COMMONWEALTH OF KENTUCKY

BEFORE THE ELECTRIC GENERATION AND TRANSMISSION SITING BOARD

In the Matter of:

ELECTRONIC APPLICATION OF THOROUGHBRED SOLAR, LLC FOR A CERTIFICATE OF CONSTRUCTION FOR AN APPROXIMATELY 50 MEGAWATT MERCHANT ELECTRIC SOLAR GENERATING FACILITY IN HART COUNTY, KENTUCKY PURSUANT TO KRS 278.700 AND 807 KAR 5:110.	))))))))	Case No. 2022-00115

THOROUGHBRED SOLAR, LLC'S RESPONSE TO SITING BOARD STAFF'S POST-HEARING REQUEST FOR INFORMATION

Applicant Thoroughbred Solar, LLC ("Thoroughbred Solar") respectfully submits its responses to the Siting Board Staff's Post-Hearing Request for Information as follows:

1. Provide a copy of the Phase I Environmental Site Assessment

RESPONSE: A copy of a Phase I Environmental Site Assessment for the Thoroughbred Solar site is included as Exhibit A. As discussed during the hearing, a draft had been prepared in 2021; however, because the review at that time did not reflect the full 530-acre Project Area, an updated version of the report has been prepared to provide for this response. No Recognized Environmental Conditions have been identified for the Project, consistent with information provided at the hearing.

2. Provide the affected systems studies completed by Louisville Gas & Electric and the Tennessee Valley Authority

RESPONSE: Documentation affirming that all requirements have been met relative to affected system studies by Louisville Gas & Electric and Tennessee Valley Authority is included as Exhibit B.

3. Provide information about the contact and outreach Thoroughbred Solar has had with the property owners in the three residential neighborhoods that are included in the deviation request.

RESPONSE: As set forth in the Application, particularly Exhibits 3 and 6, Thoroughbred Solar has provided notice and engaged in community outreach in many respects throughout the development of the Project. As part of this community outreach and engagement effort, multiple avenues of communication were utilized. These avenues include social media engagement, direct mailing, attendance of public events, and in-person door knocking. The Thoroughbred Solar development team paid special attention to engagement and outreach to adjacent property owners to the proposed facility site boundary.

On or about March 28, 2022, direct mail was sent to the list provided in the Application at Exhibit 6, Attachment A-6, pages 2-3 to provide notice of the April 13, 2022 Public Information Meeting. This list included three property owners within the defined residential neighborhoods in Thoroughbred Solar's Motion for Deviation. Notice of the Public Information Meeting, including all of the properties contained in Thoroughbred Solar's Motion for Deviation, was published on March 24, 2022 in the *Hart County News Herald*, a newspaper of general circulated in Hart County, Kentucky.

A representative of the Thoroughbred Solar Project conducted direct door knocking in April 2022 to establish communication with adjacent and nearby residents of the proposed facility. In-person contact was attempted at 33 adjacent and nearly adjacent homes to the Project Area. A copy of the list is included as Exhibit C. Of these 33 properties, 9 are included in the defined residential neighborhoods in Thoroughbred Solar's Motion for Deviation.

Thoroughbred Solar's direct mailing list was expanded in October 2022 to provide communication to a greater audience of residents, which included 12 properties in the defined residential neighborhoods. A newsletter, a copy of which is included as Exhibit D, was sent to this expanded mailing list in November 2022. Holiday cards, a sample of which is included as Exhibit E, were sent to this list of residents in December 2022.

On January 12, 2023, notice of the Local Public Hearing was published in *The Hart County News Herald.* Notice of the formal hearing was published in *The Hart County News Herald* on February 9, 2023. A letter from Thoroughbred Solar introducing the new lead developer and providing updated contact information was sent to the expanded mailing list in February 2023, a sample of which is included as Exhibit F.

4. Provide the manufacturer's specifications for noise during operations of the small pile driver that is to be used during construction of the project.

RESPONSE: The Operator's Manual for the Vermeer PD10 Pile Driver is included as Exhibit G. This manual is a more recent version than the data that was used during the initial modelling; therefore, the end results differ slightly from the initial analysis. The sound data for the pile driver equipment is found on page 114 of the Operator's Manual. In this document, there are two versions of the PD10 with sound data: one that is equipped with a Deutz engine and the other with a Yanmar engine. The two engines differ in power output and as a result have differing associated noise levels. For each engine type there are two sound measurements given. The first is a sound pressure

level at the operator ear. The other is a guaranteed sound power. The sound power and pressure are different in that the sound pressure is context dependent (in this case, the operator's location) and the sound power is context independent and will be the same at any distance from the unit. These two numbers should not be directly compared. It is important to note that the sound pressure level is what was used in Thoroughbred Solar's analysis. Using the rated sound pressure level at the operator's ear, which is approximately 4 feet from the unit, one can calculate the levels at incrementally further distances. At 50 feet from the unit, the sound pressure level of the Deutz version of the PD10 would be 92 dBA and the sound pressure level of the Yanmar version of the PD10 would be 83 dBA.

Some former Kentucky Siting Board applicants appear to have relied on Federal Highway Administration ("FHWA") data, which includes sound pressure levels for much larger impact pile drivers, typically used in roadway construction. In the FHWA table, Impact Pile Drivers have a sound level of 101 dBA at a distance of 50 feet. Data is also provided in the FHWA table for a vibratory pile drivers (listed at 95 dBA at 50 feet); however, the Vermeer PD10 is an impact pile driver, and as such using the data for a vibratory pile driver would be inapplicable in this case. Extrapolating that measurement out to a distance of 1,500 feet (which is the distance recommended by the Consultant's Report in this proceeding), the FHWA-rated impact pile driver will produce a sound pressure level of 71.5 dBA at 1,500 feet. Because the recommendation for mitigation stops at 1,500 feet, based on other decisions granting solar construction certificates, Thoroughbred Solar understands 71.5 dBA to be an acceptable temporary sound pressure level and that an equivalent sound pressure rating at a lesser distance would not require additional mitigation measures.

Using the sound pressure levels provided by the manufacturer of the PD10 Pile Driver, it is possible to calculate that equivalent distance. The Yanmar unit would achieve a sound pressure level of 71.5 dBA at approximately 190 feet, while the Deutz version would achieve an equivalent sound pressure level at approximately 338 feet. Based on the above information and accounting for a reasonable buffer, Thoroughbred Solar has recommended that mitigation measures be employed when a residence is within a distance of 400 feet from the operating pile driver.

5. Provide the National Cooperative Highway Research Program sound data set that was used to calculate the noise impacts for the project.

RESPONSE: Two items providing the requested information are included as Exhibit H. The first is the NCHRP 25-49 final report. The second is a zip folder including the actual data set. This data set can also be found at https://onlinepubs.trb.org/onlinepubs/nchrp/docs/EquipDB.Source.zip). The data used for modeling is the average Leq for each piece of equipment. All sound levels shown are at a distance of 50 feet from the equipment.

6. Provide the occupation and salary range for each job that will be created in the operational phase of the project.

RESPONSE: Thoroughbred Solar has conferred with both the human resources department and field operations team at Leeward Renewable Energy ("LRE") to gain an understanding of expected roles that would be involved in the regular operations of the Thoroughbred Solar facility as well as the associated wages with those roles. The estimates provided below represent expectations for roles that would be necessary for the safe and effective operation of the Project and estimates of their respective base pay range (which may vary due to local economic factors). This information is representative of actual employment wages at other solar sites that are operated by LRE. The figures below represent solely base wages and do not include other employment compensation such as bonuses and benefits. LRE generally budgets the average cost of operations personnel across job functions in an operational power plant at around $100,000 per employee, per year. Estimates for the likely involved roles here are:

1. Plant Manager – annual Base Pay range: $95,000 - $150,000;
2. Site Lead – annual Base Pay range: $70,000 - $95,000;
3. PV Technician – annual Base Pay range: $50,000 - $70,000; and
4. Vegetation Management Technician – annual Base Pay range: $30,000 - $40,000.

It is worth noting that the labor income value in Table 4 of the economic impact report includes all forms of employment income, including employee compensation (wages, salaries, and benefits) and proprietor income. Further, the total of 4 direct jobs is a number that has been rounded down, meaning that the labor income per job (which, again, includes benefits) is less than if one were to do a simple division of income per job. Benefits often comprise around 30% of an employee's total compensation, which is included in the $415,900 figure in the original report.

7. Refer to the Application, Exhibit 10, page 10, Tables 3 and 4. The construction and operational phases of the project will generate over $20 million in statewide labor income. Provide an estimate of the state and local income taxes and occupational taxes that will be generated by the project in construction and operation phases.

RESPONSE: The Commonwealth of Kentucky has a flat state income tax of 4.5%, and Hart County has a flat county income tax of 0.01%. At a combined statewide labor income of $20,022,100 in the beginning years of the Project (the construction phase and the first year of O&M), Thoroughbred Solar expects the combined state and local income tax contribution to equal $700,000–$900,000, depending on the precise level of taxable income, which will vary with deductions, dependents, etc. At an assumed 40-year lifespan for the Project, Thoroughbred Solar conservatively estimates the total state income tax contribution from O&M to be about $750,000 and the total local income tax contribution from O&M to be about $17,000.

With regard to occupational taxes, Hart County Tax Ordinance 220.14 Section 3, states: "every person or business entity engaged in any business for profit and any person or business entity that is required to make a filing with the IRS, or the Kentucky Revenue Cabinet shall be required to file and pay the county an occupational license tax for the privilege of engaging in such activities with the county. The occupational license tax shall be measured by 0.8% (.008)" Based this

ordinance, it is Thoroughbred Solar's understanding that there could be an occupational tax levied on Thoroughbred Solar, LLC's annual net profits. The occupational tax rate in the Hart County Tax district is 0.8%, with a cap of $2,000 (See ordinance 220.14 Section 3 Subsection 5). Thoroughbred Solar, LLC expects to be levied the full $2,000 tax.

8. Refer to the Application, Exhibit 10, page 10. The analysis was conducted at the state level.

   a. Provide the local economic impacts during both the construction and operational phases of the project. In the response, include estimates of the direct, indirect and induced jobs created, value of wages and salaries, and economic output. Also, include an explanation of how the local economic impacts were calculated or derived.

   b. Referring to the Application, Exhibit 6, Attachment A-1, page 6. The handout promises "hundreds of temporary construction jobs, temporary jobs induced by construction and long-term operations and maintenance jobs." Reconcile the differences between the hundreds of jobs that will be in Hart County versus the 141 direct statewide jobs promised in Exhibit 10, page 10, Table 3.

RESPONSE:

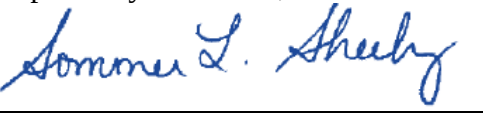
a. It is uncertain exactly how many of the construction and O&M related jobs for the Project will occur distinctly at the local level (Hart County). As Hart County has not seen a utility-scale solar project to date, the data (e.g., wages, multipliers, etc.) on these types of occupations do not yet exist at the county level, making a state-level economic impact model the only viable approach in this circumstance. The developer plans to utilize as much local labor as reasonably possible to both construct and operate the Project.

   While a viable method for calculating the local (i.e., county level) economic impacts for the O&M phase was not feasible given the lack of data with the newness of this industry, it would technically be possible to use a broader-level construction sector to model the potential economic impacts of the build-out of Thoroughbred Solar. However, even the most specific construction sector that could be employed at the county level would utilize data unrelated to utility-scale solar, such as constructing communication structures, transmission lines, industrial buildings, etc. such that results using this sector would be incorrect and misleading. Therefore, Thoroughbred Solar used state-level data and honed

in on the actual types of jobs, wages paid, etc. that were specific to constructing a solar facility instead of relying on more geographically specific, but less sector-relevant, data.

b. The hundreds of temporary construction jobs to which Thoroughbred Solar referred in Exhibit 6, Attachment A-1, page 6 is a general estimate of job creation resulting from the construction and operation of a solar facility. This presentation was given in October 2021 as part of an introductory meeting with Judge Executive Joe Choate. The purpose of the presentation was to provide a broad picture of the benefits that the Thoroughbred Solar project was expected to provide to Hart County, at the time the presentation was given. Over the course of further due diligence, including the commissioning of the ordinance-required Economic Impact Analysis, analyses were conducted to further refine the employment expectations for the construction of the facility. The Economic Impact Analysis was conducted in June 2022. The results of this study estimated that 296 temporary jobs are expected to be created as a result of the construction of the facility. The study clarified that 141 of these 296 jobs are expected to be on-site construction jobs, and the remaining 155 would be either induced or indirectly created as a result of construction activity. The estimated job creation during construction is a statewide estimate. At this stage in the project lifecycle, it is uncertain exactly how many of the jobs during construction and operation of the facility will be sourced at the local level (i.e., county level). However, it is generally expected that resources will come from Kentucky. The amount of local labor will be a function of the local labor market and the availability of qualified employees at the time of construction. It is in the best interest of the Project to utilize local labor, contractors, and vendors in order to minimize cost and support the local economy. In addition to sourcing qualified EPC contractors to lead the project, Thoroughbred Solar will require that the selected EPC contractors solicit bids for services from qualified local suppliers.

Respectfully submitted,



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ASTM PHASE I ENVIRONMENTAL SITE ASSESSMENT
THOROUGHBRED SOLAR
HART COUNTY, KENTUCKY

by
Haley & Aldrich, Inc.

for
Thoroughbred Solar, LLC

File No. 0203928-000
March 2023

HALEY & ALDRICH, INC.
3 Bedford Farms Drive
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603.391.3325

9 March 2023
File No. 0203928-000

Thoroughbred Solar, LLC
c/o Leeward Renewable Energy Development, LLC
6688 N. Central Expressway, Suite 500
Dallas, Texas 75206

Attention: Patrick Walsh, Senior Development Associate

Subject: ASTM Phase I Environmental Site Assessment
Thoroughbred Solar
Hart County, Kentucky

Ladies and Gentlemen:

The enclosed report presents the results of a Phase I Environmental Site Assessment (Phase I ESA) conducted on an approximately 530-acre area located in Hart County, Kentucky (herein referred to as the "subject property"). This work was performed by Haley & Aldrich, Inc. (Haley & Aldrich), in accordance with our proposal to Thoroughbred Solar, LLC dated 22 February 2023_rev. 1 ("Agreement") as authorized on 9 March 2023. This Phase I ESA was conducted in conformance with the scope and limitations of the ASTM International (ASTM) E1527-21 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process as referenced in 40 Code of Federal Regulations (CFR) Part 312 (the All Appropriate Inquiries [AAI] Rule).

The objective of a Phase I ESA is to assess whether known and suspect "recognized environmental conditions" (RECs), historical RECs (HRECs), or controlled RECs (CRECs) are associated with the subject property, as defined in the ASTM E1527-21 Standard.

This Phase I ESA has revealed no evidence of RECs associated with the subject property.

Thank you for the opportunity to perform these services for you. Please do not hesitate to contact us if you have any questions or comments.

Sincerely yours,
HALEY & ALDRICH, INC.

Audrey West
Technical Specialist

Lynn Gresock
Principal Consultant

Enclosures

Executive Summary

Haley & Aldrich, Inc. (Haley & Aldrich) has performed a Phase I Environmental Site Assessment (Phase I ESA) of an approximately 530-acre area in Hart County, Kentucky (herein referred to as the "subject property"). The scope of work is described and conditioned by our proposal dated 22 February 2023. This Phase I ESA was performed for Thoroughbred Solar, LLC who seeks to develop the subject property as a utility-scale solar facility. This Phase I ESA was performed in conformance with the scope and limitations of the ASTM E1527-21 Standard and All Appropriate Inquiries (AAI) Rule.[1]

SUBJECT PROPERTY DESCRIPTION

The subject property consists of approximately 530 acres of primarily cultivated or fallow agricultural land over portions of four parcels located between Interstate 65 (I-65) and Route 31W to the west of Rowletts, Kentucky, an unincorporated community in Hart County.

OBJECTIVE

The objective of a Phase I ESA is to assess whether "recognized environmental conditions" (RECs), historical RECs (HRECs), and controlled RECs (CRECs) are associated with the subject property. Our conclusions are intended to help the user evaluate the "business environmental risk" associated with the subject property Our opinion regarding a REC's potential impact on the subject property is based on the scope of our work, the information obtained during the course of our work, the conditions prevailing at the time our work was performed, the applicable regulatory requirements in effect at the time our work was performed, our experience evaluating similar sites, and on our understanding of the client's intention to develop the subject property as a utility-scale solar facility.

SIGNIFICANT DATA GAPS

Our ability to identify and evaluate RECs at the subject property is conditioned upon significant data gaps identified as part of this Phase I. The ASTM E1527-21 Standard defines a significant data gap as a data gap that affects the ability of the Environmental Professional to identify a REC.

No significant data gaps were identified during the performance of this Phase I. Thus, it is our opinion that sufficient information was obtained to identify subject property conditions indicative of releases or threatened releases of hazardous substances and petroleum hydrocarbons. Our opinion is limited by the conditions prevailing at the time our work is performed and the applicable regulatory requirements in effect.

RECOGNIZED ENVIRONMENTAL CONDITIONS

The ASTM E1527-21 Standard defines a REC in part as "the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment."

[1] The ASTM Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process (ASTM E1527-21 Standard) as referenced in 40 CFR Part 312 (the All Appropriate Inquiries [AAI] Rule).

RECs were not identified in connection with the subject property.

CONTROLLED RECOGNIZED ENVIRONMENTAL CONDITIONS

The ASTM E1527-21 Standard defines a CREC as a recognized environmental condition resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls.

CRECs were not identified in connection with the subject property.

HISTORICAL RECOGNIZED ENVIRONMENTAL CONDITIONS

The ASTM E1527-21 Standard defines an HREC as "a previous release of hazardous substances or petroleum products affecting the subject property that has been addressed to the satisfaction of the applicable regulatory authority or authorities and meeting unrestricted use criteria established by the applicable regulatory authority or authorities without subjecting the subject property to any controls." A historical recognized environmental condition is not a recognized environmental condition.

HRECs were not identified in connection with the subject property.

DE MINIMIS CONDITIONS

The ASTM E1527-21 Standard defines *de minimis* conditions as those conditions which "do not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies." The ASTM E1527-21 Standard notes that "conditions determined to be *de minimis* are not recognized environmental conditions."

The following *de minimis* conditions were identified in connection with the subject property.

***De Minimis* #1:** Past Agricultural Use. Pesticides and/or herbicides were likely applied to the subject property during its use for agricultural purposes. Trace amounts of these chemicals may still be present in soil at the subject property, although Haley & Aldrich cannot conclude whether these residual levels would exceed applicable remediation standards or guidance levels. No evidence of current or historical manufacture, storage, or mixing of pesticides or herbicides was observed or reported. Application of pesticides and herbicides for agricultural purposes in accordance with manufacturers' recommendations and best practices is not considered a REC.

***De Minimis* #2:** Vehicle Dump Area. Assorted solid waste, scrap metal, or disused automobiles/ equipment accumulations were identified within the subject property. While the disused automobiles may contain some petroleum products and antifreeze, no evidence was observed and potential accumulations are considered unlikely to contain hazardous materials. Therefore, this condition is not considered a REC.

***De Minimis* #3:** Dump Areas. Various dumps were observed on the subject property. These dumps were observed to contain household trash, glass jars, furniture, old car seats, tires, metal pieces of unknown

origin, plastic containers, buckets, and plastic pieces of unknown origin. Evidence of release or threat of release of petroleum and/or hazardous materials was not observed within the dump areas, nor were containers anticipated to contain such materials observed; therefore, this condition is not considered a REC.

SUMMARY AND RECOMMENDATIONS

We did not identify RECs, HRECs, or CRECs during this Phase I ESA. Further assessment is not recommended at this time.

The remainder of this report contains additional information regarding the Phase I ESA, the resulting findings summarized above, and limitations affecting this report.

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Continued Viability of Environmental Site Assessment

In accordance with the ASTM E1527-21 Standard, the following components of the Phase I Report must be conducted or updated within 180 days prior to the date of acquisition or prior to the date of the transaction:

1. Questionnaires with owners, operators, and occupants. Completed on: 6 March 2023
2. Searches for recorded environmental cleanup liens (a user responsibility). Completed on: 1 March 2023
3. Reviews of federal, tribal, state, and local government records. Completed on: 1 March 2023
4. Visual inspections of the subject property and of adjoining properties. Completed on: 28 February 2023
5. The declaration by the Environmental Professional responsible for the assessment or update (refer to Section 9). Completed on 9 March 2023

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1. Introduction

This report presents the results of an ASTM Phase I Environmental Site Assessment (Phase I ESA) conducted on an approximately 530-acre area in Hart County, Kentucky (herein referred to as the "subject property"). The subject property consists of approximately 520 acres of primarily cultivated or fallow agricultural land and approximately 10 acres of forested areas over portions of four parcels located between Interstate 65 (I-65) and Route 31W to the west of Rowletts, Kentucky, an unincorporated community in Hart County, as shown on the Project Locus, Figure 1. This Phase I ESA was conducted in consideration of Thoroughbred Solar, LLC's intention to develop the property as a utility-scale solar facility.

1.1 OBJECTIVE

The objective of a Phase I is to assess whether "recognized environmental conditions" (RECs), controlled RECs (CRECs), or historical RECs (HRECs) are associated with the subject property by evaluating site history, interviews, existing observable conditions, current site use, and current and former uses of adjoining properties as well as potential releases at surrounding properties that may impact the subject property. Our conclusions are intended to help the user evaluate the "business environmental risk" associated with the subject property.

The ASTM E1527-21 Standard defines a REC as: (1) the presence of hazardous substances or petroleum products in, on, or at the subject property due to a release to the environment; (2) the likely presence of hazardous substances or petroleum products in, on, or at the subject property due to a release or likely release to the environment; or (3) the presence of hazardous substances or petroleum products in, on, or at the subject property under conditions that pose a material threat of a future release to the environment. The definitions of RECs, CRECs, and HRECs are included in the Glossary section of this report.

1.2 SCOPE OF SERVICES

This Phase I ESA was performed by Haley & Aldrich, Inc. (Haley & Aldrich) in conformance with the scope and limitations of the ASTM E1527-21 Standard and All Appropriate Inquiries (AAI) Rule and in accordance with our proposal to LRE dated 22 February 2023 ("Agreement") as authorized on 28 February 2023. The Phase I ESA Limitations and Agreement are attached hereto as Appendix A.

As part of this Phase I ESA, Haley & Aldrich conducted visual observations of site conditions and of abutting property use (site reconnaissance); interviewed a key site manager and applicable tenant representatives (through the use of questionnaires); reviewed federal, state, tribal, and local environmental database information, federal and state environmental files, previous reports (if identified and provided), and site historical use records; and formulated conclusions regarding the potential presence and impact of RECs.

1.3 NON-SCOPE CONSIDERATIONS

The ASTM E1527-21 Standards include the following list of "additional issues" that are non-scope considerations outside of the scope of the ASTM Phase I practice: asbestos-containing materials, biological agents, cultural and historic resources, ecological resources, endangered species, health and

safety, indoor air quality related to release of hazardous substances or petroleum products into the environment, industrial hygiene, lead-based paint unrelated to releases into the environment, lead in drinking water, mold or microbial growth conditions, polychlorinated biphenyl (PCB)-containing materials, naturally occurring radon, regulatory compliance, substances not defined as hazardous substances (emerging compounds[2]), and wetlands. These items were not included in this Phase I of the subject property.

The assessment of the presence of PCBs is limited to those potential sources specified in the ASTM E1527-21 Standards as "electrical or hydraulic equipment known or likely to contain PCBs…to the extent visually and or physically observed or identified from the interview or records review."

1.4 LIMITING CONDITIONS/DEVIATIONS

Haley & Aldrich completed this Phase I ESA in substantial conformance with the ASTM E1527-21 Standard. In our opinion, no additions were made to, or deviations and deletions made from the ASTM work scope in completing this Phase I ESA.

1.5 USER RESPONSIBILITIES

The completion of this Phase I ESA is only one component of the process required to satisfy the AAI Rule. In addition, the user must adhere to a set of user responsibilities as defined by the ASTM E1527-21 Standard and the AAI Rule. User responsibilities are discussed in Section 6.6 of this report. A user seeking protection from Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) liability as an innocent landowner, bona fide prospective purchaser, or contiguous property owner must complete all components of the AAI process in addition to meeting ongoing obligations. AAI components, CERCLA liability relief, and ongoing obligations are discussed in the AAI Rule and in Appendix XI of the ASTM E1527-21 Standard.

[2] Per- and polyfluoroalkyl substances (PFAS) are examples of emerging compounds.

2. Site Description

A description of the subject property is detailed in the sections below. Refer to Figure 1 for a Project Locus and Figure 2 for a Site Plan showing relevant site features and adjacent properties.

2.1 SITE OWNERSHIP, LOCATION, AND VICINITY DESCRIPTION

Site Description	
Owner	**045-00-00-050.00 (1645 Rowletts Cave Springs Road)** 112 acres in total Harry & Mary Isaacs P.O. Box 520 Munfordville, Kentucky 42765 **055-00-00-063.00 (982 Rowletts Cave Springs Road)** 90 acres out of 115 acres David & Bonnie Sammons 982 Rowletts Cave Springs Road Horse Cave, Kentucky 42749 **056-00-00-040.00 (L&N Turnpike Road)** 174 acres out of 206 acres David & Traci Gardner 1129 L & N Turnpike Road Horse Cave, Kentucky 42749 **056-00-00-012.00 (L&N Turnpike Road)** 149 acres out of 154 acres Harry & Mary Isaacs P.O. Box 520 Munfordville, Kentucky 42765
Current Site Use	Agricultural land
Size	Approximately 530 acres
USGS 7.5-Minute Topographic Map	Horse Cave, 2013
Site County	Hart County
Zoning	Hart County is not zoned.
Parcel Information	Parcel ID 045-00-00-050.00 and portions of Parcel IDs 055-00-00-063.00, 056-00-00-040.00, and 056-00-00-012.00

Site Vicinity Description		
General Area Description	The subject property lies in a rural residential and agricultural area between Route 31W and I-65. Denser development is found along KY-335, which bisects the subject property.	
	North:	Rowletts Cave Springs Road followed by agricultural, rural residential, and forest.

Site Vicinity Description		
Adjoining Property Description	East:	Commercial and residential development followed by Maple Grove Lane and additional development.
	South:	Maple Grove Lane, limited residences, and agricultural development.
	West:	Rural residential development followed by I-65 and its associated facilities (i.e., a rest stop)

2.2 PHYSICAL SETTING

Subsurface explorations and/or hydrogeologic investigations were not performed for this Phase I ESA. Subject property geology and hydrology were evaluated on the basis of readily available public information or references, and/or based upon our experience and understanding of subsurface conditions in the vicinity of the subject property. It is unknown to what extent localized variations in groundwater depth and flow occur on the subject property.

The subject property is located within an area subject to karst geology. The term “karst” refers to a landscape characterized by sinkholes, springs, sinking streams, and underground draining through solution-enlarged conduits or caves.

Physical Setting		Source
Topography Summary	The subject property is gently rolling.	1, 2
Site Elevation (El.)	Approximate El. 570 to 710 feet	2
Overburden Soils	Native material consists of Crider silt loam, which consists of well-draining, silt loam commonly found on ridges.	3
Bedrock Formation	Subject property is located in an area mapped as a limestone and shale rock unit subject to karst features and includes mapped sinkholes.	5
Depth to Bedrock	Approximately 2 to 8 feet below ground surface (ft bgs)	3
Depth to Groundwater	Approximately 40 to 150 ft bgs	6
Surface Water Flow Direction	Surface water appears to flow toward the north and west based on observed surface topography.	4
Regional Groundwater Flow Direction	Regional groundwater flow appears to flow to the north and west based on the Green River, which lies approximately 0.5 miles north and west of the subject property.	4

Physical Setting		Source
Nearest Surface Water Body	Green River is located approximately 0.5 miles north and west of the subject property, at its closest point.	4

Sources:

1. *Site Reconnaissance by Haley & Aldrich on 28 February 2023.*
2. *EDR, 2021. EDR Historical Topo Map Report with QuadMatch, United States Geologic Survey 7.5-minute quadrangles, dated 2 November 2021.*
3. *USDA NRCS, 2021. United States Department of Agriculture, Natural Resources Conservation Service, accessed 3 November 2021.*
4. *Google Earth, 2021.*
5. *Kentucky Geological Survey, 2007. Generalized Geologic Map for Land-Use Planning: Hart County, Kentucky.*
6. *Kentucky Groundwater Data Repository. Accessed 1 March 2023 at https://kgs.uky.edu/kgsmap/KGSWater/viewer.asp.*

Environmentally Sensitive Areas		Source
Floodplain	Yes. There are several small pockets of Federal Emergency Management Agency (FEMA)-mapped 1% chance flood hazard areas within the subject property (as shown on Figure 2).	1
Mapped Wetlands	Yes. There are several small ponds and freshwater emergent wetlands mapped by the U.S. Fish and Wildlife Service (USFWS) within the subject property; however, a formal delineation has indicated the presence of only one wetland and no streams (as shown on Figure 2).	2
Aquifer Protection Area/District	The subject property lies within Source Water Protection Area 3 for the Green River Valley Water District.	3

Sources:

1. *FEMA, 2023. FEMA's National Flood Hazard Layer (NFHL) Viewer. FEMA's National Flood Hazard Layer (NFHL) Viewer (arcgis.com). Accessed 1 March 2023.*
2. *USFWS, 2023. United States Fish and Wildlife Service National Wetlands Inventory Data Mapper. Wetlands Mapper (fws.gov). Accessed 1 March 2023.*
3. *KDOW, 2023. Kentucky Division of Water - Source Water Protection Viewer. Source Water Protection Viewer (arcgis.com). Accessed 1 March 2023.*

3. Previous Reports

Previously prepared reports for the subject property were not provided or reviewed as part of this assessment.

4. Site History

Haley & Aldrich assessed past usage of the subject property and adjoining properties through a review of:

- Topographic Maps dated 1934/1935, 1937/1938, 1953/1954, 1966, and 2013;
- Aerial Photographs dated 1953, 1983, 1993, 2008, 2010, 2012, and 2016;
- City Directories dated 1992, 1995, 2000, 2005, 2010, 2014, and 2017;
- Municipal records;
- Interviews with subject property personnel; and
- Previous Reports.

Copies of information obtained from historical references reviewed are included in Appendix B. Unless otherwise noted below, per the ASTM standard, sources were reviewed dating back to 1940 or first developed use, whichever is earlier, and at five-year intervals if the use of the property has changed within the time period.

4.1 SUBJECT PROPERTY

The approximately 530-acre subject property is located between I-65 and Route 31W, in an unincorporated area of Hart County, and is traversed by several utility corridors and L and N Turnpike Road. The majority of the subject is agricultural land, currently fallow, with some pockets of treed areas.

Based on review of the United States Geological Survey (USGS) National Land Cover Database (NLCD), the subject property predominantly contains hay/pasture, cultivated crops, and deciduous and herbaceous land cover. Based on Hart County land assessment, the eastern parcel contains grass/pastureland, soybean crops, forested land, “non-crop” land, and “other” land use.

The table below provides a detailed summary of pertinent information from the historical sources reviewed:

Dates	Description of Subject Property	Sources
1934 to 1983	The subject property is undeveloped land traversed by improved roads and bound by unimproved roads to the north and south. There are small ponds indicated throughout the subject property. A farmstead is visible in the north-central portion of the subject property.	Topographic Maps Aerial Photographs
1983 to Present Day	The subject property is undeveloped land in agricultural use with pockets of wooded areas and scattered trees throughout the properties. Small sink holes are still visible throughout the property. The farmstead has been abandoned, with only two small structures remaining.	Topographic Maps Aerial Photographs City Directory

4.2 ADJOINING PROPERTIES

The table below provides a summary of pertinent information from the historical sources reviewed regarding adjacent properties:

Dates	Description of Adjacent Properties	Sources
1934 to 1953	**North**: Undeveloped road followed by Summer Seat Knob. Green River is located farther to the north. **South**: Undeveloped land and Maple Grove Lane followed by additional undeveloped land. **East**: Rowletts, an unincorporated area in Hart County, lies along Route 31W. **West**: Undeveloped roads followed by undeveloped land.	Topographic Maps
1953 to 1992	**North**: Developed road labeled as Rowletts Cave Springs Road followed by Summer Seat Knob and agricultural land. **South**: Rural residential and agricultural land with scattered undeveloped roads traversing the area. **East**: Development in Rowletts has expanded. **West**: I-65 has been developed just to the west of the subject property.	Topographic Maps Aerial Photographs
1992 to 2008	**North**: Rowletts Cave Springs Road and rural residential and agricultural development. **South**: No change from previous time. **East**: Development along Route 31W has continued to expand. **West**: Rural residential development now lies along G Wilson Lane.	Topographic Maps Aerial Photographs City Directory
2008 to Present Day	**North**: Rowletts Cave Springs Road and rural residential and agricultural development. **South**: No change from previous time. **East**: Development along Route 31W has continued to expand. A golf course lies just west of Route 31W. **West**: Rural residential and agricultural, followed by a newly constructed rest stop along I-65.	Topographic Maps Aerial Photographs City Directory

5. Environmental Records Review

5.1 ENVIRONMENTAL DATABASE RECORDS SEARCH

Haley & Aldrich used the electronic database service, Environmental Data Resources (EDR) to complete the environmental records review. The database search was used to identify properties that may be listed in the referenced agency records, located within the ASTM-specified approximate minimum search distances as shown in the table below. A description of each database searched is in Section 11.2 of this report. The complete environmental database report is provided in Appendix C. Pertinent information obtained from the database is summarized in Section 5.3 below.

Database Searched	Approximate Minimum Search Distance	Subject Property Listed?	Number of Sites within Search Distance[1]
1. NPL Sites	1 mile	No	0
2. Delisted NPL Sites	0.5 miles	No	0
3. CERCLIS[2] Sites	0.5 miles	No	0
4. CERCLIS-NFRAP[2] Sites	0.5 miles	No	1
5. Federal ERNS	Site only	No	0
6. RCRA non-CORRACTS TSD Facilities	0.5 miles	No	0
7. RCRA CORRACTS TSD Facilities	1 mile	No	0
8. RCRA Generators	Site & Adjoining	No	0
9. Federal Institutional/Engineering Controls	Site Only	No	0
10. State/Tribal Equivalent CERCLIS[2] Sites	0.5 miles	No	0
11. State/Tribal Registered Storage Tanks	Site & Adjoining	No	0
12. State/Tribal Landfills and Solid Waste Disposal Sites	0.5 miles	No	1
13. State/Tribal Leaking Storage Tanks	0.5 miles	No	0
14. State/Tribal Institutional Controls/Engineering Controls	Site Only	No	Not Applicable
15. State/Tribal Voluntary Cleanup Sites	0.5 miles	No	0
16. State/Tribal Brownfield Sites	0.5 miles	No	0
17. Orphan Site List[3]	Site & Adjoining	No	1
18. SPILLS	Site Only	Yes	1
19. FINDS	Site Only	No	0
20. ECHO	Site Only	No	0

Notes:

1. *Some sites may be included on multiple databases.*
2. *The US EPA retired the CERCLIS database in October 2013. In January 2016, the Superfund Enterprise Management System (SEMS), which replaces the CERCLIS database, became active. The CERCLIS database records search included as part of this assessment includes currently ascertainable data from the SEMS and SEMS-Archive databases as reported through the database vendor.*
3. *Haley & Aldrich also searched the Orphan Site List provided in the database report for the subject property and sites adjoining the subject property. Orphan sites are those that, due to incorrect or incomplete addresses, could not be mapped.*

5.2 ADDITIONAL ENVIRONMENTAL RECORDS OR FILE REVIEW

To supplement the environmental record search, we contacted the following state and local government agencies and searched applicable online databases. If copies of the documents reviewed were obtained, pertinent material is included in Appendix C. Relevant information obtained is included in the appropriate sections of the report and/or discussed in Section 5.3 below. Adjacent properties were not included in requests for additional information.

Agency	Request Sent or Files Searched		Files Exist and are Available for Review	Files Reviewed
	Subject Property	Adjoining Properties		
Kentucky Energy and Environment Cabinet[2]	Yes	No	Yes	Yes
Hart County PVA Office[3]	Yes	No	No	No
Hart County Planning Commission[4]	Yes	No	No Response	N/A
Hart County Building/Electrical Inspector	Yes	No	No Response	N/A
Horse Cave Volunteer Fire Department	Yes	No	No Response	N/A

Notes:

1. *To date, as noted above, certain responses have not been received from the Freedom of Information Act (FOIA) requests. Based on the information obtained through our interviews with key site personnel, and our review of other records, it does not appear that responses to the FOIA requests should affect our conclusions regarding RECs on the subject property. However, when a response is received, it will be forwarded to LRE, and if it affects our conclusions regarding the site, LRE will be informed.*
2. *URL: Open Records - Kentucky Energy and Environment Cabinet*
3. *URL: Hart County PVA (hartpva.com)*
4. *URL: Planning Commission - Hart County (ky.gov)*

5.3 DETAILED DESCRIPTION OF RELEVANT INFORMATION

5.3.1 Subject Property

The subject property was identified by EDR on one database with one associated record, as summarized in the table below.

Map ID/ Address	Database	Description
TP1 Munfordville, Kentucky	SPILLS	Incident of open dumping in July 2008. Record is listed as closed.

5.3.2 Nearby Sites

Several sites were listed in the database report within the applicable search radii or identified in regulatory records reviews. Only those sites adjacent to the subject property and sites with a potential to have impacted the subject property are discussed below. The complete database report and relevant records review information is included in Appendix C.

1. Hidden River Cave Explosion, Highway 31W:

   This site is listed on the SEMS-ARCHIVE database with a status of No Further Remedial Action Planned (NFRAP). This site was first identified in 1988 and was determined not to be eligible for listing on the National Priorities List (NPL) in 1990.

2. Hart Co Compost & Recycling Center, 249 Rowletts Cave Spring Road:

   This site is listed on the Solid Waste Facility / Land Fill (SWF/LF) with a status of terminated.

One orphan site was identified by EDR in association with the subject property database search. Upon further analysis, this site was found to be farther than 1 mile from the subject property.

Based on the type and status of these findings, none of the records identified by EDR are considered to represent a significant environmental concern for the subject property.

5.4 VAPOR MIGRATION

The ASTM E1527-21 standard states that "for the purposes of this practice, “migrate” and “migration” refer to the movement of hazardous substances or petroleum products in any form, including, for example, solid and liquid at the surface or subsurface, and vapor in the subsurface." Thus, this section specifies whether or not we perceive a risk of vapor migration to the subject property.

To assess a vapor migration risk, we conducted a detailed review and analysis of the site-specific environmental database report and/or other reasonably ascertainable records to assess whether:

1. Off-site properties have documented chlorinated volatile organic compound (VOC) contamination located within 100 feet of the subject property, or

2. Off-site properties have documented volatile petroleum hydrocarbon contamination within 30 feet of the subject property.

Based on our records review, it is presumed unlikely that a potential source of vapor migration currently exists beneath the subject property.

6. Subject Property Reconnaissance and Key Personnel Interview(s)

A site visit to observe subject property conditions was conducted by Audrey West of Haley & Aldrich, on 28 February 2023. Access to the subject property was arranged by LRE.

Haley & Aldrich also observed the exterior portions of the subject property, including the property boundaries, and observed adjoining property conditions from the subject property boundaries and/or public thoroughfares. Only two structures, a storage building, and a pavilion are located on the subject property. The interior of these structures was observed. No weather-related conditions or other conditions that would limit our ability to observe the subject property or adjoining properties occurred during our site visit.

As the property owners were not available during the site visit, interviews with property owners were conducted via questionnaires sent to the owners by LRE. Information from returned questionnaires (provided in Appendix E) is incorporated into this report. David Sammons, Tony Gardner, and Harry Isaacs, also landowners and key site managers, completed Landowner Questionnaires providing information about the subject property. Per the ASTM Standard, past owners, operators, and occupants of the subject property who are likely to have material information regarding the potential for contamination at the subject property shall be contacted to the extent that they can be identified and that the information likely to be obtained is not duplicative of information already obtained from other sources. Haley & Aldrich was not provided with contact information in order to interview past owners and/or operators at the subject property. Based upon historical data collected from other sources, this potential data gap is not expected to adversely impact the results of this assessment.

The findings of the site visit and interviews are discussed below. Site photographs are included in Appendix D.

ASTM E1527-21 Standard Section 10.8 requires that, prior to the site visit, the current subject property owner or key site manager and user, if different from the current owner or key site manager, be asked if there are any helpful documents that can be made available for review. No responsive documents were provided by the key site managers.

6.1 CURRENT USE OF THE PROPERTY

The subject property consists of approximately 530 acres of primarily cultivated or fallow agricultural land over four parcels located between I-65 and Route 31W to the west of Rowletts, Kentucky, an unincorporated community in Hart County. The subject property is also used for hunting, with several deer stands and baiting areas located throughout the subject property.

6.2 GENERAL DESCRIPTION OF STRUCTURES

Only two structures, an agricultural storage building and a pavilion, are located on the subject property. The pavilion building is vacant. The agricultural storage building stored a trailer and hay bales in the outside portion. Within the agricultural building, various empty barrels, old doors, old metal gates, and various wood pieces are present. No evidence of staining or release was observed at the time of the site visit.

6.3 USE, STORAGE, AND DISPOSAL OF PETROLEUM PRODUCTS AND HAZARDOUS MATERIALS

The use, storage, and/or disposal of petroleum products or hazardous materials was not observed or reported at the subject property.

The subject property has historically been used for agricultural purposes. Assorted solid waste, scrap metal, and/or disused automobiles/equipment accumulations were identified within the subject property. While the disused automobiles may contain some petroleum products and antifreeze, the accumulations observed are considered unlikely to contain hazardous materials that would create or contribute to a REC at the subject property. These accumulations are considered a *de minimis* condition. The locations of identified accumulations are indicated on Figure 2.

6.4 OTHER SUBJECT PROPERTY OBSERVATIONS

The table below summarizes items that were observed and/or reported at the subject property during the site visit other than those items related to use, storage, and disposal of petroleum or hazardous materials (described in Section 6.3 above). If items were observed or reported, they are further described either in the table or below.

Description	Observed or Reported at Time of Site Visit	Observations/Comments
Potable Water Supply	N/A	
Nearest Drinking Water Source	N/A	
Sewage Disposal System	N/A	
Septic System	N/A	
Unidentified Storage Containers	Yes	Several unidentified containers were observed at dump areas throughout the subject property. These containers consisted of large plastic barrels, small plastic containers, and glass jars. At the time of the site visit, these containers appeared empty. No staining or evidence of release was observed near the dumps at the time of the site visit.
Wastewater Discharge	N/A	
Stormwater Discharge	N/A	
Odors	N/A	
PCBs Associated with Electrical or Hydraulic Equipment	N/A	
Elevators (Traction or Hydraulic)	N/A	
Vehicle Maintenance Lifts	N/A	
Emergency Generators	N/A	
Sprinkler System Pumps	N/A	
Heating System	N/A	

Description	Observed or Reported at Time of Site Visit	Observations/Comments
Cooling System	N/A	
Stains or Corrosion on Floors, Walls, or Ceilings	N/A	
Floor Drains	N/A	
Sumps	N/A	
Catch Basins	N/A	
Pits, Ponds, Lagoons, and Pools of Liquid	Yes	The subject property contains numerous sinkholes consistent with the karst terrain that is normal for the Kentucky area.
Stained Soil or Pavement	No	
Stressed Vegetation	No	
Solid Waste and Evidence of Waste Filling	Yes	Areas of solid waste accumulations are indicated on Figure 2. The solid waste piles consisted of scrap metal, old tires, and various trash.
Dry Wells	No	
Monitoring Wells	Yes	One groundwater level monitoring well was identified and is indicated on Figure 2.
Water Supply Wells	No	
Irrigation Wells	No	
Injection Wells	No	
Abandoned Wells	No	

Notes:

1. *N/A items are those that were not observed or reported and/or not anticipated to be present given the nature of the site (e.g., building features not present on an undeveloped property).*

A potential graveyard was identified within a grove of trees within the subject property. The location of the potential graveyard is indicated in Figure 2.

6.5 ADJOINING PROPERTY OBSERVATIONS

Conditions at the adjoining properties with the potential to adversely impact the subject property were not observed.

6.6 USER RESPONSIBILITIES

The AAI Rule requires that the User of the report consider the following:

- Whether the user has specialized knowledge about previous ownership or uses of the subject property that may be material to identifying RECs;
- Whether the user has determined that the subject property's Title contains environmental liens or other information related to the environmental condition of the property, including engineering and institutional controls and Activity and Use Limitations (AULs), as defined by ASTM;

- Whether the user is aware of commonly known or reasonably ascertainable information about the subject property including whether or not the presence of contamination is likely on the subject property and to what degree it can be detected; and

- Whether the user has prior knowledge that the price of the subject property has been reduced for environmentally-related reasons.

While such information is not required to be provided by the environmental professional(s), the information can assist the environmental professional in identifying RECs. The "All Appropriate Inquiries" Final Rule (40 CFR Part 312) requires that these tasks be performed by or on behalf of a party seeking to qualify for an LLP to CERCLA liability.

Haley & Aldrich was provided with a completed User Responsibilities Questionnaire, which is included in Appendix E.

7. Findings and Opinions

7.1 SIGNIFICANT DATA GAPS

Our ability to identify and evaluate RECs at the subject property is conditioned upon significant data gaps identified as part of this Phase I. The ASTM E1527-21 Standard defines a significant data gap as a data gap that affects the ability of the environmental professional to identify a REC.

No significant data gaps were identified during the performance of this Phase I. Thus, it is our opinion that sufficient information was obtained to identify subject property conditions indicative of releases or threatened releases of hazardous substances and petroleum hydrocarbons. Our opinion is limited by the conditions prevailing at the time our work is performed and the applicable regulatory requirements in effect.

7.2 RECOGNIZED ENVIRONMENTAL CONDITIONS

The ASTM E1527-21 Standard defines a REC as: "(1) the presence of hazardous substances or petroleum products in, on, or at the subject property due to a release to the environment; (2) the likely presence of hazardous substances or petroleum products in, on, or at the subject property due to a release or likely release to the environment; or (3) the presence of hazardous substances or petroleum products in, on, or at the subject property under conditions that pose a material threat of a future release to the environment."

Our opinion regarding a REC's potential impact on the subject property is based on the scope of our work, the information obtained during the course of our work, the conditions prevailing at the time our work was performed, the applicable regulatory requirements in effect at the time our work was performed, our experience evaluating similar sites, and on our understanding of the client's intended use for the subject property.

RECs were not identified in connection with the subject property.

7.3 CONTROLLED RECOGNIZED ENVIRONMENTAL CONDITIONS

The ASTM E1527-21 Standard defines a CREC as "a recognized environmental condition resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority or authorities with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls."

CRECs were not identified in connection with the subject property.

7.4 HISTORICAL RECOGNIZED ENVIRONMENTAL CONDITIONS

The ASTM E1527-21 Standard defines an HREC as "a previous release of hazardous substances or petroleum products affecting the subject property that has been addressed to the satisfaction of the applicable regulatory authority or authorities and meeting unrestricted use criteria established by the applicable regulatory authority or authorities without subjecting the subject property to any controls." A historical recognized environmental condition is not a recognized environmental condition.

HRECs were not identified in connection with the subject property.

7.5 DE MINIMIS CONDITIONS

The ASTM E1527-21 Standard defines a *de minimis* condition as a condition related to a release that generally does not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies. The ASTM E1527-21 Standard notes that conditions determined to be *de minimis* are not recognized environmental conditions.

The following *de minimis* conditions were identified in connection with the subject property.

***De Minimis* #1:** Past Agricultural Use. Pesticides and/or herbicides were likely applied to the subject property associated with its use for agricultural purposes. Trace amounts of these chemicals may still be present in soil at the subject property, although Haley & Aldrich cannot conclude whether these residual levels would exceed applicable remediation standards or guidance levels. No evidence of current or historical manufacture, storage, or mixing of pesticides or herbicides was observed or reported. Application of pesticides and herbicides for agricultural purposes in accordance with manufacturers' recommendations and best practices is not considered a REC.

***De Minimis* #2:** Vehicle Dump Area. Assorted solid waste, scrap metal, or disused automobiles/ equipment accumulations were identified within the subject property. While the disused automobiles may contain some petroleum products and antifreeze, no evidence was observed and potential accumulations are considered unlikely to contain hazardous materials. Therefore, this condition is not considered a REC.

***De Minimis* #3:** Dump Areas. Various dumps were observed on the subject property. These dumps contained household trash, glass jars, furniture, old car seats, tires, metal pieces of unknown origin, plastic containers, buckets, and plastic pieces of unknown origin. Evidence of release or threat of release of petroleum and/or hazardous materials were not observed within the dump areas; therefore, this condition is not considered a REC.

8. Conclusions

Haley & Aldrich has performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of the ASTM Practice E1527-21 of the subject property, an approximately 530-acre parcel located in Hart County, Kentucky. Any exceptions to or deletions from this practice are described in Section 1.4 of this report.

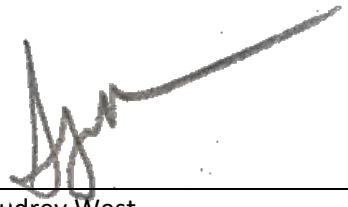
This assessment has revealed no evidence of RECs in connection with the subject property. We do not recommend additional assessment at this time.

9. Environmental Professional Certification

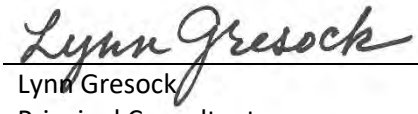
The undersigned declare the following:

We declare that, to the best of our professional knowledge and belief, we meet the definition of Environmental Professional as defined in §312.10 of 40 CFR Part 312; and

We have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. We have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.



Audrey West
Assistant Project Manager



Lynn Gresock
Principal Consultant

10. Credentials

This Phase I report was prepared by Audrey West, under the direct supervision of Eric Shirley, who served as the Environmental Professionals for this project. Qualification information for the project personnel is provided below.

AUDREY WEST
Assistant Project Manager/Ecological Scientist
Ms. West is an Assistant Project Manager in the Energy & Mining Division. Her responsibilities include team management, client support, and agency coordination, with the goal of obtaining all required environmental permits to meet the overall project timeline. Ms. West has over 6 years of experience on various environmental projects, including substantial field investigations. Her experience and education as an ecological scientist provide a key skill, both in the field and in the office. Specific tasks included drafting and editing technical reports, preparation of comprehensive permit application writing, and agency coordination.

LYNN GRESOCK
Principal Consultant
Ms. Gresock has over 38 years of consulting experience relating to environmental permitting and compliance for a wide range of projects, most particularly relating to the energy sector. Throughout the course of her experience, she has overseen and reviewed numerous Phase I ESAs and similar documents for properties throughout the United States.

11. Glossary and Other Descriptions

11.1 GLOSSARY

All Appropriate Inquiry (AAI) — that inquiry constituting "all appropriate inquiry into the previous ownership and uses of the property consistent with good commercial or customary practice" as defined in CERCLA, 42 U.S.C §9601(35)(B), that will qualify a party to a commercial real estate transaction for one of threshold criteria for satisfying the LLPs to CERCLA liability (42 U.S.C §9601(35)(A) & (B), §9607(b)(3), §9607(q); and §9607(r)), assuming compliance with other elements of the defense.

Business Environmental Risk — a risk which can have a material environmental or environmentally-driven impact on the business associated with the current or planned use of a parcel of commercial real estate, not necessarily limited to those environmental issues required to be investigated in this practice. Consideration of business environmental risk issues may involve addressing one or more non-scope considerations.

Controlled Recognized Environmental Condition (CREC) — a recognized environmental condition resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority (for example, as evidenced by the issuance of a no further action letter or equivalent, or meeting risk-based criteria established by regulatory authority), with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls).

Data Gap — a lack of or inability to obtain information required by this practice despite good faith efforts by the environmental professional to gather such information. Data gaps may result from incompleteness in any of the activities required by this practice, including, but not limited to site reconnaissance (for example, an inability to conduct the site visit), and interviews (for example, an inability to interview the key site manager, regulatory officials, etc.).

De Minimis Conditions — conditions which do not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies. Conditions determined to be *de minimis* conditions are not recognized environmental conditions nor controlled recognized environmental conditions.

Environmental Professional — a person meeting the education, training, and experience requirements as set forth in 40 CFR §312.10(b).

Historical Recognized Environmental Condition (HREC) — a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority, without subjecting the property to any required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls).

Key Site Manager — the person identified by the owner or operator of a property as having good knowledge of the uses and physical characteristics of the property.

Material Threat —a physically observable or obvious threat which is reasonably likely to lead to a release that, in the opinion of the environmental professional, is threatening and might result in impact to public health or the environment. An example might include an aboveground storage tank system that contains a hazardous substance and which shows evidence of damage. The damage would represent a material threat if it is deemed serious enough that it may cause or contribute to tank integrity failure with a release of contents to the environment.

Orphan Site — (not ASTM E1527-21 definition) — sites that could not be mapped due to poor or inadequate address information.

Recognized Environmental Condition (REC) — the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. *De minimis* conditions are not recognized environmental conditions.

11.2 DESCRIPTIONS OF DATABASES SEARCHED

Numerous regulatory databases were searched during this Phase I ESA. Each database reviewed is described in the database report presented in Appendix C. Those databases required by the ASTM E1527-21 Standard are identified below.

1. **NPL Sites:** The National Priorities List (NPL) is a list of contaminated sites that are considered the highest priority for cleanup by the U.S. Environmental Protection Agency (USEPA).

2. **Delisted NPL Sites:** The Delisted National Priorities List (NPL) is a list of formal NPL sites formerly considered the highest priority for cleanup by the USEPA that met the criteria of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) for deletion from the NPL because a no further response was appropriate.

3. **CERCLIS Sites:** The Comprehensive Environmental Response, Compensation, and Liability Act Information System (CERCLIS) list identifies sites which are suspected to have contamination and require additional investigation to assess whether they should be considered for inclusion on the NPL.

4. **CERCLIS-NFRAP Sites:** CERCLIS-NFRAP status indicates that a site was once on the CERCLIS List but has No Further Response Actions Planned (NFRAP). Sites on the CERCLIS-NFRAP List were removed from the CERCLIS List in February 1995 because, after an initial investigation was performed, no contamination was found, contamination was removed quickly, or the contamination was not significant enough to warrant NPL status.

5. **Federal ERNS:** The Federal Emergency Response Notification System (ERNS) list tracks information on reported releases of oil and hazardous materials.

6. **RCRA non-CORRACTS TSD facilities:** The Resource Conservation and Recovery Act (RCRA) non-CORRACTS TSD Facilities List tracks facilities which treat, store, or dispose of hazardous waste and are not associated with corrective action activity.

7. **RCRA CORRACTS TSD facilities:** The RCRA CORRACTS TSD Facilities list catalogues facilities that treat, store, or dispose of hazardous waste and have been associated with corrective action activity.

8. **RCRA Generators:** The RCRA Generator list is maintained by the USEPA to track facilities that generate hazardous waste.

9. **Federal Institutional Controls/Engineering Controls:** The Federal Institutional Control list and Engineering Control list are maintained by the USEPA. Some Institutional Control and Engineering Control information may not be made publicly available and therefore will not be included on this registry.

10. **State and Tribal Equivalent NPL/CERCLIS Sites:** The (ASTM E1527-21 Standard) requires searching "State and Tribal Equivalent NPL Sites." In Kentucky, the equivalent NPL is the SHWS, which is maintained by the Kentucky Department of Environmental Protection.

11. **State and Tribal Registered Storage Tanks:** The Kentucky Department of Environmental Protection maintains a list of aboveground and underground storage tanks registered with the Kentucky Department of Environmental Protection.

12. **State and Tribal Landfills and Solid Waste Disposal Sites:** Kentucky Department of Environmental Protection maintains a list of regulated waste disposal sites.

13. **State and Tribal Leaking Storage Tanks:** Kentucky Department of Environmental Protection and USEPA maintain a list of Leaking Storage Tanks (LUST/LAST). The LUST/LAST lists are a listing of release sites that have an Underground or Aboveground Storage Tank listed as the source.

14. **State and Tribal Institutional Controls/Engineering Controls:** Kentucky Department of Environmental Protection maintains a list of sites with Institutional controls or Engineering controls in place.

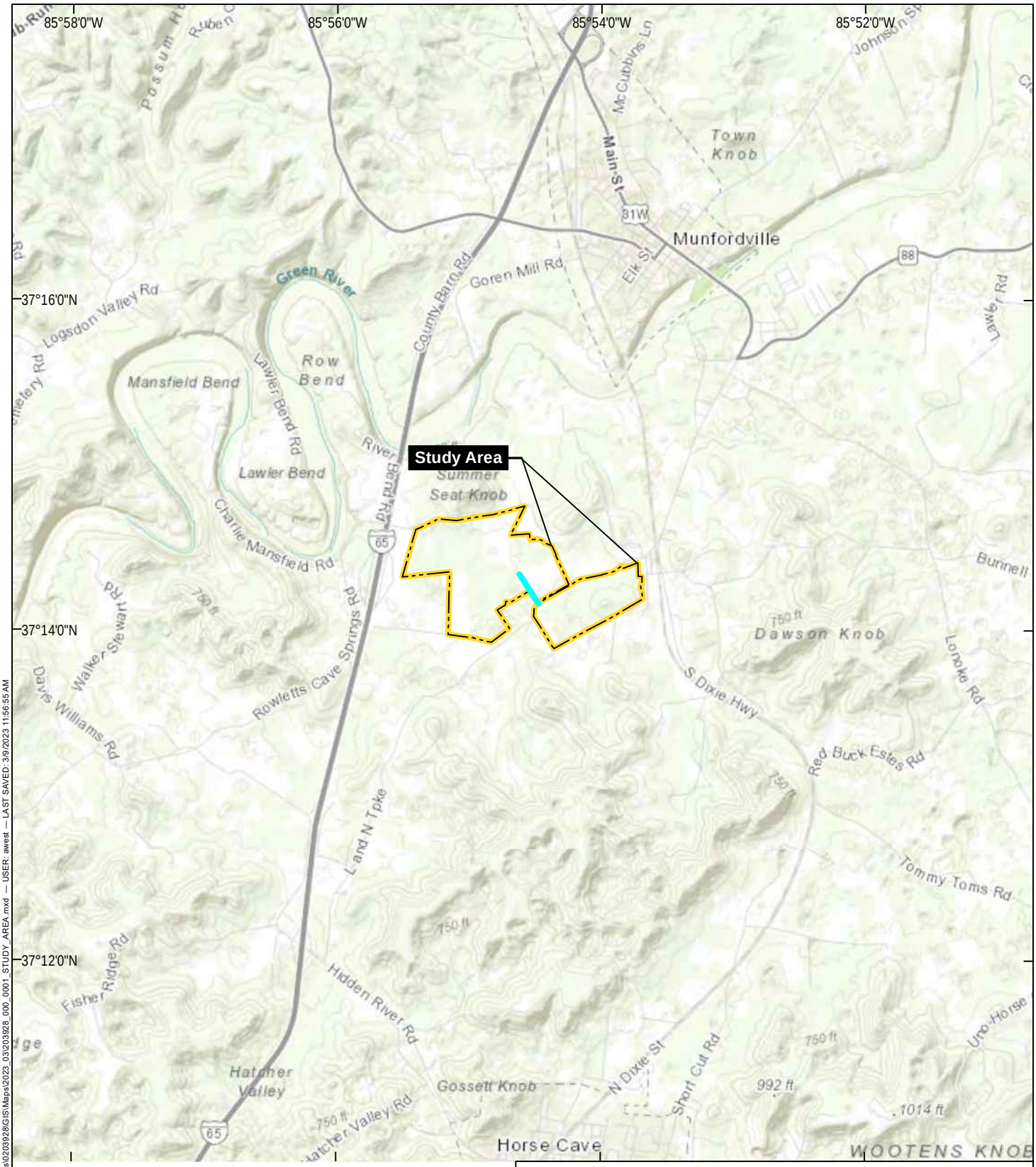
15. **State and Tribal Voluntary Cleanup Sites:** The USEPA and Kentucky Department of Environmental Protection maintains a list of Voluntary Cleanup sites.

16. **State and Tribal Brownfield Sites:** USEPA and Kentucky Department of Environmental Protection maintain a list of Brownfield sites which includes properties where redevelopment or reuse may be compromised by the presence or presumed presence of hazardous materials or petroleum.

12. References

1. Certified Sanborn Map Report, Rowletts Cave Springs Road, dated 3 November 2021.
2. David Sammons, completed Landowner Questionnaire, 6 March 2023.
3. EDR Aerial Photo Decade Package, Rowletts Cave Springs Road, dated 4 November 2021.
4. EDR Area / Corridor Report, Rowletts Cave Springs Road, dated 28 February 2023.
5. EDR-City Directory Image Report, Rowletts Cave Springs Road, dated 4 November 2021.
6. EDR Historical Topo Map Report with QuadMatch, Rowletts Cave Springs Road, dated 2 November 2021.
7. Haley & Aldrich, Inc., site visit conducted by Audrey West on 28 February 2023.
8. Harry Isaacs, completed Landowner Questionnaire, 2 March 2023.
9. Kentucky Geological Survey, 2007. Generalized Geologic Map for Land-Use Planning: Hart County, Kentucky.
10. Kentucky Groundwater Data Repository. Accessed 1 March 2023 at https://kgs.uky.edu/kgsmap/KGSWater/viewer.asp.
11. Patrick Walsh of Leeward Renewable Energy Development, LLC, completed User Questionnaire, dated 1 March 2023.
12. Tony Gardner, completed Landowner Questionnaire, 3 March 2023.

FIGURES



KY

N

MAP SOURCE: ESRI
SITE COORDINATES: 37°14'15"N, 85°54'37"W

HALEY ALDRICH

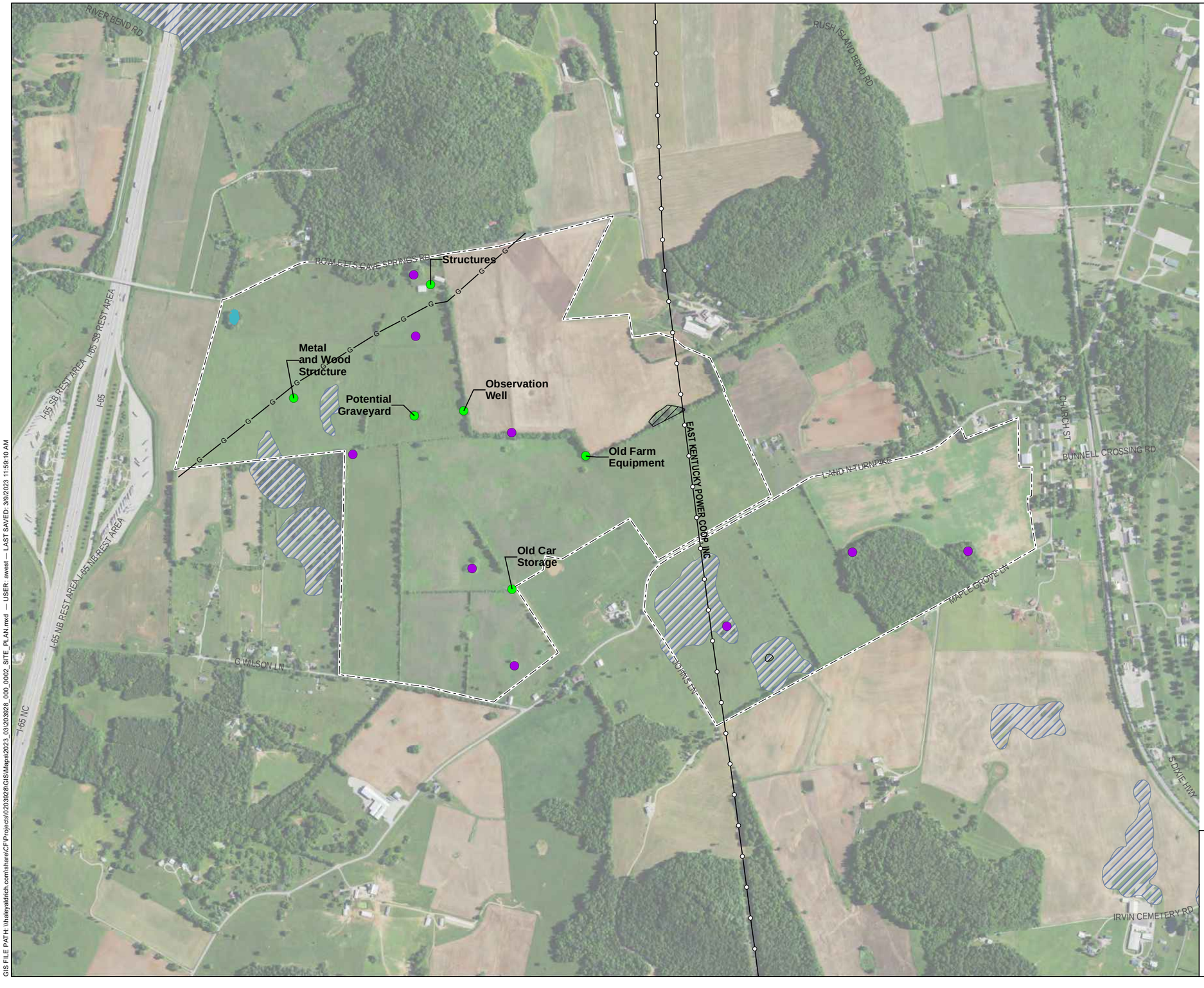
THOROUGHBRED SOLAR PROJECT
HORSE CAVE, KENTUCKY

STUDY AREA OVERVIEW

APPROXIMATE SCALE: 1 IN = 5000 FT
MARCH 2023

FIGURE 1

GIS FILE PATH: \\haleyaldrich.com\share\CF\Projects\0203928\GIS\Maps\2023_03\203928_000_0001_STUDY_AREA.mxd — USER: awest — LAST SAVED: 3/9/2023 11:56:55 AM



LEGEND

- Identified Feature
- Dump Piles
- NATURAL GAS LINE
- 69 kV TRANSMISSION LINE
- Site Boundary
- Field Identified Karst Feature
- Field Identified Wetland
- NFHL Mapped 100 Year Floodplain

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. kV = KILOVOLTS
3. TRANSMISSION LINE DATA SOURCE: UNITED STATES DEPARTMENT OF HOMELAND SECURITY (DHS) HOMELAND INFRASTRUCTURE FOUNDATION-LEVEL DATA (HFILD)
4. ROADS DATA SOURCE: KENTUCKY TRANSPORTATION CABINET (KYTC)
5. AERIAL IMAGERY SOURCE: KENTUCKY FROM ABOVE, 2020

N

0 1,000 2,000
SCALE IN FEET

HALEY ALDRICH

THOROUGHBRED SOLAR PROJECT
HORSE CAVE, KENTUCKY

SITE PLAN

MARCH 2023

FIGURE 2

GIS FILE PATH: \\haleyaldrich.com\share\CF\Projects\0203928\GIS\Maps\2023_03\203928_000_0002_SITE_PLAN.mxd — USER: awest — LAST SAVED: 3/9/2023 11:59:10 AM

APPENDIX A

Phase I ESA Limitations
Haley & Aldrich proposal dated 22 February 2023

APPENDIX A

Haley & Aldrich, Inc. Limitations

Environmental site assessment ("ESA") reports prepared by Haley & Aldrich, Inc. (Haley & Aldrich) are for the sole and exclusive use of its Client. Haley & Aldrich represents that the ESA was prepared in accordance with the ASTM International Standard E1527-21 entitled "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process" ("ASTM E1527-21"). The findings, opinions, conclusions and information contained in the ASTM E1527-21 ESA are limited to, and solely based upon, information reasonably ascertainable by Haley & Aldrich at the time the ASTM E1527-21 ESA was completed.

All users of this ASTM E1527-121 ESA are bound to the terms and conditions and limitations contained in the accompanying Proposal, Terms & Conditions, and Limitations for this ASTM E1527-21 ESA. The findings, opinions, conclusions and information contained in this report are based solely on the Scope of Services provided pursuant to the Proposal and its attachments and the information reasonably ascertainable by Haley & Aldrich at the time the ASTM E1527-21 ESA was completed. Haley & Aldrich has not performed any additional observations, investigations, studies, or other testing not specified in the Scope of Services. Haley & Aldrich shall not be liable for the existence of any condition the discovery of which would have required the performance of services not authorized under the Scope of Services.

This ASTM E1527-21 ESA is prepared for the exclusive use of Haley & Aldrich's client in connection with the subject property for the purpose of assessing the potential or existing environmental contamination liabilities associated with the subject property. There are no intended beneficiaries other than Haley & Aldrich's client. Haley & Aldrich shall owe no duty whatsoever to any other person or entity by issuing the ASTM E1527-21 ESA. Use of this ASTM E1527-21 ESA by any person or entity, including by Haley & Aldrich's client, for a purpose other than for the purpose of assessing the potential or existing environmental contamination liabilities associated with the subject property is expressly prohibited unless such person or entity obtains written authorization from Haley & Aldrich indicating that the ASTM E1527-21 ESA is adequate for such other use. Use of this ASTM E1527-21 ESA by any person or entity for such other purpose without written authorization by Haley & Aldrich shall be at such person's or entity's sole risk and shall be without legal exposure or liability to Haley & Aldrich.

Haley & Aldrich may authorize third-party reliance on the ASTM E1527-21 ESA by providing reliance letters to third party(ies) provided that the third party(ies) agree: (1) to use the ASTM E1527-21 ESA only for the purpose of assessing the potential or existing environmental contamination liabilities associated with real property; (2) to be bound by the terms and conditions and limitations contained in the ASTM E1527-21 ESA and the Proposal and its attachments, Terms & Conditions, and Limitations; (3) to accept the form and substance of Haley & Aldrich's reliance letter; and (4) to deliver to Haley & Aldrich a signed copy of a reliance letter by an authorized representative of the relying party, within thirty (30) days after said reliance letter is provided to the relying party, signifying the relying party's acceptance of the aforementioned conditions. Upon Haley & Aldrich's receipt of the signed reliance letter by the relying party(ies), the relying party(ies) will be authorized to rely on Haley & Aldrich's ASTM E1527-21 ESA for the limited purpose of identifying potential or existing environmental contamination liabilities associated with the subject property. The relying party(ies) agrees to bind each of its respective successors and assigns to the aforementioned terms and conditions.

This ASTM E1527-21 ESA reflects site conditions observed and described by records available to Haley & Aldrich as of the date of ASTM E1527-21 ESA preparation. The passage of time may result in significant changes in site conditions, technology, or economic conditions, which could alter the findings and/or recommendations of the ASTM E1527-21 ESA. Accordingly, Haley & Aldrich's client and any other party to whom the ASTM E1527-21 ESA is provided recognize and agree that Haley & Aldrich shall bear no liability for deviations from observed conditions or available records after the time of ASTM E1527-21 ESA preparation. Haley & Aldrich makes no express or implied representation that the information contained in the ASTM E1527-21 ESA has continued viability after 180 days of the ASTM E1527-21 ESA's completion date, and any use or reliance on the ASTM E1527-21 ESA after 180 days of the ASTM E1527-21 ESA's completion date by Haley & Aldrich's client or any other authorized person or entity will be at that party's sole risk and without liability to Haley & Aldrich.

Notwithstanding anything contained herein, Haley & Aldrich shall not be liable for any claim or damage arising from environmental contamination liabilities that occurred on the subject property after the effective date of the ASTM E1527-21 ESA. Likewise, Haley & Aldrich shall not be liable for any existing or future property owner's failure to satisfy any continuing obligation for CERCLA liability protection or under the Federal Environmental Protection Agency's All Appropriate Inquiries rule.

HALEY & ALDRICH, INC.
3 Bedford Farms Drive
Bedford, NH 03110
603.625.5353

22 February 2023 _rev. 1
File No. 0203928

Thoroughbred Solar, LLC
c/o Leeward Renewable Energy Development, LLC
6688 N. Central Expressway, Suite 500
Dallas, Texas 75206

Attention: Patrick Walsh
Senior Development Associate

Subject: Task Order for ASTM Phase I Environmental Site Assessment
Thoroughbred Solar
Hart County, Kentucky

Dear Patrick:

Haley & Aldrich, Inc. (Haley & Aldrich) is pleased to submit this Task Order to provide environmental due diligence consulting services in support of Thoroughbred Solar (the Project), to be located on an approximately 530-acre property in Hart County, Kentucky (subject property).

Project Understanding and Background

Thoroughbred Solar, LLC, a wholly owned affiliate of Leeward Renewable Energy Development, LLC (LRE) has requested that a Phase I Environmental Site Assessment [1] be performed to identify potential environmental implications associated with the proposed use of the subject property. A prior review had been initiated in 2021 for a slightly smaller portion of the subject property; however, it was never finalized. This Task Order reflects updating the information in a new Phase I ESA to reflect the full subject property to support the request made during the siting process.

Details of the work scope are provided in Attachment I.

Scope and Costs

Haley & Aldrich's scope of services and associated costs are summarized in the table below.

[1] The ASTM Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process (ASTM E1527-21 Standard) as referenced in 40 CFR Part 312 (the All Appropriate Inquiries [AAI] Rule).

Scope Item	Description	Type	Cost
1. Phase I Environmental Site Assessment	Completion of an ASTM E1527-21 Standard Phase I Environmental Site Assessment per the attached work scope (Attachment I).[1,2,3]	Lump Sum	
		TOTAL:	

Notes and Assumptions:

1. *The scope of work includes a one-hour meeting or conference call. Time spent conducting additional meetings/conference calls will be billed separately pending client authorization.*
2. *The scope of work does not include time for reviewing lengthy reports and regulatory files. Time spent reviewing numerous or lengthy reports and regulatory files will be billed separately pending client authorization.*
3. *This scope of work assumes one 1-day site visit conducted by a single Haley & Aldrich professional during regular business hours. Site access will be coordinated by the client.*

Third-Party Reliance

The Phase I Environmental Site Assessment report prepared by Haley & Aldrich is for the sole and exclusive use of Thoroughbred Solar, LLC. In the event Thoroughbred Solar LLC's lenders and each of their respective successors and assigns (Relying Parties) desire to rely on Haley & Aldrich's Phase I Environmental Site Assessment report, such Relying Parties must obtain Haley & Aldrich's prior written authorization and execute Haley & Aldrich's Reliance Letter, which is appended hereto.

Specific to reliance on the Phase I Environmental Site Assessment report, any proposed modifications to the attached template, or if the relying party proposes their own reliance letter template, will require review and approval by Haley & Aldrich, as well as an additional fee.

User Responsibilities

A user seeking protection from Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) liability as an innocent landowner, bona fide prospective purchaser, or contiguous property owner must complete all components of the All Appropriate Inquiries (AAI) process in addition to meeting ongoing obligations. These user responsibilities are further described in Attachment I and in the User Responsibilities Questionnaire in Attachment II.

We request that LRE provide the information in the questionnaire to us. Though it is not required by the AAI Rule or the ASTM E1527-21 Standard that this information be provided to Haley & Aldrich, failure on the part of the user to obtain such information for their own records, should it be reasonably ascertainable, may invalidate the user's compliance with the AAI Rule for CERCLA liability protection in the future.

To meet the requirements of 40 CFR 312, a search for the existence of environmental liens, deed restrictions, engineering/institutional controls, activity and use limitations (AULs), etc., that are filed or recorded against the subject property must be conducted by the user. The scope of work included in Attachment I includes a search of those records as part of the database search, with the exception of a lien search. We understand that as part of your due diligence you will either engage a title company,

real estate attorney, or title professional to undertake a review of reasonably ascertainable recorded records for environmental liens deed restrictions, engineering/institutional controls, AULs, etc., currently recorded against or relating to the subject property. If you would instead like us to include a lien search as part of our assessment, this can be conducted at additional cost.

Target Schedule

We will initiate work immediately upon authorization to proceed (including ordering file reviews) and will coordinate with LRE regarding access to the subject property. We anticipate conducting the site reconnaissance early in the week of 27 February 2023 and providing a draft report within one week following the site visit, assuming that user/landowner feedback is received in a timely manner. We will update you on our findings as our work progresses. We understand that the goal is to allow submittal of the report as a part of the post-hearing Siting Board data request response.

Please note that responses to agency records requests may not be received within the above time frame. We will supplement the report with the responses if they are received and contain information that would alter our conclusions.

Authorization

Haley & Aldrich will provide the services described herein in accordance with the Master Consulting Services Agreement (CSA) between Leeward Renewable Energy Development, LLC and Haley & Aldrich, Inc. dated 7 March 2022. If acceptance and authorization to proceed are not received within 60 days, we reserve the right to renegotiate the estimated fee and scope of services.

If the above arrangements are satisfactory to you, please indicate your acceptance by signing and returning one copy of this letter. When accepted by you, this Task Order together with the CSA and attached Limitations (Attachment III) and Standard Fee Schedule (Attachment IV) will constitute our Agreement.

Closing

Thank you for inviting Haley & Aldrich to submit this proposal. We look forward to our association with you on the project. Should you have any questions regarding the proposal, please do not hesitate to contact us.

Sincerely yours,
HALEY & ALDRICH, INC.

Tina Berceli-Boyle
Project Manager

Lynn Gresock
Principal Consultant

This Task Order, the CSA, and Attachments I, II, and III are understood and accepted:

THOROUGHBRED SOLAR, LLC

By _____
(authorized signature)

By John Wieland
(print or type name)

Title CJO

Date 3/9/2023

Attachments:

Attachment I – Detailed Scope of Services, User Responsibilities
Attachment II – User Responsibilities Questionnaire
Attachment III – Haley & Aldrich Limitations

https://haleyaldrich-my.sharepoint.com/personal/lgresock_haleyaldrich_com/Documents/Desktop/Workspace/LRE/2023-0222-HAI-Thoroughbred Solar Task Order - Phase I ESA_rev1.docx

Attachment I

ASTM E1527-21
Phase I Environmental Site Assessment Standard Scope of Services & User Responsibilities

Scope of Services

The scope of services below summarizes Haley & Aldrich Inc.'s proposed environmental professional services required to complete an environmental site assessment and "All Appropriate Inquiry" (AAI) for a parcel of commercial real estate with respect to the range of contaminants within the scope of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (42 U.S.C. §9601), in accordance with 40 CFR Part 312.20 (AAI), to permit a user to satisfy one of the requirements to qualify for CERCLA's innocent landowner defense, contiguous property owner liability protection, or bona fide prospective purchaser liability protection (landowner liability protections or LLP).

Title 40, Part 312.11 of the Code of Federal Regulations provides that the procedures of ASTM International (ASTM) Standard E1527-21 entitled "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process" (ASTM E1527-21) may be used to comply with the requirements of 40 CFR 312, AAI.

The goal of ASTM E1527-21 is to assess whether recognized environmental conditions (RECs) exist at the subject property. A REC as defined by ASTM E1527-21 means: (1) the presence of hazardous substances or petroleum products in, on, or at the subject property due to a release to the environment; (2) the likely presence of hazardous substances or petroleum products in, on, or at the subject property due to a release or likely release to the environment; or (3) the presence of hazardous substances or petroleum products in, on, or at the subject property under conditions that pose a material threat of a future release to the environment.

Accordingly, the five core components of Haley & Aldrich's standard scope of services, performed in accordance with ASTM E1527-21, shall include:

1. Records Review – In accordance with ASTM E1527-21, Haley & Aldrich will obtain and review reasonably ascertainable records that will help identify RECs in connection with the subject property.
2. Site Reconnaissance – Haley & Aldrich will visit the subject property to obtain information indicating the likelihood of identifying RECs in connection with the subject property. On the visit to the subject property, Haley & Aldrich will visually observe and document the subject property and the periphery of any structure(s) located on the subject property to the extent our view of the same is not obstructed. Additionally, Haley & Aldrich shall visually observe and document accessible components of the interior of any building located on the subject property. Conditions of adjoining properties will also be observed and documented from the subject property boundaries and/or public thoroughfares.
3. Interviews with Owners and Occupants – ASTM E1527-21 require that interviews be performed with a "key site manager" (a person with good knowledge of uses and physical characteristics of the subject property), as well as past and present owners, operators, and occupants of the subject property to obtain information indicating RECs in connection with the subject property.

Please provide contact information for the "key site manager" so Haley & Aldrich can arrange a mutually convenient appointment to interview the key site manager. We also ask that you advise all known past and present owners, operators, and occupants of our site visit so we may interview a number of them as required by ASTM E1527-21. Lastly, in accordance with the ASTM E1527-21 Standard, we request that you arrange to have assembled and available to Haley & Aldrich, on the day of our subject property visit, or as soon as possible, copies of any previous environmental documents (user-provided information), including: environmental site assessment reports, environmental compliance audit reports, environmental permits, registrations for underground and above-ground storage tanks, registrations for injection systems, material data safety sheets, community right-to-know plan, safety plans, spill prevention plans, emergency preparedness plans, hydrogeologic reports for the subject property, any government notices concerning the subject property, hazardous waste records and reports, geotechnical studies, risk assessments, recorded Activity and Use Limitations (AULs), environmental land use restrictions (ELURs), or environmental liens.

4. Interviews with State and/or Local Government Officials – Haley & Aldrich shall reasonably attempt to interview applicable state and/or local government officials to obtain information indicating RECs in connection with the subject property.

5. Evaluation and Report – Haley & Aldrich will interpret the information and data assembled from work scope items No. 1 through No. 4 above and will formulate conclusions regarding evidence of RECs at the subject property and their potential impact on the subject property. We will prepare a report in accordance with the format set forth in ASTM E1527-21 unless otherwise directed. The report will generally include a summary, introduction, site description, records, site and interview documentation, supporting documents, findings, conclusions, recommendations, and appropriate professional statements as required by ASTM E1527-21.

User Responsibilities

A user seeking protection from CERCLA liability as an innocent landowner, bona fide prospective purchaser, or contiguous property owner must complete all components of the AAI process in addition to meeting ongoing obligations. AAI components, CERCLA liability relief, and ongoing obligations are discussed in the AAI Rule and in Appendix XI of the ASTM E1527-21 Standard.

The AAI Rule requires that the user of the report consider the following:

- Whether the user has specialized knowledge about previous ownership or uses of the subject property that may be material to identifying RECs;
- Whether the user has determined that the subject property's Title contains environmental liens or other information related to the environmental condition of the subject property, including engineering and institutional controls and AULs, as defined by ASTM;
- Whether the user is aware of commonly known or reasonably ascertainable information about the subject property including whether or not the presence of contamination is likely on the subject property and to what degree it can be detected; and
- Whether the user has prior knowledge that the price of the subject property has been reduced for environmentally related reasons.

We request that you provide this information to us. A copy of the User Responsibility Questionnaire is included in Attachment II. Though it is not required by the AAI Rule or the ASTM E1527-21 Standard that this information be provided to Haley & Aldrich, failure on the part of the user to obtain such

information for their own records, should it be reasonably ascertainable, may invalidate the user's compliance with the AAI Rule for CERCLA liability protection in the future.

Attachment II

User Responsibilities Questionnaire
All Appropriate Inquiries Under ASTM E1527-21

Date:
Subject Property Name:
Address:
Prepared By:

In order to qualify for one of the Landowner Liability Protections (LLP) offered by the Small Business Liability Relief and Brownfields Revitalization Act of 2001 (the "Brownfields Amendments"), the user must conduct "All Appropriate Inquiry" (AAI), which includes consideration of the following information (if available). Though it is not required that this information be provided to the environmental professional for the completion of the ASTM E1527-21 Phase I Environmental Site Assessment, failure of the user to consider this information could result in a determination that AAI is not complete.

(1.) Environmental cleanup liens that are filed or recorded against the subject property (40 CFR 312.25).
Are you aware of any environmental cleanup laws against the subject property that are filed or recorded under federal, tribal, state, or local law? If yes, give a description and attach copies of the liens.

(2.) Activity and land use limitations that are in place on the subject property or that have been filed or recorded in a registry (40 CFR 312.26).
Are you aware of any Activity and Use Limitations (AULs), such as engineering controls, land use restrictions or institutional controls that are in place at the subject property or have been filed or recorded in a registry under federal, tribal, state, or local law?

(3.) Specialized knowledge or experience of the person seeking to qualify for the LLP (40 CFR 312.28).
As the user of this Phase I Environmental Site Assessment do you have any specialized knowledge or experience related to the subject property or nearby properties? For example, are you involved in the same line of business as the current or former occupants of the subject property or an adjoining property so that you would have specialized knowledge of the chemicals and processes used by this type of business?

(4.) Relationship of the purchase price to the fair market value of the subject property if it were not contaminated (40 CFR 312.29).
Does the purchase price being paid for this subject property reasonably reflect the market value of the subject property? If you conclude that there is a difference, have you considered whether the lower purchase price is because contamination is known or believed to be present at the subject property?

(5.) **Commonly known or reasonably ascertainable information about the subject property (40 CFR 312.30).** Are you aware of commonly known, or reasonably ascertainable information about the subject property that would help the environmental professional to identify conditions indicative of releases or threatened releases? For example, as user,

(a.) Do you know the past uses of the subject property?

(b.) Do you know the specific chemicals that are present or once were present at the subject property?

(c.) Do you know of spills or other chemical releases that have taken place at the subject property?

(d.) Do you know of any environmental cleanups that have taken place at the subject property?

(6.) **The degree of obviousness of the presence or likely presence of contamination at the subject property, and the ability to detect the contamination by appropriate investigation (40 CFR 312.31).** As the user of this Phase I Environmental Site Assessment, based on your knowledge and experience related to the subject property, are there any obvious indicators that point to the presence or likely presence of contamination at the subject property?

Signature (User/Authorized Representative) Title Date

Attachment III

Haley & Aldrich[,Inc.; of New York; of Michigan, Inc.] Limitations

Environmental Site Assessment (Phase I Environmental Site Assessment) reports prepared by Haley & Aldrich are for the sole and exclusive use of our Client. Haley & Aldrich represents that the Phase I Environmental Site Assessment was prepared in accordance with the ASTM International (ASTM) Standard ASTM E1527-21 entitled "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process" (ASTM E1527-21). The findings, opinions, conclusions, and information contained in the ASTM E1527-21 Phase I Environmental Site Assessment are limited to, and solely based upon, information reasonably ascertainable by Haley & Aldrich at the time the ASTM E1527-21 Phase I Environmental Site Assessment was completed.

All users of this ASTM E1527-21 Phase I Environmental Site Assessment are bound to the terms and conditions and limitations contained in the accompanying Proposal, Terms and Conditions, and Limitations for this ASTM E1527-21 Phase I Environmental Site Assessment. The findings, opinions, conclusions, and information contained in this report are based solely on the Scope of Services provided pursuant to the Proposal and its attachments and the information reasonably ascertainable by Haley & Aldrich at the time the ASTM E1527-21 Phase I Environmental Site Assessment was completed. Haley & Aldrich has not performed any additional observations, investigations, studies, or other testing not specified in the Scope of Services. Haley & Aldrich shall not be liable for the existence of any condition the discovery of which would have required the performance of services not authorized under the Scope of Services.

This ASTM E1527-21 Phase I Environmental Site Assessment is prepared for the exclusive use of Haley & Aldrich's client in connection with the subject property for the purpose of assessing the potential or existing environmental contamination liabilities associated with the subject property. There are no intended beneficiaries other than Haley & Aldrich's client. Haley & Aldrich shall owe no duty whatsoever to any other person or entity by issuing the ASTM E1527-21 Phase I Environmental Site Assessment. Use of this ASTM E1527-21 Phase I Environmental Site Assessment by any person or entity, including by Haley & Aldrich's client, for a purpose other than for the purpose of assessing the potential or existing environmental contamination liabilities associated with the subject property is expressly prohibited unless such person or entity obtains written authorization from Haley & Aldrich indicating that the ASTM E1527-21 Phase I Environmental Site Assessment is adequate for such other use. Use of this ASTM E1527-21 Phase I Environmental Site Assessment by any person or entity for such other purpose without written authorization by Haley & Aldrich shall be at such person's or entity's sole risk and shall be without legal exposure or liability to Haley & Aldrich.

Haley & Aldrich may authorize third-party reliance on the ASTM E1527-21 Phase I Environmental Site Assessment by providing reliance letters to third party(ies) provided that the third party(ies) agree: (1) to use the ASTM E1527-21 Phase I Environmental Site Assessment only for the purpose of assessing the potential or existing environmental contamination liabilities associated with real property; (2) to be bound by the terms and conditions and limitations contained in the ASTM E1527-21 Phase I Environmental Site Assessment report and the proposal and its Attachments, Terms and Conditions, and Limitations; (3) to accept the form and substance of Haley & Aldrich's reliance letter; and (4) to deliver to Haley & Aldrich a signed copy of a reliance letter by an authorized representative of the relying party, within thirty (30) days after said reliance letter is provided to the relying party, signifying the relying party's acceptance of the aforementioned conditions. Upon Haley & Aldrich's receipt of the signed

reliance letter by the relying party(ies), the relying party(ies) will be authorized to rely on Haley & Aldrich's ASTM E1527-21 Phase I Environmental Site Assessment for the limited purpose of identifying potential or existing environmental contamination liabilities associated with the subject property. The relying party(ies) agree(s) to bind each of its respective successors and assigns to the aforementioned Terms and Conditions.

This ASTM E1527-21 Phase I Environmental Site Assessment reflects subject property conditions observed and described by records available to Haley & Aldrich as of the date of ASTM E1527-21 Phase I Environmental Site Assessment preparation. The passage of time may result in significant changes in subject property conditions, technology, or economic conditions, which could alter the findings and/or recommendations of the ASTM E1527-21 Phase I Environmental Site Assessment. Accordingly, Haley & Aldrich's client and any other party to whom the ASTM E1527-21 Phase I Environmental Site Assessment is provided recognize and agree that Haley & Aldrich shall bear no liability for deviations from observed conditions or available records after the time of ASTM E1527-21 Phase I Environmental Site Assessment preparation. Haley & Aldrich makes no express or implied representation that the information contained in the ASTM E1527-21 Phase I Environmental Site Assessment has continued viability after 180 days of the ASTM E1527-21 Phase I Environmental Site Assessment's completion date, and any use or reliance on the ASTM E1527-21 Phase I Environmental Site Assessment after 180 days of the ASTM E1527-21 Phase I Environmental Site Assessment's completion date by Haley & Aldrich's client or any other authorized person or entity will be at that party's sole risk and without liability to Haley & Aldrich.

Notwithstanding anything contained herein, Haley & Aldrich shall not be liable for any claim or damage arising from environmental contamination liabilities that occurred on the subject property after the effective date of the ASTM E1527-21 Phase I Environmental Site Assessment. Likewise, Haley & Aldrich shall not be liable for any existing or future property owner's failure to satisfy any continuing obligation for CERCLA liability protection or under the Federal Environmental Protection Agency's All Appropriate Inquiries rule.

APPENDIX B
Historical Research Documentation

Rowletts Cave Springs Road

Rowletts Cave Springs Road

Horse Cave, KY 42749

Inquiry Number: 6731018.6

November 03, 2021

Certified Sanborn® Map Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

11/03/21

Site Name:

Rowletts Cave Springs Road
Rowletts Cave Springs Road
Horse Cave, KY 42749
EDR Inquiry # 6731018.6

Client Name:

Haley & Aldrich of New York
200 Town Centre Drive
Rochester, NY 14623
Contact: Jacqueline Bruce

The Sanborn Library has been searched by EDR and maps covering the target property location as provided by Haley & Aldrich of New York were identified for the years listed below. The Sanborn Library is the largest, most complete collection of fire insurance maps. The collection includes maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow, and others. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by the Sanborn Library LLC, the copyright holder for the collection. Results can be authenticated by visiting www.edrnet.com/sanborn.

The Sanborn Library is continually enhanced with newly identified map archives. This report accesses all maps in the collection as of the day this report was generated.

Certified Sanborn Results:

Certification # 3E2C-49BD-9D7C

PO # NA

Project 0203928-000

UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

Sanborn® Library search results

Certification #: 3E2C-49BD-9D7C

The Sanborn Library includes more than 1.2 million fire insurance maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow and others which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

The Sanborn Library LLC Since 1866™

Limited Permission To Make Copies

Haley & Aldrich of New York (the client) is permitted to make up to FIVE photocopies of this Sanborn Map transmittal and each fire insurance map accompanying this report solely for the limited use of its customer. No one other than the client is authorized to make copies. Upon request made directly to an EDR Account Executive, the client may be permitted to make a limited number of additional photocopies. This permission is conditioned upon compliance by the client, its customer and their agents with EDR's copyright policy; a copy of which is available upon request.

Rowletts Cave Springs Road

Rowletts Cave Springs Road

Horse Cave, KY 42749

Inquiry Number: 6731018.5

November 02, 2021

EDR Historical Topo Map Report

with QuadMatch™

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Historical Topo Map Report

11/02/21

Site Name:

Rowletts Cave Springs Road
Rowletts Cave Springs Road
Horse Cave, KY 42749
EDR Inquiry # 6731018.5

Client Name:

Haley & Aldrich of New York
200 Town Centre Drive
Rochester, NY 14623
Contact: Jacqueline Bruce

EDR Topographic Map Library has been searched by EDR and maps covering the target property location as provided by Haley & Aldrich of New York were identified for the years listed below. EDR's Historical Topo Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topo Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the late 1800s.

Search Results:

P.O.# NA
Project: 0203928-000

Coordinates:

Latitude:	37.239722 37° 14' 23" North
Longitude:	-85.913056 -85° 54' 47" West
UTM Zone:	Zone 16 North
UTM X Meters:	596409.11
UTM Y Meters:	4122019.48
Elevation:	581.00' above sea level

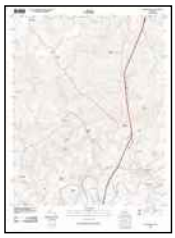
Maps Provided:

2013
1966
1953, 1954
1937, 1938
1934, 1935

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

2013 Source Sheets



Munfordville
2013
7.5-minute, 24000

Horse Cave
2013
7.5-minute, 24000

1966 Source Sheets

Munfordville
1966
7.5-minute, 24000
Aerial Photo Revised 1951

Horse Cave
1966
7.5-minute, 24000
Aerial Photo Revised 1953

1953, 1954 Source Sheets

Munfordville
1953
7.5-minute, 24000
Aerial Photo Revised 1951

Horse Cave
1954
7.5-minute, 24000
Aerial Photo Revised 1953

1937, 1938 Source Sheets

Munfordville
1937
15-minute, 62500

Horse Cave
1938
15-minute, 62500

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

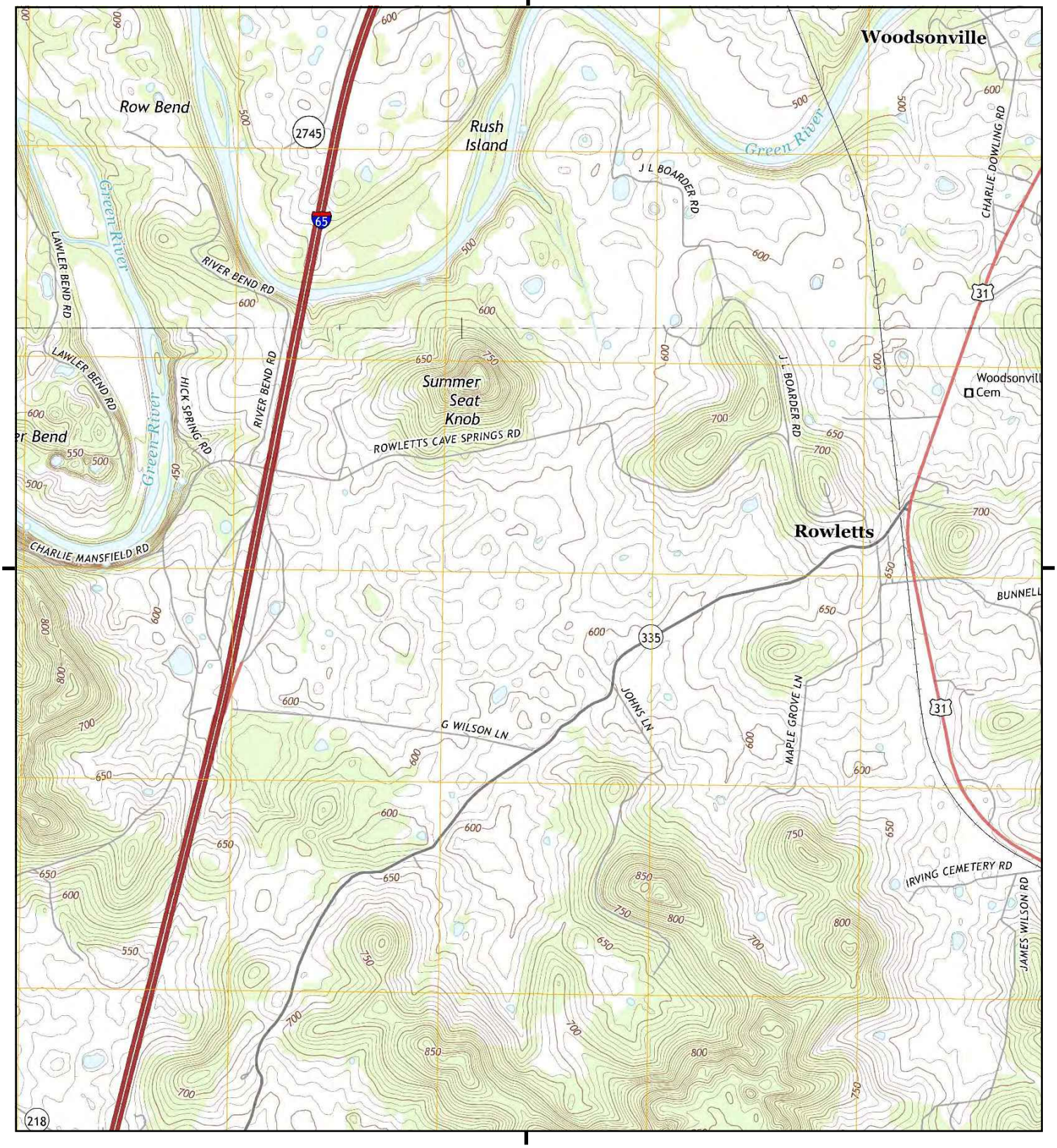
1934, 1935 Source Sheets

Munfordville
1934
15-minute, 48000

Horse Cave
1935
15-minute, 48000

Historical Topo Map

2013



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

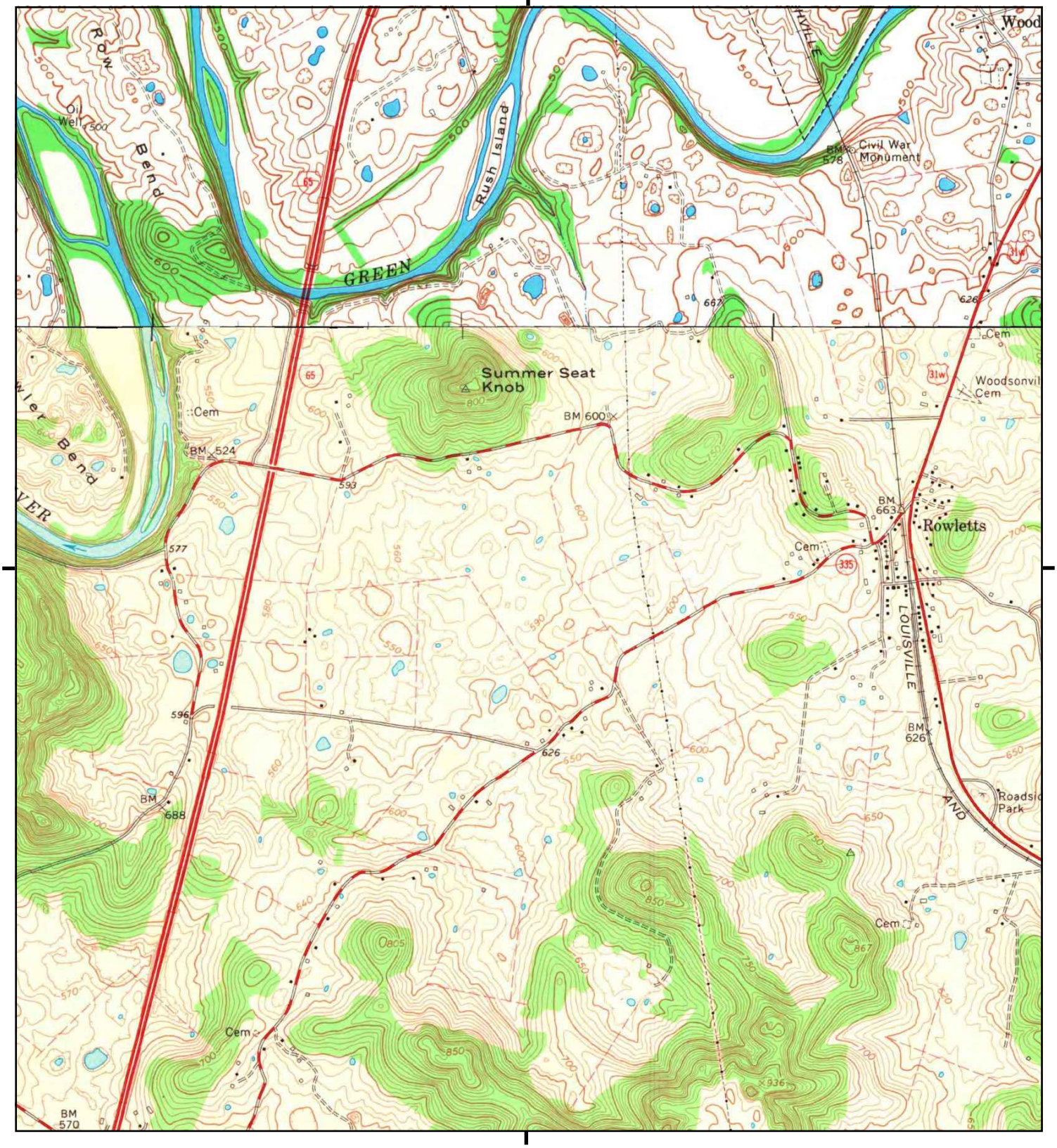
TP, Horse Cave, 2013, 7.5-minute
N, Munfordville, 2013, 7.5-minute

SITE NAME: Rowletts Cave Springs Road
ADDRESS: Rowletts Cave Springs Road
Horse Cave, KY 42749
CLIENT: Haley & Aldrich of New York

N

Historical Topo Map

1966



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

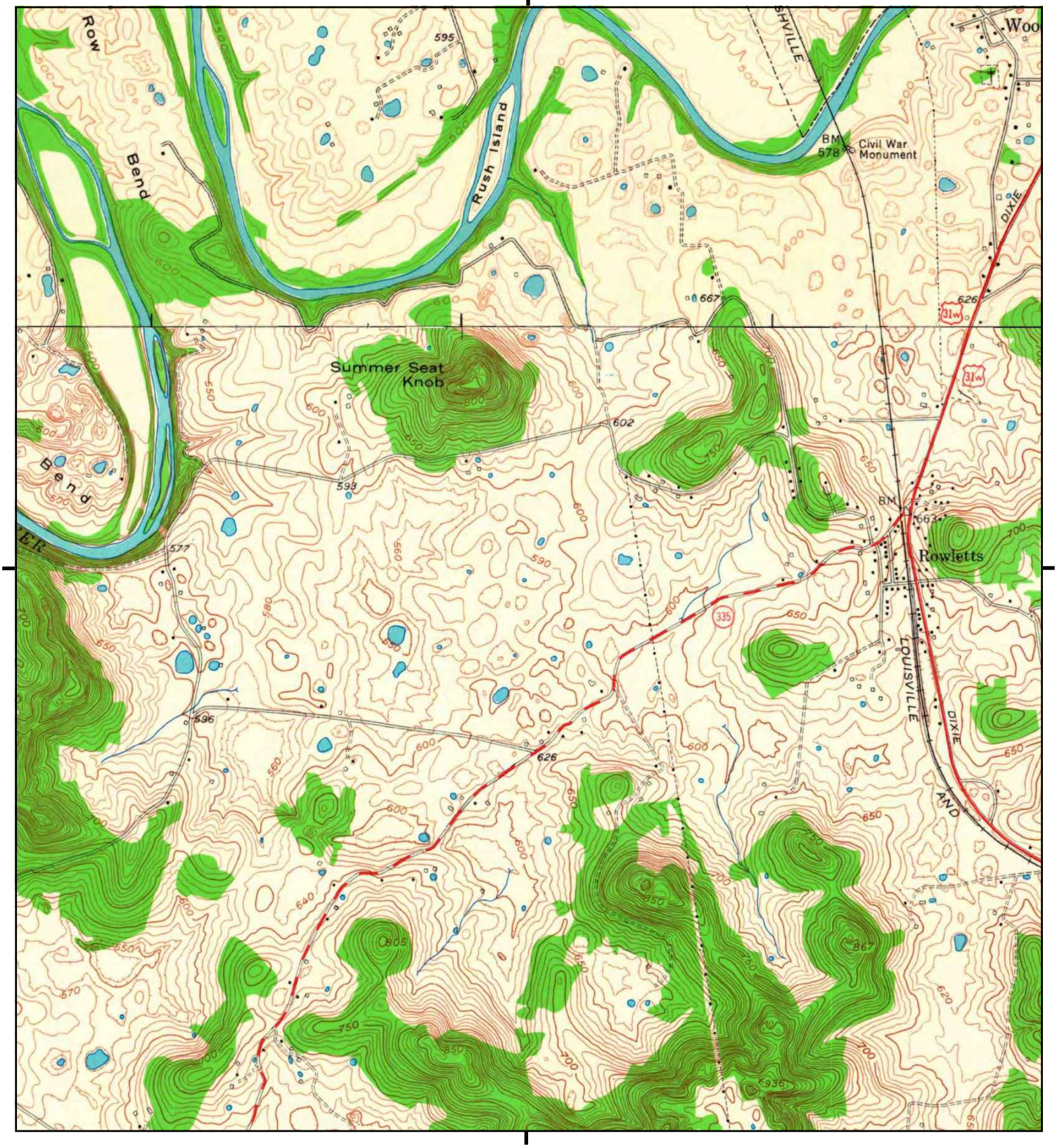
TP, Horse Cave, 1966, 7.5-minute
N, Munfordville, 1966, 7.5-minute

SITE NAME: Rowletts Cave Springs Road
ADDRESS: Rowletts Cave Springs Road
Horse Cave, KY 42749
CLIENT: Haley & Aldrich of New York

N

Historical Topo Map

1953, 1954



This report includes information from the following map sheet(s).

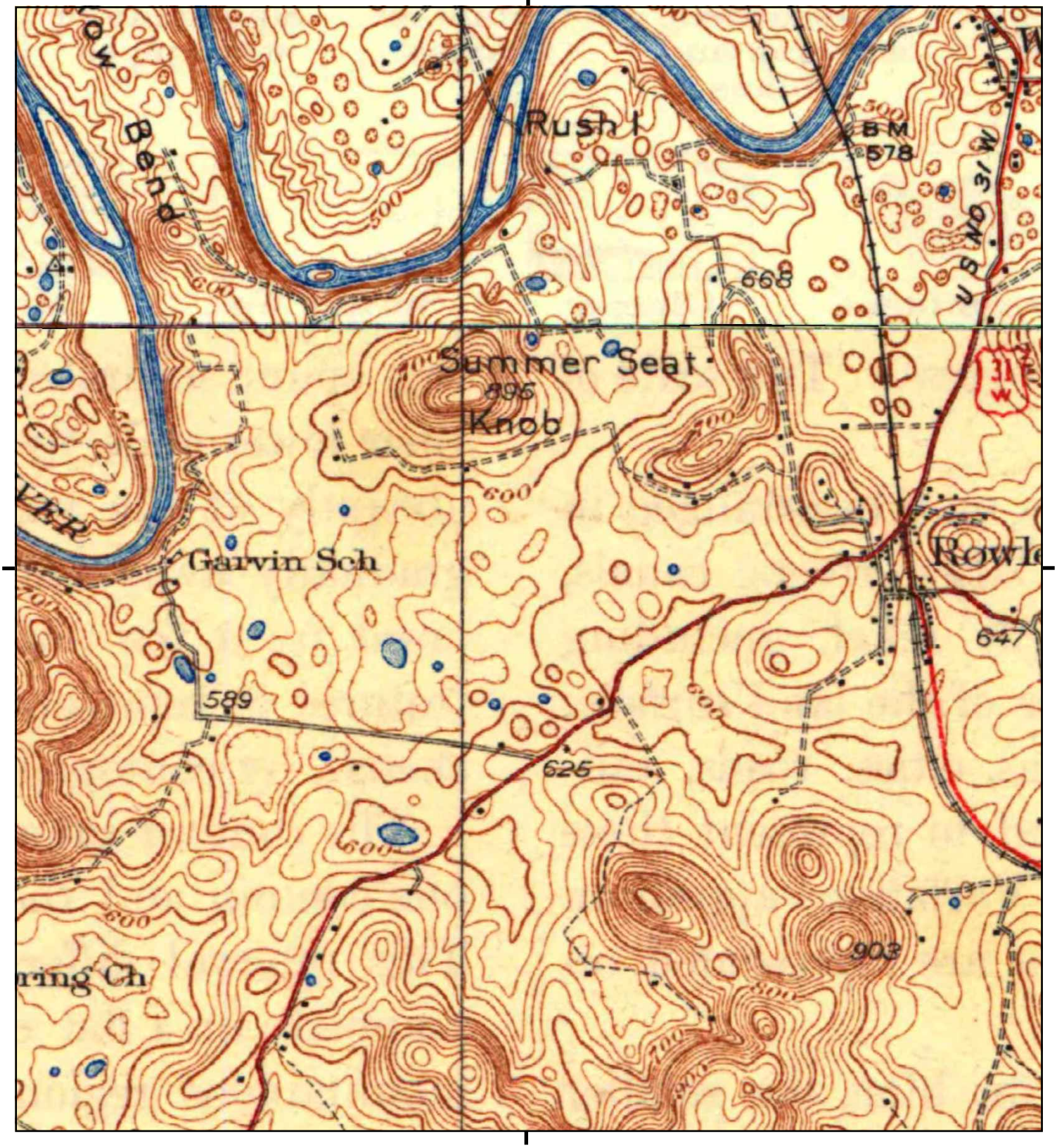
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Horse Cave, 1954, 7.5-minute
N, Munfordville, 1953, 7.5-minute

SITE NAME: Rowletts Cave Springs Road
ADDRESS: Rowletts Cave Springs Road
Horse Cave, KY 42749
CLIENT: Haley & Aldrich of New York

N



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Horse Cave, 1938, 15-minute
N, Munfordville, 1937, 15-minute

SITE NAME: Rowletts Cave Springs Road
ADDRESS: Rowletts Cave Springs Road
Horse Cave, KY 42749
CLIENT: Haley & Aldrich of New York

N

This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Horse Cave, 1935, 15-minute
N, Munfordville, 1934, 15-minute

SITE NAME: Rowletts Cave Springs Road
ADDRESS: Rowletts Cave Springs Road
Horse Cave, KY 42749
CLIENT: Haley & Aldrich of New York

N

Rowletts Cave Springs Road

Rowletts Cave Springs Road

Horse Cave, KY 42749

Inquiry Number: 6731018.8

November 04, 2021

The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

Date EDR Searched Historical Sources:

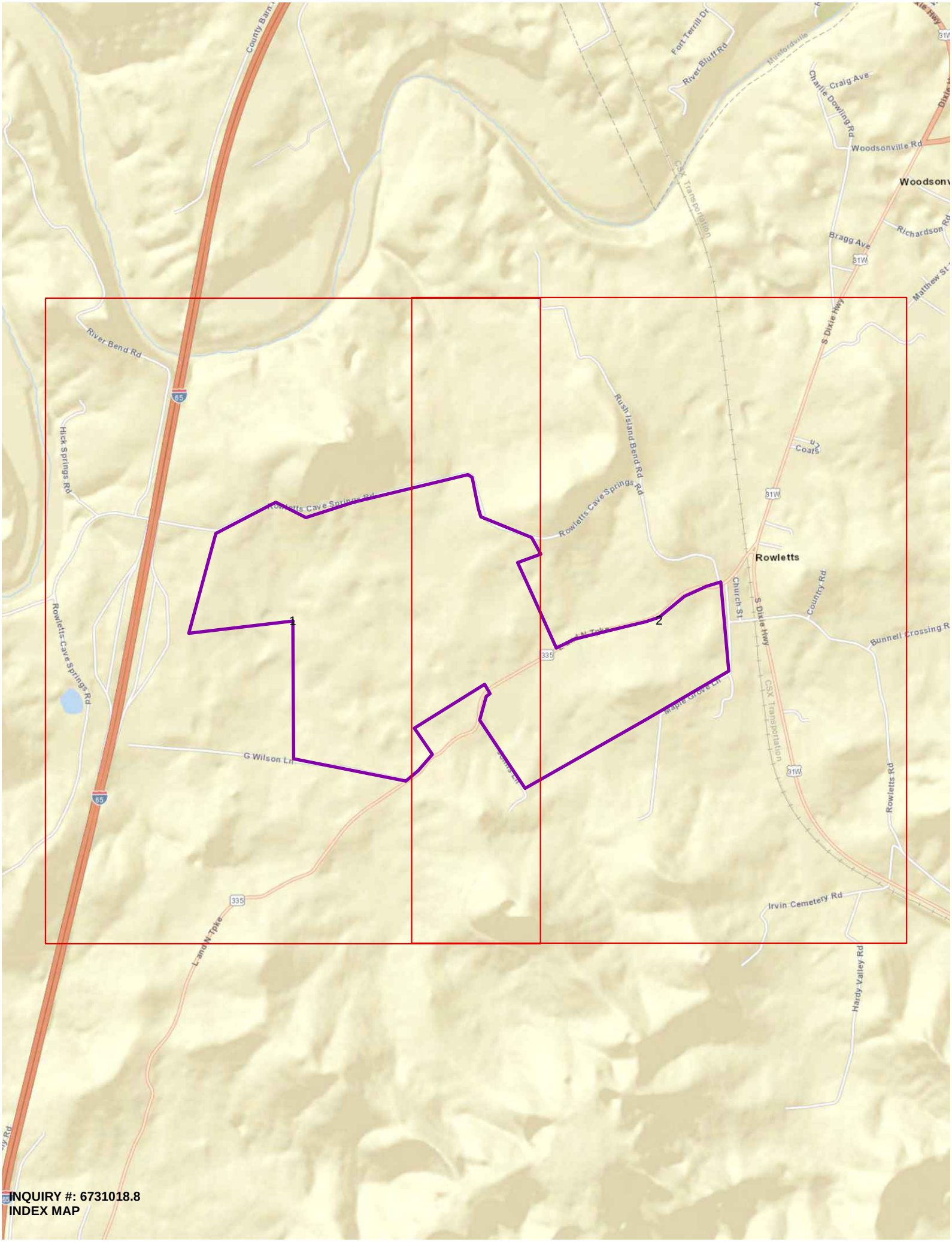
Aerial Photography November 04, 2021

Target Property:

Rowletts Cave Springs Road

Horse Cave, KY 42749

Year	***Scale***	***Details***	***Source***
1953	Aerial Photograph. Scale: 1"=1000'	Flight Year: 1953	USGS
1983	Aerial Photograph. Scale: 1"=1000'	Flight Year: 1983	USGS
1993	Aerial Photograph. Scale: 1"=1000'	Flight Year: 1993	USGS/DOQQ
2008	Aerial Photograph. Scale: 1"=1000'	Flight Year: 2008	USDA/NAIP
2010	Aerial Photograph. Scale: 1"=1000'	Flight Year: 2010	USDA/NAIP
2012	Aerial Photograph. Scale: 1"=1000'	Flight Year: 2012	USDA/NAIP
2016	Aerial Photograph. Scale: 1"=1000'	Flight Year: 2016	USDA/NAIP



INQUIRY #: 6731018.8
INDEX MAP


1-12
INQUIRY #: 6731018.8
YEAR: 1953
SCALE: 1"=1000'

INQUIRY #: 6731018.8
YEAR: 1953
SCALE: 1"=1000'


INQUIRY #: 6731018.8
YEAR: 1983
SCALE: 1"=1000'


INQUIRY #: 6731018.8
YEAR: 1983
SCALE: 1"=1000'


INQUIRY #: 6731018.8
YEAR: 1993
SCALE: 1"=1000'


INQUIRY #: 6731018.8
YEAR: 1993
SCALE: 1"=1000'


INQUIRY #: 6731018.8
YEAR: 2008
SCALE: 1"=1000'


INQUIRY #: 6731018.8
YEAR: 2008
SCALE: 1"=1000'


INQUIRY #: 6731018.8
YEAR: 2010
SCALE: 1"=1000'


INQUIRY #: 6731018.8
YEAR: 2010
SCALE: 1"=1000'


INQUIRY #: 6731018.8
YEAR: 2012
SCALE: 1"=1000'


INQUIRY #: 6731018.8
YEAR: 2012
SCALE: 1"=1000'


INQUIRY #: 6731018.8
YEAR: 2016
SCALE: 1"=1000'


INQUIRY #: 6731018.8
YEAR: 2016
SCALE: 1"=1000'

Rowletts Cave Springs Road
Rowletts Cave Springs Road
Horse Cave, KY 42749

Inquiry Number: 6731018.9
November 04, 2021

The EDR-City Directory Image Report

EDR® Environmental Data Resources Inc

6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

TABLE OF CONTENTS

SECTION

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

EXECUTIVE SUMMARY

DESCRIPTION

Environmental Data Resources, Inc.'s (EDR) City Directory Report is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's City Directory Report includes a search of available city directory data at 5 year intervals.

RECORD SOURCES

EDR's Digital Archive combines historical directory listings from sources such as Cole Information and Dun & Bradstreet. These standard sources of property information complement and enhance each other to provide a more comprehensive report.

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Data by
infoUSA®

RESEARCH SUMMARY

The following research sources were consulted in the preparation of this report. A check mark indicates where information was identified in the source and provided in this report.

Year	Target Street	Cross Street	Source
2017	☑	☑	EDR Digital Archive
2014	☑	☑	EDR Digital Archive
2010	☑	☑	EDR Digital Archive
2005	☑	☑	EDR Digital Archive
2000	☑	☑	EDR Digital Archive
1995	☑	☑	EDR Digital Archive
1992	☑	☑	EDR Digital Archive

FINDINGS

TARGET PROPERTY STREET

Rowletts Cave Springs Road
Horse Cave, KY 42749

Year	*CD Image*	*Source*

ROWLETTS CAVE SPRINGS RD

2017	pg A2	EDR Digital Archive
2014	pg A5	EDR Digital Archive
2010	pg A7	EDR Digital Archive
2005	pg A9	EDR Digital Archive
2000	pg A11	EDR Digital Archive
1995	pg A13	EDR Digital Archive
1992	pg A15	EDR Digital Archive

FINDINGS

CROSS STREETS

Year	*CD Image*	*Source*
L AND N TURNPIKE RD		
2017	pg. A1	EDR Digital Archive
2014	pg. A3	EDR Digital Archive
2010	pg. A6	EDR Digital Archive
2005	pg. A8	EDR Digital Archive
2000	pg. A10	EDR Digital Archive
1995	pg. A12	EDR Digital Archive
1992	pg. A14	EDR Digital Archive

City Directory Images

Target Street	Cross Street	Source
-	✓	EDR Digital Archive

L AND N TURNPIKE RD 2017

203	JOHNSON, JERRY D
235	BRADLEY, M
240	BRYANT, JAMES D
250	JEHOVAHS WITNESS
335	HORTON, ARLIE W
353	WAGGONER, CONI J
455	BERGER, JAMES L
1129	GARDNER, DAVID A
1131	ROWLETT, GERTRUDE P
1262	LOGSDON, HERSHELL
1670	CRESTMONT SEED COMPANY INC
	ENGLAND, DOUGLAS D
1880	CRESMONT SEED COMPANY INC
	ENGLAND, MARIAN P
1974	RUCKER, JOHN
2065	RAMSEY, JAMES D
	RAMSEYS BODY SHOP
2115	GORE, KENNY D
2125	TROYER, MICHAEL M
2225	SLOAN, KEVIN
2425	BRYANT, JAMES
2433	MIZE, THOMAS
2437	HAWKINS, JEWELL
2489	FRENCH, KIMBERLY J
2527	VERTREES, GARY L
2545	BUSH, SUE S
2564	HOLTZCLAW, JASON C
2565	SLOAN, JOE J
2599	HORTON, DONNIE E
2601	HORTON, MELISSA
2645	MILLER, KASSANDRA
2654	MELLOAN, CONLEY
2695	MEADOWS, TERRY W
2881	DELK, SARAH K
2885	GODFREY, MALCOM A
2905	SLOAN, JIM A
2925	BROOKS, ROBERT C
2985	RIGGS, STEVE
3015	ADCOCK, ERIC W
3627	ALLEN, LINDSEY
3700	KENTUCKY DOWN UNDER ADVENTURE ZOO
4000	FCTI INC
	ILS WAYPORT
	LOVES
	MCDONALDS
	SUBWAY
	WANDERING WIFI

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

ROWLETTS CAVE SPRINGS RD 2017

305	HAWKINS, RANDY L
320	BAILEY, DAVID
525	HARDESTY, PHILLIP C
583	FAULKNER, DWIGHT E
620	NEAL, WILLIAM L
633	RICE, CHARLES A
670	HARDESTY, TYRONE D
980	SAMMONS, DAVID D
1410	PALNAU, DAVID G
1465	NIETEN, AARON
1645	CAHOE, APRIL
1822	BYLER, ALLEN A
2000	CATHEY, JAMES O
2750	SANDERS, ELVIS
2760	COX, ADAM M
2780	LOVETT, HELEN H
2793	LOGSDON, HERBERT
2849	BURD, MICHAEL L
2856	MEADOWS, GEORGE T
3319	BLAIR, TOBY L
3369	DENNISON, RAY
3379	CAIN, PAVIELLE M
3402	ROTH, JAMES C
3555	JAGGERS, RICKY J
3577	MONROE, MICHAEL C
3632	CARY, TAYLOR
3669	HARPER, LEON L
4374	MATTESON, ANN M

Target Street	Cross Street	Source
-	✓	EDR Digital Archive

L AND N TURNPIKE RD 2014

203	JOHNSON, JERRY D
235	BRADLEY, M
240	BRYANT, JAMES D
250	KINGDOM HALL JEHOVAHS
	OCCUPANT UNKNOWN,
335	HORTON, ARLIE W
	STEARMAN, MELISSA G
353	WAGGONER, CONSTANCE J
455	OCCUPANT UNKNOWN,
695	MEREDITH, MARLENE S
1129	GARDNER, DAVID A
1262	LOGSDON, HERSHELL
1315	OCCUPANT UNKNOWN,
1670	ENGLAND, DOUGLAS D
1880	ENGLAND MARIAN
	ENGLAND, MARIAN P
1974	RUCKER, JOHN
2065	RAMSEY, JAMES D
	RAMSEYS BODY SHOP
2115	GORE, KENNY D
2125	TROYER, MICHAEL M
2225	SLOAN, KEVIN
2262	HATCHER, JONATHAN D
2425	TARRY, BOBBY J
2433	MIZE, THOMAS
2437	GENTRY, SAMMIE R
2489	SMITH, KIMBERLY
2527	VERTREES, GARY L
2545	BUSH, DOROTHY S
2564	OCCUPANT UNKNOWN,
2565	SLOAN, JOE J
2599	HORTON, DONNIE E
2601	HORTON, JOSHUA
2645	MILLER, KASSANDRA
2654	MELLOAN, CONLEY
2695	MEADOWS, TERRY W
2881	DELK, KAY
2885	GODFREY, MALCOM A
2905	SLOAN, JIM A
2925	BROOKS, ROBERT C
2985	RIGGS, KIWONA
3015	CRAIN, JOEY D
3069	SHARPENSTEEN, SHANNON L
3415	THOMAS, SOLON L
3627	GOMEZ, DIANA
3700	KENTUCKY DOWN UNDER ADVENTURE ZOO
4000	ILS WAYPORT
	LOVES
	MCDONALDS
	SUBWAY SANDWICHES

Target Street	Cross Street	Source
-	✓	EDR Digital Archive

L AND N TURNPIKE RD 2014 (Cont'd)

4000 WANDERING WIFI

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

ROWLETTS CAVE SPRINGS RD 2014

144	BRADLEY, FRANK A
275	ALEXANDER, KRYSTAL D
305	OCCUPANT UNKNOWN,
320	BAILEY, DAVID
407	BARLOW, EUGENE S
454	CARTER, TOMMY K
508	PAUL, ROGER L
525	HARDESTY, PHILLIP C
583	FAULKNER, DWIGHT E
620	NEAL, WILLIAM L
633	RICE, CHARLES A
670	HARDESTY, KATINA W
884	GREEN, BRANDY N
1238	NUNN, LORA A
1410	PALNAU, DAVID G
1465	NIETEN, AARON
1645	CAHOE, APRIL
1822	BYLER, ALLEN A
2000	CATHEY, JAMES O
2750	SANDERS, ELVIS
2760	COX, ADAM M
2780	OCCUPANT UNKNOWN,
2788	LOGSDON, HERMAN L
2793	LOGSDON, HERBERT
2849	BURD, MICHAEL L
2856	MEADOWS, GEORGE T
3319	BLAIR, TOBY L
3369	JOHNSON, CHARLES R
3379	SCHNEIDER, ALEXANDRIA
3388	OCCUPANT UNKNOWN,
3402	ROTH, JAMES C
3555	JAGGERS, RICKY J
3577	MONROE, MICHAEL C
3632	WEBB, VERONICA J
3669	HARPER, LEON L
4374	MATTESON, DAVID O

Target Street	Cross Street	Source
-	✓	EDR Digital Archive

L AND N TURNPIKE RD 2010

203	JOHNSON, JERRY D
235	BRADLEY, M
240	BRYANT, JAMES D
335	RIGGS, BUDDY T
353	WAGGONER, CONI J
455	BERRY, CAROLYN
695	MEREDITH, STEVE H
1129	GARDNER, DAVID A
1131	PUCKETT, GARY G
1262	LOGSDON, HERSHELL
1315	OCCUPANT UNKNOWN,
1670	ENGLAND, DOUGLAS S
1880	CRESTMONT SEED CO INC
	ENGLAND, MARIAN P
1974	RUCKER, JOHN
2065	RAMSEY, JAMES D
	RAMSEYS BODY SHOP
2115	GORE, KENNY D
2125	STUTZMAN, AARON P
2262	HATCHER, JONATHAN D
2312	OCCUPANT UNKNOWN,
2425	GLASS, RONNIE K
2433	MIZE, THOMAS
2437	RILEY, CHEN J
2489	BELLO, D D
2527	VERTREES, GARY L
2545	BUSH, SUE
2564	OCCUPANT UNKNOWN,
2565	SLOAN, JOE J
2654	MELLOAN, JUANITA M
2695	MEADOWS, TERRY W
2881	HOUK, SARAH K
2885	OCCUPANT UNKNOWN,
2905	SEXTON, KIM J
2925	BROOKS, ROBERT C
2985	OCCUPANT UNKNOWN,
3015	SMITH, DONALD L
3069	SHARPENSTEEN, SHANNON C
3415	THOMAS, SOLON L
3627	FLANNERY, LAVONDA
4000	CHESTERS CHICKEN
	LOVES TRAVEL STOP
	MC DONALDS
	WANDERING WI FI

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

ROWLETTS CAVE SPRINGS RD 2010

144	BRADLEY, FRANK A
249	BRADLEY, PATTY J
275	ALEXANDER, KRYSTAL D
320	HASKINS, DEON
454	CARTER, KENNETH K
508	PAUL, ROGER L
524	HARDESTY, PHILLIP
620	NEAL, ANITA N
633	RICE, CHARLES A
670	HARDESTY, JESSE R
980	SAMMONS, DAVID D
1238	NUNN, LORA A
1645	CAHOE, APRIL
1822	TROYER, MICHAEL M
2000	CATHEY, JAMES O
2750	SANDERS, ELVIS
2780	BOLDT, WALTER L
2788	LOGSDON, HERMAN L
2793	LOGSDON, HERBERT
2849	BURD, KATHY M
2856	MEADOWS, GEORGE T
3358	ROSE, MILDRED L
3369	JOHNSON, CHARLES R
3379	SMITH, NELSON K
3402	ROTH, JAMES C
3555	JAGGERS, RICKY L
3577	MONROE, MICHAEL C
4374	MATTESON, DAVID O
4488	POWELL, WILLIAM B

Target Street	Cross Street	Source
-	✓	EDR Digital Archive

L AND N TURNPIKE RD 2005

203	JOHNSON, LESLIE M
235	FULKERSON, HUBERT J
335	OCCUPANT UNKNOWN,
455	PHILPOTT, RACHEL
1129	GARDNER, DAVID A
1131	OCCUPANT UNKNOWN,
1262	OCCUPANT UNKNOWN,
1298	LOGSDON, HERSHELL
1670	ENGLAND, DOUGLAS D
1880	CRESMONT SEED CO INC
	ENGLAND, MARIAN P
1974	OCCUPANT UNKNOWN,
2065	RAMSEY, JAMES D
	RAMSEYS BODY SHOP
2262	HATCHER, JONATHAN D
2425	GLASS, RONNIE K
2437	RILEY, CHEN J
2489	WILLIAMS, SYLVIA C
2527	VERTREES, GARY L
2545	BUSH, SUE
2564	FISCHER, WILLIAM M
2565	SLOAN, JOE J
2625	OCCUPANT UNKNOWN,
2654	MELLOAN, DORIS J
2695	MEADOWS, TERRY W
2885	GODFREY, TERESA S
2905	SEXTON, BRIAN K
2925	BROOKS, ROBERT C
2985	DENNISON, GARY L
3015	SMITH, DONALD L
3069	OCCUPANT UNKNOWN,
3415	THOMAS, SOLON L
3559	OCCUPANT UNKNOWN,
	RIVER FALLS MACHINERY OF KY
3627	JONES, RENE
3700	KENTUCKY DOWN UNDER

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

ROWLETTS CAVE SPRINGS RD 2005

144	BRADLEY, FRANK A
305	ALEXANDER, PAMELA Y
320	HASKINS, DEON
452	CARTER, KENNETH K
508	FAULKNER, SHAKONDA M
633	RICE, CHARLES A
670	HARDESTY, JESSE D
980	SAMMONS, DAVID
982	DAVID SAMMONS
	HARLOW, CHERRIE
1238	NUNN, LORA A
1465	HUMPHREY, DARRELL
1645	CATHEY, BESSIE
1822	STUTZMAN, AARON P
2780	SLOAN, JOSHUA
2788	LOGSDON, HERMAN L
2789	FAULKNER CONSTRUCTION
2793	LOGSDON, HERBERT
2849	CAHOE, GEORGIA J
2856	MEADOWS, GEORGE T
3369	JOHNSON, CHARLES R
3379	SMITH, NELSON
3555	JAGGERS, RICKY L
3577	MONROE, CHRIS
3632	GOTT, JOHN C
4374	MATTESON, DAVID U
4488	POWELL, WILLIAM

Target Street	Cross Street	Source
-	✓	EDR Digital Archive

L AND N TURNPIKE RD 2000

2065 RAMSEYS BODY SHOP

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

ROWLETTS CAVE SPRINGS RD 2000

320	HASKINS, ROSIE B
525	GREEN, C B
620	NEAL, ANITA
670	HARDESTY, KATINA
982	SAMMONS, DAVID
1645	CATHEY, BESSIE
2788	LOGSDON, HERMAN L
2793	LOGSDON, HERBERT
4374	ANTONIO, ARTURO S
4488	SULLIVAN, BRUCE

Target Street	Cross Street	Source
-	✓	EDR Digital Archive

L AND N TURNPIKE RD 1995

2065 RAMSEYS BODY SHOP

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

ROWLETTS CAVE SPRINGS RD 1995

249	EWERS, DEBORAH
320	HASKINS, ROSIE B
620	NEAL, ANITA
982	SAMMONS, DAVID
1645	CATHEY, BESSIE
2788	LOGSDON, HERMAN L
2793	LOGSDON, HERBERT
3369	MEREDITH, STEVE L
4374	ANTONIO, ARTURO S

Target Street	Cross Street	Source
-	✓	EDR Digital Archive

L AND N TURNPIKE RD 1992

203	JOHNSON, JERRY
235	FULKERSON, HUBERT
335	STAFFORD, NORA
455	HANDY, MAYNARD
1262	LOGSDON, H
1298	LOGSDON, ROYCE C
1880	ENGLAND, MARIAN
2115	CRUMP, BILL
2262	HATCHER, J D
2524	SPENCER, BETTY J
2564	FISCHER, WILLIAM O
2565	SLOAN, JOE
2625	COOK, JAMES F
2654	MELLOAN, CONLEY
2885	HOUK, KAY
2905	SEXTON, KIM
2925	BROOKS, ROBERT C
3415	HAIRE, EDWIN
3559	WILSON, CLINT

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

ROWLETTS CAVE SPRINGS RD 1992

320 HASKINS, ROSIE B
620 NEAL, ANITA
982 SAMMONS, DAVID
2788 LOGSDON, H L
2793 LOGSDON, HERBERT
3369 MEREDITH, STEVE L
4374 LAMOUNTAIN, JOHN

APPENDIX C
Regulatory Records Documentation

Thoroughbred Solar Project
Thoroughbred Solar Project
Horse Cave, KY 42749

Inquiry Number: 7265877.2s
February 28, 2023

EDR Area / Corridor Report

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E1527-21), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

SUBJECT PROPERTY INFORMATION

ADDRESS

THOROUGHBRED SOLAR PROJECT
HORSE CAVE, KY 42749

TARGET PROPERTY SEARCH RESULTS

The Target Property was identified in the following databases.

Page Numbers and Map Identifcations refer to the EDR Area/Corridor Report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

ADDITIONAL ENVIRONMENTAL RECORDS

Records of Emergency Release Reports

SPILLS: State spills

A review of the SPILLS list, as provided by EDR, and dated 10/31/2022 has revealed that there is 1 SPILLS site within the requested target property.

Site	Address	Map ID / Focus Map(s)	Page
Not reported Facility Status: Env. Closed Inc ID: 2281703		1 / 5	18

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Page Numbers and Map Identifcations refer to the EDR Area/Corridor Report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

EXECUTIVE SUMMARY

STANDARD ENVIRONMENTAL RECORDS

Lists of Federal CERCLA sites with NFRAP

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

A review of the SEMS-ARCHIVE list, as provided by EDR, and dated 10/27/2022 has revealed that there is 1 SEMS-ARCHIVE site within approximately 0.5 miles of the requested target property.

Site	Address	Direction / Distance	Map ID / Focus Map(s)	Page
HIDDEN RIVER CAVE EX Site ID: 0405070 EPA Id: KYD985068378	HIGHWAY 31W	NNW 0 - 1/8 (0.123 mi.)	2 / 2	18

Lists of state and tribal landfills and solid waste disposal facilities

SWF/LF: Solid Waste Facilities List

A review of the SWF/LF list, as provided by EDR, and dated 08/25/2022 has revealed that there is 1 SWF/LF site within approximately 0.5 miles of the requested target property.

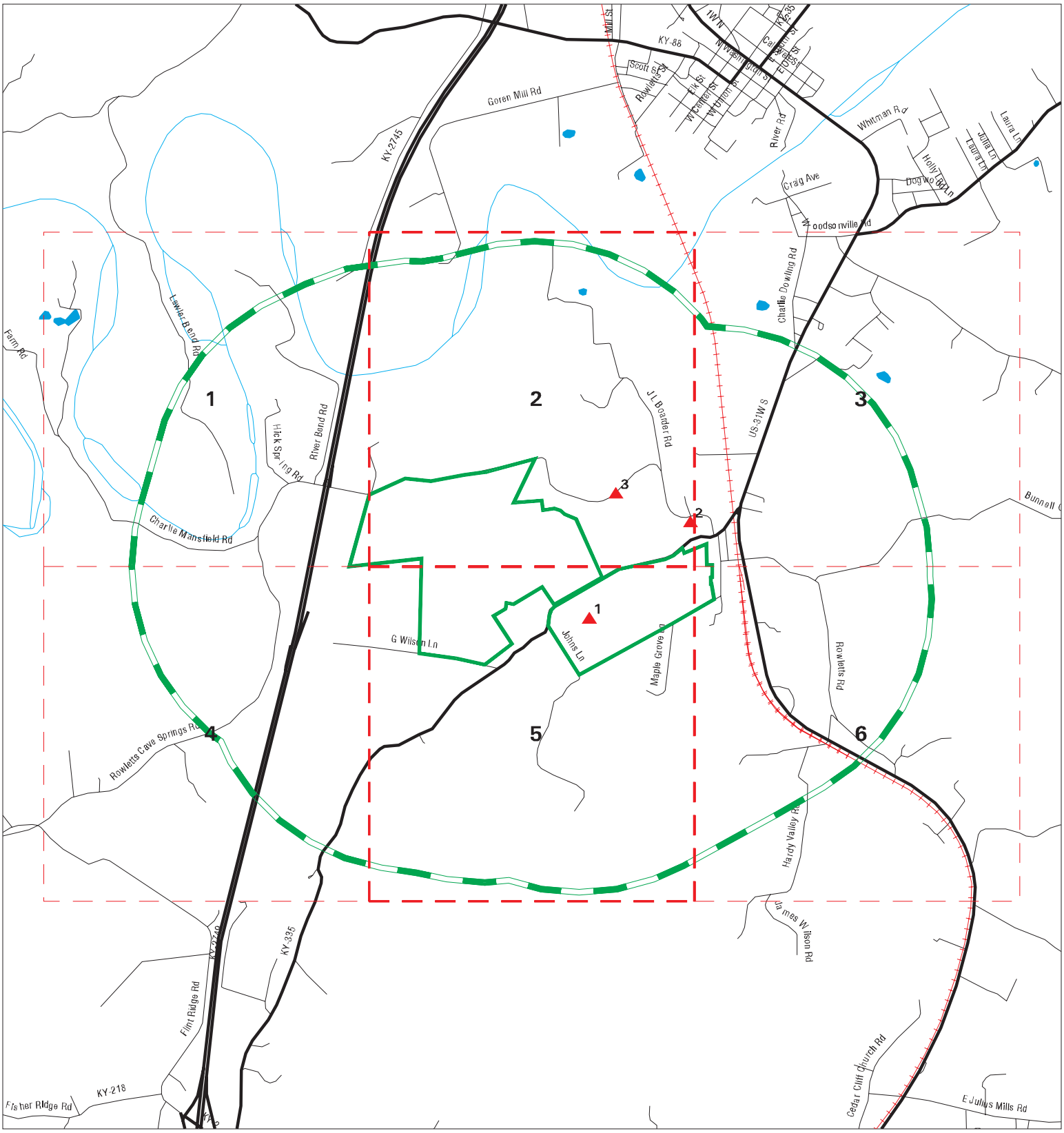
Site	Address	Direction / Distance	Map ID / Focus Map(s)	Page
HART CO COMPOST & RE Status: Terminated Facility Id: 43240	249 ROWLETTS CAVE SP	ENE 1/8 - 1/4 (0.219 mi.)	3 / 2	19

MAPPED SITES SUMMARY

Target Property:
THOROUGHBRED SOLAR PROJECT
HORSE CAVE, KY 42749

MAP ID / FOCUS MAP	SITE NAME	ADDRESS	DATABASE ACRONYMS	DIST (ft. & mi.) DIRECTION
1 / 5			SPILLS	TP
2 / 2	HIDDEN RIVER CAVE EX	HIGHWAY 31W	SEMS-ARCHIVE	652 0.123 NNW
3 / 2	HART CO COMPOST & RE	249 ROWLETTS CAVE SP	SWF/LF	1158 0.219 ENE

Key Map - 7265877.2s



Sites
Target Property
Search Buffer
Focus Map - No Sites
Focus Map - Sites
National Priority List Sites
Dept. Defense Sites
Indian Reservations BIA

0 1/2 1 Miles

SITE NAME: Thoroughbred Solar Project	CLIENT: Haley & Aldrich, Inc.
ADDRESS: Thoroughbred Solar Project	CONTACT: Audrey West
CITY/STATE: Horse Cave KY	INQUIRY #: 7265877.2s
ZIP: 42749	DATE: 02/28/23 3:41 PM

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Lists of Federal NPL (Superfund) sites								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	1.000		0	0	0	0	NR	0
Lists of Federal Delisted NPL sites								
Delisted NPL	1.000		0	0	0	0	NR	0
Lists of Federal sites subject to CERCLA removals and CERCLA orders								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Lists of Federal CERCLA sites with NFRAP								
SEMS-ARCHIVE	0.500		1	0	0	NR	NR	1
Lists of Federal RCRA facilities undergoing Corrective Action								
CORRACTS	1.000		0	0	0	0	NR	0
Lists of Federal RCRA TSD facilities								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Lists of Federal RCRA generators								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-VSQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROLS	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	TP		NR	NR	NR	NR	NR	0
Lists of state- and tribal hazardous waste facilities								
SHWS	1.000		0	0	0	0	NR	0
Lists of state and tribal landfills and solid waste disposal facilities								
SWF/LF	0.500		0	1	0	NR	NR	1
Lists of state and tribal leaking storage tanks								
PSTEAF	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST	0.500		0	0	0	NR	NR	0
SB193	0.500		0	0	0	NR	NR	0
Lists of state and tribal registered storage tanks								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal institutional control / engineering control registries								
ENG CONTROLS	0.500		0	0	0	NR	NR	0
INST CONTROL	0.500		0	0	0	NR	NR	0
Lists of state and tribal voluntary cleanup sites								
VCP	0.500		0	0	0	NR	NR	0
INDIAN VCP	0.500		0	0	0	NR	NR	0
Lists of state and tribal brownfield sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
SWRCY	0.500		0	0	0	NR	NR	0
HIST LF	0.500		0	0	0	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	TP		NR	NR	NR	NR	NR	0
CDL	TP		NR	NR	NR	NR	NR	0
US CDL	TP		NR	NR	NR	NR	NR	0
Local Land Records								
LIENS 2	TP		NR	NR	NR	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0
SPILLS	TP	1	NR	NR	NR	NR	NR	1
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
DOT OPS	TP		NR	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	TP		NR	NR	NR	NR	NR	0
US AIRS	TP		NR	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
FINDS	TP		NR	NR	NR	NR	NR	0
DOCKET HWC	TP		NR	NR	NR	NR	NR	0
ECHO	TP		NR	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
PFAS NPL	0.250		0	0	NR	NR	NR	0
PFAS FEDERAL SITES	0.250		0	0	NR	NR	NR	0
PFAS TSCA	0.250		0	0	NR	NR	NR	0
PFAS RCRA MANIFEST	0.250		0	0	NR	NR	NR	0
PFAS ATSDR	0.250		0	0	NR	NR	NR	0
PFAS WQP	0.250		0	0	NR	NR	NR	0
PFAS NPDES	0.250		0	0	NR	NR	NR	0
PFAS ECHO	0.250		0	0	NR	NR	NR	0
PFAS ECHO FIRE TRAINING	0.250		0	0	NR	NR	NR	0
PFAS PART 139 AIRPORT	0.250		0	0	NR	NR	NR	0
AQUEOUS FOAM NRC	0.250		0	0	NR	NR	NR	0
PFAS	0.250		0	0	NR	NR	NR	0
AIRS	TP		NR	NR	NR	NR	NR	0
ASBESTOS	TP		NR	NR	NR	NR	NR	0
COAL ASH	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
Financial Assurance	TP		NR	NR	NR	NR	NR	0
LEAD	TP		NR	NR	NR	NR	NR	0
NPDES	TP		NR	NR	NR	NR	NR	0
UIC	TP		NR	NR	NR	NR	NR	0
MINES MRDS	TP		NR	NR	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA HWS	TP		NR	NR	NR	NR	NR	0
RGA LF	TP		NR	NR	NR	NR	NR	0
- Totals --		1	1	1	0	0	0	3

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

Focus Map - 1 - 7265877.2s

Sites
Target Property
Search Buffer
Focus Map - No Sites
Focus Map - Sites
Power Line
National Priority List Sites
Dept. Defense Sites
Indian Reservations BIA

0 1/8 1/4 Miles

SITE NAME: Thoroughbred Solar Project	CLIENT: Haley & Aldrich, Inc.
ADDRESS: Thoroughbred Solar Project	CONTACT: Audrey West
CITY/STATE: Horse Cave KY	INQUIRY #: 7265877.2s
ZIP: 42749	DATE: 02/28/23

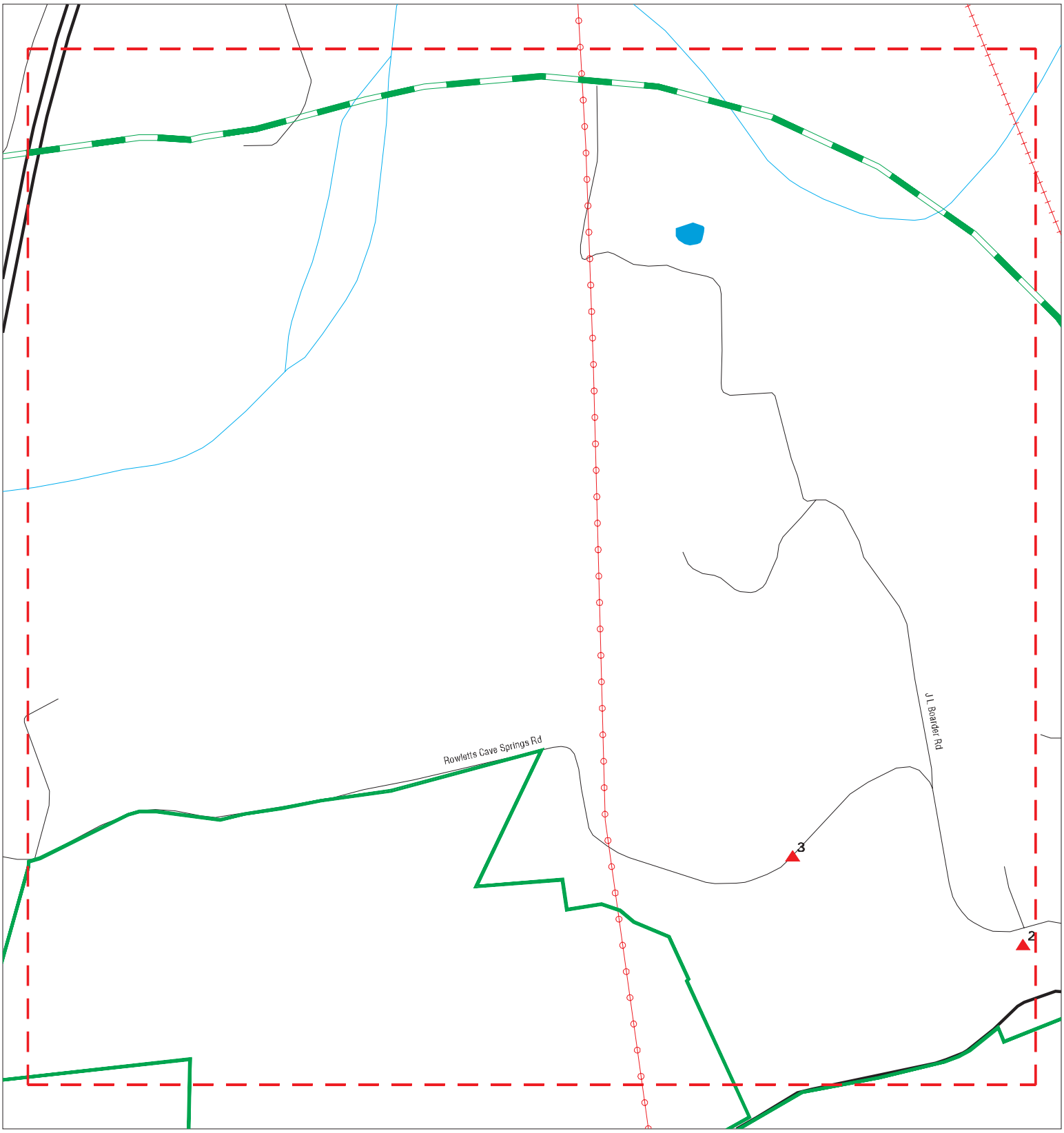
MAPPED SITES SUMMARY - FOCUS MAP 1

Target Property:
THOROUGHBRED SOLAR PROJECT
HORSE CAVE, KY 42749

MAP ID / FOCUS MAP	SITE NAME	ADDRESS	DATABASE ACRONYMS	DIST (ft. & mi.) DIRECTION

NO MAPPED SITES FOUND

Focus Map - 2 - 7265877.2s



Sites
Target Property
Search Buffer
Focus Map - No Sites
Focus Map - Sites
Power Line
National Priority List Sites
Dept. Defense Sites
Indian Reservations BIA

0 1/8 1/4 Miles

SITE NAME: Thoroughbred Solar Project	CLIENT: Haley & Aldrich, Inc.
ADDRESS: Thoroughbred Solar Project	CONTACT: Audrey West
CITY/STATE: Horse Cave KY	INQUIRY #: 7265877.2s
ZIP: 42749	DATE: 02/28/23

MAPPED SITES SUMMARY - FOCUS MAP 2

Target Property:
THOROUGHBRED SOLAR PROJECT
HORSE CAVE, KY 42749

MAP ID / FOCUS MAP	SITE NAME	ADDRESS	DATABASE ACRONYMS	DIST (ft. & mi.) DIRECTION
2 / 2	HIDDEN RIVER CAVE EX	HIGHWAY 31W	SEMS-ARCHIVE	652 0.123 NNW
3 / 2	HART CO COMPOST & RE	249 ROWLETTS CAVE SP	SWF/LF	1158 0.219 ENE

Focus Map - 3 - 7265877.2s

Sites
Target Property
Search Buffer
Focus Map - No Sites
Focus Map - Sites
Power Line
National Priority List Sites
Dept. Defense Sites
Indian Reservations BIA

0 1/8 1/4 Miles

SITE NAME: Thoroughbred Solar Project	CLIENT: Haley & Aldrich, Inc.
ADDRESS: Thoroughbred Solar Project	CONTACT: Audrey West
CITY/STATE: Horse Cave KY	INQUIRY #: 7265877.2s
ZIP: 42749	DATE: 02/28/23

MAPPED SITES SUMMARY - FOCUS MAP 3

Target Property:
THOROUGHBRED SOLAR PROJECT
HORSE CAVE, KY 42749

MAP ID / FOCUS MAP	SITE NAME	ADDRESS	DATABASE ACRONYMS	DIST (ft. & mi.) DIRECTION

NO MAPPED SITES FOUND

Focus Map - 4 - 7265877.2s

Sites
Target Property
Search Buffer
Focus Map - No Sites
Focus Map - Sites
Power Line
National Priority List Sites
Dept. Defense Sites
Indian Reservations BIA

0 1/8 1/4 Miles

SITE NAME: Thoroughbred Solar Project	CLIENT: Haley & Aldrich, Inc.
ADDRESS: Thoroughbred Solar Project	CONTACT: Audrey West
CITY/STATE: Horse Cave KY	INQUIRY #: 7265877.2s
ZIP: 42749	DATE: 02/28/23

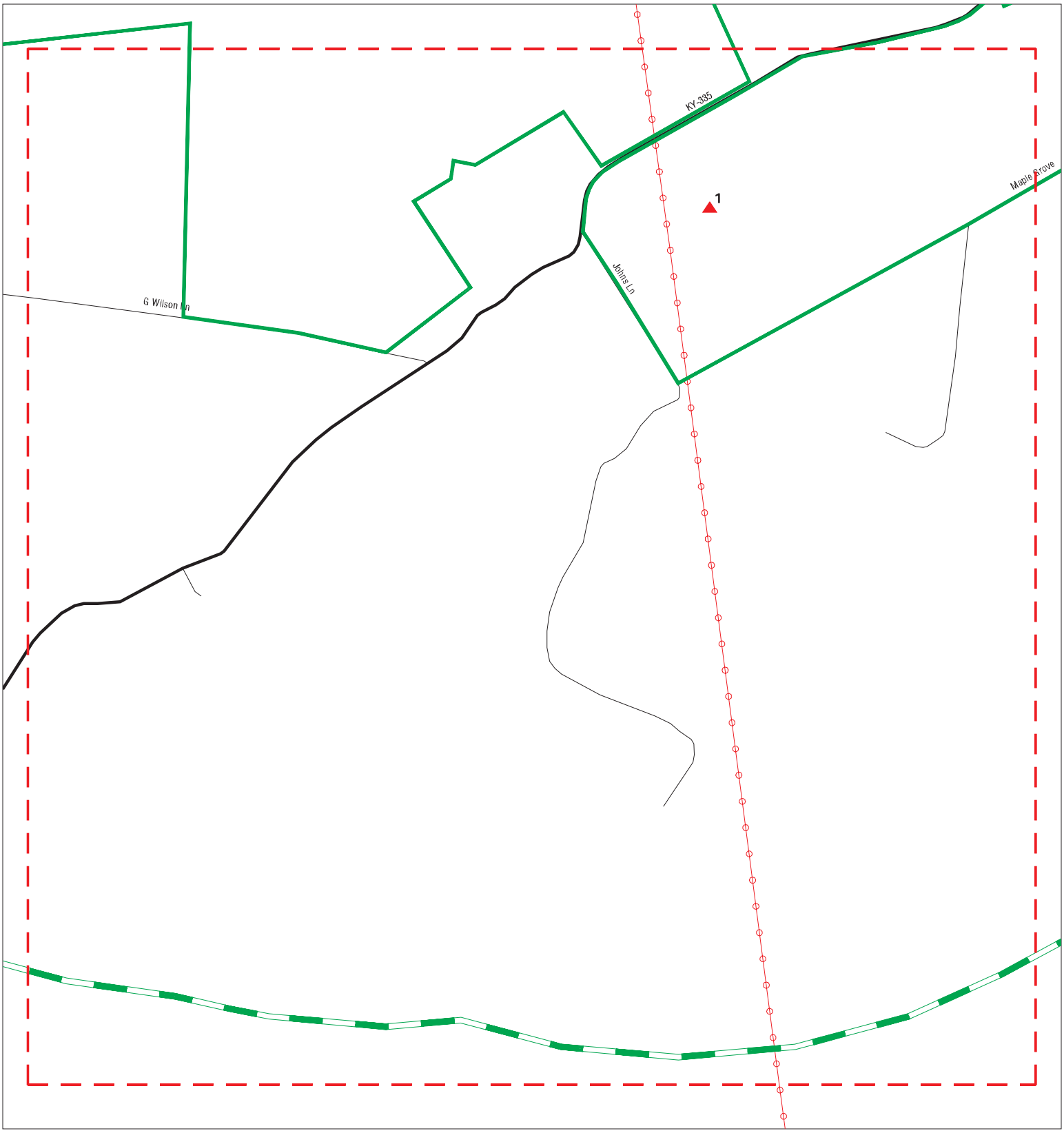
MAPPED SITES SUMMARY - FOCUS MAP 4

Target Property:
THOROUGHBRED SOLAR PROJECT
HORSE CAVE, KY 42749

MAP ID / FOCUS MAP	SITE NAME	ADDRESS	DATABASE ACRONYMS	DIST (ft. & mi.) DIRECTION

NO MAPPED SITES FOUND

Focus Map - 5 - 7265877.2s



Sites
Target Property
Search Buffer
Focus Map - No Sites
Focus Map - Sites
Power Line
National Priority List Sites
Dept. Defense Sites
Indian Reservations BIA

0 1/8 1/4 Miles

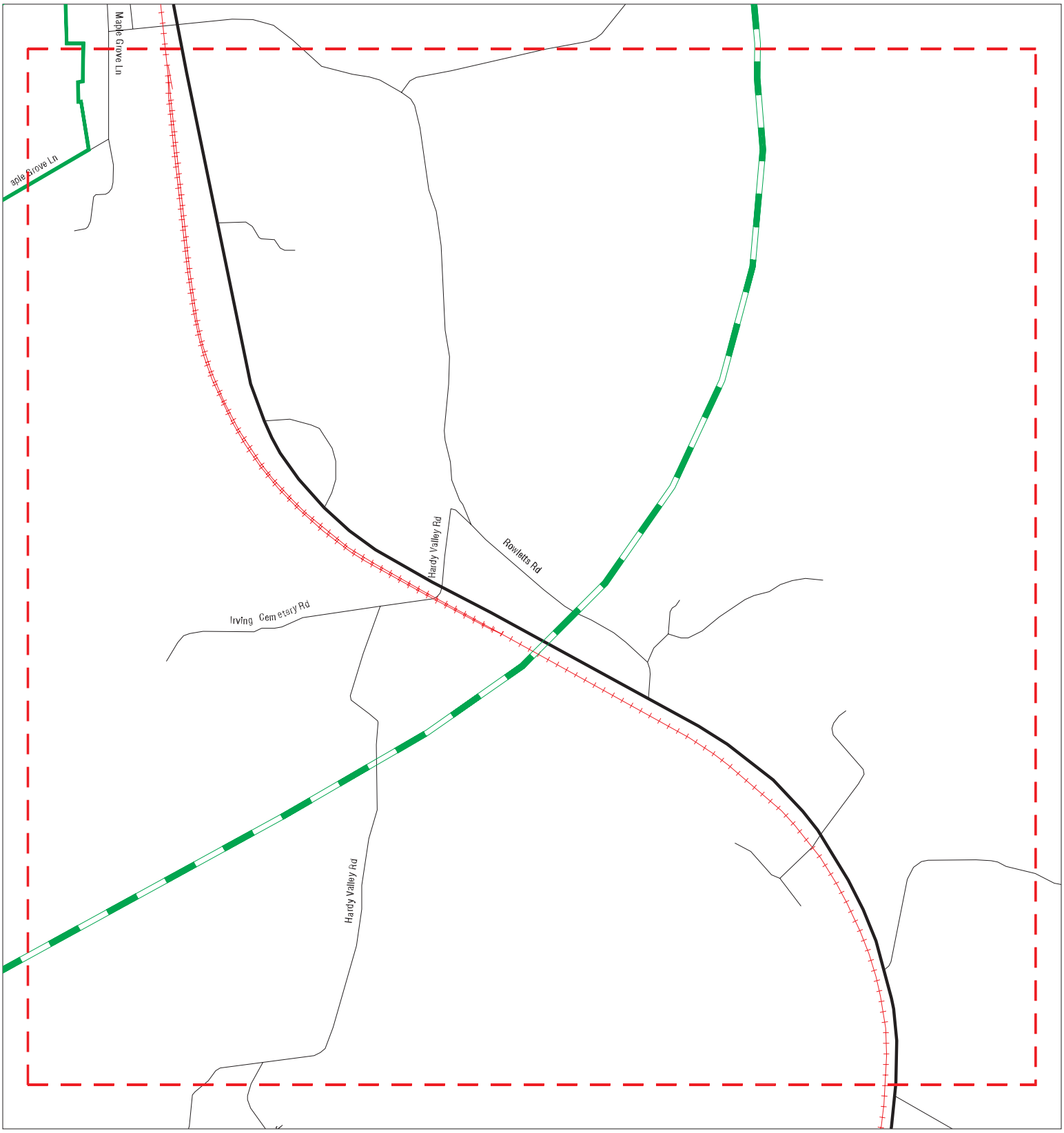
SITE NAME: Thoroughbred Solar Project	CLIENT: Haley & Aldrich, Inc.
ADDRESS: Thoroughbred Solar Project	CONTACT: Audrey West
CITY/STATE: Horse Cave KY	INQUIRY #: 7265877.2s
ZIP: 42749	DATE: 02/28/23

MAPPED SITES SUMMARY - FOCUS MAP 5

Target Property:
THOROUGHBRED SOLAR PROJECT
HORSE CAVE, KY 42749

MAP ID / FOCUS MAP	SITE NAME	ADDRESS	DATABASE ACRONYMS	DIST (ft. & mi.) DIRECTION
1 / 5			SPILLS	TP

Focus Map - 6 - 7265877.2s



Sites
Target Property
Search Buffer
Focus Map - No Sites
Focus Map - Sites
Power Line
National Priority List Sites
Dept. Defense Sites
Indian Reservations BIA

0 1/8 1/4 Miles

SITE NAME: Thoroughbred Solar Project	CLIENT: Haley & Aldrich, Inc.
ADDRESS: Thoroughbred Solar Project	CONTACT: Audrey West
CITY/STATE: Horse Cave KY	INQUIRY #: 7265877.2s
ZIP: 42749	DATE: 02/28/23

MAPPED SITES SUMMARY - FOCUS MAP 6

Target Property:
THOROUGHBRED SOLAR PROJECT
HORSE CAVE, KY 42749

MAP ID / FOCUS MAP	SITE NAME	ADDRESS	DATABASE ACRONYMS	DIST (ft. & mi.) DIRECTION

NO MAPPED SITES FOUND

1
Target Property **MUNFORDVILLE, KY**

Actual: **596 ft.**

Focus Map: **5**

SPILLS **S117135539**
N/A

SPILLS:

Name:	Not reported
Address:	Not reported
City,State,Zip:	MUNFORDVILLE, KY
Facility Status:	Env. Closed
Incident Type:	OPEN DUMPING
Program Code:	04
Received By Staff:	McGuffey, Robbie
Received Date:	07/19/2008
Report Date:	2008-07-19 19:24:00
Dispatch Description:	Illegal disposal of CDD
Source Name:	Mike Killibrew / Killibrew Construction Co.
Source Address:	Off of Old Dixie Highway EOC 20082443
Substances:	Not reported
Other Substances Desc:	CDD
Media Impacted:	Env Protection
Inc ID:	2281703
Lead Invest Person ID:	9474
Compliance:	Yes
Notification:	No
Priority:	Routine
Incident End Date:	2008-08-12 00:00:00
Follow Up Priority Desc:	Routine
Most Recent Comp Eval Activity:	Not reported
Most Recent ENF Activity:	Not reported
Begin Emergency Date:	7/19/2008
End Emergency Date:	7/19/2008
MARS Function Code:	J840
Locked:	Yes
Closure Type Desc:	Env. Closed-Mitigated
Waterbody:	Not reported
Latitude:	85.90510
Longitude:	-37.23525

2
NNW
< 1/8
0.123 mi.
652 ft.

HIDDEN RIVER CAVE EXPLOSION
HIGHWAY 31W
ROWLETTS, KY 42772

SEMS-ARCHIVE **1003869192**
KYD985068378

Actual: **699 ft.**

Focus Map: **2**

SEMS Archive:

Site ID:	0405070
EPA ID:	KYD985068378
Name:	HIDDEN RIVER CAVE EXPLOSION
Address:	HIGHWAY 31W
Address 2:	Not reported
City,State,Zip:	ROWLETTS, KY 42772
Cong District:	02
FIPS Code:	21099
FF:	N
NPL:	Not on the NPL
Non NPL Status:	NFRAP-Site does not qualify for the NPL based on existing information

SEMS Archive Detail:

Region:	04
Site ID:	0405070

HIDDEN RIVER CAVE EXPLOSION (Continued) **1003869192**

EPA ID:	KYD985068378
Site Name:	HIDDEN RIVER CAVE EXPLOSION
NPL:	N
FF:	N
OU:	00
Action Code:	VS
Action Name:	ARCH SITE
SEQ:	1
Start Date:	Not reported
Finish Date:	1990-03-14 05:00:00
Qual:	Not reported
Current Action Lead:	EPA Perf In-Hse

Region:	04
Site ID:	0405070
EPA ID:	KYD985068378
Site Name:	HIDDEN RIVER CAVE EXPLOSION
NPL:	N
FF:	N
OU:	00
Action Code:	PA
Action Name:	PA
SEQ:	1
Start Date:	1990-02-20 05:00:00
Finish Date:	1990-03-14 05:00:00
Qual:	N
Current Action Lead:	St Perf

Region:	04
Site ID:	0405070
EPA ID:	KYD985068378
Site Name:	HIDDEN RIVER CAVE EXPLOSION
NPL:	N
FF:	N
OU:	00
Action Code:	DS
Action Name:	DISCVRY
SEQ:	1
Start Date:	1988-10-08 04:00:00
Finish Date:	1988-10-08 04:00:00
Qual:	Not reported
Current Action Lead:	St Perf

---

3 **HART CO COMPOST & RECYCLING CENTER** **SWF/LF** **S107602473**
ENE **249 ROWLETTS CAVE SPRING RD** **N/A**
1/8-1/4 **ROWLETTS, KY 42272**
0.219 mi.
1158 ft.

Actual:
687 ft.

Focus Map:
2

LF:

Name:	HART CO COMPOST & RECYCLING CENTER
Address:	249 ROWLETTS CAVE SPRING RD
City,State,Zip:	ROWLETTS, KY 42272
Facility ID:	43240
Status:	Terminated
Permit Number:	05000007-3
SI ID:	ACTV0000000003

HART CO COMPOST & RECYCLING CENTER (Continued) **S107602473**

SI Designation:	05000007-3
AI Name:	Hart Co Compost & Recycling Center
Rel Entity ID:	Not reported
Facility Type:	Commercial Recycling Center-SW-RPBR
Latitude:	37.24313900
Longitude:	-85.90147200
Permittee city/state/zip:	ROWLETTS, KY 42272
Permit expired date:	Not reported
Related Entity Name:	Not reported
Related Entity Address1:	Not reported
Related Entity Address2:	Not reported
Related Entity Municipality:	Not reported
Related Entity State:	Not reported
Related Entity Zip:	Not reported
Related Entity Type:	Not reported
SI Description:	RECYCLING CENTER-ACTIVITY CEASED
Date Last Site Insp.:	Not reported
Last Inspector:	Not reported
Related Entity Specific Type:	Not reported

Name:	HART CO COMPOST & RECYCLING CENTER
Address:	249 ROWLETTS CAVE SPRING RD
City,State,Zip:	ROWLETTS, KY 42272
Facility ID:	43240
Status:	Terminated
Permit Number:	05000007-1
SI ID:	ACTV0000000002
SI Designation:	05000007-1
AI Name:	Hart Co Compost & Recycling Center
Rel Entity ID:	Not reported
Facility Type:	Composting
Latitude:	37.24313900
Longitude:	-85.90147200
Permittee city/state/zip:	ROWLETTS, KY 42272
Permit expired date:	Not reported
Related Entity Name:	Not reported
Related Entity Address1:	Not reported
Related Entity Address2:	Not reported
Related Entity Municipality:	Not reported
Related Entity State:	Not reported
Related Entity Zip:	Not reported
Related Entity Type:	Not reported
SI Description:	COMPOSTING OPERATION-ACTIVITY CEASED
Date Last Site Insp.:	Not reported
Last Inspector:	Not reported
Related Entity Specific Type:	Not reported

Name:	HART CO COMPOST & RECYCLING CENTER
Address:	249 ROWLETTS CAVE SPRING RD
City,State,Zip:	ROWLETTS, KY 42272
Facility ID:	43240
Status:	Terminated
Permit Number:	05000007-2
SI ID:	ACTV0000000001
SI Designation:	05000007-2
AI Name:	Hart Co Compost & Recycling Center
Rel Entity ID:	Not reported

HART CO COMPOST & RECYCLING CENTER (Continued) **S107602473**

Facility Type:	Beneficial Reuse
Latitude:	37.24313900
Longitude:	-85.90147200
Permittee city/state/zip:	ROWLETTS, KY 42272
Permit expired date:	Not reported
Related Entity Name:	Not reported
Related Entity Address1:	Not reported
Related Entity Address2:	Not reported
Related Entity Municipality:	Not reported
Related Entity State:	Not reported
Related Entity Zip:	Not reported
Related Entity Type:	Not reported
SI Description:	BENEFICIAL REUSE, SOLID WASTE-ACTIVITY CEASED
Date Last Site Insp.:	Not reported
Last Inspector:	Not reported
Related Entity Specific Type:	Not reported

Count: 1 records

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
MUNFORDVILLE	S123109283	TORNADO DEBRIS LANDFILL	875 CONCORD CHURCH RD	42765	SWF/LF

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Lists of Federal NPL (Superfund) sites

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 10/27/2022
Date Data Arrived at EDR: 11/01/2022
Date Made Active in Reports: 11/15/2022
Number of Days to Update: 14

Source: EPA
Telephone: N/A
Last EDR Contact: 02/03/2023
Next Scheduled EDR Contact: 04/10/2023
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 3
Telephone 215-814-5418

EPA Region 4
Telephone 404-562-8033

EPA Region 5
Telephone 312-886-6686

EPA Region 10
Telephone 206-553-8665

EPA Region 6
Telephone: 214-655-6659

EPA Region 7
Telephone: 913-551-7247

EPA Region 8
Telephone: 303-312-6774

EPA Region 9
Telephone: 415-947-4246

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 10/27/2022
Date Data Arrived at EDR: 11/01/2022
Date Made Active in Reports: 11/15/2022
Number of Days to Update: 14

Source: EPA
Telephone: N/A
Last EDR Contact: 02/02/2023
Next Scheduled EDR Contact: 04/10/2023
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

Lists of Federal Delisted NPL sites

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 10/27/2022
Date Data Arrived at EDR: 11/01/2022
Date Made Active in Reports: 11/15/2022
Number of Days to Update: 14

Source: EPA
Telephone: N/A
Last EDR Contact: 02/02/2023
Next Scheduled EDR Contact: 04/10/2023
Data Release Frequency: Quarterly

Lists of Federal sites subject to CERCLA removals and CERCLA orders

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 08/25/2022
Date Data Arrived at EDR: 09/06/2022
Date Made Active in Reports: 12/05/2022
Number of Days to Update: 90

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 12/21/2022
Next Scheduled EDR Contact: 04/10/2023
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 10/27/2022
Date Data Arrived at EDR: 11/01/2022
Date Made Active in Reports: 11/15/2022
Number of Days to Update: 14

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 02/02/2023
Next Scheduled EDR Contact: 04/24/2023
Data Release Frequency: Quarterly

Lists of Federal CERCLA sites with NFRAP

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 10/27/2022
Date Data Arrived at EDR: 11/01/2022
Date Made Active in Reports: 11/15/2022
Number of Days to Update: 14

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 02/02/2023
Next Scheduled EDR Contact: 04/24/2023
Data Release Frequency: Quarterly

Lists of Federal RCRA facilities undergoing Corrective Action

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 11/21/2022
Date Data Arrived at EDR: 11/21/2022
Date Made Active in Reports: 12/05/2022
Number of Days to Update: 14

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 12/21/2022
Next Scheduled EDR Contact: 04/03/2023
Data Release Frequency: Quarterly

Lists of Federal RCRA TSD facilities

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 11/21/2022
Date Data Arrived at EDR: 11/21/2022
Date Made Active in Reports: 12/05/2022
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: (404) 562-8651
Last EDR Contact: 12/21/2022
Next Scheduled EDR Contact: 04/03/2023
Data Release Frequency: Quarterly

Lists of Federal RCRA generators

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 11/21/2022
Date Data Arrived at EDR: 11/21/2022
Date Made Active in Reports: 12/05/2022
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: (404) 562-8651
Last EDR Contact: 12/21/2022
Next Scheduled EDR Contact: 04/03/2023
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 11/21/2022
Date Data Arrived at EDR: 11/21/2022
Date Made Active in Reports: 12/05/2022
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: (404) 562-8651
Last EDR Contact: 12/21/2022
Next Scheduled EDR Contact: 04/03/2023
Data Release Frequency: Quarterly

RCRA-VSQG: RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Very small quantity generators (VSQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 11/21/2022
Date Data Arrived at EDR: 11/21/2022
Date Made Active in Reports: 12/05/2022
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: (404) 562-8651
Last EDR Contact: 12/21/2022
Next Scheduled EDR Contact: 04/03/2023
Data Release Frequency: Quarterly

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 11/02/2022
Date Data Arrived at EDR: 11/08/2022
Date Made Active in Reports: 01/10/2023
Number of Days to Update: 63

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 02/03/2023
Next Scheduled EDR Contact: 05/22/2023
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 10/27/2022
Date Data Arrived at EDR: 11/16/2022
Date Made Active in Reports: 02/09/2023
Number of Days to Update: 85

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 02/21/2023
Next Scheduled EDR Contact: 06/05/2023
Data Release Frequency: Varies

US INST CONTROLS: Institutional Controls Sites List

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 10/27/2022
Date Data Arrived at EDR: 11/16/2022
Date Made Active in Reports: 02/09/2023
Number of Days to Update: 85

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 02/21/2023
Next Scheduled EDR Contact: 06/05/2023
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/12/2022
Date Data Arrived at EDR: 12/14/2022
Date Made Active in Reports: 12/19/2022
Number of Days to Update: 5

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 12/14/2022
Next Scheduled EDR Contact: 04/03/2023
Data Release Frequency: Quarterly

Lists of state- and tribal hazardous waste facilities

SHWS: State Leads List

State Hazardous Waste Sites. State hazardous waste site records are the states' equivalent to CERCLIS. These sites may or may not already be listed on the federal CERCLIS list. Priority sites planned for cleanup using state funds (state equivalent of Superfund) are identified along with sites where cleanup will be paid for by potentially responsible parties. Available information varies by state.

Date of Government Version: 09/14/2022
Date Data Arrived at EDR: 09/15/2022
Date Made Active in Reports: 12/06/2022
Number of Days to Update: 82

Source: Department of Environmental Protection
Telephone: 502-564-6716
Last EDR Contact: 02/17/2023
Next Scheduled EDR Contact: 06/05/2023
Data Release Frequency: Quarterly

Lists of state and tribal landfills and solid waste disposal facilities

SWF/LF: Solid Waste Facilities List

Solid Waste Facilities/Landfill Sites. SWF/LF type records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. Depending on the state, these may be active or inactive facilities or open dumps that failed to meet RCRA Subtitle D Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 08/25/2022
Date Data Arrived at EDR: 10/24/2022
Date Made Active in Reports: 01/12/2023
Number of Days to Update: 80

Source: Department of Environmental Protection
Telephone: 502-564-6716
Last EDR Contact: 01/24/2023
Next Scheduled EDR Contact: 05/08/2023
Data Release Frequency: Semi-Annually

Lists of state and tribal leaking storage tanks

PSTEAF: Facility Ranking List

The Underground Storage Tank Branch (USTB) has ranked all PSTEAF reimbursable facilities requiring corrective action, in accordance with 401 KAR 42:290. Directive letters will be issued on the basis of facility ranking and available PSTEAF funding in sequential order as ranked. For example, Rank 2 facilities will be issued directives before Rank 3 facilities.

Date of Government Version: 08/01/2022
Date Data Arrived at EDR: 10/03/2022
Date Made Active in Reports: 12/14/2022
Number of Days to Update: 72

Source: Department of Environmental Protection
Telephone: 502-564-5981
Last EDR Contact: 01/04/2023
Next Scheduled EDR Contact: 04/17/2023
Data Release Frequency: Quarterly

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land

Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 04/11/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 01/17/2023
Next Scheduled EDR Contact: 05/01/2023
Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 04/28/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 01/17/2023
Next Scheduled EDR Contact: 05/01/2023
Data Release Frequency: Varies

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 04/20/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 01/17/2023
Next Scheduled EDR Contact: 05/01/2023
Data Release Frequency: Varies

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 04/08/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 01/17/2023
Next Scheduled EDR Contact: 05/01/2023
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 04/20/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 01/17/2023
Next Scheduled EDR Contact: 05/01/2023
Data Release Frequency: Varies

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 04/28/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 01/17/2023
Next Scheduled EDR Contact: 05/01/2023
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 06/02/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/31/2022
Number of Days to Update: 79

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 01/17/2023
Next Scheduled EDR Contact: 05/01/2023
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 04/14/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 01/17/2023
Next Scheduled EDR Contact: 05/01/2023
Data Release Frequency: Varies

SB193: SB193 Branch Site Inventory List

The inventory indicates facilities that have performed permanent closure activities at a regulated underground storage tank facility and have known soil and/or groundwater contamination.

Date of Government Version: 09/05/2006
Date Data Arrived at EDR: 09/13/2006
Date Made Active in Reports: 10/18/2006
Number of Days to Update: 35

Source: Department of Environmental Protection
Telephone: 502-564-5981
Last EDR Contact: 04/08/2016
Next Scheduled EDR Contact: 07/25/2016
Data Release Frequency: No Update Planned

Lists of state and tribal registered storage tanks

FEMA UST: Underground Storage Tank Listing

A listing of all FEMA owned underground storage tanks.

Date of Government Version: 10/14/2021
Date Data Arrived at EDR: 11/05/2021
Date Made Active in Reports: 02/01/2022
Number of Days to Update: 88

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 12/28/2022
Next Scheduled EDR Contact: 04/17/2023
Data Release Frequency: Varies

UST: Underground Storage Tank Database

Registered Underground Storage Tanks. UST's are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA) and must be registered with the state department responsible for administering the UST program. Available information varies by state program.

Date of Government Version: 11/08/2022
Date Data Arrived at EDR: 11/16/2022
Date Made Active in Reports: 02/09/2023
Number of Days to Update: 85

Source: Department of Environmental Protection
Telephone: 502-564-5981
Last EDR Contact: 02/22/2023
Next Scheduled EDR Contact: 06/05/2023
Data Release Frequency: Quarterly

AST: Above Ground Storage Tanks

A listing of aboveground storage tank site locations.

Date of Government Version: 06/01/2021
Date Data Arrived at EDR: 06/02/2021
Date Made Active in Reports: 08/23/2021
Number of Days to Update: 82

Source: Office of State Fire Marshal
Telephone: 502-564-4010
Last EDR Contact: 02/02/2023
Next Scheduled EDR Contact: 06/05/2023
Data Release Frequency: Varies

INDIAN UST R9: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 04/08/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 01/17/2023
Next Scheduled EDR Contact: 05/01/2023
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 04/20/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 01/17/2023
Next Scheduled EDR Contact: 05/01/2023
Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 04/14/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 01/17/2023
Next Scheduled EDR Contact: 05/01/2023
Data Release Frequency: Varies

INDIAN UST R10: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 04/20/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 01/17/2023
Next Scheduled EDR Contact: 05/01/2023
Data Release Frequency: Varies

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 04/07/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 01/17/2023
Next Scheduled EDR Contact: 05/01/2023
Data Release Frequency: Varies

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 04/11/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 01/17/2023
Next Scheduled EDR Contact: 05/01/2023
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 04/28/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 01/17/2023
Next Scheduled EDR Contact: 05/01/2023
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 06/02/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/31/2022
Number of Days to Update: 79

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 01/17/2023
Next Scheduled EDR Contact: 05/01/2023
Data Release Frequency: Varies

State and tribal institutional control / engineering control registries

ENG CONTROLS: Engineering Controls Site Listing
A listing of sites that use engineering controls.

Date of Government Version: 09/14/2022
Date Data Arrived at EDR: 09/15/2022
Date Made Active in Reports: 12/06/2022
Number of Days to Update: 82

Source: Department of Environmental Protection
Telephone: 502-564-6716
Last EDR Contact: 02/17/2023
Next Scheduled EDR Contact: 06/05/2023
Data Release Frequency: Varies

INST CONTROL: State Superfund Database
A list of closed sites in the State Superfund Database. Institutional controls would be in place at any site that uses Contained or Managed as a Closure Option.

Date of Government Version: 09/14/2022
Date Data Arrived at EDR: 09/15/2022
Date Made Active in Reports: 12/06/2022
Number of Days to Update: 82

Source: Department of Environmental Protection
Telephone: 502-564-6716
Last EDR Contact: 02/17/2023
Next Scheduled EDR Contact: 06/05/2023
Data Release Frequency: Varies

Lists of state and tribal voluntary cleanup sites

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng
A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 07/08/2021
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 12/13/2022
Next Scheduled EDR Contact: 04/03/2023
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Sites
Sites that have been accepted into the Voluntary Cleanup Program or have submitted an application.

Date of Government Version: 10/11/2022
Date Data Arrived at EDR: 10/12/2022
Date Made Active in Reports: 12/23/2022
Number of Days to Update: 72

Source: Department of Environmental Protection
Telephone: 502-564-6716
Last EDR Contact: 12/20/2022
Next Scheduled EDR Contact: 04/10/2023
Data Release Frequency: Varies

Lists of state and tribal brownfield sites

BROWNFIELDS: Kentucky Brownfield Inventory
The Kentucky Brownfield Program has created an inventory of brownfield sites in order to market the properties to those interested in brownfield redevelopment. The Kentucky Brownfield Program is working to promote the redevelopment of these sites by helping to remove barriers that prevent reuse, providing useful information to communities, developers and the public and encouraging a climate that fosters redevelopment of contaminated sites.

Date of Government Version: 10/27/2022
Date Data Arrived at EDR: 10/27/2022
Date Made Active in Reports: 01/12/2023
Number of Days to Update: 77

Source: Division of Compliance Assistance
Telephone: 502-564-0323
Last EDR Contact: 01/09/2023
Next Scheduled EDR Contact: 04/24/2023
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 02/23/2022
Date Data Arrived at EDR: 03/10/2022
Date Made Active in Reports: 03/10/2022
Number of Days to Update: 0

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 12/07/2022
Next Scheduled EDR Contact: 03/27/2023
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

SWRCY: Recycling Facilities

A listing of recycling facilities located in the state of Kentucky.

Date of Government Version: 09/04/2020
Date Data Arrived at EDR: 10/14/2020
Date Made Active in Reports: 01/04/2021
Number of Days to Update: 82

Source: Department of Environmental Protection
Telephone: 502-564-6716
Last EDR Contact: 01/13/2023
Next Scheduled EDR Contact: 04/24/2023
Data Release Frequency: Varies

HIST LF: Historical Landfills

This solid waste facility listing contains detail information that is not included in the landfill listing. A listing with detail information is no longer available by the Department of Environmental Protection.

Date of Government Version: 05/01/2003
Date Data Arrived at EDR: 03/30/2006
Date Made Active in Reports: 05/01/2006
Number of Days to Update: 32

Source: Department of Environmental Protection
Telephone: 502-564-6716
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands

Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 01/20/2023
Next Scheduled EDR Contact: 05/08/2023
Data Release Frequency: Varies

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations

A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 01/13/2023
Next Scheduled EDR Contact: 05/01/2023
Data Release Frequency: No Update Planned

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land
A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176

Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 01/27/2023
Next Scheduled EDR Contact: 05/08/2023
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register
A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 01/06/2023
Date Data Arrived at EDR: 02/02/2023
Date Made Active in Reports: 02/10/2023
Number of Days to Update: 8

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 02/02/2023
Next Scheduled EDR Contact: 06/05/2023
Data Release Frequency: No Update Planned

CDL: Clandestine Drub Lab Location Listing
Clandestine drug lab site locations.

Date of Government Version: 09/14/2022
Date Data Arrived at EDR: 09/15/2022
Date Made Active in Reports: 12/06/2022
Number of Days to Update: 82

Source: Department of Environmental Protection
Telephone: 502-564-6716
Last EDR Contact: 02/17/2023
Next Scheduled EDR Contact: 06/05/2023
Data Release Frequency: Varies

US CDL: Clandestine Drug Labs
A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 01/06/2023
Date Data Arrived at EDR: 02/02/2023
Date Made Active in Reports: 02/10/2023
Number of Days to Update: 8

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 02/02/2023
Next Scheduled EDR Contact: 06/05/2023
Data Release Frequency: Quarterly

Local Land Records

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 10/27/2022
Date Data Arrived at EDR: 11/01/2022
Date Made Active in Reports: 11/15/2022
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 02/02/2023
Next Scheduled EDR Contact: 04/10/2023
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 09/19/2022
Date Data Arrived at EDR: 09/19/2022
Date Made Active in Reports: 09/30/2022
Number of Days to Update: 11

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 12/14/2022
Next Scheduled EDR Contact: 04/03/2023
Data Release Frequency: Quarterly

SPILLS: State spills

A listing of spill and/or release related incidents.

Date of Government Version: 10/31/2022
Date Data Arrived at EDR: 11/02/2022
Date Made Active in Reports: 01/24/2023
Number of Days to Update: 83

Source: DEP, Emergency Response
Telephone: 502-564-2380
Last EDR Contact: 01/09/2023
Next Scheduled EDR Contact: 04/24/2023
Data Release Frequency: Varies

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 11/21/2022
Date Data Arrived at EDR: 11/21/2022
Date Made Active in Reports: 12/05/2022
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: (404) 562-8651
Last EDR Contact: 12/21/2022
Next Scheduled EDR Contact: 04/03/2023
Data Release Frequency: Quarterly

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 11/01/2022
Date Data Arrived at EDR: 11/10/2022
Date Made Active in Reports: 02/09/2023
Number of Days to Update: 91

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 02/14/2023
Next Scheduled EDR Contact: 05/29/2023
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 06/07/2021
Date Data Arrived at EDR: 07/13/2021
Date Made Active in Reports: 03/09/2022
Number of Days to Update: 239

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 01/13/2023
Next Scheduled EDR Contact: 04/24/2023
Data Release Frequency: Varies

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/11/2018
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 574

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 01/03/2023
Next Scheduled EDR Contact: 04/17/2023
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 07/30/2021
Date Data Arrived at EDR: 02/03/2023
Date Made Active in Reports: 02/10/2023
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 02/02/2023
Next Scheduled EDR Contact: 05/22/2023
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 09/19/2022
Date Data Arrived at EDR: 09/20/2022
Date Made Active in Reports: 12/22/2022
Number of Days to Update: 93

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 12/14/2022
Next Scheduled EDR Contact: 04/03/2023
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 01/30/2023
Next Scheduled EDR Contact: 05/15/2023
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 09/30/2017
Date Data Arrived at EDR: 05/08/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 73

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 02/03/2023
Next Scheduled EDR Contact: 05/15/2023
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 06/17/2020
Date Made Active in Reports: 09/10/2020
Number of Days to Update: 85

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 12/12/2022
Next Scheduled EDR Contact: 03/27/2023
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2021
Date Data Arrived at EDR: 11/01/2022
Date Made Active in Reports: 02/09/2023
Number of Days to Update: 100

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 02/16/2023
Next Scheduled EDR Contact: 05/29/2023
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 10/17/2022
Date Data Arrived at EDR: 10/18/2022
Date Made Active in Reports: 01/10/2023
Number of Days to Update: 84

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 01/18/2023
Next Scheduled EDR Contact: 05/01/2023
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 10/27/2022
Date Data Arrived at EDR: 11/01/2022
Date Made Active in Reports: 11/15/2022
Number of Days to Update: 14

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 02/02/2023
Next Scheduled EDR Contact: 03/13/2023
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 04/27/2022
Date Data Arrived at EDR: 05/04/2022
Date Made Active in Reports: 05/10/2022
Number of Days to Update: 6

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 01/17/2023
Next Scheduled EDR Contact: 05/01/2023
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties

A listing of verified Potentially Responsible Parties

Date of Government Version: 10/27/2022
Date Data Arrived at EDR: 11/01/2022
Date Made Active in Reports: 11/15/2022
Number of Days to Update: 14

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 02/02/2023
Next Scheduled EDR Contact: 05/15/2023
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 01/20/2022
Date Data Arrived at EDR: 01/20/2022
Date Made Active in Reports: 03/25/2022
Number of Days to Update: 64

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 01/04/2023
Next Scheduled EDR Contact: 04/17/2023
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/28/2022
Next Scheduled EDR Contact: 04/17/2023
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

MLTS: Material Licensing Tracking System
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 10/26/2022
Date Data Arrived at EDR: 11/22/2022
Date Made Active in Reports: 12/05/2022
Number of Days to Update: 13
Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 01/17/2023
Next Scheduled EDR Contact: 05/01/2023
Data Release Frequency: Quarterly

COAL ASH DOE: Steam-Electric Plant Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2020
Date Data Arrived at EDR: 11/30/2021
Date Made Active in Reports: 02/22/2022
Number of Days to Update: 84
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 11/29/2022
Next Scheduled EDR Contact: 03/13/2023
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 01/12/2017
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 251
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 02/27/2023
Next Scheduled EDR Contact: 06/12/2023
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 09/13/2019
Date Data Arrived at EDR: 11/06/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 96
Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 02/03/2023
Next Scheduled EDR Contact: 05/15/2023
Data Release Frequency: Varies

RADINFO: Radiation Information Database
The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 07/01/2019
Date Data Arrived at EDR: 07/01/2019
Date Made Active in Reports: 09/23/2019
Number of Days to Update: 84

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 12/20/2022
Next Scheduled EDR Contact: 04/10/2023
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing

A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing

A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 01/02/2020
Date Data Arrived at EDR: 01/28/2020
Date Made Active in Reports: 04/17/2020
Number of Days to Update: 80

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 01/24/2023
Next Scheduled EDR Contact: 05/08/2023
Data Release Frequency: Quarterly

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 09/30/2022
Date Data Arrived at EDR: 10/21/2022
Date Made Active in Reports: 01/10/2023
Number of Days to Update: 81

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 01/03/2023
Next Scheduled EDR Contact: 04/17/2023
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2019
Date Data Arrived at EDR: 03/02/2022
Date Made Active in Reports: 03/25/2022
Number of Days to Update: 23

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 12/21/2022
Next Scheduled EDR Contact: 04/03/2023
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 01/06/2023
Next Scheduled EDR Contact: 04/17/2023
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program

DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 07/26/2021
Date Data Arrived at EDR: 07/27/2021
Date Made Active in Reports: 10/22/2021
Number of Days to Update: 87

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 01/30/2023
Next Scheduled EDR Contact: 05/15/2023
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 08/30/2019
Date Data Arrived at EDR: 11/15/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 74

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 02/13/2023
Next Scheduled EDR Contact: 05/29/2023
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 10/27/2022
Date Data Arrived at EDR: 11/01/2022
Date Made Active in Reports: 11/15/2022
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 02/02/2023
Next Scheduled EDR Contact: 04/10/2023
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites

A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)

The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data

A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 11/07/2022
Date Data Arrived at EDR: 11/17/2022
Date Made Active in Reports: 02/10/2023
Number of Days to Update: 85

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 02/22/2023
Next Scheduled EDR Contact: 06/05/2023
Data Release Frequency: Semi-Annually

MINES VIOLATIONS: MSHA Violation Assessment Data

Mines violation and assessment information. Department of Labor, Mine Safety & Health Administration.

Date of Government Version: 11/29/2022
Date Data Arrived at EDR: 11/30/2022
Date Made Active in Reports: 12/22/2022
Number of Days to Update: 22

Source: DOL, Mine Safety & Health Admi
Telephone: 202-693-9424
Last EDR Contact: 02/23/2023
Next Scheduled EDR Contact: 06/12/2023
Data Release Frequency: Quarterly

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing

This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 05/06/2020
Date Data Arrived at EDR: 05/27/2020
Date Made Active in Reports: 08/13/2020
Number of Days to Update: 78

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 02/24/2023
Next Scheduled EDR Contact: 06/05/2023
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 02/24/2023
Next Scheduled EDR Contact: 06/05/2023
Data Release Frequency: Varies

ABANDONED MINES: Abandoned Mines

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 09/13/2022
Date Data Arrived at EDR: 09/14/2022
Date Made Active in Reports: 12/05/2022
Number of Days to Update: 82

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 12/13/2022
Next Scheduled EDR Contact: 03/20/2023
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 08/03/2022
Date Data Arrived at EDR: 08/25/2022
Date Made Active in Reports: 10/24/2022
Number of Days to Update: 60

Source: EPA
Telephone: (404) 562-9900
Last EDR Contact: 11/29/2022
Next Scheduled EDR Contact: 03/13/2023
Data Release Frequency: Quarterly

UXO: Unexploded Ordnance Sites

A listing of unexploded ordnance site locations

Date of Government Version: 11/09/2021
Date Data Arrived at EDR: 10/20/2022
Date Made Active in Reports: 01/10/2023
Number of Days to Update: 82

Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 01/09/2023
Next Scheduled EDR Contact: 04/24/2023
Data Release Frequency: Varies

ECHO: Enforcement & Compliance History Information

ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 09/25/2022
Date Data Arrived at EDR: 09/30/2022
Date Made Active in Reports: 12/22/2022
Number of Days to Update: 83

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 01/04/2023
Next Scheduled EDR Contact: 04/17/2023
Data Release Frequency: Quarterly

DOCKET HWC: Hazardous Waste Compliance Docket Listing

A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 05/06/2021
Date Data Arrived at EDR: 05/21/2021
Date Made Active in Reports: 08/11/2021
Number of Days to Update: 82

Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 02/24/2023
Next Scheduled EDR Contact: 06/05/2023
Data Release Frequency: Varies

FUELS PROGRAM: EPA Fuels Program Registered Listing

This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 11/10/2022
Date Data Arrived at EDR: 11/10/2022
Date Made Active in Reports: 02/09/2023
Number of Days to Update: 91

Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 02/14/2023
Next Scheduled EDR Contact: 05/29/2023
Data Release Frequency: Quarterly

PFAS NPL: Superfund Sites with PFAS Detections Information

EPA's Office of Land and Emergency Management and EPA Regional Offices maintain data describing what is known about site investigations, contamination, and remedial actions under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) where PFAS is present in the environment.

Date of Government Version: 02/23/2022
Date Data Arrived at EDR: 07/08/2022
Date Made Active in Reports: 11/08/2022
Number of Days to Update: 123

Source: Environmental Protection Agency
Telephone: 703-603-8895
Last EDR Contact: 01/10/2023
Next Scheduled EDR Contact: 04/17/2023
Data Release Frequency: Varies

PFAS FEDERAL SITES: Federal Sites PFAS Information

Several federal entities, such as the federal Superfund program, Department of Defense, National Aeronautics and Space Administration, Department of Transportation, and Department of Energy provided information for sites with known or suspected detections at federal facilities.

Date of Government Version: 02/23/2022
Date Data Arrived at EDR: 03/31/2022
Date Made Active in Reports: 11/08/2022
Number of Days to Update: 222

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 01/05/2023
Next Scheduled EDR Contact: 04/17/2023
Data Release Frequency: Varies

PFAS TSCA: PFAS Manufacture and Imports Information

EPA issued the Chemical Data Reporting (CDR) Rule under the Toxic Substances Control Act (TSCA) and requires chemical manufacturers and facilities that manufacture or import chemical substances to report data to EPA. EPA publishes non-confidential business information (non-CBI) and includes descriptive information about each site, corporate parent, production volume, other manufacturing information, and processing and use information.

Date of Government Version: 01/03/2022
Date Data Arrived at EDR: 03/31/2022
Date Made Active in Reports: 11/08/2022
Number of Days to Update: 222

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 01/05/2023
Next Scheduled EDR Contact: 04/17/2023
Data Release Frequency: Varies

PFAS RCRA MANIFEST: PFAS Transfers Identified In the RCRA Database Listing

To work around the lack of PFAS waste codes in the RCRA database, EPA developed the PFAS Transfers dataset by mining e-Manifest records containing at least one of these common PFAS keywords: PFAS, PFOA, PFOS, PERFL, AFFF, GENX, GEN-X (plus the VT waste codes). These keywords were searched for in the following text fields: Manifest handling instructions (MANIFEST_HANDLING_INSTR), Non-hazardous waste description (NON_HAZ_WASTE_DESCRIPTION), DOT printed information (DOT_PRINTED_INFORMATION), Waste line handling instructions (WASTE_LINE_HANDLING_INSTR), Waste residue comments (WASTE_RESIDUE_COMMENTS).

Date of Government Version: 01/03/2022
Date Data Arrived at EDR: 03/31/2022
Date Made Active in Reports: 11/08/2022
Number of Days to Update: 222

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 01/05/2023
Next Scheduled EDR Contact: 04/17/2023
Data Release Frequency: Varies

PFAS ATSDR: PFAS Contamination Site Location Listing

PFAS contamination site locations from the Department of Health & Human Services, Center for Disease Control & Prevention. ATSDR is involved at a number of PFAS-related sites, either directly or through assisting state and federal partners. As of now, most sites are related to drinking water contamination connected with PFAS production facilities or fire training areas where aqueous film-forming firefighting foam (AFFF) was regularly used.

Date of Government Version: 06/24/2020
Date Data Arrived at EDR: 03/17/2021
Date Made Active in Reports: 11/08/2022
Number of Days to Update: 601

Source: Department of Health & Human Services
Telephone: 202-741-5770
Last EDR Contact: 01/23/2023
Next Scheduled EDR Contact: 05/08/2023
Data Release Frequency: Varies

PFAS WQP: Ambient Environmental Sampling for PFAS

The Water Quality Portal (WQP) is a part of a modernized repository storing ambient sampling data for all environmental media and tissue samples. A wide range of federal, state, tribal and local governments, academic and non-governmental organizations and individuals submit project details and sampling results to this public repository. The information is commonly used for research and assessments of environmental quality.

Date of Government Version: 01/03/2022
Date Data Arrived at EDR: 03/31/2022
Date Made Active in Reports: 11/08/2022
Number of Days to Update: 222

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 01/05/2023
Next Scheduled EDR Contact: 04/17/2023
Data Release Frequency: Varies

PFAS NPDES: Clean Water Act Discharge Monitoring Information

Any discharger of pollutants to waters of the United States from a point source must have a National Pollutant Discharge Elimination System (NPDES) permit. The process for obtaining limits involves the regulated entity (permittee) disclosing releases in a NPDES permit application and the permitting authority (typically the state but sometimes EPA) deciding whether to require monitoring or monitoring with limits.

Date of Government Version: 01/03/2022
Date Data Arrived at EDR: 03/31/2022
Date Made Active in Reports: 11/08/2022
Number of Days to Update: 222

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 01/05/2023
Next Scheduled EDR Contact: 04/17/2023
Data Release Frequency: Varies

PFAS ECHO: Facilities in Industries that May Be Handling PFAS Listing

Regulators and the public have expressed interest in knowing which regulated entities may be using PFAS. EPA has developed a dataset from various sources that show which industries may be handling PFAS. Approximately 120,000 facilities subject to federal environmental programs have operated or currently operate in industry sectors with processes that may involve handling and/or release of PFAS.

Date of Government Version: 01/03/2022
Date Data Arrived at EDR: 03/31/2022
Date Made Active in Reports: 11/08/2022
Number of Days to Update: 222

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 01/05/2023
Next Scheduled EDR Contact: 04/17/2023
Data Release Frequency: Varies

PFAS ECHO FIRE TRAINING: Facilities in Industries that May Be Handling PFAS Listing

A list of fire training sites was added to the Industry Sectors dataset using a keyword search on the permitted facilitys name to identify sites where fire-fighting foam may have been used in training exercises. Additionally, you may view an example spreadsheet of the subset of fire training facility data, as well as the keywords used in selecting or deselecting a facility for the subset. as well as the keywords used in selecting or deselecting a facility for the subset. These keywords were tested to maximize accuracy in selecting facilities that may use fire-fighting foam in training exercises, however, due to the lack of a required reporting field in the data systems for designating fire training sites, this methodology may not identify all fire training sites or may potentially misidentify them.

Date of Government Version: 08/22/2018
Date Data Arrived at EDR: 03/31/2022
Date Made Active in Reports: 11/08/2022
Number of Days to Update: 222

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 01/05/2023
Next Scheduled EDR Contact: 04/17/2023
Data Release Frequency: Varies

PFAS PART 139 AIRPORT: All Certified Part 139 Airports PFAS Information Listing

Since July 1, 2006, all certified part 139 airports are required to have fire-fighting foam onsite that meet military specifications (MIL-F-24385) (14 CFR 139.317). To date, these military specification fire-fighting foams are fluorinated and have been historically used for training and extinguishing. The 2018 FAA Reauthorization Act has a provision stating that no later than October 2021, FAA shall not require the use of fluorinated AFFF. This provision does not prohibit the use of fluorinated AFFF at Part 139 civilian airports; it only prohibits FAA from mandating its use. The Federal Aviation Administration?s document AC 150/5210-6D - Aircraft Fire Extinguishing Agents provides guidance on Aircraft Fire Extinguishing Agents, which includes Aqueous Film Forming Foam (AFFF).

Date of Government Version: 08/22/2018
Date Data Arrived at EDR: 10/26/2022
Date Made Active in Reports: 11/08/2022
Number of Days to Update: 13

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 01/05/2023
Next Scheduled EDR Contact: 04/17/2023
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

AQUEOUS FOAM NRC: Aqueous Foam Related Incidents Listing

The National Response Center (NRC) serves as an emergency call center that fields initial reports for pollution and railroad incidents and forwards that information to appropriate federal/state agencies for response. The spreadsheets posted to the NRC website contain initial incident data that has not been validated or investigated by a federal/state response agency. Response center calls from 1990 to the most recent complete calendar year where there was indication of Aqueous Film Forming Foam (AFFF) usage are included in this dataset. NRC calls may reference AFFF usage in the ?Material Involved? or ?Incident Description? fields.

Date of Government Version: 02/23/2022
Date Data Arrived at EDR: 03/31/2022
Date Made Active in Reports: 11/08/2022
Number of Days to Update: 222

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 01/05/2023
Next Scheduled EDR Contact: 04/17/2023
Data Release Frequency: Varies

PFAS: PFAS Detections Site Listing

The presence of PFAS contamination at locations, including water treatment plants.

Date of Government Version: 12/01/2022
Date Data Arrived at EDR: 12/01/2022
Date Made Active in Reports: 02/22/2023
Number of Days to Update: 83

Source: Department of Environmental Protection
Telephone: 502-564-3410
Last EDR Contact: 11/30/2022
Next Scheduled EDR Contact: 03/20/2023
Data Release Frequency: Varies

AIRS: Permitted Airs Facility Listing

A listing of permitted Airs facilities.

Date of Government Version: 08/08/2022
Date Data Arrived at EDR: 08/09/2022
Date Made Active in Reports: 10/27/2022
Number of Days to Update: 79

Source: Department of Environmental Protection
Telephone: 502-573-3382
Last EDR Contact: 01/23/2023
Next Scheduled EDR Contact: 05/08/2023
Data Release Frequency: Semi-Annually

ASBESTOS: Asbestos Notification Listing

Asbestos sites

Date of Government Version: 09/14/2022
Date Data Arrived at EDR: 09/14/2022
Date Made Active in Reports: 12/06/2022
Number of Days to Update: 83

Source: Department of Environmental Protection
Telephone: 502-782-6780
Last EDR Contact: 02/23/2023
Next Scheduled EDR Contact: 06/12/2023
Data Release Frequency: Varies

COAL ASH: Coal Ash Disposal Sites

A listing of coal ash pond site locations.

Date of Government Version: 08/25/2022
Date Data Arrived at EDR: 10/24/2022
Date Made Active in Reports: 01/12/2023
Number of Days to Update: 80

Source: Department of Environmental Protection
Telephone: 502-564-6716
Last EDR Contact: 01/24/2023
Next Scheduled EDR Contact: 05/08/2023
Data Release Frequency: No Update Planned

DRYCLEANERS: Drycleaner Listing

A listing of drycleaner facility locations.

Date of Government Version: 02/16/2023
Date Data Arrived at EDR: 02/16/2023
Date Made Active in Reports: 02/27/2023
Number of Days to Update: 11

Source: Department of Environmental Protection
Telephone: 502-573-3382
Last EDR Contact: 01/23/2023
Next Scheduled EDR Contact: 05/08/2023
Data Release Frequency: Semi-Annually

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Financial Assurance 1: Financial Assurance Information Listing
A listing of financial assurance information.

Date of Government Version: 11/14/2022
Date Data Arrived at EDR: 11/16/2022
Date Made Active in Reports: 02/03/2023
Number of Days to Update: 79

Source: Department of Environmental Protection
Telephone: 502-564-6716
Last EDR Contact: 01/23/2023
Next Scheduled EDR Contact: 05/08/2023
Data Release Frequency: Varies

Financial Assurance 2: Financial Assurance Information Listing
Financial Assurance information for underground storage tank facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 05/14/2014
Date Data Arrived at EDR: 06/06/2014
Date Made Active in Reports: 06/24/2014
Number of Days to Update: 18

Source: Department of Environmental Protection
Telephone: 502-564-5981
Last EDR Contact: 01/20/2023
Next Scheduled EDR Contact: 05/08/2023
Data Release Frequency: Varies

Financial Assurance 3: Financial Assurance Information Listing
A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 11/14/2022
Date Data Arrived at EDR: 11/16/2022
Date Made Active in Reports: 02/03/2023
Number of Days to Update: 79

Source: Department of Environmental Protection
Telephone: 502-564-6716
Last EDR Contact: 01/23/2023
Next Scheduled EDR Contact: 05/08/2023
Data Release Frequency: Varies

LEAD: Environmental Lead Program Report Tracking Database
Lead Report Tracking Database

Date of Government Version: 01/27/2017
Date Data Arrived at EDR: 02/02/2017
Date Made Active in Reports: 08/21/2017
Number of Days to Update: 200

Source: Department of Public Health
Telephone: 502-564-4537
Last EDR Contact: 01/30/2023
Next Scheduled EDR Contact: 05/15/2023
Data Release Frequency: Varies

NPDES: Permitted Facility Listing
A listing of permitted wastewater facilities.

Date of Government Version: 02/21/2023
Date Data Arrived at EDR: 02/23/2023
Date Made Active in Reports: 02/27/2023
Number of Days to Update: 4

Source: Department of Environmental Protection
Telephone: 502-564-3410
Last EDR Contact: 01/30/2023
Next Scheduled EDR Contact: 05/15/2023
Data Release Frequency: Semi-Annually

UIC: UIC Information
A listing of wells identified as underground injection wells, in the Kentucky Oil & Gas Wells data base.

Date of Government Version: 07/28/2022
Date Data Arrived at EDR: 10/07/2022
Date Made Active in Reports: 12/23/2022
Number of Days to Update: 77

Source: Kentucky Geological Survey
Telephone: 859-323-0544
Last EDR Contact: 01/10/2023
Next Scheduled EDR Contact: 04/24/2023
Data Release Frequency: Quarterly

PCS ENF: Enforcement data
No description is available for this data

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 02/05/2015
Date Made Active in Reports: 03/06/2015
Number of Days to Update: 29

Source: EPA
Telephone: 202-564-2497
Last EDR Contact: 12/28/2022
Next Scheduled EDR Contact: 04/17/2023
Data Release Frequency: Varies

MINES MRDS: Mineral Resources Data System
Mineral Resources Data System

Date of Government Version: 04/06/2018
Date Data Arrived at EDR: 10/21/2019
Date Made Active in Reports: 10/24/2019
Number of Days to Update: 3

Source: USGS
Telephone: 703-648-6533
Last EDR Contact: 02/24/2023
Next Scheduled EDR Contact: 06/05/2023
Data Release Frequency: Varies

PCS INACTIVE: Listing of Inactive PCS Permits
An inactive permit is a facility that has shut down or is no longer discharging.

Date of Government Version: 11/05/2014
Date Data Arrived at EDR: 01/06/2015
Date Made Active in Reports: 05/06/2015
Number of Days to Update: 120

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 12/28/2022
Next Scheduled EDR Contact: 04/17/2023
Data Release Frequency: Semi-Annually

PCS: Permit Compliance System
PCS is a computerized management information system that contains data on National Pollutant Discharge Elimination System (NPDES) permit holding facilities. PCS tracks the permit, compliance, and enforcement status of NPDES facilities.

Date of Government Version: 07/14/2011
Date Data Arrived at EDR: 08/05/2011
Date Made Active in Reports: 09/29/2011
Number of Days to Update: 55

Source: EPA, Office of Water
Telephone: 202-564-2496
Last EDR Contact: 12/28/2022
Next Scheduled EDR Contact: 04/17/2023
Data Release Frequency: Semi-Annually

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants
The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historical Auto Stations
EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historical Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA HWS: Recovered Government Archive State Hazardous Waste Facilities List

The EDR Recovered Government Archive State Hazardous Waste database provides a list of SHWS incidents derived from historical databases and includes many records that no longer appear in current government lists.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/03/2014
Number of Days to Update: 186

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/15/2014
Number of Days to Update: 198

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data

Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 11/16/2022
Date Data Arrived at EDR: 11/16/2022
Date Made Active in Reports: 02/06/2023
Number of Days to Update: 82

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 02/10/2023
Next Scheduled EDR Contact: 05/22/2023
Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 04/10/2019
Date Made Active in Reports: 05/16/2019
Number of Days to Update: 36

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 12/28/2022
Next Scheduled EDR Contact: 04/17/2023
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 01/01/2019
Date Data Arrived at EDR: 10/29/2021
Date Made Active in Reports: 01/19/2022
Number of Days to Update: 82

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 01/27/2023
Next Scheduled EDR Contact: 05/08/2023
Data Release Frequency: Quarterly

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 06/30/2018
Date Data Arrived at EDR: 07/19/2019
Date Made Active in Reports: 09/10/2019
Number of Days to Update: 53

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 01/06/2023
Next Scheduled EDR Contact: 04/24/2023
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2020
Date Data Arrived at EDR: 11/30/2021
Date Made Active in Reports: 02/18/2022
Number of Days to Update: 80

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 02/13/2022
Next Scheduled EDR Contact: 05/29/2023
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 06/19/2019
Date Made Active in Reports: 09/03/2019
Number of Days to Update: 76

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 12/01/2022
Next Scheduled EDR Contact: 03/20/2023
Data Release Frequency: Annually

Oil/Gas Pipelines
Source: Endeavor Business Media
Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by Endeavor Business Media. This information is provided on a best effort basis and Endeavor Business Media does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of Endeavor Business Media.

Electric Power Transmission Line Data
Source: Endeavor Business Media
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Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Certified Child Care Homes
Source: Cabinet for Families & Children
Telephone: 502-564-7130

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005, 2010 and 2015 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Environmental & Public Protection Cabinet
Telephone: 502-564-6736

STREET AND ADDRESS INFORMATION

APPENDIX D
Subject Property Photographs

Photo 1: Typical agricultural land located in northern portion of subject property

Photo 2: Typical transmission line pole located within the subject property

Photo 3: Empty pavilion located off of Rowletts Cave Road

Photo 4: Interior of agricultural structure located off of Rowletts Cave Road

Photo 5: Exterior storage of agricultural structure located off of Rowletts Cave Road

Photo 6: Dump pile located south of structures off of Rowletts Cave Road

Photo 7: Groundwater monitoring well

Photo 8: Cemetery located in northern parcel off of Rowletts Cave Road

Photo 9: Dump pile loated north of structures off of Rowletts Cave Road

Photo 10: Fallen deer stand within the northern portion of the subject property

Photo 11: Various outbuildings near structures off of Rowletts Cave Road

Photo 12: Dump pile near abandoned vehicles

Photo 13: Abandoned vehicles within agricultural fields in the southern portion of the subject property

Photo 14: Typical dump piles within sinkholes in the subject property

Photo 15: Agricultural land in southern portion of subject property

Photo 16: Large delineated sinkhole within the subject property

Photo 17: Typical ditches within throughout the subject property

Photo 18: Overgrown field within the southern portion of the subject property

Photo 19: Typical stone dump pile within the subject property

Photo 20: Large stone pile near forested area in southern portion of the subject propety

Photo 21: Typical trash found throughout the forested area in the southern portion of the subject property

Photo 22: Overgrown field within the northern portion of the subject property

APPENDIX E
User Questionnaires

ENVIRONMENTAL SITE ASSESSMENT OWNER/OCCUPANT INQUIRY

Disclosure: You are not bound by any laws or regulations to answer the questions associated herein. This questionnaire is intended to assist us in gathering reasonably ascertainable information that relates to the performance of this Environmental Site Assessment – under the ASTM E1527-13, and does not constitute and admission of liability to, or for, any recognized environmental conditions or impairments in connection with the subject property.

SITE NAME: Thoroughbred Solar

CURRENT OWNER: Gardner, David and Traci

DESCRIPTION: Farmland

LOCATION: Horse Cave, Kentucky

AUTHORIZED BY: _____

SUBJECT & SURROUNDING PROPERTY (applicable to all sites)

Question	Owner/Occupant		
1 Is the property or any adjoining property used for an industrial use?	Yes	(No)	Unknown
2. To the best of your knowledge, has the property or any adjoining property been used for an industrial use in the past?	Yes	(No)	Unknown
3. Is the property or any adjoining property used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage, disposal, processing, or recycling facility?	Yes	(No)	Unknown
4. To the best of your knowledge has the property or any adjoining property ever been used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage, disposal, processing, or recycling facility in the past?	Yes	(No)	Unknown

LAND USE (applicable to all sites)

Question	Owner/Occupant		
5 Are there currently, or to the best of your knowledge have there been previously, any damaged or discarded automotive or industrial batteries or pesticides, paints, or other chemicals in individual containers of greater than 5 gal (19 L) in volume or 50 gal (190 L) in the aggregate, stored on or used at the property or at the facility?	Yes	(No)	Unknown
6. Are there currently, or to the best of your knowledge have	Yes	(No)	Unknown

ENVIRONMENTAL SITE ASSESSMENT OWNER/ OCCUPANT INQUIRY

	Question	Owner/Occupant
	there been previously, any industrial drums (typically 55 gal (208 L)) or sacks of chemicals located on the property or at the facility?	
7	Has fill dirt been brought onto the property that originated from a contaminated site or that is of an unknown origin?	Yes (No) Unknown
8	Are there currently, or to the best of your knowledge have there been previously, any pits ponds lagoons, oil water separators or other equipment located on the property in connection with waste treatment or waste disposal?	Yes (No) Unknown
9	Is there currently, or to the best of your knowledge has there been previously, any stained soil or stressed vegetation on the property?	No
10.	Are there currently, or to the best of your knowledge have there been previously, any registered or unregistered storage tanks (above or underground) located on the property? Has there ever been any vent pipes, fill pipes, or access ways indicting a fill pipe protruding from the ground on the property or adjacent to any structure located on the property?	No
11.	Are there currently, or to the best of your knowledge have there been issues identified relative to wetland (jurisdictional waters of the U.S.) or ecologically sensitive areas, historical landmarks, elevated occurrences of radon gas, or naturally occurring radioactive material at the property?	No

STRUCTURE ISSUES

Has the property ever had a structure on site?
If No, skip to question number 13. NO

	Question	Owner/Occupant
12.	Are there currently, or to the best of your knowledge have there been previously, any flooring, drains, or walls located within the facility that are stained by substances other than water or are emitting foul odors?	Yes (No) Unknown

OTHER ISSUES

	Question	Owner/Occupant
13.	If the property is served by a private well or non-public water system, have containments been identified in the well or system that exceed guidelines applicable to the water system or has the well been designated as contaminated by any	Yes (No) Unknown

ENVIRONMENTAL SITE ASSESSMENT OWNER/OCCUPANT INQUIRY

Question	Owner/Occupant		
government environmental/health agency?			
14. Does the owner or occupant of the property have any knowledge of environmental liens, activity use limitations, or governmental notification relating to past or recurrent violations of environmental laws with respect to the property or any facility located on the property?	Yes	No	Unknown
15. Has the owner or occupant of the property been informed of the past or current existence of hazardous substances or petroleum products or environmental violations with respect to the property or any facility located on the property?	Yes	No	Unknown
16. Does the owner or occupant of the property have any knowledge of any environmental site assessment of the property or facility that indicated the presence of hazardous substances or petroleum products on, or contamination of, the property or recommend further assessment of the property?	Yes	No	Unknown
17. Does the owner or occupant of the property know of any past, threatened or pending lawsuits or administrative proceedings concerning a release or threatened release of any hazardous substances or petroleum products involving the property by any owner or occupant of the property?	Yes	No	Unknown
18. Does the property discharge waste water (not including sanitary waste or storm water) onto or adjacent to the property and/or into a sanitary sewer or storm water system?	Yes	No	Unknown
19. To the best of your knowledge, have any hazardous substances or petroleum products, unidentified waste materials, tires, automotive or industrial batteries or any other waste materials ever been *dumped above grade, buried, and/or burned on the property*?	Yes	No	Unknown
20. Is there a transformer, capacitator, or any hydraulic equipment for which there are any records indicating the presence of PCBs?	Yes	No	Unknown
21. To the best of your knowledge, is there, or has there ever been ongoing environmental testing or monitoring at the property?	Yes	No	Unknown
22. To the best of your knowledge, is there, or has there ever been any active or abandoned water wells at the property?	Yes	No	Unknown
23. How many years has the present owner occupied/owned the	Yes	No	Unknown

ENVIRONMENTAL SITE ASSESSMENT OWNER/OCCUPANT INQUIRY

Question	Owner/Occupant
property?	

Has the property ever had a structure on site?
If No, skip to question number 29.

NO

Question	Owner/Occupant
24. To the best of your knowledge, are there, or has there ever been substances suspected to be and/or identified as asbestos containing materials at the property?	Yes No Unknown
25. To the best of your knowledge, is there, or has there ever been any parts of the structures known to be coated with lead-based paint at the property?	Yes No Unknown
26. To the best of your knowledge, is there, or has there ever been any urea formaldehyde insulation, issues concerning radon, or mercury lighting at the property?	Yes No Unknown
27. How many years has the present business occupied the property?	_____ years
28. Please estimate the construction date of the buildings on the property.	_____ years

HELPFUL DOCUMENTS

Question	Owner/Occupant
29. To the best of your knowledge, are there, or has there ever been any of the following documents generated in connection previous acquisitions or with current or past operations at the property:	Yes (No) Unknown
a) Environmental Site Assessment Reports	Yes (No) Unknown
b) Environmental Audit/Compliance Reports (SWPPPs, SPCCs, etc.)	Yes (No) Unknown
c) Environmental Permits (for examples, solid waste disposal permits, hazardous waste disposal permits, wastewater permits, NPDES permits, LDPDES permits, etc.)	Yes (No) Unknown
d) Registrations for Underground or Above-Ground Storage Tanks	Yes (No) Unknown
e) Material Safety Data Sheets (MSDS)	Yes (No) Unknown

ENVIRONMENTAL SITE ASSESSMENT OWNER/OCCUPANT INQUIRY

Question	Owner/Occupant		
f) Community Right-to-Know Plans	Yes	No	Unknown
g) Reports regarding hydrogeologic conditions on the property or surrounding area.	Yes	No	Unknown
h) Notices or other correspondence from any government agency relating to past or current violations of environmental laws with respect to the property or relating to environmental liens encumbering the property.	Yes	No	Unknown
i) Hazardous waste generator notices or reports,	Yes	No	Unknown
j) Geotechnical studies	Yes	No	Unknown
RECOMMENDED ADDITIONAL REFERENCES/CONTACT FOR REPORTS OR ADDITIONAL INFORMATION:			
ADDITIONAL COMMENTS:			

ENVIRONMENTAL SITE ASSESSMENT OWNER/OCCUPANT INQUIRY

This Owner/Occupant Inquiry was completed by:

Name: David + Traci Gardner

Title: Owners

Firm: _____

Address: 1129 L & N Turnpike Rd, Horse Cave, Ky

Phone Number: 270-218-0486 **Fax Number:** _____

Relationship to site: Site property

Relationship to owner / occupant:
(for example, principal, employee, consultant). Owners

Other person(s) involved in completing / verifying this information:

Name: _____

Relationship to site: _____

Relationship to owner / occupant:
(for example, principal, employee, consultant): _____

The individual completing this form represents that to the best of their knowledge the above statements and facts are true and correct and to the best of their knowledge no material facts have been suppressed or misstated.

Traci Gardner
Signature

3.2.23
Date

ENVIRONMENTAL SITE ASSESSMENT OWNER/OCCUPANT INQUIRY

Disclosure: You are not bound by any laws or regulations to answer the questions associated herein. This questionnaire is intended to assist us in gathering reasonably ascertainable information that relates to the performance of this Environmental Site Assessment – under the ASTM E1527-13, and does not constitute and admission of liability to, or for, any recognized environmental conditions or impairments in connection with the subject property.

SITE NAME: Thoroughbred Solar

CURRENT OWNER: Isaacs, Harry and Burba

DESCRIPTION: Farmland

LOCATION: Horse Cave, Kentucky

AUTHORIZED BY: _____

SUBJECT & SURROUNDING PROPERTY (applicable to all sites)

Question	Owner/Occupant		
1. Is the property or any adjoining property used for an industrial use?	Yes	**No**	Unknown
2. To the best of your knowledge, has the property or any adjoining property been used for an industrial use in the past?	Yes	**No**	Unknown
3. Is the property or any adjoining property used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage, disposal, processing, or recycling facility?	Yes	**No**	Unknown
4. To the best of your knowledge has the property or any adjoining property ever been used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage, disposal, processing, or recycling facility in the past?	Yes	**No**	Unknown

LAND USE (applicable to all sites)

Question	Owner/Occupant		
5. Are there currently, or to the best of your knowledge have there been previously, any damaged or discarded automotive or industrial batteries or pesticides, paints, or other chemicals in individual containers of greater than 5 gal (19 L) in volume or 50 gal (190 L) in the aggregate, stored on or used at the property or at the facility?	Yes	**No**	Unknown

ENVIRONMENTAL SITE ASSESSMENT OWNER/OCCUPANT INQUIRY

Question	Owner/Occupant
6. Are there currently, or to the best of your knowledge have there been previously, any industrial drums (typically 55 gal (208 L)) or sacks of chemicals located on the property or at the facility?	Yes **No** Unknown
7. Has fill dirt been brought onto the property that originated from a contaminated site or that is of an unknown origin?	Yes **No** Unknown
8. Are there currently, or to the best of your knowledge have there been previously, any pits, ponds, lagoons, oil water separators, or other equipment located on the property in connection with waste treatment or waste disposal?	Yes **No** Unknown
9. Is there currently, or to the best of your knowledge has there been previously, any stained soil or stressed vegetation on the property?	**NO**
10. Are there currently, or to the best of your knowledge have there been previously, any registered or unregistered storage tanks (above or underground) located on the property? Has there ever been any vent pipes, fill pipes, or access ways indicting a fill pipe protruding from the ground on the property or adjacent to any structure located on the property?	**NO**
11. Are there currently, or to the best of your knowledge have there been issues identified relative to wetland (jurisdictional waters of the U.S.) or ecologically sensitive areas, historical landmarks, elevated occurrences of radon gas, or naturally occurring radioactive material at the property?	**NO**

STRUCTURE ISSUES

Has the property ever had a structure on site?
If No, skip to question number 13. **NO**

Question	Owner/Occupant
12. Are there currently, or to the best of your knowledge have there been previously, any flooring, drains, or walls located within the facility that are stained by substances other than water or are emitting foul odors?	Yes **No** Unknown

OTHER ISSUES

Question	Owner/Occupant
13. If the property is served by a private well or non-public water system, have containments been identified in the well or system that exceed guidelines applicable to the water system	Yes **No** Unknown

ENVIRONMENTAL SITE ASSESSMENT OWNER/OCCUPANT INQUIRY

Question	Owner/Occupant		
or has the well been designated as contaminated by any government environmental/health agency?			
14. Does the owner or occupant of the property have any knowledge of environmental liens, activity use limitations, or governmental notification relating to past or recurrent violations of environmental laws with respect to the property or any facility located on the property?	Yes	**No**	Unknown
15. Has the owner or occupant of the property been informed of the past or current existence of hazardous substances or petroleum products or environmental violations with respect to the property or any facility located on the property?	Yes	**No**	Unknown
16. Does the owner or occupant of the property have any knowledge of any environmental site assessment of the property or facility that indicated the presence of hazardous substances or petroleum products on, or contamination of, the property or recommend further assessment of the property?	Yes	**No**	Unknown
17. Does the owner or occupant of the property know of any past, threatened or pending lawsuits or administrative proceedings concerning a release or threatened release of any hazardous substances or petroleum products involving the property by any owner or occupant of the property?	Yes	**No**	Unknown
18. Does the property discharge waste water (not including sanitary waste or storm water) onto or adjacent to the property and/or into a sanitary sewer or storm water system?	Yes	**No**	Unknown
19. To the best of your knowledge, have any hazardous substances or petroleum products, unidentified waste materials, tires, automotive or industrial batteries or any other waste materials ever been *dumped above grade, buried, and/or burned on the property*?	Yes	**No**	Unknown
20. Is there a transformer, capacitator, or any hydraulic equipment for which there are any records indicating the presence of PCBs?	Yes	**No**	Unknown
21. To the best of your knowledge, is there, or has there ever been ongoing environmental testing or monitoring at the property?	Yes	**No**	Unknown
22. To the best of your knowledge, is there, or has there ever been any active or abandoned water wells at the property?	**Yes**	No	Unknown

ENVIRONMENTAL SITE ASSESSMENT OWNER/OCCUPANT INQUIRY

Question	Owner/Occupant
23. How many years has the present owner occupied/owned the property? **ABOUT 30 YEARS**	Yes No Unknown

Has the property ever had a structure on site?
If No, skip to question number 29. **NO**

Question	Owner/Occupant
24. To the best of your knowledge, are there, or has there ever been substances suspected to be and/or identified as asbestos containing materials at the property?	Yes **No** Unknown
25. To the best of your knowledge, is there, or has there ever been any parts of the structures known to be coated with lead-based paint at the property?	Yes **No** Unknown
26. To the best of your knowledge, is there, or has there ever been any urea formaldehyde insulation, issues concerning radon, or mercury lighting at the property?	Yes **No** Unknown
27. How many years has the present business occupied the property? **THIS IS A FARM – NO BUSINESSES**	Owned approx. 30 years
28. Please estimate the construction date of the buildings on the property. **NO BUILDINGS (OTHER THAN AN OLD BARN AND AN OPEN HAY BARN) ARE ON THIS PROPERTY**	__Both over 30 years

HELPFUL DOCUMENTS

Question	Owner/Occupant
29. To the best of your knowledge, are there, or has there ever been any of the following documents generated in connection previous acquisitions or with current or past operations at the property:	Yes No Unknown
a) Environmental Site Assessment Reports	Yes **No** Unknown
b) Environmental Audit/Compliance Reports (SWPPPs, SPCCs, etc.)	Yes **No** Unknown
c) Environmental Permits (for examples, solid waste disposal permits, hazardous waste disposal permits, wastewater permits, NPDES permits, LDPDES permits, etc.)	Yes **No** Unknown
d) Registrations for Underground or Above-Ground Storage Tanks	Yes **No** Unknown

ENVIRONMENTAL SITE ASSESSMENT OWNER/OCCUPANT INQUIRY

Question	Owner/Occupant		
e) Material Safety Data Sheets (MSDS)	Yes	**No**	Unknown
f) Community Right-to-Know Plans	Yes	**No**	Unknown
g) Reports regarding hydrogeologic conditions on the property or surrounding area.	Yes	**No**	Unknown
h) Notices or other correspondence from any government agency relating to past or current violations of environmental laws with respect to the property or relating to environmental liens encumbering the property.	Yes	**No**	Unknown
i) Hazardous waste generator notices or reports,	Yes	**No**	Unknown
j) Geotechnical studies	Yes	**No**	Unknown
RECOMMENDED ADDITIONAL REFERENCES/CONTACT FOR REPORTS OR ADDITIONAL INFORMATION:			
ADDITIONAL COMMENTS:			

ENVIRONMENTAL SITE ASSESSMENT OWNER/OCCUPANT INQUIRY

This Owner/Occupant Inquiry was completed by:

Name: Burba Isaacs

Title: Owner

Firm: N/A

Address: PO Box 610 Munfordville, KY 42765

Phone Number: 270-991-3145 Fax Number: N/A

Relationship to site: Owner

Relationship to owner / occupant:
(for example, principal, employee, consultant): N/A

Other person(s) involved in completing / verifying this information:

Name: _____

Relationship to site: _____

Relationship to owner / occupant:
(for example, principal, employee, consultant): _____

The individual completing this form represents that to the best of their knowledge the above statements and facts are true and correct and to the best of their knowledge no material facts have been suppressed or misstated.

Burba Isaacs

Signature

3/2/2023

Date

Disclosure: You are not bound by any laws or regulations to answer the questions associated herein. This questionnaire is intended to assist us in gathering reasonably ascertainable information that relates to the performance of this Environmental Site Assessment – under the ASTM E1527-13, and does not constitute and admission of liability to, or for, any recognized environmental conditions or impairments in connection with the subject property.

SITE NAME: Thoroughbred Solar

CURRENT OWNER: Sammons, David

DESCRIPTION: Farmland

LOCATION: Horse Cave, Kentucky

AUTHORIZED BY:

SUBJECT & SURROUNDING PROPERTY (applicable to all sites)

Question	Owner/Occupant
• Is the property or any adjoining property used for an industrial use?	Yes (No) Unknown
• To the best of your knowledge, has the property or any adjoining property been used for an industrial use in the past?	Yes (No) Unknown
• Is the property or any adjoining property used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage, disposal, processing, or recycling facility?	Yes (No) Unknown
• To the best of your knowledge has the property or any adjoining property ever been used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage, disposal, processing, or recycling facility in the past? Adjoining Property Hart Co Recycling Center	(Yes) No Unknown Previous Owner

LAND USE (applicable to all sites)

Question	Owner/Occupant

pesticides + herbicides used on farmland

• Are there currently, or to the best of your knowledge have there been previously, any damaged or discarded automotive or industrial batteries or pesticides, paints, or other chemicals in individual containers of greater than 5 gal (19 L) in volume or 50 gal (190 L) in the aggregate, stored on or used at the property or at the facility?	Yes ? No Unknown not stored
• Are there currently, or to the best of your knowledge have there been previously, any industrial drums (typically 55 gal (208 L)) or sacks of chemicals located on the property or at the facility?	Yes (No) Unknown
• Has fill dirt been brought onto the property that originated from a contaminated site or that is of an unknown origin?	Yes (No) Unknown
• Are there currently, or to the best of your knowledge have there been previously, any pits, ponds, lagoons, oil water separators, or other equipment located on the property in connection with waste treatment or waste disposal?	Yes ? (No) Unknown Animal Waste Pits + Lagoons
• Is there currently, or to the best of your knowledge has there been previously, any stained soil or stressed vegetation on the property?	? No
• Are there currently, or to the best of your knowledge have there been previously, any registered or unregistered storage tanks (above or underground) located on the property? Has there ever been any vent pipes, fill pipes, or access ways indicting a fill pipe protruding from the ground on the property or adjacent to any structure located on the property?	No
• Are there currently, or to the best of your knowledge have there been issues identified relative to wetland (jurisdictional waters of the U.S.) or ecologically sensitive areas, historical landmarks, elevated occurrences of radon gas, or naturally occurring radioactive material at the property?	No

STRUCTURE ISSUES

Has the property ever had a structure on site?
If No, skip to question number 13.

Question	Owner/Occupant
• Are there currently, or to the best of your knowledge have there been previously, any flooring, drains, or walls located within the facility that are stained by substances other than water or are emitting foul odors?	Yes (No) Unknown

OTHER ISSUES

Question	Owner/Occupant
• If the property is served by a private well or non-public water system, have containments been identified in the well or system that exceed guidelines applicable to the water system or has the well been designated as contaminated by any government environmental/health agency?	Yes **No** Unknown
• Does the owner or occupant of the property have any knowledge of environmental liens, activity use limitations, or governmental notification relating to past or recurrent violations of environmental laws with respect to the property or any facility located on the property?	Yes **No** Unknown
• Has the owner or occupant of the property been informed of the past or current existence of hazardous substances or petroleum products or environmental violations with respect to the property or any facility located on the property?	Yes **No** Unknown
• Does the owner or occupant of the property have any knowledge of any environmental site assessment of the property or facility that indicated the presence of hazardous substances or petroleum products on, or contamination of, the property or recommend further assessment of the property?	Yes **No** Unknown
• Does the owner or occupant of the property know of any past, threatened or pending lawsuits or administrative proceedings concerning a release or threatened release of any hazardous substances or petroleum products involving the property by any owner or occupant of the property?	Yes **No** Unknown
• Does the property discharge waste water (not including sanitary waste or storm water) onto or adjacent to the property and/or into a sanitary sewer or storm water system?	Yes **No** Unknown
• To the best of your knowledge, have any hazardous substances or petroleum products, unidentified waste materials, tires, automotive or industrial batteries or any other waste materials ever been *dumped above grade, buried, and/or burned on the property*?	Yes **No** Unknown
• Is there a transformer, capacitator, or any hydraulic equipment for which there are any records indicating the presence of PCBs?	Yes **No** Unknown

Goverment Monitoring Well on property monitor flow from Horse Cave to Green River

• To the best of your knowledge, is there, or has there ever been ongoing environmental testing or monitoring at the property?	(Yes)	No	Unknown
• To the best of your knowledge, is there, or has there ever been any active or abandoned water wells at the property? 2 1 GW-345 well	(Yes)	No	Unknown
• How many years has the present owner occupied/owned the property? 33	(Yes)	No	Unknown

Has the property ever had a structure on site?
If No, skip to question number 29.

Question	Owner/Occupant		
• To the best of your knowledge, are there, or has there ever been substances suspected to be and/or identified as asbestos containing materials at the property?	Yes	(No)	Unknown
• To the best of your knowledge, is there, or has there ever been any parts of the structures known to be coated with lead-based paint at the property?	Yes	(No)	Unknown
• To the best of your knowledge, is there, or has there ever been any urea formaldehyde insulation, issues concerning radon, or mercury lighting at the property?	Yes	(No)	Unknown
• How many years has the present business occupied the property?	33 years		
• Please estimate the construction date of the buildings on the property.	_____ years		

HELPFUL DOCUMENTS

Question	Owner/Occupant		
• To the best of your knowledge, are there, or has there ever been any of the following documents generated in connection previous acquisitions or with current or past operations at the property:	Yes	No	Unknown
• Environmental Site Assessment Reports	Yes	(No)	Unknown

• Environmental **Audit/Compliance** Reports (SWPPPs, **SPCCs, etc.)**	Yes	(No)	Unknown
• Environmental **Permits (for examples, solid waste disposal** permits, hazardous **waste** disposal per**mits, wastewater permits, NPDES permits, LDPDES permits, etc.)** KY Ag Use Permit	(Yes)	No	Unknown
• **Registrations for Underground or Above-Ground Storage Tanks**	Yes	(No)	Unknown
• **Material Safety Data Sheets (MSDS)**	Yes	(No)	Unknown
• **Community Right-to-Know Plans**	Yes	(No)	Unknown
• Reports regard**ing hydrogeologic** conditions on the property or surrounding ar**ea.**	Yes	(No)	Unknown
• **Notices** or other **correspondence from any government agency** relating to past or current vio**lations of environmental laws** with respect to the property **or relating to** environmen**tal liens encumbering** the pro**perty.**	Yes	(No)	Unknown
• **Hazardous waste generator notices or reports,**	Yes	(No)	Unknown
• **Geotechnical studies**	Yes	(No)	Unknown
RECOMMENDED **ADDITIONAL REFERENCES/CONTACT FOR REPORTS OR ADDITIONAL INFORMATION:**			

ADDITIONAL COMMENTS:	

This Owner/Occupant Inquiry was completed by:

Name: David Simmons

Title: _____

Firm: _____

Address: _____

Phone Number: _____ **Fax Number:** _____

Relationship to site: _____

Relationship to owner / occupant:
(for example, principal, employee, consultant): _____

Other person(s) involved in completing / verifying this information:

Name: _____

Relationship to site: _____

Relationship to owner / occupant:
(for example, principal, employee, consultant): _____

The individual completing this form represents that to the best of their knowledge the above statements and facts are true and correct and to the best of their knowledge no material facts have been suppressed or misstated.

David Hammond — Signature

3-6-23 — Date

User Responsibilities Questionnaire
All Appropriate Inquiries Under ASTM E1527-13

Date: 3/1/2023
Subject Site Name: Thoroughbred Solar
Address:
Prepared By: Patrick Walsh

In order to qualify for one of the Landowner Liability Protections (LLP) offered by the Small Business Liability Relief and Brownfields Revitalization Act of 2001 (the "Brownfields Amendments"), the user must conduct "All Appropriate Inquiry" (AAI), which includes consideration of the following information (if available). Though it is not required that this information be provided to the environmental professional for the completion of the ASTM E1527-13 Phase I Environmental Site Assessment, failure of the user to consider this information could result in a determination that AAI is not complete.

(1.) Environmental cleanup liens that are filed or recorded against the subject site (40 CFR 312.25).
Are you aware of any environmental cleanup liens against the Site that are filed or recorded under federal, tribal, state, or local law? If yes, give a description and attach copies of the liens.

No

(2.) Activity and land use limitations that are in place on the subject site or that have been filed or recorded in a registry (40 CFR 312.26).
Are you aware of any Activity and Use Limitations (AUL), such as engineering controls, land use restrictions or institutional controls that are in place at the Site or have been filed or recorded in a registry under federal, tribal, state, or local law?

No

(3.) Specialized knowledge or experience of the person seeking to qualify for the LLP (40 CFR 312.28).
As the user of this Phase I Environmental Site Assessment do you have any specialized knowledge or experience related to the Site or nearby properties? For example, are you involved in the same line of business as the current or former occupants of the Site or an adjoining property so that you would have specialized knowledge of the chemicals and processes used by this type of business?

No

(4.) Relationship of the purchase price to the fair market value of the subject site if it were not contaminated (40 CFR 312.29).
Does the purchase price being paid for this Site reasonably reflect the market value of the Site? If you conclude that there is a difference, have you considered whether the lower purchase price is because contamination is known or believed to be present at the Site?

No

(5.) Commonly known or reasonably ascertainable information about the subject site (40 CFR 312.30).
Are you aware of commonly known, or reasonably ascertainable information about the Site that would help the environmental professional to identify conditions indicative of releases or threatened releases? For example, as user,

(a.) Do you know the past uses of the Site?

Farmland, row crops. Has been in a conservation program, though, from 2007-2022

(b.) Do you know the specific chemicals that are present or once were present at the Site?

No

(c.) Do you know of spills or other chemical releases that have taken place at the Site?

No

(d.) Do you know of any environmental cleanups that have taken place at the Site?

No

(6.) The degree of obviousness of the presence or likely presence of contamination at the subject site, and the ability to detect the contamination by appropriate investigation (40 CFR 312.31).
As the user of this Phase I Environmental Site Assessment, based on your knowledge and experience related to the Site are there any obvious indicators that point to the presence or likely presence of contamination at the Site?

No

Ron Walsh — Sr. Development Associate — 3/2/2023

Signature (User/Authorized Representative) | Title | Date

From: Vinson, Ashley <Ashley.Vinson@lge-ku.com>
Sent: Thursday, October 14, 2021 1:46 PM
To: Frank Bristol <frank.bristol@LeewardEnergy.com>
Cc: Fortwengler, Troy <Troy.Fortwengler@lge-ku.com>
Subject: RE: PJM Queue AF2-365 Affected System Study

Correct.

From: Frank Bristol <frank.bristol@LeewardEnergy.com>
Sent: Thursday, October 14, 2021 2:30 PM
To: Vinson, Ashley <Ashley.Vinson@lge-ku.com>
Subject: RE: PJM Queue AF2-365 Affected System Study

EXTERNAL email. STOP and THINK before responding, clicking on links, or opening attachments.

Ashley,

For the avoidance of doubt are you saying that you have screened this project and have determined that no affected system study is required on your system?

Thanks,

Franklin Bristol
VP of Transmission

Leeward Renewable Energy, LLC
6688 N. Central Expressway, Suite 500, Dallas, TX 75206
Frank.Bristol@LeewardEnergy.com
M 920.650.0728 | F 214.515.1158

leewardenergy.com

From: Vinson, Ashley <Ashley.Vinson@lge-ku.com>
Sent: Thursday, October 14, 2021 1:19 PM
To: Frank Bristol <frank.bristol@LeewardEnergy.com>
Subject: FW: PJM Queue AF2-365 Affected System Study

****External Email. Use caution before opening attachments or clicking links.****

Frank,

Please see below. Sorry, I thought I had sent this to you already. Let me know if you have any questions.

Thank you,

Ashley Vinson
Manager, Transmission Policy & Tariffs | LG&E/KU
220 West Main Street, Louisville, KY 40202
M: 502-214-0950 or 502-873-8603 | **O**: 502-627-3278 | **F**: 502-217-4941
Ashley.Vinson@lge-ku.com
lge-ku.com

From: Fortwengler, Troy <Troy.Fortwengler@lge-ku.com>
Sent: Monday, October 4, 2021 10:00 PM
To: Vinson, Ashley <Ashley.Vinson@lge-ku.com>; Knoy, Jason <Jason.Knoy@lge-ku.com>
Subject: RE: PJM Queue AF2-365 Affected System Study

This one is actually part of the queue for which we are trying to kickoff a study soon, but this project was not identified as requiring study according to our screening criteria.

From: Vinson, Ashley <Ashley.Vinson@lge-ku.com>
Sent: Monday, October 04, 2021 6:44 PM
To: Knoy, Jason <Jason.Knoy@lge-ku.com>; Fortwengler, Troy <Troy.Fortwengler@lge-ku.com>
Subject: FW: PJM Queue AF2-365 Affected System Study

Is this one also planned for Q1 2022? Will you be reaching out to him re: an agreement after the first of the year?

From: Frank Bristol <frank.bristol@LeewardEnergy.com>
Sent: Tuesday, September 28, 2021 2:31 PM
To: Vinson, Ashley <Ashley.Vinson@lge-ku.com>
Cc: Rob Kalbouss <Rob.Kalbouss@LeewardEnergy.com>; Ian Sharpe <Ian.Sharpe@LeewardEnergy.com>
Subject: RE: PJM Queue AF2-365 Affected System Study

Ashley,

We'd like to kick off the Affected System Study for the subject PJM project. What are the next steps?

Franklin Bristol
VP of Transmission

Leeward Renewable Energy, LLC
6688 N. Central Expressway, Suite 500, Dallas, TX 75206
Frank.Bristol@LeewardEnergy.com
M 920.650.0728 | F 214.515.1158

leewardenergy.com

From: Simon Cherucheril-TS <simon.cherucheril@transervinternational.net>
Sent: Monday, August 2, 2021 6:31 AM
To: Frank Bristol <frank.bristol@LeewardEnergy.com>; Support TranServ <Support@transervinternational.net>
Cc: Vinson, Ashley <Ashley.Vinson@lge-ku.com>; Barker, Daryn (Daryn.Barker@lge-ku.com) <Daryn.Barker@lge-

ku.com>
Subject: RE: PJM Queue AF2-365 Affected System Study

****External Email. Use caution before opening attachments or clicking links.****

Frank,

Affected system studies are performed by the TO. Please contact Ashley Vison on questions pertaining to an LG&E and KU Affected System Study. Please also note that we also forwarded this email to Ashley.

Thanks,

Simon G. Cherucheril
TranServ International, Inc.
3660 Technology Drive NE
Minneapolis, MN 55418
Email: Simon.cherucheril@transervinternational.com
Phone: 763-205-7084

From: Frank Bristol [mailto:frank.bristol@LeewardEnergy.com]
Sent: Thursday, July 29, 2021 8:42 AM
To: Support TranServ <Support@transervinternational.net>
Subject: RE: PJM Queue AF2-365 Affected System Study

{External email message: This email is from an external source. Please exercise caution prior to opening attachments, clicking on links, or providing any sensitive information.}

To whom it may concern,

Does LG&E/KU coordinate affected system studies directly with PJM/EKPC or do we need to enter into an Affected System Study Agreement with you for the subject project?

This is a 50 MW solar plant with a PJM interconnection request to EKPC's 69 kV system with a POI on the 69 kV line from Munfordville KU Tap to Horse Cave Jct.? This appears to be a tie line so there would need to be some amount of coordination during the Facilities Study.

Can you confirm whether we need an Affected System Study Agreement or if the Facilities Study that is underway with PJM/EKPC will adequately address your affected system concerns?

Franklin Bristol
VP of Transmission

Leeward Renewable Energy, LLC
6688 N. Central Expressway, Suite 500, Dallas, TX 75206
Frank.Bristol@LeewardEnergy.com
M 920.650.0728 | F 214.515.1158

leewardenergy.com

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Interconnection System Impact Study

Requester: Leeward Renewable Energy, LLC

(AFS for PJM Queue AF2-365)

#AS063 – Thoroughbred Solar

Study Performed By:

Interconnection Planning & Special Studies

TENNESSEE VALLEY AUTHORITY

FINAL

February 23, 2023

BUSINESS SENSITIVE

Executive Summary

The Tennessee Valley Authority (TVA) conducted an Interconnection System Impact Study (SIS) at the request of Leeward Renewable Energy, LLC to evaluate the impact of the proposed interconnection AS063. Leeward Renewable Energy, LLC, has proposed to build a new 50 MW Solar plant to be in Hart County, Kentucky. The Point of Interconnection will be the Munfordville – Horse Cave Junction 69 kV Line, which is owned by Eastern Kentucky Power Co-operative (EKPC).

The objective of the SIS is to identify all Adverse System Impacts on TVA's transmission system in order to maintain system reliability as a result of the Interconnection Request. The SIS will also determine the facility additions, modifications, and upgrades that are needed to maintain a reliable interconnection.

In addition to identifying all Adverse System Impacts on the TVA transmission system, TVA monitors its Local Power Companies (LPCs) as well as neighboring transmission systems for impacts. No Potentially Affected Systems were identified as a result of the proposed interconnection. EKPC performed a System Impact Study prior to TVA's Affected System Study.

Without and With Priors

The SIS included steady-state (thermal & voltage) analysis.

- Steady-state loadflow analysis determined that the proposed interconnection will not cause thermal violations on the TVA transmission system.
- Short Circuit analysis was not performed as there is no expectation that the proposed interconnection will cause any stability issues on the TVA transmission system.
- Stability analysis was not performed as there is no expectation that the proposed interconnection will cause any stability issues on the TVA transmission system.

The study identified a need for the following system improvements:

Table ES-1: Direct Assignment Facilities & Required Network Upgrades

Direct Assignment Facilities	Cost Estimate ($k)
None	$0
Network Upgrades	
None	$0
Total	**$0**

Table of Contents

List of Tables

1.0 Introduction

The purpose of this SIS is to determine all Adverse System Impacts on TVA's transmission system caused by the AS063 Interconnection Request. This report identifies the Network Upgrades that are required for TVA system reliability.

The connection point for the proposed generation facility is at the Munfordville – Horse Cave Junction 69 kV Line, which is in Munfordville, Kentucky and is owned by EKPC.

2.0 Model Development

The power flow models utilized in this study originated from the Eastern Interconnection Reliability Assessment Group (ERAG), Multi-Regional Modeling Working Group (MMWG) and the SERC Long Term Study Group (LTSG) 2021 series of power flow base cases. These models are created as part of the ERAG and SERC regional modeling process. The most up-to-date TVA load forecast and generation plans available at the time of case creation were used in the cases, including any projected transmission upgrades. Deviations from the normal generation dispatch may be made, if the request is found to be sensitive to local generation. All confirmed prior Interconnection Requests have priority over TVA's available transmission capacity. Offline generators that have existing Interconnection Rights on the TVA system may be dispatched at the output that was studied through the interconnection process in order to necessarily reflect those rights.

A notice concerning assumptions made in the model development process is contained in Appendix A.

3.0 Study Criteria and Methodology

This study was conducted consistent with TVA SIS processes and practices. All studies performed in the SIS are designed to meet applicable reliability standards and TVA's planning practices and procedures. Information regarding contingencies, monitored elements, generation dispatch, and load profiles evaluated in this study are provided upon request.

The analysis of the Interconnection Request was conducted using a combination of software including PTI PSS/E, PowerWorld Simulator, and PowerGEM TARA.

4.0 Study Results With and Without Prior Requesters

The following sections summarize the facilities required for the interconnection based on the results of steady state studies.

4.1 With and Without Prior Requesters

The facilities associated with the conditions without the prior queued Interconnection Requests are summarized below.

4.1.1 Direct Assignment Facilities

4.1.1.1 Interconnection

There were no Direct Assignment Facilities on the TVA system identified as necessary in order to support the interconnection arrangement.

4.1.1.2 Fault Study

Short circuit analysis was not performed as there is no expectation that the proposed interconnection will cause any breaker duty issues on the TVA transmission system.

4.1.1.3 Stability

Stability analysis was not performed as there is no expectation that the proposed interconnection will cause any stability issues on the TVA transmission system.

4.1.2 Network Upgrades

There will be no network upgrades required for the proposed interconnection.

4.1.2.1 Loadflow

Steady-state loadflow analysis determined that the proposed interconnection will not cause thermal violations on the TVA transmission system.

4.2 Project Schedule

Not applicable.

5.0 Conclusion

In conclusion, there were no identified Direct Assignment Facilities or Network Upgrades needed on TVA's system for the generation interconnection of Thoroughbred Solar to EKPC's system in Munfordville, Kentucky as shown in Appendix B.

The SIS included steady-state (thermal & voltage) analysis.

The transmission path from the Generating Facility to the TVA transmission system contains non-TVA facilities. All results within this SIS assume these non-TVA facilities are in-place. It is the Interconnection Customer's responsibility to secure any necessary rights to utilize these non-TVA facilities.

In addition to identifying all Adverse System Impacts on the TVA transmission system, TVA monitors its Local Power Companies (LPCs) as well as neighboring transmission systems for impacts. TVA identified no potentially Affected Systems as a result of the proposed interconnection.

This SIS only evaluates the TVA reliability impacts of Leeward Renewable Energy's interconnection to the EKPC transmission system. This SIS does not evaluate or grant Transmission Service.

Table 5-1: Direct Assignment Facilities & Required Network Upgrades with and without Priors

Direct Assignment Facilities	Cost Estimate ($k)
None	$0
Network Upgrades	
None	$0
Total	**$0**

Appendix A: Notice Regarding Transmission Planning Study Information

This information has been derived utilizing power flow models of projected future system conditions. These planning models incorporate many assumptions concerning loads, transmission system configuration, generation dispatch, firm transactions, and other information pertinent to building power flow models. TVA uses available information about transmission and generation additions and upgrades that may subsequently change. The system models external to TVA were either obtained from the applicable control area, or from the most recent SERC base cases. TVA is not responsible for the information provided by others in the development of these models. The cases represent TVA's best effort in developing power flow models for use within TVA as a starting point for interconnection studies, at the point in time when the analysis is done. TVA retains the right to update the models as additional information becomes available or as additional possible scenarios are needed. The decision to use the study or underlying assumptions for any particular purpose other than to obtain the requested Interconnection Rights is the sole responsibility of the user.

Scheduling and cost estimates provided in this report do not include time or money to resolve unforeseen issues such as those that may be identified during TVA's review of environmental impacts as required by the National Environmental Policy Act (NEPA).

Appendix B: Interconnection Arrangement (from EKPC's SIS report)

Interconnection depiction redacted

Appendix C: Definitions

Glossary of Terms

Adverse System Impact – The negative effects due to technical or operational limits on conductors or equipment being exceeded that may compromise the safety and reliability of the electric system.

Affected System – An electric system other than TVA's transmission system that may be affected by the proposed interconnection.

Direct Assignment Facility – Any additions, modifications, or upgrades that are necessary to physically and electrically interconnect the specified Generating Facility, and are solely for the benefit of the specified Generating Facility.

Direct Transfer Trip (DTT) – Used by TVA to provide remote primary protection for power equipment or remote backup protection for a failed breaker.

ERAG – Eastern Interconnection Reliability Assessment Group

Facilities Study – Process in which TVA (with input from requester) further refines project scope, schedule and cost estimates (± 20%).

Generating Facility – Interconnection Customer's device for the production of electricity identified in the Interconnection Request, but not including the Interconnection Customer's Interconnection Facilities.

Interconnection Customer – Any entity, including TVA, that proposes to interconnect its Generating Facility with TVA's transmission system.

Interconnection Facilities – All facilities and equipment between the Generating Facility and the Point of Interconnection, as well as any other modifications, additions or upgrades that are necessary to physically and electrically interconnect the Generating Facility to TVA's transmission system. Interconnection Facilities are sole use facilities and shall not include Network Upgrades.

Interconnection Request – An Interconnection Customer's request, to interconnect a new Generating Facility, or to increase the capacity of, or make a material modification to the operating characteristics of, an existing Generating Facility that is interconnected with TVA's transmission system.

Interconnection Right – A right to interconnect a specified Generating Facility into TVA's transmission system, contingent upon completion of all required system additions, modifications, and upgrades to accommodate the maximum capacity of the specified Generating Facility.

In-Service Date – The date upon which the Interconnection Customer reasonably expects it will be ready to begin use of TVA's Interconnection Facilities to obtain back feed power.

MMWG – Multi-Regional Modeling Working Group

NERC – North American Electric Reliability Corporation or its successor organization.

Network Upgrades – Any additions, modifications, and upgrades that are required to accommodate the specified Generating Facility, and to enhance either the capacity or the reliability of TVA's transmission system.

SCDWG – Short Circuit Database Working Group

SERC – SERC Reliability Corporation - a regional entity with delegated authority from NERC for the purpose of proposing and enforcing reliability standards.

SIS – Interconnection System Impact Study

Landowner:	Address:
ENGLAND DOUGLAS ENGLAND KIMBERLY	1670 L AND N TURNPIKE Rd
SLOAN LINDA B	420 G WILSON Ln
SPENCER RACHAEL MICHELLE	423 G WILSON Ln
WILSON KIMBERLY LYNN	536 G WILSON Ln
SMITH CHRISTOPHER	649 G WILSON Ln
PATTI MARKWELL	1298 L AND N TURNPIKE Rd
MARKWELL DANA MARKWELL PATTI L	1262 L AND N TURNPIKE Rd
MEREDITH MARLENE	695 L AND N TURNPIKE Rd
BERGER JAMES LEE BERGER BEVERLY A	455 L AND N TURNPIKE Rd
PRATHER JOSHUA RANDALL	884 ROWLETTS CAVE SPRINGS Rd
WAGGONER CONSTANCE J WAGGONER DOROTHY J	353 L AND N TURNPIKE Rd
HORTON ARLIE	335 L AND N TURNPIKE Rd
MUNFORDVILLE CONG OF JEHOVAHS WITNESSES	250 L AND N TURNPIKE Rd
GREEN PAMELA	240 L AND N TURNPIKE Rd
AJ RE VENTURE LLC	234 L AND N TURNPIKE Rd
PURGIEL MARA KATHLEEN	366 MAPLE GROVE Ln
LANE RONNIE LANE PAM	370 MAPLE GROVE Ln
MEREDITH CHRISTOPHER M	651 MAPLE GROVE Ln
LAWLER WILLIAM MICK LAWLER JERRY	295 JOHNS Ln
HUMPHREY TAMMY	1465 ROWLETTS CAVE SPRINGS Rd
PALNAU DAVID G PALNAU ELSA G	1410 ROWLETTS CAVE SPRINGS Rd
STINSON MIKE K	2020 ROWLETTS CAVE SPRINGS Rd
BRADLEY MARY	235 L AND N TURNPIKE Rd
MAST OLEN MAST ANNABELLE	543 G WILSON Ln
THOMPSON JOHNATHAN THOMPSON ROWLAND C	131 MAPLE GROVE Ln
BRYANT MARY	121 MAPLE GROVE Ln
SALCHI JUDY	275 MAPLE GROVE Ln
DENNIS MICHAEL C DENNIS PAMELA	303 G WILSON Ln
CHELIUS LEN	424 G WILSON Ln
NARVAEZ MICHAEL NARVAEZ DAWN	428 G WILSON Ln
SLOAN DOUG	530 G WILSON Ln
LACY JIMMY	540 G WILSON Ln
WILSON FANNIE	560 G WILSON Ln

thoroughbred solar

THE THOROUGHBRED ROUND UP

Dear Thoroughbred Solar Neighbors & Friends,

I hope this letter finds you and your families well as you enjoy a beautiful Kentucky fall.

On behalf of Thoroughbred Solar, I am pleased to share the latest news about the project milestones which include the recent submittal of our application to the Kentucky Siting Board, our activities in the community, and our commitment to support agriculture in Hart County.

We are excited about the economic potential this facility will bring to the area. In addition to adding renewable energy to the grid which businesses like manufacturers look for in siting new facilities, the ability to complete a project like this sends the message the county is open for business. Finally, the facility itself will add tax revenue to the county, full-time jobs during the construction and operations phases of the project and Thoroughbred Solar will continue doing good work in the community.

Should you have any questions relating to the Thoroughbred Solar project, please do not hesitate to contact us via the information provided in this update. I look forward to sharing more about Thoroughbred Solar as the project progresses.

Sincerely,

Rob Kalbouss

Rob Kalbouss
Senior Development Manager

THOROUGHBRED SOLAR APPLICATION UPDATE

Leeward Renewable Energy submitted Thoroughbred Solar's application to the Kentucky State Board on Electric Generation and Transmission in October.

The application represents the culmination of several years of work which included the following studies and reports:

- Streams and Wetland Delineation
- Property Value and Land Use Impacts
- Economic Impact
- Anticipated Noise, Glare, and Effect on Roads and Traffic
- Geological and Geophysical Site Evaluations
- Compatibility with Surroundings
- Electrical Transmission Grid Impacts.

Thoroughbred Solar was designed with Hart County's residents and agricultural character in mind. For example, a 23-acre area of woods will remain intact and outside of the fenced area. We are also exploring options to lease part of the project's unused acreage to grow forage.

The Thoroughbred Solar team is excited to bring local jobs, energy, and economic opportunity to Hart County. The final phase of the application process for the project expects to conclude in early 2023.

CREATING COMMUNITY PARTNERSHIPS IN HART COUNTY

Throughout 2022, the Thoroughbred Solar team partnered with several community organizations in Hart County to support a variety of initiatives including childhood literacy, historic preservation, agriculture, and youth.

During the spring, the Thoroughbred team held a public information meeting at Hart on Main in April where folks had an opportunity to meet the local team and receive more information about the project. Senior Development Manager Rob Kalbouss also provided a presentation about Thoroughbred Solar during the April meeting of the Hart County Cattlemen's Association.

Thoroughbred Solar also partnered with the Hart County Chamber's annual FUN Fest event that raises local funding for the Dolly Parton Imagination Library. The Thoroughbred team provided a $2,000 donation for the annual FUN Fest event held on May 14.

Hart County Fair Tractor Pull

Over the summer, the Thoroughbred Solar team attended the Hart County Fair and staffed a booth, meeting many residents of Hart County. Thoroughbred Solar sponsored the tractor pull. Closing out the summer, we also presented at the Hart County Chamber of Commerce's lunch networking event on August 10.

In recognition of historic preservation and cultural resources in the county, Thoroughbred Solar partnered with Hart County Historical Society to support annual initiatives, including the Battle of Bridges 5K event in June and the Roy A. Cann Award & Banquet Dinner held on October 1. The Thoroughbred Solar team continues to build local relationships and new partnerships in Hart County, including supporting causes that are widely supported by the community.

Hart County Historical Society

KENTUCKY ENERGY TRANSITION FACTS

- Utility-scale solar facilities have been operating in Kentucky since 2016.
- Solar power employs 1,769 Kentuckians, up 6.8 percent from last year.
- Iconic Kentucky whiskey brand, Jim Beam announced that its largest distillery, located in Nelson County, will be expanded, and powered by renewable energy.
- In early 2021, Kentucky's largest employer, Yum! joined the Renewable Energy Buyers Alliance (REBA), an alliance of large energy buyers that have joined together to accelerate the transition to a zero-carbon energy future.
- Ford has invested $6 billion in Central Kentucky for electric vehicle manufacturing plants that are expected to produce hundreds of thousands of batteries. Ford will begin construction on the plants before the end of this year.

Connect With Us

Rob Kalbouss | Sr. Development Manager
rob.kalbouss@leewardenergy.com
512.902.8837

Patrick Walsh | Sr. Development Associate
Patrick.Walsh@LeewardEnergy.com
847.507.2830

Season's Greetings

thoroughbred solar

Merry Christmas & Happy Holidays

We wish you and your loved ones a joyous holiday season and a bright start to 2023.

Sincerely,

Rob Kalbouss
Sr. Development Manager

Patrick Walsh
Sr. Development Associate

Thoroughbred Solar
Project Update

Introducing Thoroughbred Solar's New Development Lead

Dear Landowner,

I hope this letter finds you and your family well as we enjoy the waning days of winter. As we all anticipate the changing seasons and the beginning of spring, I want to take this opportunity to introduce myself as the new development lead for Thoroughbred Solar.

The year ahead looks bright for Thoroughbred ~~Solar~~ as we reach the end of the permitting phase of the project. I wanted to take a moment to reintroduce myself as the new development lead for Thoroughbred Solar ~~and~~ will be overseeing ~~all~~ the project's development moving forward. I've been working with the Hart County community since [YEAR], and I'm excited to continue building upon these ~~incredible~~ relationships. It's been a true pleasure getting to know residents and leaders throughout the county. This project in particular is very exciting because it's unique in that it requires no additional electrical infrastructure to support it; Hart County has the perfect prerequisites. We are making efficient use of available resources to deliver clean, renewable power to the region.

On behalf of the entire project team, we are deeply grateful for your participation and partnership. I look forward to working with you closely as the project develops. Please do not hesitate to reach out to me to discuss project details or with any questions you may have.

Sincerely,
Patrick Walsh
Senior Development Associate

As senior development associate, Patrick is responsible for for site selection, land acquisition, permitting, and building ~~close~~ relationships with the local community. He studied economics, business, and real estate at the University of Colorado, Boulder and has since returned to his hometown in the Midwest.

Patrick is passionate about working in the rapidly expanding renewable energy industry. He's excited by the prospect of delivering clean, sustainable energy that will support residential, commercial, and industrial power needs for decades to come.

847.507.2830 patrick.walsh@leewardenergy.com

LEEWARD
thoroughbred solar

PD10 Pile Driver

Operator's and Maintenance Manual

EN_o-m2_07 original instructions
Publication Date: 2022-04-22
Serial No. 1001 -
Order No. 105400CQ3
Cabled Assembly No. 296379241

Vermeer® | EQUIPPED TO DO MORE.®

Introduction

This manual explains the proper operation and maintenance of your machine. Study and understand these instructions thoroughly before operating or maintaining the machine. Failure to do so could result in personal injury or equipment damage. Consult your Vermeer dealer if you do not understand the instructions in this manual, or need additional information.

The instructions, illustrations, and specifications in this manual are based on the latest information available at time of publication. Your machine may have product improvements and features not yet contained in this manual.

To provide a better view, some photographs or illustrations in the maintenance sections may show the machine shields removed. **Never operate the machine with the shields removed - keep all shields in place.** If removing a shield is necessary, return it to its operating position before operating the machine.

Vermeer Corporation reserves the right to make changes at any time without notice or obligation.

Operation and maintenance instructions are included in the two Operator's and Maintenance Manuals provided with the machine. The tethered (cabled) manual must remain attached to the machine for ready reference. Store it in the manual storage box when not in use.

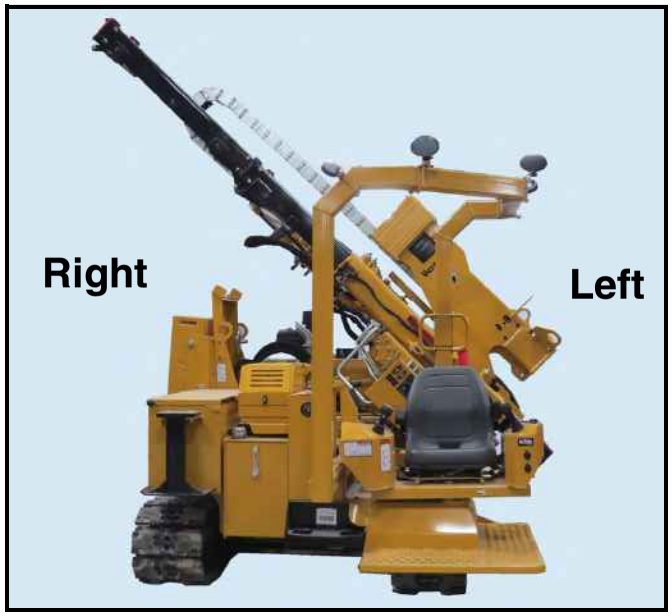
Additional copies of the manuals are available from your dealer. Use the reorder number on the front cover to order additional manuals.

Copies of this manual are available in Spanish from your dealer. Other languages may also be available.

Se dispone de ejemplares de este manual en español.

NOTICE TO OWNER

Replacement manuals are free of charge by registering your **used** Vermeer machine. Your machine's Operator's, Maintenance and Parts Manuals may be available online at www.myvermeer.com. For questions about online or printed manuals, or to register a used machine, contact the Data Analytics Department by telephone: 800-829-0051 or 641-628-3141; email: dataanalytics@vermeer.com; internet: www.vermeer.com or www.myvermeer.com; or, letter: Data Analytics Dept., Vermeer Corporation, PO Box 200, Pella IA 50219 USA.



Orientation: Right and left sides of the machine are determined by direction of forward travel in transport position as shown.

TRADEMARKS

Vermeer new industrial equipment limited warranty

Effective November 1, 2021 **Warranty period: 12 months / 1,000 hours**

Vermeer Corporation (hereinafter "Vermeer") warrants each new industrial product of Vermeer's manufacture to be free from defects in material and workmanship under normal use and service for one (1) full year after initial purchase/retail sale or 1,000 operating hours, whichever occurs first. This limited warranty shall apply only to complete machines of Vermeer's manufacture; parts are covered by a separate Limited Warranty. **EQUIPMENT AND ACCESSORIES NOT OF VERMEER'S MANUFACTURE ARE WARRANTED ONLY TO THE EXTENT OF THE ORIGINAL MANUFACTURER'S WARRANTY AND SUBJECT TO THEIR ALLOWANCE TO VERMEER ONLY IF FOUND DEFECTIVE BY SUCH MANUFACTURER.**

EXTENDED WARRANTY OPTIONS ARE AVAILABLE FOR PURCHASE

WARRANTY TERMS During the limited warranty period specified above, any defect in material or workmanship in any warranted item of Vermeer industrial equipment not excluded below shall be repaired or replaced at Vermeer’s option without charge by any authorized independent Vermeer dealer. The warranty repair or replacement must be made by a Vermeer independent authorized dealer at the dealer’s location. Vermeer will pay for replacement parts and such authorized dealer’s labor in accordance with Vermeer’s labor reimbursement policy. Vermeer reserves the right to supply remanufactured replacement parts as it deems appropriate.

RETAIL PURCHASER RESPONSIBILITY: This limited warranty requires proper maintenance and periodic inspections of the industrial equipment as indicated in the operator’s/maintenance manual furnished with each new industrial equipment. The cost of routine or required maintenance and services is the responsibility of the retail purchaser. The retail purchaser is required to keep documented evidence that these services were performed. This Vermeer new industrial equipment limited warranty may be subject to cancellation if the above requirements are not performed. Vermeer industrial equipment with known failed or defective parts must be immediately removed from service.

EXCLUSIONS AND LIMITATIONS

The warranties contained herein shall **NOT APPLY TO:**

(1) Any defect which was caused (in Vermeer's sole judgment) by other than normal use and service of the industrial equipment or by any of the following: (i) accident; (ii) misuse or negligence; (iii) overloading; (iv) lack of reasonable and proper maintenance; (v) improper repair or installation; (vi) unsuitable storage; (vii) non-Vermeer approved alteration or modification; (viii) natural calamities; (ix) vandalism; (x) parts or accessories installed on Industrial equipment which were not manufactured or installed by Vermeer authorized dealers; (xi) the elements; (xii) collision or other accident.

(2) Any industrial equipment whose identification numbers or marks have been altered or removed or whose hour meter has been altered or tampered with.

(3) Any industrial equipment which any of the required or recommended periodic inspection or services have been performed using parts not manufactured or supplied by Vermeer or meeting Vermeer specifications including, but without limitation, engine tuneup parts, engine oil filters, air filters, hydraulic oil filters and fuel filters.

(4) New industrial equipment delivered to the retail purchaser in which the equipment/warranty registration has not been completed and returned to Vermeer within ten (10) days from the date of purchase.

(5) Any defect which was caused (in Vermeer's sole judgment) by operation of the industrial equipment not abiding by standard operating procedures outlined in the operator's manual.

(6) Engine, battery, and tire limited warranties and support are the responsibility of the respective product's manufacturer.

(7) Transportation osts, if any, of transporting to the Vermeer dealer. Freight costs, if any, of transporting replacement parts to the Vermeer dealer.

(8) The travel time of the Vermeer dealer's service personnel to make a repair on the retail purchaser's site or other location.

(9) In no event shall Vermeer's liability exceed the purchase price of the product,

(10) Vermeer shall not be liable to any person under any circumstances for any incidental or consequential damages (including but not limited to loss of profits, out of service time) occurring for any reason at any time.

(11) Diagnostic and overtime labor premiums are not covered under this limited warranty policy. Oils and fluids are not covered under this limited warranty.

(12) Depreciation damage caused by normal wear, lack of reasonable and proper maintenance, failure to follow operating instructions, misuse, lack of proper protection during storage.

(13) Accessory systems and electronics not of Vermeer's manufacture are warranted only to the extent of such manufacturer's respective limited warranty, if any.

(14) Down hole toolage is not covered under this warranty.

(15) Wear items which are listed below:

Antenna, augers, base plates, bearing seals, bearings, belts, brake pads, brushes, bolts/torqued parts, boom wear items, booms, brake pads, bushings, buckets, cable fingers, chain, clamping vise parts, clutches, clutch components, conveyor belts, cups, curtains, cutter wheels, dies, digging chain, digging rims, discharge conveyor belts, drive chuck, drums, earth stakes, end idler, end rollers, fan belts, flails, flashings, hammers, hoses, infeed conveyor belts, infeed conveyor chains, jaws, knives, leaf chain, lights, lights on light kits, liners, outer drum bearings, packing assemblies, pins and bushings, pins and pivot points, piston cups, pivot rings, plastic wear strips, plow blades, plungers, pockets, rods, rollers, rod loader parts, rooter bands, rotor plates, rubber grouser bars, rubber or plastic items, rubber tracks, rubber track bands, rubber shielding, scraper knives, screens, seals, service items, shear bar/bedknife, skid shoes, sprockets, teeth, tips, tip mounts, tires, thrust wheels, tooling, track chain, track guides, track idlers, track pads, track rollers, track sprockets, trench cleaner (crumber), trip cleaners, trommel brushes, trommel screen panels, trunnion and pivot points, valves, valve seats, water hoses, water swivels, wear bars, wear blocks, wear plates, wear strips, wheels, winch cable, windshield wiper parts.

PARTS WARRANTY:

Parts replaced in the warranty period will receive the balance of the first year new industrial equipment limited warranty during the first (12) months or 1,000 hours, whichever comes first. Replacement parts after the original machine warranty are warranted to be free from defects of material for ninety (90) days or the part will be repaired or replaced without labor coverage for removal and reinstallation.

EXCLUSIONS OF WARRANTIES: EXCEPT FOR THE WARRANTIES EXPRESSLY AND SPECIFICALLY MADE HEREIN, VERMEER MAKES NO OTHER WARRANTIES, AND ANY POSSIBLE LIABILITY OF VERMEER HEREINUNDER IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS, IMPLIED, OR STATUTORY, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. VERMEER RESERVES THE RIGHT TO MODIFY, ALTER AND IMPROVE ANY PRODUCT WITHOUT INCURRING ANY OBLIGATION TO REPLACE ANY PRODUCT PREVIOUSLY SOLD WITH SUCH MODIFICATION. NO PERSON IS AUTHORIZED TO GIVE ANY OTHER WARRANTY, OR TO ASSUME ANY ADDITIONAL OBLIGATION ON VERMEER'S BEHALF.

NO DEALER WARRANTY. The selling dealer makes no warranty of its own and the dealer has no authority to make any representation or promise on behalf of Vermeer or to modify the terms or limitations of this warranty in any way.

ELECTRONIC SIGNATURES. Each of the parties hereto expressly agrees to conduct transactions by electronic means. Accordingly, the parties agree and intend that all electronic transmissions including, without limitation, electronic signatures, shall be considered equivalent to an original writing as provided under Iowa law, as it may be amended from time to time.

MANUFACTURED BY:
Vermeer Corporation
Pella, Iowa 50219 USA

TELEMATICS EQUIPMENT NOTICE AND CONSENT

This machine may be equipped with Vermeer GPS tracking equipment that collects and transmits data about the machine's performance and location. This data is collected by Vermeer and held, used and shared consistently with the terms of the Vermeer Privacy Policy and any applicable provisions of the End User License Agreement ("EULA") which may be found at: http://www2.vermeer.com/vermeer/NA/en/N/privacy and http://telematics.vermeer.com.

Machine owner and designated representatives ("subscribers") may access the data through a subscription based website called Vermeer Telematics (formerly known as Vermeer Fleet/Fleet Edge). Use of Vermeer Telematics is subject to the subscriber's acceptance of the terms and conditions of use and payment of any applicable subscription or license fees. If you are a current subscriber, you may obtain a copy of the currently effective terms and conditions through your login or by contacting appsupport@vermeer.com.

More information about Vermeer Telematics may be found at: http://store.vermeer.com.

Machine owner may opt-out of the telematics service and collection of data by Vermeer Telematics at any time by contacting your Vermeer dealer or appsupport@vermeer.com.

Receiving and Delivery Report

DEALER PREP

Check or perform the following:

General

___ Check for shipping damage or shortage.
___ Check that ***Operator's Manual*** is attached to the machine.
___ Check for correct lubrication.
___ Check bolts for tightness.
___ Check installation and condition of all shields.
___ Check condition of all safety signs and operation decals.
___ Check seat belt installation and operation. Refer to ***page 60-27.***
___ Check operation of Neutral Start Interlock system. Refer to ***page 60-23.***
___ Check operation of Operator Presence system. Refer to ***page 60-25.***
___ Check track tension. Refer to ***page 60-54.***
___ Check operation of instruments and lights. Refer to ***page 20-2.***
___ Check all phases of operation. Refer to ***page 20-2.***

Engine

___ Check oil level in engine.

___ Check level and concentration of coolant.

___ Check condition of air cleaner.

___ Check battery electrolyte level and charge.

___ Check air intake clamps.

___ Check radiator hose clamps.

___ Check belts for correct tension. Refer to engine manufacturer operator's manual.

___ Check operation of engine.

Hydraulics

___ Check hydraulic fluid level.

___ Check all hydraulic components for leaks or damage.

___ Check controls for correct function. Refer to ***page 20-1.***

DELIVERY

Check and perform the following with the customer:

___ Review all sections of the ***Operator's Manual***.

___ Review welding alert and location of electronic modules to unplug. Refer to ***page 60-2.***

___ Grease or oil all lubrication points.

Review and demonstrate with the customer the various aspects of pile driver operation:

___ Overall explanation of how the pile driver works.

___ Pile driver safety.

___ Preparing the pile driver for operation. Refer to ***page 40-1.***

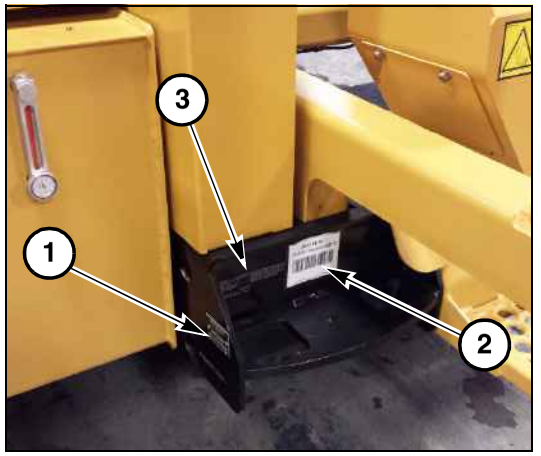
DEALER/OWNER INFORMATION

dealer	owner
address	address
city	city
state / province	state / province
zip / postal code	zip / postal code
country	country
phone number	phone number
email address	email address

IDENTIFICATION NUMBERS - RECORD

Machine Model Number **(1)** _____

Machine Serial Number **(1)** _____



MACHINE IDENTIFICATION DECAL

This decal **(2)** contains a barcode with the machine's vehicle identification number (VIN). It can be scanned with any barcode reading device.

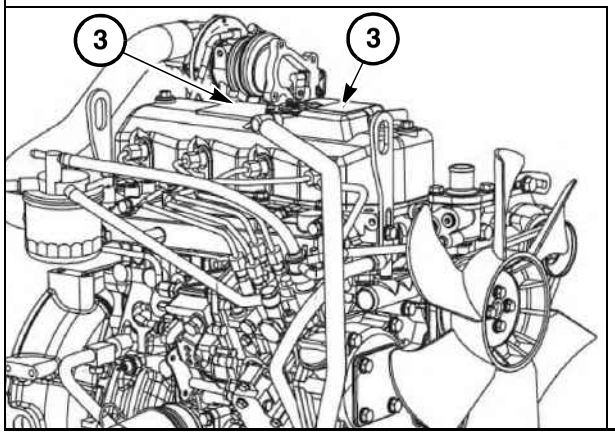
ENGINE IDENTIFICATION NUMBERS - RECORD

Engine Identification tags **(3)** are located on top of engine and next to machine identification decal.

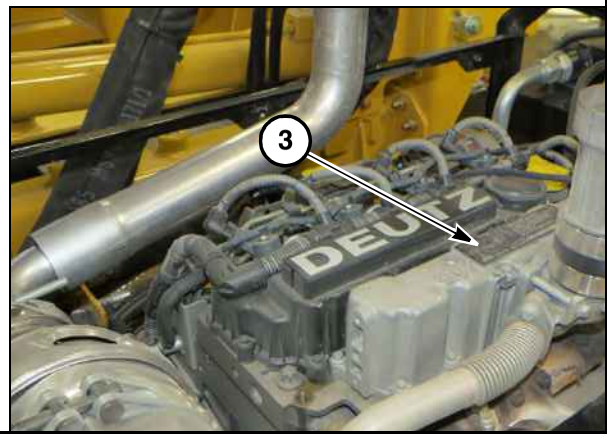
Engine Model Number _____

Engine Serial Number _____

Yanmar engine



Deutz engine



REMOTE CONTROL IDENTIFICATION NUMBERS - RECORD

Remove battery pack to view remote control identification numbers.

Remote Control Model Number **(1)** _____

Remote Control Serial Number **(1)** _____

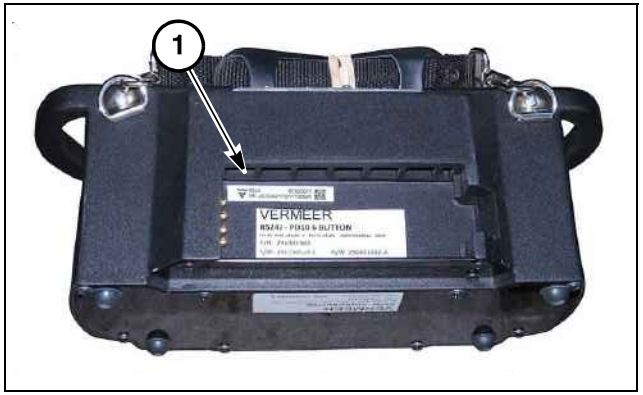


Table of Contents

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Section 10: Safety Messages

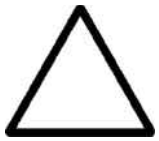
General safety messages are in this Safety Messages section. Specific safety messages are located in appropriate sections of the manual where a potential hazard may occur if the instructions or procedures are not followed.

A signal word "**DANGER**", "**WARNING**", or "**CAUTION**" is used with the safety alert symbol.

Safety signs with signal word "**DANGER**", "**WARNING**", or "**CAUTION**" are located near specific hazards.

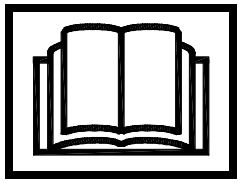
DANGER	Indicates a hazardous situation that, if not avoided, will result in death or serious injury.
WARNING	Indicates a hazardous situation that, if not avoided, could result in death or serious injury.
CAUTION	Indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.
NOTICE	Indicates information considered important, but not hazard-related.

SAFETY SYMBOL EXPLANATION

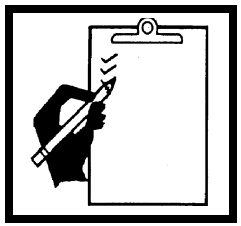


This is the safety alert symbol. This symbol is used in combination with an exclamation mark or other symbols to alert you to the potential for death or serious injury.

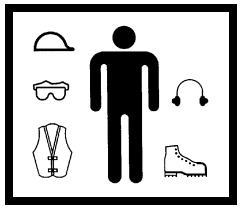
This symbol indicates that at least one part of the machine is not operating correctly. Shutting down the machine may not be necessary, but some maintenance may be required.



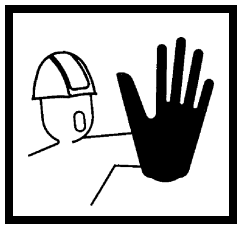
WARNING: Read Operator's Manual and safety signs before operating machine.



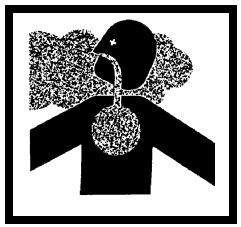
WARNING: Check machine before operating. Machine must be in good operating condition and all safety equipment installed and functioning correctly.



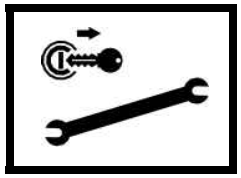
WARNING: Wear personal protective equipment. Wear close-fitting clothing and confine long hair. Additional personal protection requirements are explained separately. Refer to "Personal Protection," ***page 40-5***.



WARNING: Keep all spectators away.

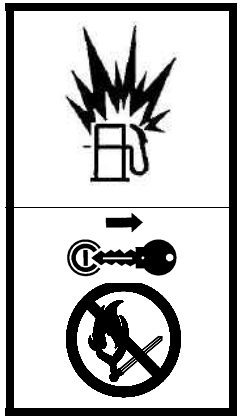


WARNING: Engine exhaust can asphyxiate or poison resulting in death or serious injury. Operate machine outdoors. If it is necessary to operate engine in an enclosed area, properly vent exhaust gases.



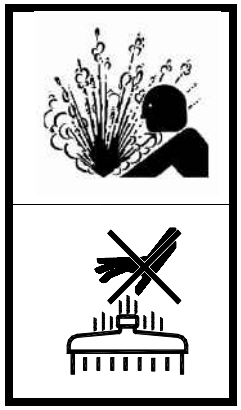
WARNING: Failure to use shutdown procedure can result in unexpected hazard(s). Death or serious injury could result due to entanglement, crushing, cutting, or other hazardous contact. Follow Shutdown Procedure after operating, before performing any service or maintenance, and before transporting. Refer to ***Shutdown Procedure, page 23-1***.

WARNING: Pressurized fluid can penetrate body tissue and result in death or serious injury. Leaks can be invisible. Keep away from any suspected leak. Relieve pressure in the hydraulic system before searching for leaks, disconnecting hoses, or performing any other work on the system. If you must pressurize the system to find a suspected leak, use an object such as a piece of wood or cardboard rather than your hands. When loosening a fitting where some residual pressure may exist, slowly loosen the fitting until oil begins to leak. Wait for leaking to stop before disconnecting the fitting. Fluid injected under the skin must be removed immediately by a surgeon familiar with this type of injury.



WARNING: Fuel and fumes can explode and burn.

Shut off engine before refueling. No flame. No smoking.



WARNING: Hot fluid under pressure can scald.

Allow engine to cool before opening radiator cap.

WARNING: Do not use the hammer to lift people.

WARNING: Make no modifications to your equipment unless specifically recommended or requested by Vermeer Corporation.

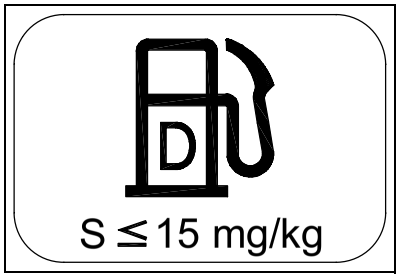
WARNING: Be sure that all safety devices, including shields, are installed and functioning correctly after servicing the machine.

WARNING: Failure to follow any of the preceding safety instructions or those that follow within this manual, could result in death or serious injury. This machine is to be used only for those purposes for which it was intended as explained in this Operator's Manual.

Section 12: Diesel Fuel Recommendations

DIESEL FUEL - SULFUR CONTENT

Tier 4 engines require Ultra Low Sulfur Diesel (ULSD) fuel, with sulfur content less than 15 ppm (15 mg/kg). Use of fuels other than what is specified in the engine manual will impact engine performance, damage engine emissions systems and may result in engine and exhaust system warranty being voided.



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Section 15: Intended Use

The PD10 pile driver is a self-propelled machine designed to drive metal piles or posts into the ground.

Always use this machine in accordance with the instructions contained in this manual, on safety signs on the machine, and in other materials provided by Vermeer Corporation.

Proper maintenance and repair is essential for safe and efficient machine operation. Do not use the machine if it is not in suitable operating condition.

In addition, ensure new operator is familiar with all the safety signs and control operations.

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Section 16: Vermeer Productivity Tools

VERMEER GPS TRACKING EQUIPMENT (TELEMATICS)

- Serial numbers 1001–3000 may be equipped with Vermeer GPS tracking equipment.
- Serial numbers 3001 and up are equipped with Vermeer GPS tracking equipment.

Vermeer uses GPS tracking equipment to collect data about the machine's performance and location. When activated, the telematics control unit (TCU) transmits the data to a subscription-based website called Vermeer Telematics (formerly known as Vermeer Fleet/Fleet Edge). Subscribers can access the data through a computer or mobile device.

Each subscription is valid for a current registered owner's specific machine. The subscription cannot be transferred to another machine or to a new machine owner.

- After subscribing, go to http://telematics.vermeer.com and refer to the bulletin for instructions on accessing the user's guides.
- Subscriptions can be canceled at any time by contacting your local Vermeer dealer or emailing appsupport@vermeer.com.
- Subscribers must notify appsupport@vermeer.com to cancel a subscription when selling a machine.

There are two levels of data access, as well as a third option which turns off the system.

- Full Implementation - The subscription owner, Vermeer and authorized dealers can all access the data. A new machine, manufactured by Vermeer Corporation and equipped with telematics, automatically begins transmitting data to Vermeer and its authorized dealer. The owner must activate the subscription to access the data. For more information on subscribing, contact your Vermeer dealer or email appsupport@vermeer.com
- Partial Implementation - only the registered owner and Vermeer Corporation can access the data. To select this option, contact your dealer or email appsupport@vermeer.com.
- Shut System Off - To discontinue data collection and turn off the system, email appsupport@vermeer.com.

Used Machines - to activate machine telematics after purchasing a used machine:

Step 1: View the compatible machine list online at http://store.vermeer.com, or contact your local Vermeer dealer or appsupport@vermeer.com to determine if machine telematics is available for installation.

Step 2: Contact your dealer or email appsupport@vermeer.com to ensure that any previous subscription related to your machine has been canceled.

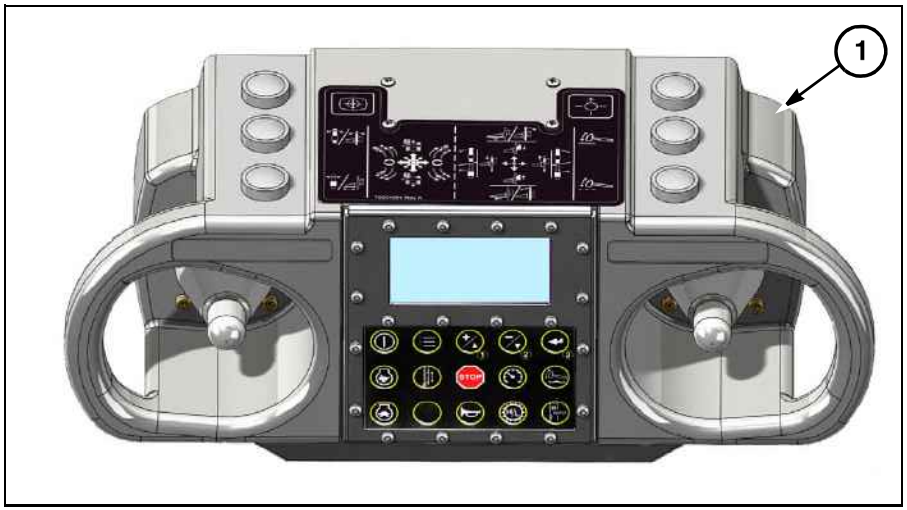
For more information, contact your Vermeer dealer or email appsupport@vermeer.com.

Section 20: Controls

OPTIONAL REMOTE CONTROL

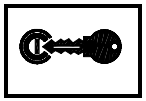
Remote Control **(1)** controls are detailed in the optional remote control section of this manual. Refer to “Optional Remote Control,” *page 21-1.*

The remote control is stored inside the toolbox. Refer to “Access - Storage for Optional Remote Control,” *page 20-21.*



ENGINE CONTROLS

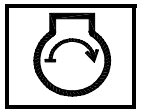
(1) Keyswitch



Counterclockwise . . . . . not used

Vertical position . . . . . .OFF

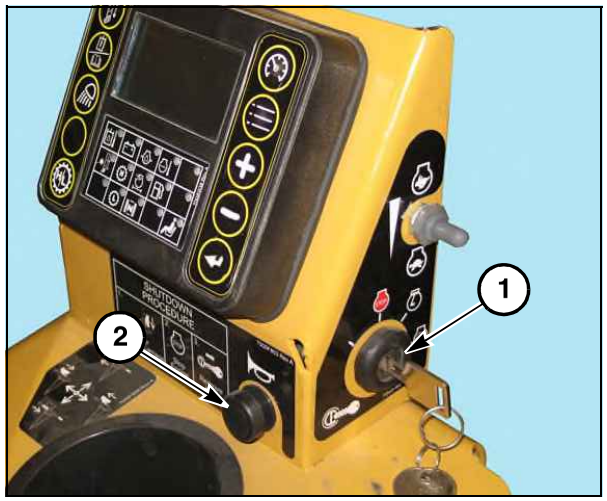
1st position clockwise . . . . . .RUN/electrical system ON



2nd position clockwise. . . . . START

Release key immediately after engine starts.

If either transport or operation controls are out of NEUTRAL, engine will start but machine will not function. Screen will show RESET LEFT JOYSTICK or RESET RIGHT JOYSTICK.



(2) Horn

Press. . . . . .to sound horn.

(3) **Throttle**

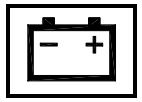
Push up. . . . . to increase RPM.

Push down . . . . . to decrease RPM.

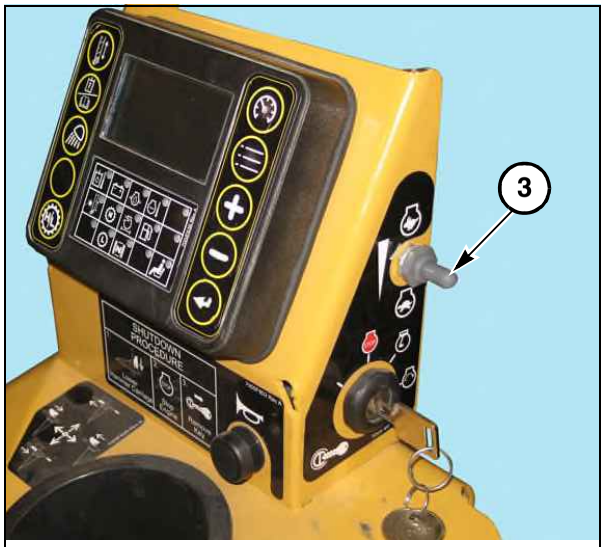
(4) **Battery Disconnect Switch**

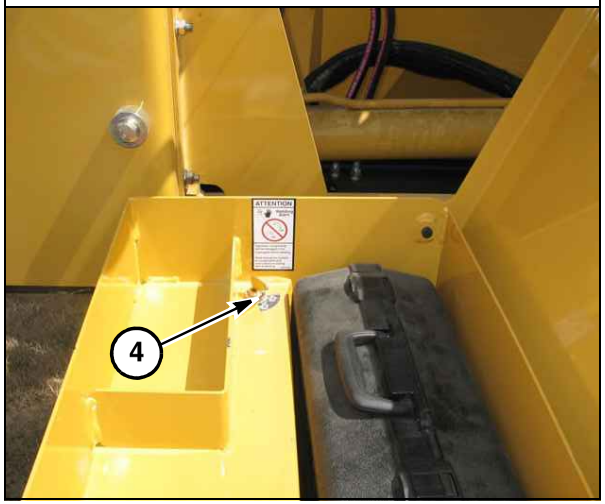
Rotate key **counterclockwise** . . . . . to DISCONNECT ground.

Rotate key **clockwise**. . . . . to CONNECT ground.



NOTICE: Do not disconnect battery power with *Keyswitch* ON. Damage to controller could result.

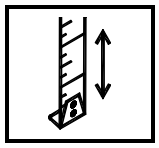




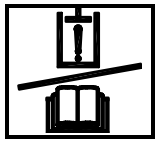
CONTROLLER KEYS

(1) Measure Mode Key
Press to toggle through the following measure modes:

- Manual
- Laser elevation (option)
- Laser elevation with GPS X/Y (option)
- GPS X/Y (option)
- GPS X/Y/Z (option)



(2) Valve Reset
Press . . . . . to reset control valve and clear valve faults.



(3) Work Lights
Press . . . . . to turn work lights ON/OFF.

(4) Ground Drive Speed Key
Press . . . . . to toggle between high and low ground drive speeds.

(5) Engine Key
Press . . . . . to toggle between main screen and engine screen.
Refer to "Controller Screens," ***page 20-24.***

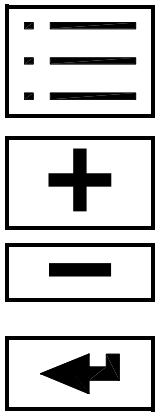
Keys 5, 6, 7, 8, and 9 are always available regardless of whether remote control or operator's station is active.

(6) Menu Key
Press. . . . . .to access menu.
Also press to back out of a selection without saving.

(7) Increase Key
Press. . . . . to scroll up through screens, or to increase values.

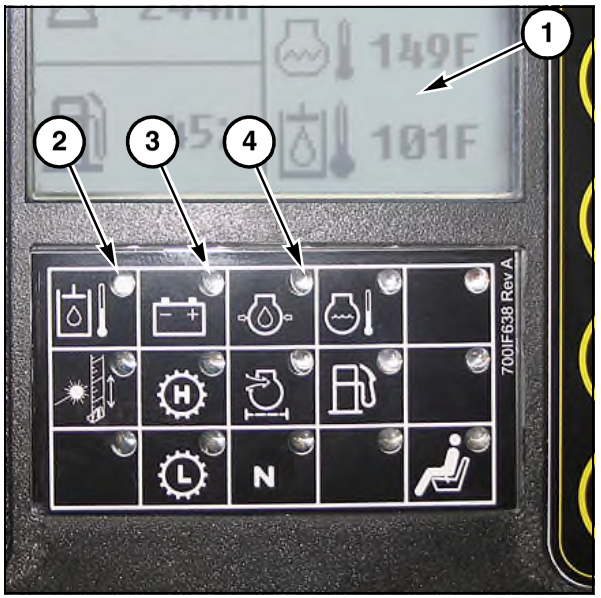
(8) Decrease Key
Press. . . . . to scroll down through screens, or to decrease values.

(9) Enter Key
Press. . . . . .to select screen items, or to save values.



Keys 5, 6, 7, 8, and 9 are always available regardless of whether remote control or operator's station is active.

MACHINE MONITOR LIGHTS



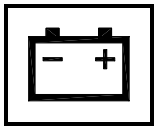
(1) Display

(2) Hydraulic Fluid High Temperature Indicator (Red)

Red light comes on when hydraulic oil temperature reaches 190°F (88°C) and indicates that oil temperature is getting too high. Follow ***Shutdown Procedure,*** page ***23-1.*** Check fan belt for wear, make sure cooler is not blocked, and that intake screens are clean.

If temperature exceeds 200°F (93°C) for 30 seconds, a hydraulic temperature high fault will be shown on display and an engine shutdown will occur.

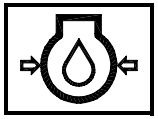
(3) Alternator Indicator (Red)



Indicates (depending on engine option) alternator is not charging correctly, or ignition switch is ON and engine is not running.

Indicates low or high voltage while engine is running.

(4) Low Engine Oil Pressure Indicator Light (Red)



A light comes on:

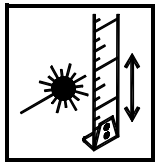
Deutz: When oil pressure falls below an acceptable minimum, with the engine running and the condition lasts for more than 12 seconds, the engine will shut down. Engine restart and run is allowed for up to 10 seconds to move machine if needed. This restart may be done multiple times.

Yanmar: When oil pressure is too low. If light comes on while engine is running, or if light does not shut off within 15 seconds after starting engine, follow ***Shutdown Procedure*** and correct the issue. Refer to ***page 23-1.*** After 15 seconds, the engine will shut down automatically if oil pressure indicator light is on for a continuous 5 seconds.

(5) Engine Coolant Temperature Indicator (Red)
Light comes on when temperature reaches 230°F (110°C).

If temperature continues to rise, the engine will derate to avoid excessive temperature. If coolant exceeds 246°F (119°C) for 10 seconds, the engine will shut down. Engine restart and run is allowed for up to 10 seconds to move machine if needed. This restart may be done multiple times.

(6) Laser Elevation (Option) (Green)
Indicates use of laser elevation has been enabled.

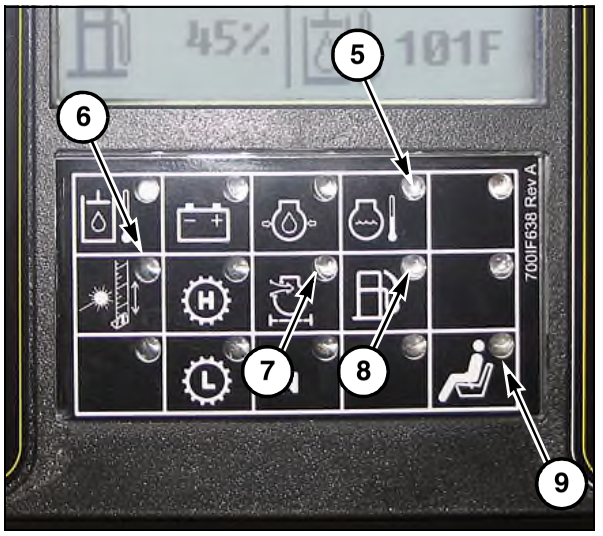


(7) Air Restriction Indicator (Amber)
Indicates air filter is dirty.

(8) Low Fuel Indicator (Amber)
Indicates less than 10% of fuel capacity remains.
Display also shows fuel remaining, in amount as a percent of capacity.

(9) Operator Presence System Engaged (Green)
Light comes on when operator is seated and key is on.

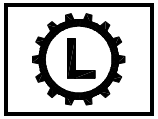
Light will flash for 3 seconds after operator leaves seat and then turns off. All engaged functions will stop.



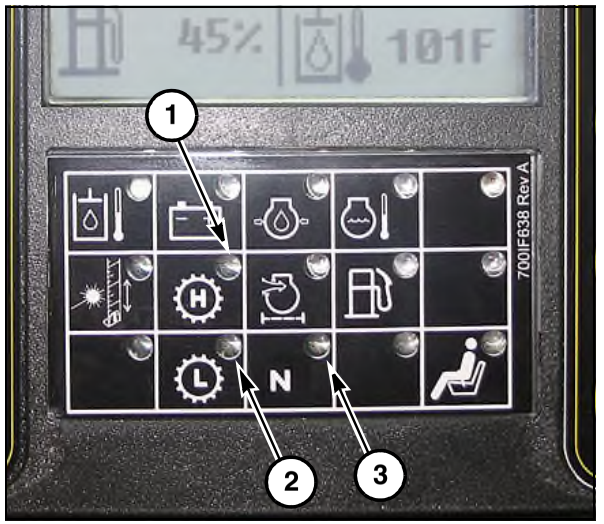
Ground Drive Indicator Lights

(1) Ground Drive High (Green)

(2) Ground Drive Low (Green)



(3) Neutral (Green)
Indicates joysticks and ground drive are in NEUTRAL. If any control is out of NEUTRAL, light goes out.
Hammer float switch does not turn light OFF.

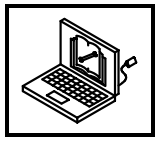


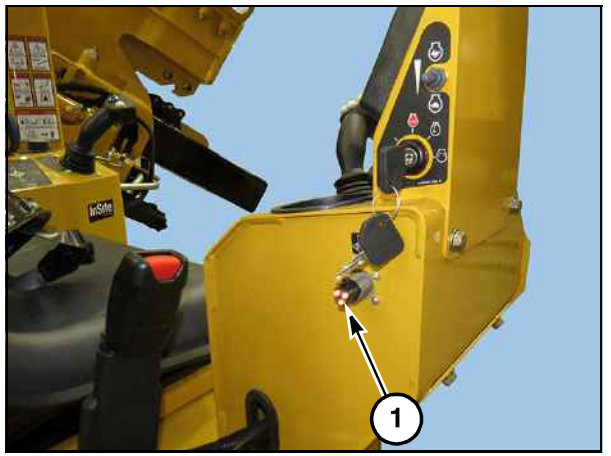
Park Brake

Park brake automatically comes on if ground drive is in NEUTRAL or if engine is OFF.

Diagnostic Port

Plug in laptop at port **(1)** to diagnose error messages.





OPERATOR'S STATION CONTROLS

(1) Operator Presence Switch

(2) Seat Slide Lever

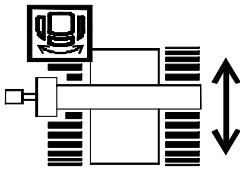
(3) Electrical Accessory Outlets

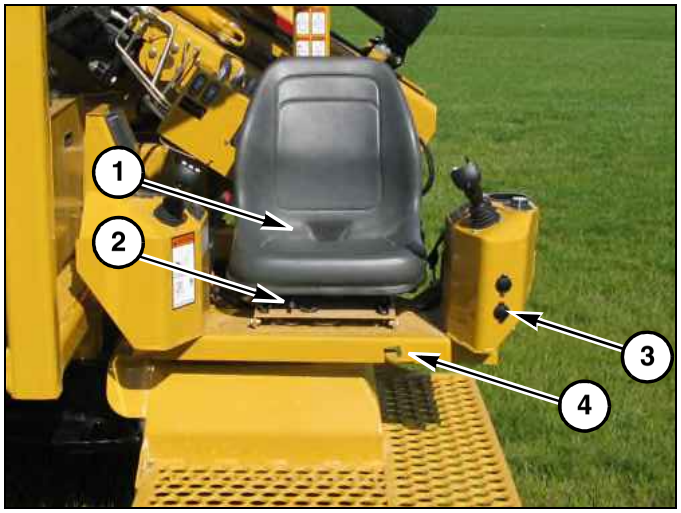
(4) Operator's Station Pivot Lever

Transport Mode Position

When sitting in seat, use lever **(4)** to rotate seat to the right.

Transport mode position is used for moving machine when it is not in Work mode. Hydraulic hammer, hammer float, auto plumb, auto home, and auto target functions are locked out in this position. All right joystick functions are locked out when ground drive is engaged. Backup alarm is active.





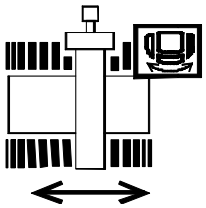
Transport Mode Position

Work Mode Position

When sitting in seat, use lever **(4)** to rotate seat to the left.

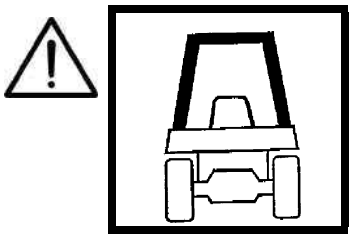
Work mode position is used for operating the hammer. All machine functions are available in work position.

Backup alarm is not active.



Work Mode Position

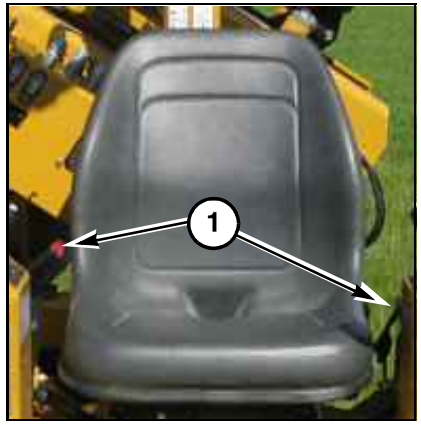
SEAT BELT



WARNING: The rollover protection structure (ROPS) is intended to protect the tractor operator in the event of a rollover. In order for you to be protected by the ROPS, you must wear seat belts. Follow instructions below relating to ROPS safety precautions.

Seat belt **(1)** must be worn at all times while operating the machine from the seated controls. To fasten seat belt, extend belt and snap it into belt clasp. Ensure all slack is out of the belt. Seat belt must be snug but not tight.

To unfasten seat belt, press red release button on belt clasp.



OPERATOR PRESENCE SWITCH

The Operator Presence system uses a switch in the seat **(1)** to detect the presence of an operator. The operator must be seated for the functions to operate.

If the operator leaves the seat while a function is operating, the function will stop within 3 seconds. All controls must be returned to NEUTRAL before any function can be resumed.

The Operator Presence system is intended for your safety and must be maintained in good functional condition. Contact your Vermeer dealer if it does not function properly.

GROUND DRIVE CONTROLS (LEFT JOYSTICK)

Machine moves in direction of left joystick movement.

Work Mode

Shown on machine in yellow.

When sitting in seat, use *Operator's Station Pivot Lever* to rotate seat to the left.

(1) Move joystick ahead and left

(2) Move joystick straight ahead from NEUTRAL to counter-rotate counterclockwise

(3) Move joystick ahead and right

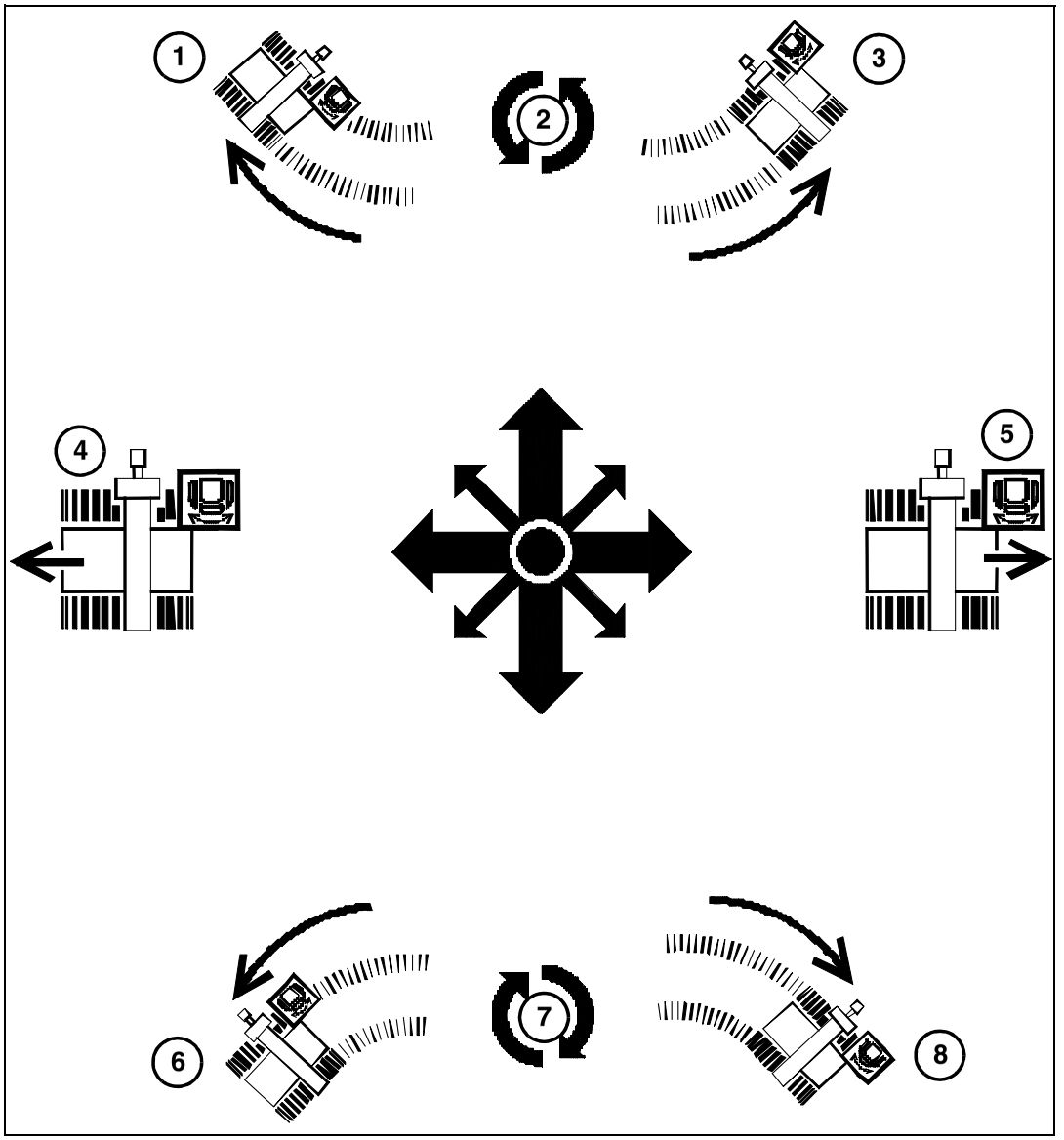
(4) Move joystick left

(5) Move joystick right

(6) Move joystick back and left

(7) Move joystick straight back from NEUTRAL to counter-rotate clockwise

(8) Move joystick back and right



Transport Mode

Shown on machine in white.

When sitting in seat, use *Operator's Station Pivot Lever* to rotate seat to the right.

(1) Move joystick ahead and left

(2) Move joystick ahead

(3) Move joystick ahead and right

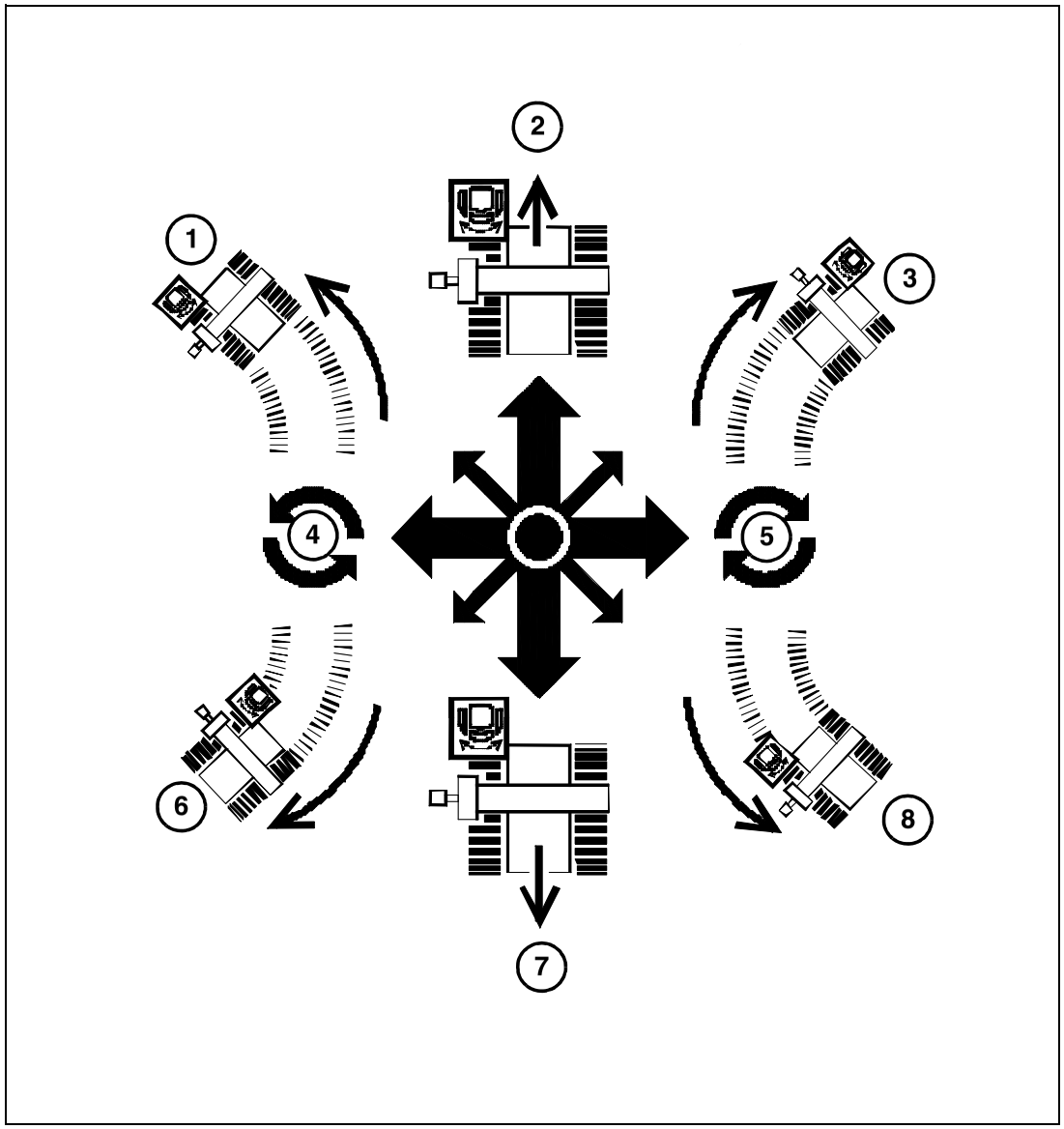
(4) Move joystick straight left from NEUTRAL to counter-rotate counterclockwise

(5) Move joystick straight right from NEUTRAL to counter-rotate clockwise

(6) Move joystick back and left

(7) Move joystick back

(8) Move joystick back and right



RIGHT JOYSTICK CONTROLS

(1) Hammer On/Off

Press and release. . . . . turn on hammer
Press again . . . . . turn off hammer

This control is only active in Work mode (seat rotated to the left).

(2) Hammer - Momentary

Press and hold . . . . . hammer functions only while holding button

This control is only active in Work mode.

(3) Mast Slide

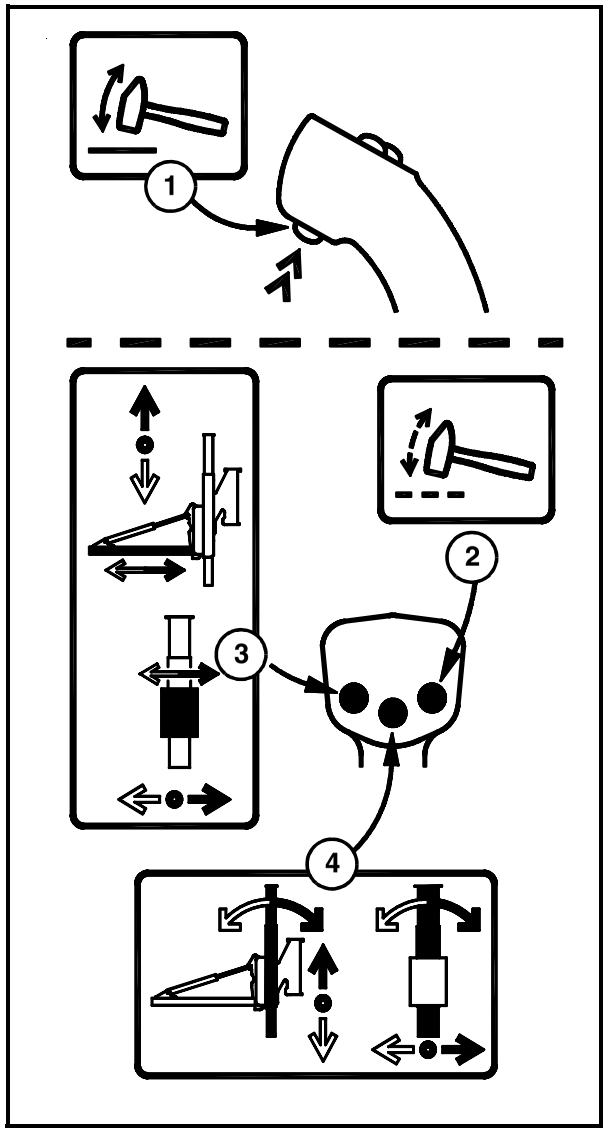
Press and hold-
While pushing joystick forward . . . . . mast slides away from machine
While pulling joystick back. . . . . mast slides toward machine

While pushing joystick left . . . . . mast slides toward rear of machine
While pushing joystick right. . . . . mast slides toward front of machine

(4) Mast Tilt

Press and hold-
While pushing joystick forward . . . . . mast tilts away from machine
While pulling joystick back. . . . . mast tilts toward machine

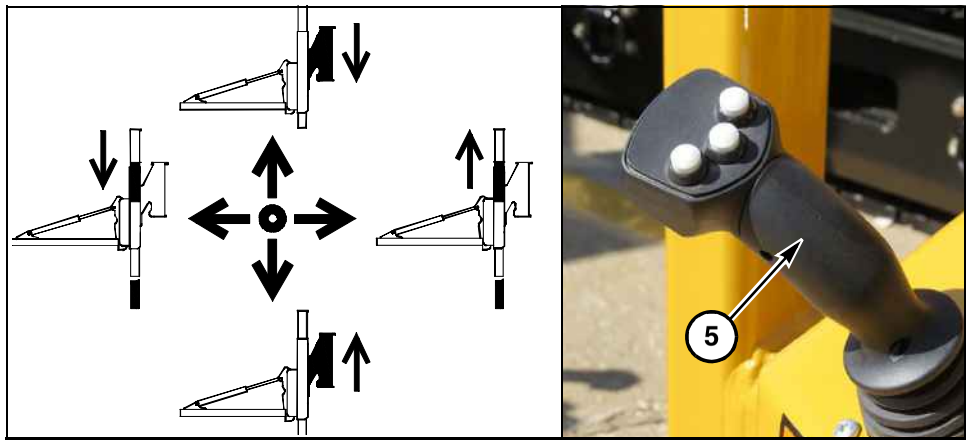
While pushing joystick left . . . . . mast tilts toward rear of machine
While pushing joystick right. . . . . mast tilts toward front of machine



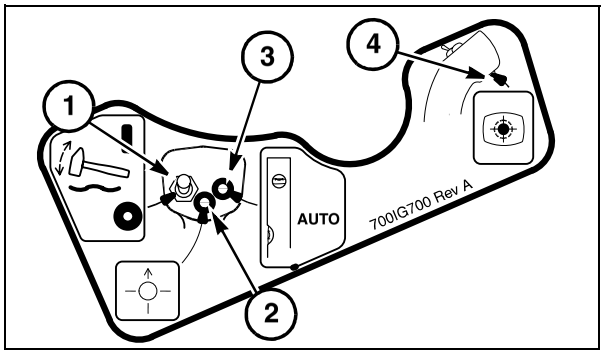
(5) Mast and Hammer Raise and Lower

Push joystick forward. . . . . .lower hammer
Pull joystick rearward . . . . . raise hammer
If hammer is raised above proximity switch zone, ground speed is limited. Refer to “Ground Speed Range,” *page 20-24.*

Joystick left. . . . . lower mast
Joystick right . . . . . .raise mast



LEFT JOYSTICK



(1) Hammer Float Switch

Push up . . . . . hammer float ON

Push down . . . . . hammer float OFF

(2) Auto Home Mast Slide (Enhanced Cylinder Option)

Slides mast to a preset, user adjusted, position within the horizontal slide range (both X/Y axes).

(3) Auto Plumb Switch

Auto Plumb automatically moves mast to vertical position.

Press. . . . . auto plumb activated

Press again . . . . . .auto plumb canceled

Auto Plumb does not function if:

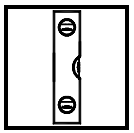
- operator's station is not in Work mode
- mast is tilted 5° or more away from machine, or 11° or more toward machine (with hammer in low position)
- mast is tilted 5° or more in any direction from plumb (with hammer in high position)
- hammer is engaged
- mast functions are engaged
- ground drive is engaged

(4) GPS Auto Target (if equipped with compatible third-party GPS system)

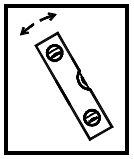
Slides mast to reach GPS target.

MAST PLUMB LIGHTS

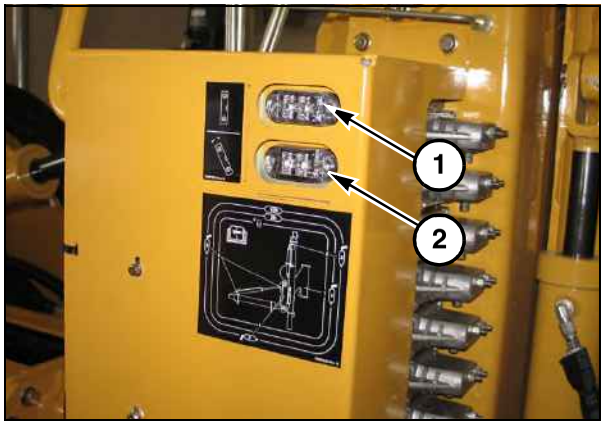
(1) **Green light on** . . . . . mast within plumb tolerance range



(2) **Amber light flashing** . . . . . Auto Plumb cycle active

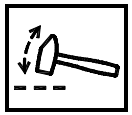


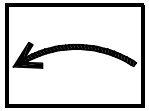
If amber light and green light are on at the same time, mast is within plumb tolerance but green light turned off at least once since completion of auto plumb.



HAMMER SPEED DIAL

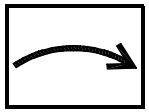
(1) **Hammer Speed (blows per minute)**





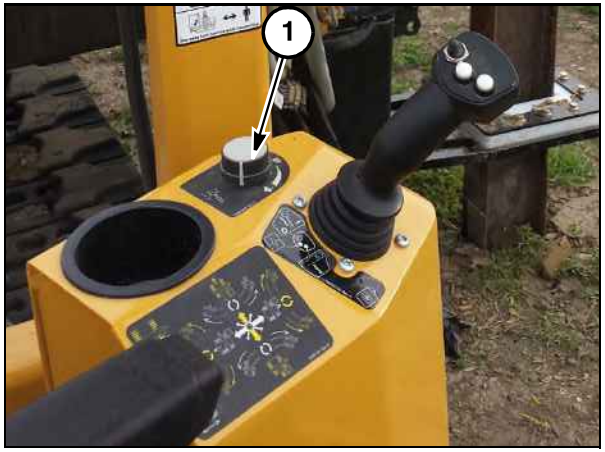
Left/counterclockwise . . . . . decrease hammer speed

Center . . . . . detent, hammer speed at 75%

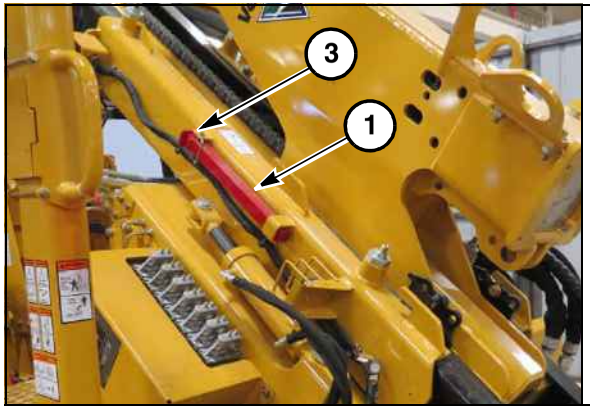


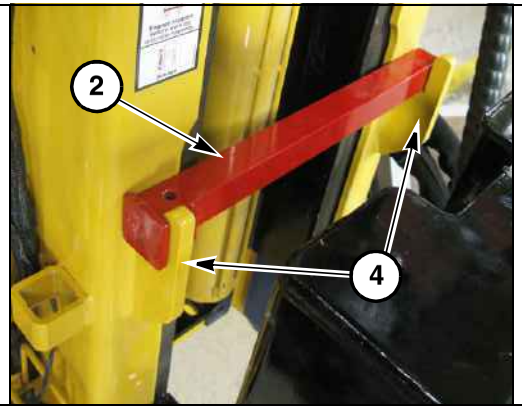
Right/clockwise . . . . . increase hammer speed

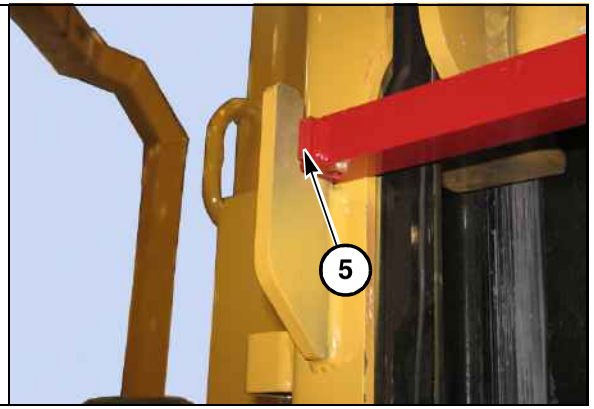
NOTICE: Never operate hammer without hammer being in contact with the pile.



HAMMER SUPPORT BAR







(1) Storage Position

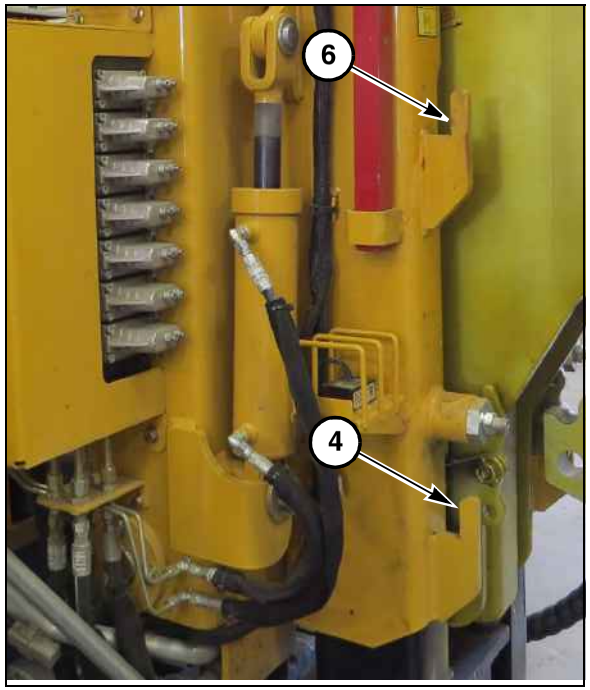
(2) Service Position

Step 1: Remove snap pin **(3)** and slide support bar out of storage position.

Step 2: Install bar in lower brackets **(4)**, with stop **(5)** on support bar, positioned to prevent bar from sliding.

Step 3: Lower hammer to support bar.

A second set of brackets **(6)** is provided for some service procedures.



LASER RECEIVER (OPTION)

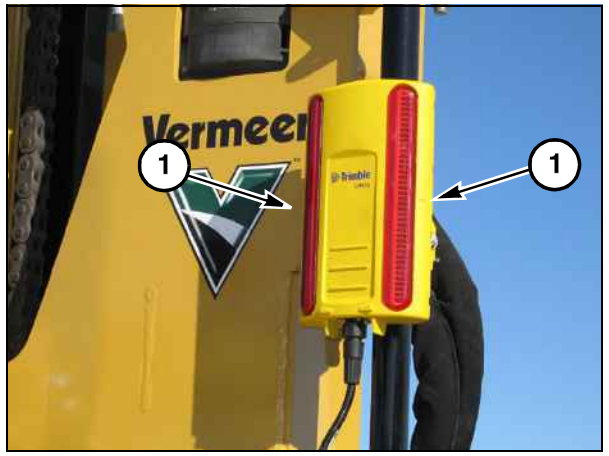
Laser receiver is mounted on hammer carriage.

Hammer slows as it approaches laser-set height.

Hammer stops when it reaches laser-set height.

Arrows **(1)** on receiver are set points.

Press *Measure Mode Key* to select laser elevation mode.
Refer to “Measure Mode Key,” ***page 20-4.***

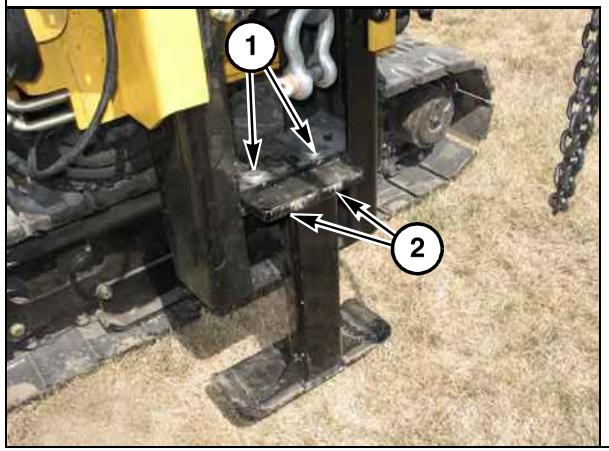


STABILIZER FOOT

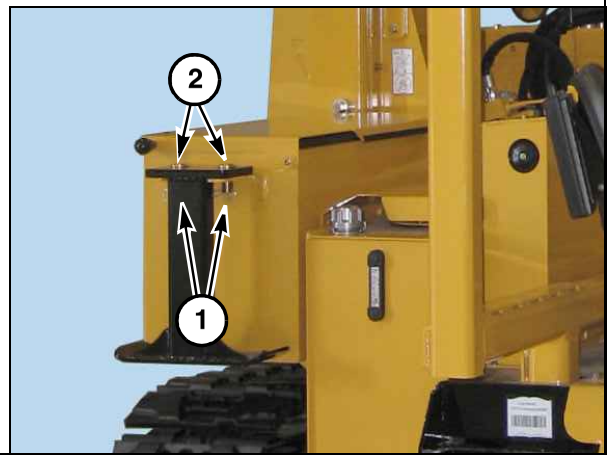
The stabilizer foot is used for pile extraction.

Secure in work position or storage position with pins **(1)** and hairpins **(2)**.

Stabilizer foot in work position



Stabilizer foot in storage position

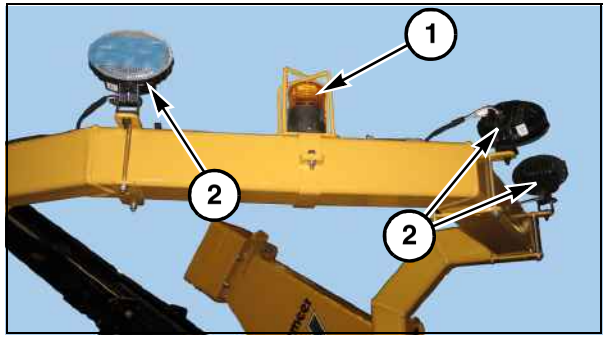


LIGHTS

(1) Beacon for Optional Remote Control

Beacon turns on when remote is enabled.

(2) Work Lights



ACCESS PANELS

Access - Engine

At rear of machine, release latches and open door **(1)** to access:

- Engine Oil: Fill, Filter, and Dipstick
- Fuel/Water Separator filter (Deutz engine only)

Access - Coolant

At rear of machine, unscrew knob to slide plate **(2)** to the side and access radiator cap.

Access - Hydraulic Pump

At rear of machine, remove bolts and shield **(3)** to access hydraulic pump stack.

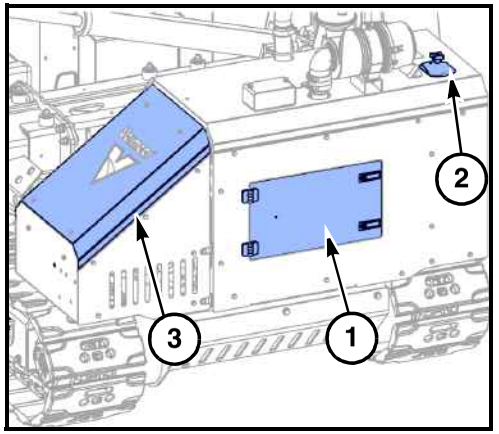
Access - Battery/Battery Disconnect Switch

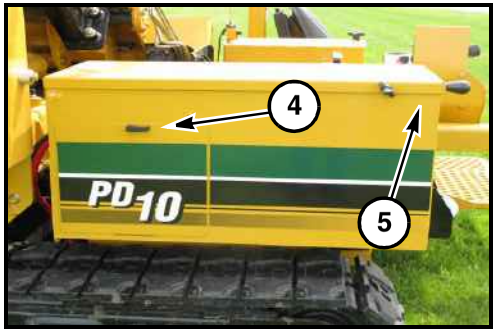
On right side, access for the following:

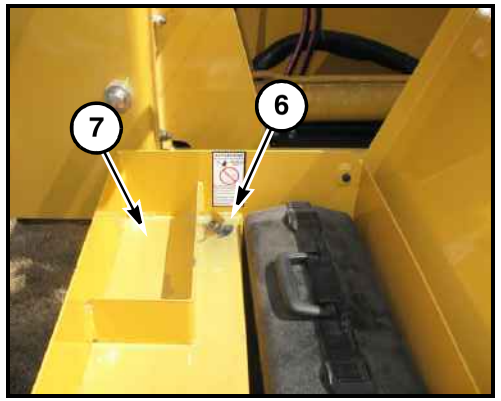
- Open compartment **(4)** to access battery.
- Open toolbox **(5)** to access *Battery Disconnect Switch* **(6)**.

Access - Storage for Optional Remote Control

- The storage location for an optional remote control **(7)** is inside the toolbox **(5)**.

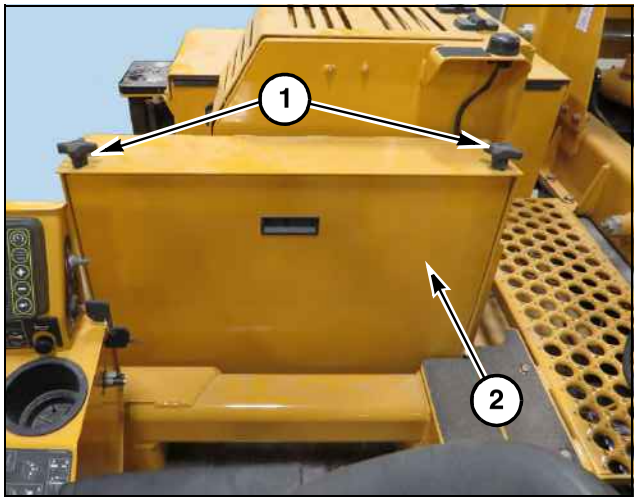






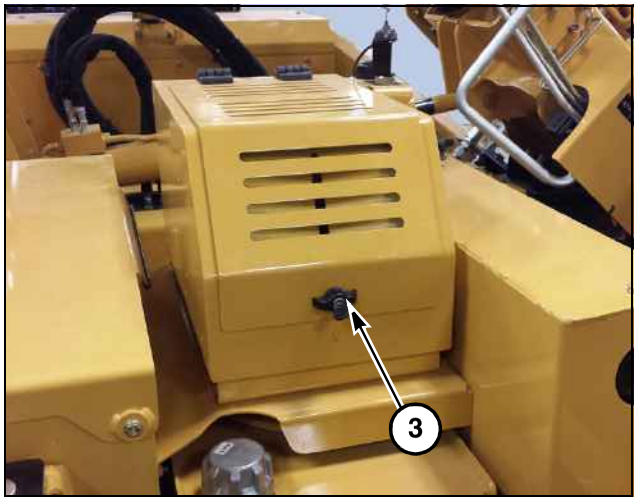
Access - Fuses/Relays

At front of machine by operator's station, unscrew knobs **(1)** and remove shield **(2)** to access fuse panel and relays.



Access - Telematics, Compatible Third-Party GPS System

Open compartment **(3)** to access telematics hardware and connection for compatible third-party GPS system.

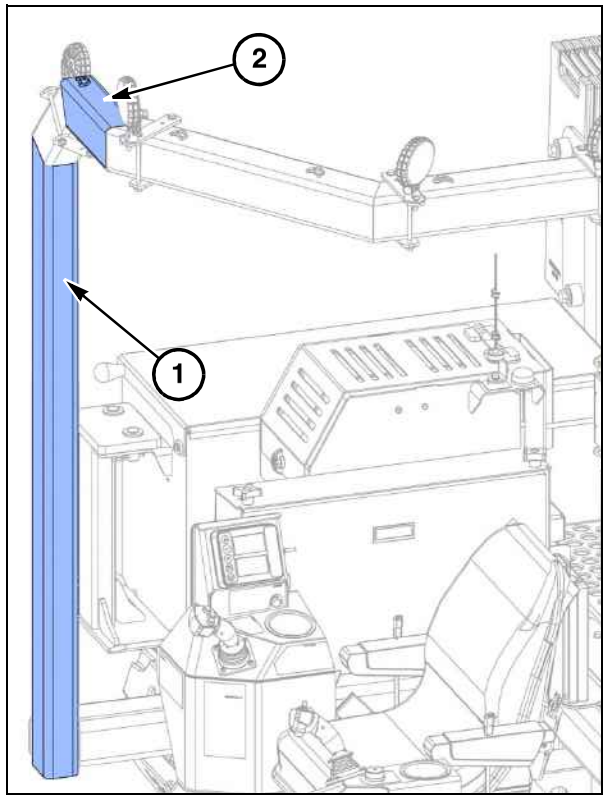


FIRE EXTINGUISHER MOUNTING LOCATION

A fire extinguisher (not supplied with machine) can be mounted on right side post of ROPS **(1)**. Clamp the fire extinguisher bracket to the ROPS bar. Do not drill or weld on the ROPS bar. Unauthorized modification of the ROPS could weaken the structure and reduce protection. Refer to “Rollover Protective Structure (ROPS),” *page 30-3.*

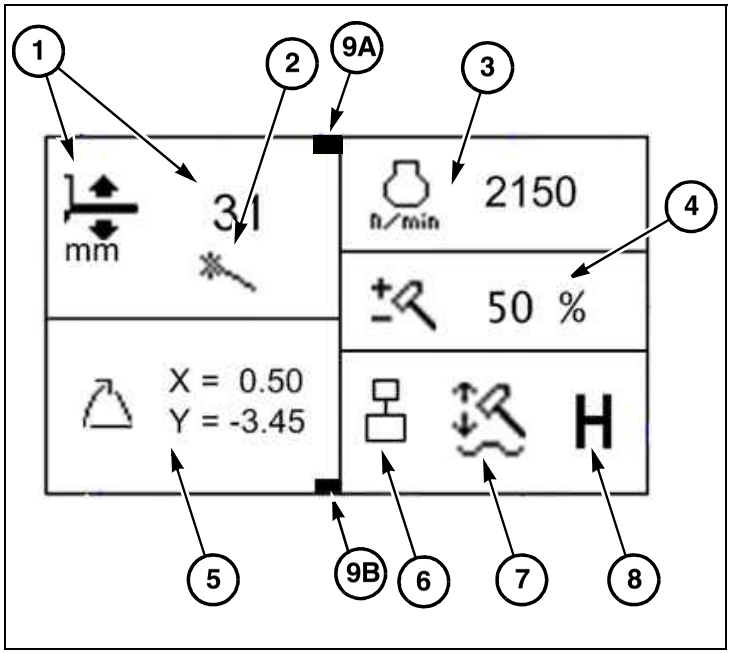
WARNING BEACON MOUNTING LOCATION

A warning beacon can be mounted on the overhead bar of the ROPS **(2)**. Clamp the warning beacon to the ROPS bar. Do not drill or weld on the ROPS bar. Unauthorized modification of the ROPS could weaken the structure and reduce protection. Refer to “Rollover Protective Structure (ROPS),” *page 30-3.*



CONTROLLER SCREENS

Main Screen



(1) Laser Elevation (if equipped)
Elevation from target in millimeters

(2) Measure Mode Selection
Refer to "Measure Mode Selections," *page 20-25.*

(3) Engine Speed
RPM

(4) Hammer Speed Flow Output Range
50–100%

(5) Mast Frame Angle
Angle away from vertical axis
X axis is parallel to direction of travel.
Y axis is perpendicular to direction of travel.
When auto plumb is active, the letter "A" replaces the icon.

(6) Remote Control
On: remote enabled
Flashing: remote disabled or off
Off: operator in seat, or remote receiver not installed

(7) Hammer Float: float ON

(8) Ground Speed Range
H: high speed range
L: low speed range
Only limited low speed range is allowed when hammer is in high position. High and low speed ranges are allowed when hammer is in low position.

(9) Hammer High/Low Status
Position of black rectangle indicates hammer is in either high position **(9A)** or low position **(9B)**.

Measure Mode Selections

Available modes depending on machine setup:

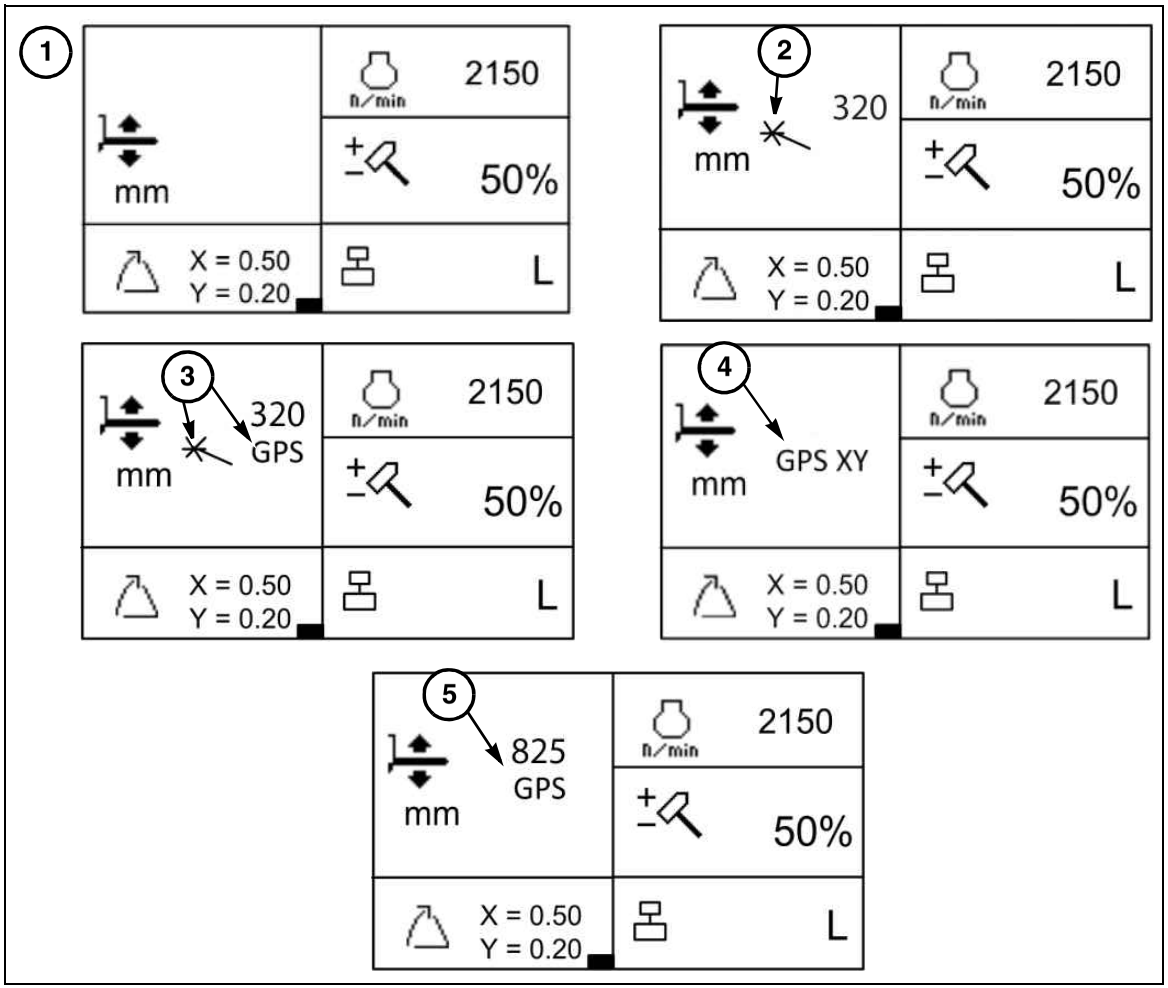
(1) Manual:
Manual positioning and elevation are enabled.

(2) Laser Elevation:
Laser elevation is enabled and requires optional laser receiver. Manuals positioning enabled.

(3) Laser Elevation with GPS X/Y:
Laser elevation is enabled and requires optional laser receiver. GPS positioning is enabled and requires compatible third-party GPS system.

(4) GPS X/Y:
GPS positioning is enabled and requires compatible third-party GPS system.

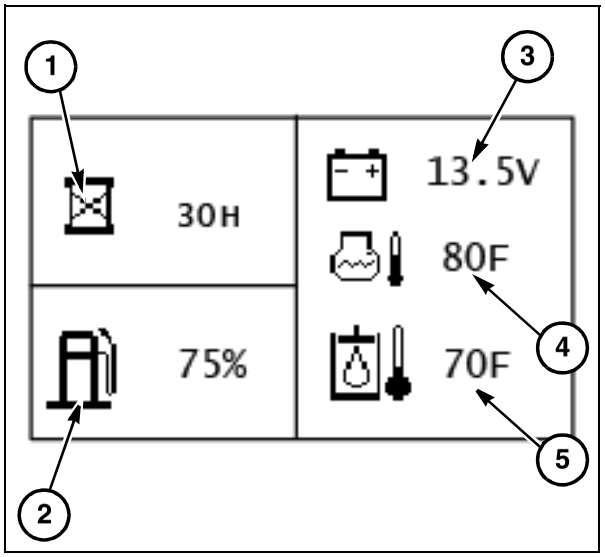
(5) GPS X/Y/Z:
GPS positioning and elevation is enabled, and requires compatible third-party GPS system.



Engine Screen

The Engine Screen appears when *Engine Key* on DP10 Controller is pressed.

Press *Engine Key* again to return to Main Screen.



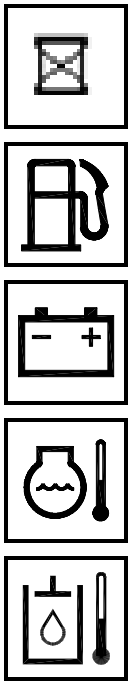
(1) Engine Hours

(2) Fuel Level

(3) System Voltage

(4) Coolant Temperature

(5) Hydraulic Temperature

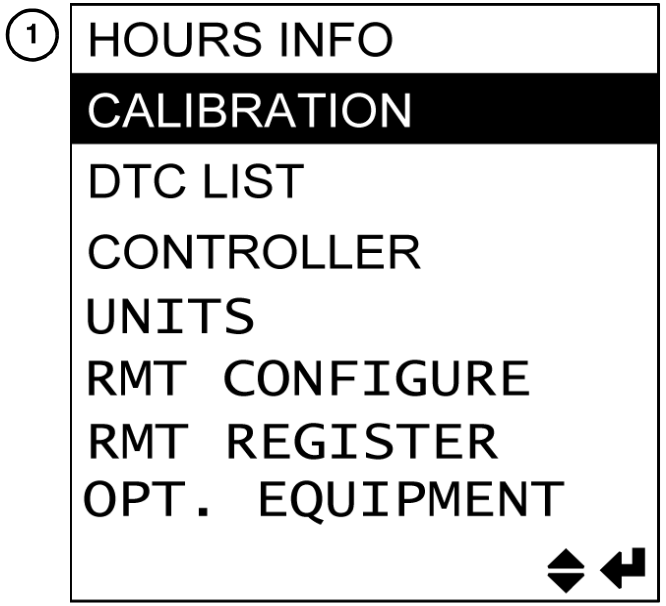


MAIN MENU SCREEN

The Main Menu Screen **(1)** appears when *Menu Key* on DP10 Controller is pressed.

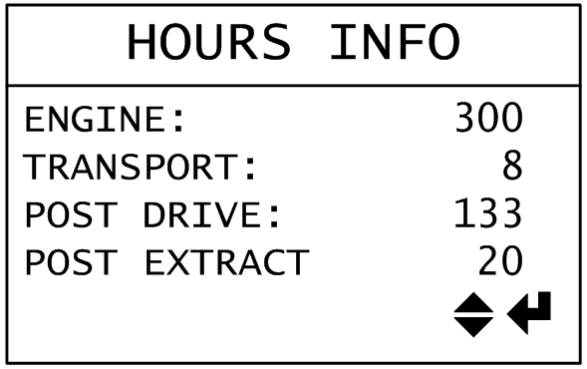
Press *Increase/Decrease Keys* to highlight desired menu item. Press *Enter Key* to select highlighted item.

Press *Menu Key* to return to Main Screen.



Hours Info Screen

Screen displays engine hours, transport hours, post driving hours, and post extraction hours.



Calibration Screen

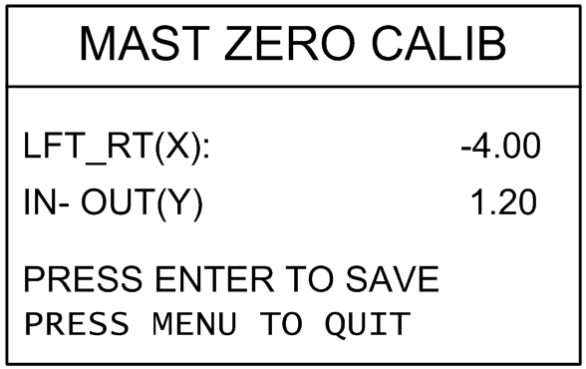
Press *Increase / Decrease Keys* to highlight desired calibration item. Press *Enter Key* to select highlighted item.

Mast Zero Screen

Use secondary measuring device, such as a bubble level, to verify mast is vertical. Then press *Enter Key* to set mast angle to zero.

X axis is parallel to direction of travel.

Y axis is perpendicular to direction of travel.



Ground Drive Screens

Use these screens to adjust steering offset.

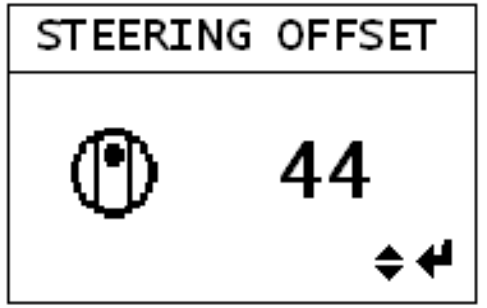
If the machine tracks more in one direction because of the position of the mast and hammer or ground conditions, changing the steering offset value guides the tracking to the other direction.

Step 1: Press *Increase/Decrease Keys* to highlight desired item.
For forward travel, choose STEERING FWD.
For rearward travel, choose STEERING REV.

Step 2: Press *Enter Key* to select option.

Step 3: Press *Increase/Decrease Keys* **(1)** to adjust bias. Adjustable range is -100 to +100.

- A lower steering offset value biases machine steering toward the left.
- A higher steering offset value biases machine steering toward the right.



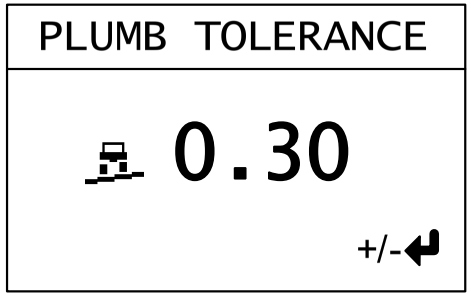
Plumb Tolerance Screen

Plumb tolerance allows the operator to choose the precision angle required to operate the auto plumb.

A value of 0.30 means ±0.3° from 0° will be considered plumb.

Tolerance is ±5.0° in 0.05° increments.

Press +/- *Keys* to increase/decrease value.



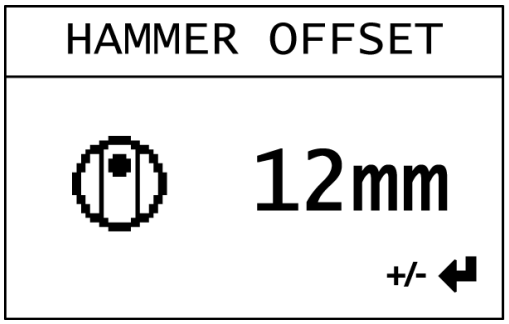
Hammer Offset Screen

Use this screen to adjust hammer shutoff when driving to either a laser receiver target or a GPS elevation target. This adjustment helps to compensate for varying soil density, and decreases the chance of over driving posts in softer soil conditions.

A value of 12 mm means that hammer is shut off 12 mm above target elevation. Adjust as needed for soil conditions. Regardless of offset value, controller screen will show actual distance to target elevation.

Offset is adjustable from 0 to 1000 mm.

Press +/- *Keys* to increase/decrease value.



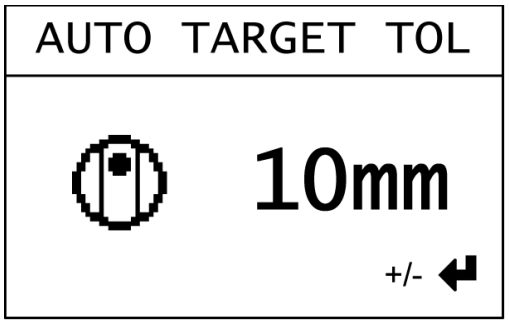
Auto Target Tolerance Screen

Auto target function uses a tolerance zone around target pile location to position mast using compatible third-party GPS system.

A lower value results in a smaller tolerance zone.

Tolerance is adjustable from 5 to 50 mm.

Press +/- *Keys* to increase/decrease value.

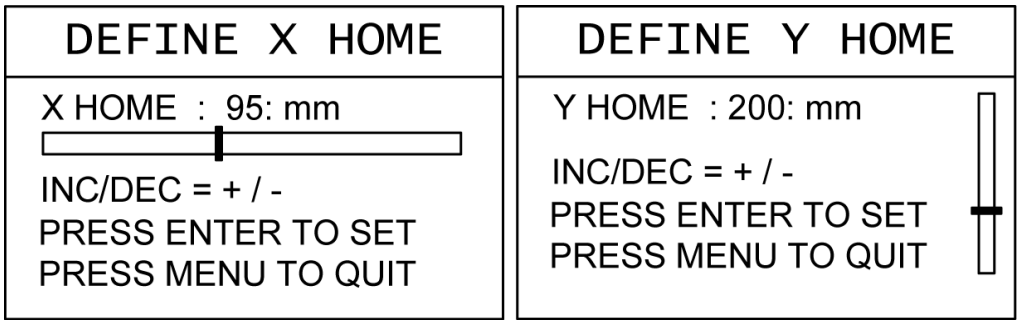


Define X Home and Y Home Position Screens

These screens allow the “Return to Home” position to be defined for X and Y when used in conjunction with the slide position sensors.

Press +/- *Keys* to increase/decrease value.

Press *Enter Key* to set value.

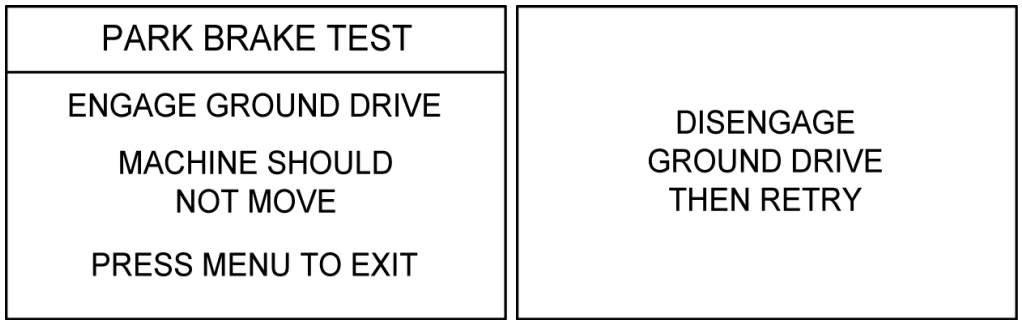


Park Brake Test Screen

Select this screen to perform a park brake test.

Engage ground drive after selecting brake test. Machine should not move during test. Contact local Vermeer dealer if machine moves during test.

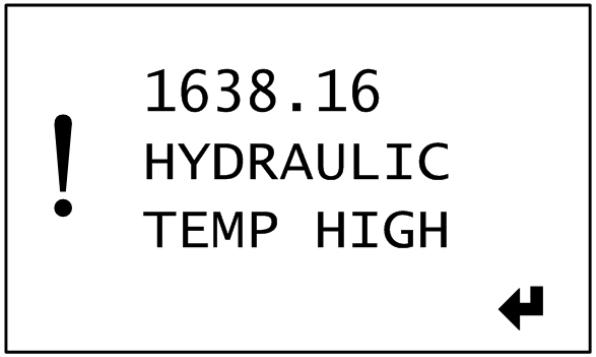
“Disengage Ground Drive, Then Retry” will be shown on display if ground drive is active before selecting test. Refer to “Park Brake - Check,” ***page 60-24.***



DTC (Diagnostic Trouble Code) List Screen

When a fault becomes active, its code number and text is shown on the display. Faults remain on the display until they become inactive, are cleared, or until hidden by a higher priority fault.

Press *Enter Key* to clear it from the display. After clearing, fault is only shown if it becomes active again.



Fault Storage Screen

Up to 10 faults are stored, with additional faults overwriting the oldest entry. View stored faults by selecting DTC List on the Main Menu Display.

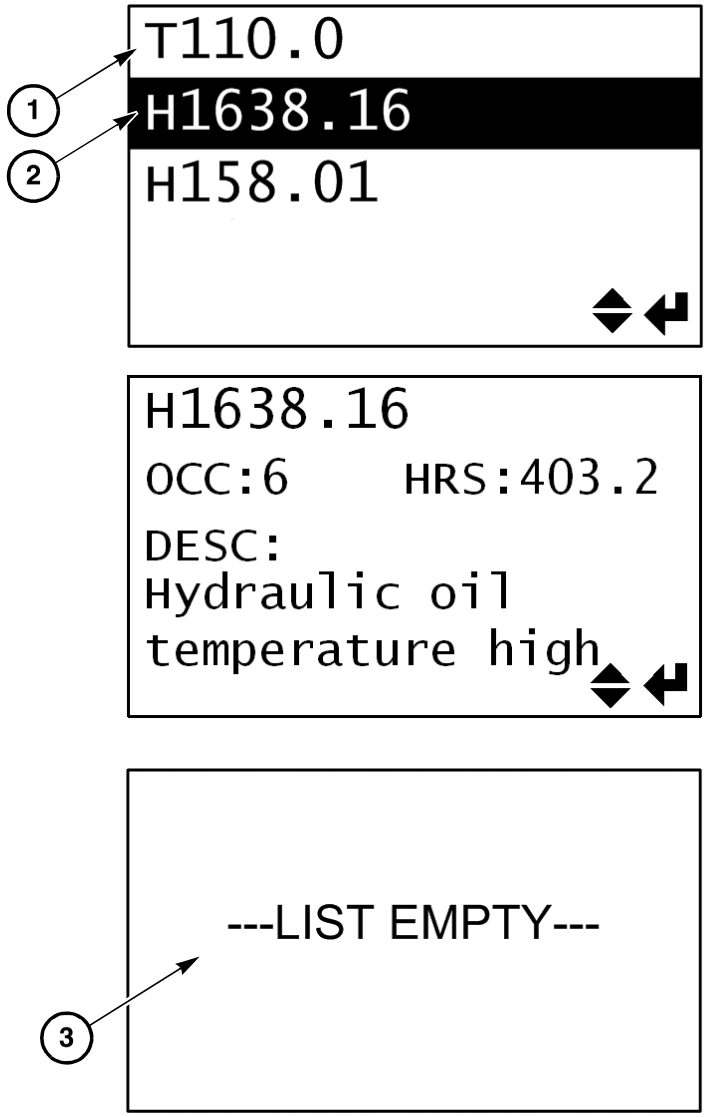
The fault list display shows active and previously active faults.

- Currently active fault: T before fault number **(1)**
- Previously active fault: H before fault number **(2)**

Use +/- *Keys* to navigate through fault list.

Press *Enter Key* to select a fault and see more information. Descriptive text, total number of occurrences since last cleared, and an engine hour time-stamp of the last occurrence is displayed.

List Empty **(3)** appears on the screen when no faults are stored.

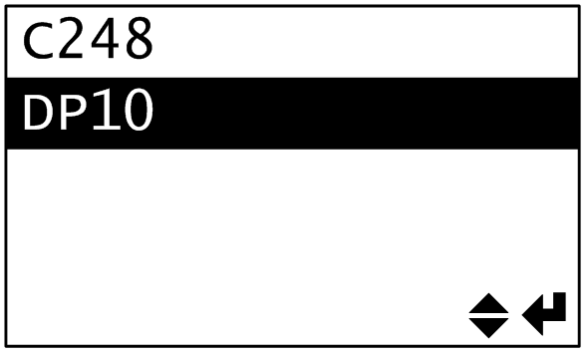


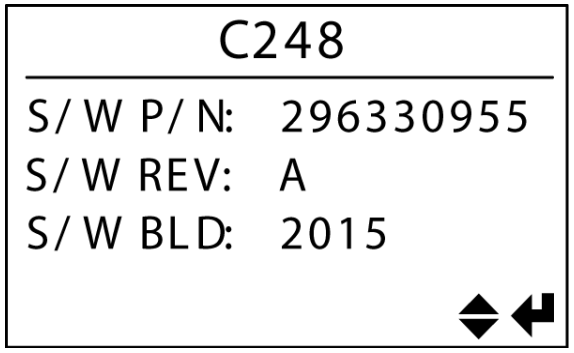
Valve Reset Key

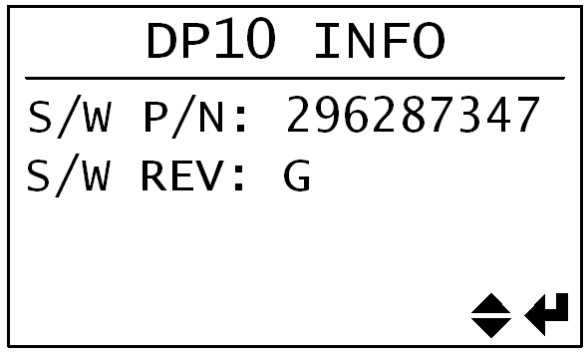
If mast or hammer fail to respond to joystick commands, a fault message will be shown on screen. Check behind valve banks for a red light. If red light is on, press *Valve Reset Key* **(1)**.

If issue continues after pressing key, contact your Vermeer dealer.

Controller Screen (Information Only)







Use +/- *Keys* to highlight a controller.

Press *Enter Key* to select controller and view its software information.

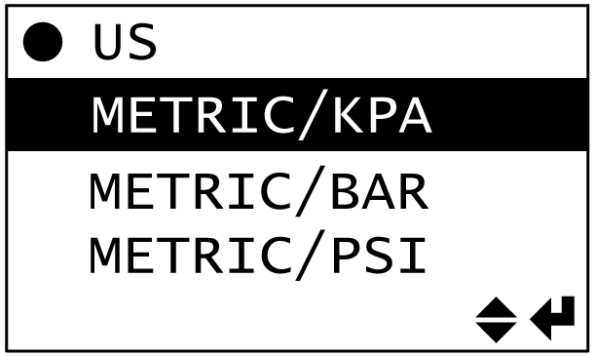
Information such as software part number, revision, and build is shown on screen depending on which controller is selected.

Units Selection Screen

Switch between U.S. units, metric units with kPa, metric units with bar, or metric units with psi.

Use +/- *Keys* to highlight a unit of measure.

Press *Enter Key* to select.

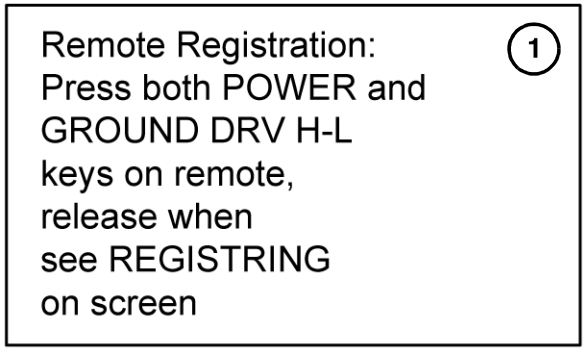


Remote Register Screen

Use this screen to register remote control with remote receiver on machine.

Follow instructions as shown on remote control screen **(1)**.

When registration is completed, “REGISTERED” is shown on remote control screen.

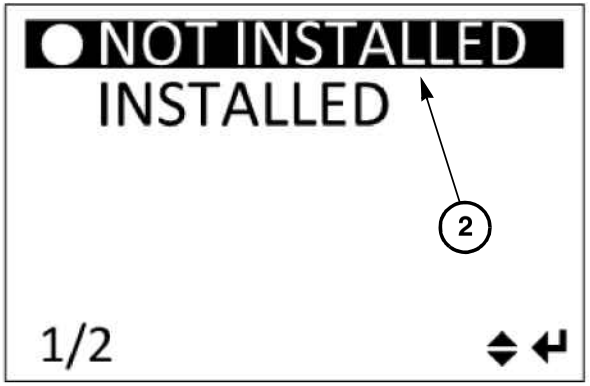


Remote Configure Screen

Remote control receiver is automatically detected when installed on machine. Use this screen if remote control receiver is removed.

Use +/- *Keys* to highlight “Not Installed” **(2)**.

Press *Enter Key* to select.



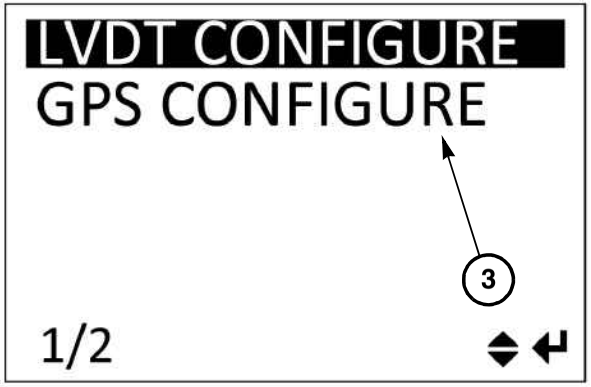
Optional Equipment Screen

LVDT sensors (used to monitor slide position) or compatible third-party GPS equipment is automatically detected when installed on machine. Use this screen if optional equipment is removed.

Use +/- *Keys* to highlight optional equipment **(3)** that was removed.

Press Enter Key to select.

Use +/- *Keys* to highlight “Not Installed” **(2)** and press *Enter Key* to select.



Inclinometer Offline

When the inclinometer is offline (failed or disconnected), the fault message, “INCLINE SNSR COMM FAULT”, will display. The machine functions will be affected and include one or more of the following:

- Engine speed will be limited to a maximum of 2300 rpm (Deutz) or 2500 rpm (Yanmar).
- Mast tilt is disabled with hammer in a high state.
- Mast tilt speed is limited with hammer in low state.
- Hammer raise/lower speed is limited.
- Mast raise/lower speed is limited.
- Ground drive speed is limited to low range.
- Auto plumb is disabled.
- Auto home is disabled.
- Auto target is disabled.
- Mast angle value is displayed as dashes.

Press enter to clear the fault message.

One of the following advisory messages will display when actuating a function that is not allowed:

- Inclinometer Offline
- Functions are Limited
- Read Operator’s Manual

To position the machine for tracking:

Step 1: Lower hammer

Step 2: Lower mast

Step 3: Tilt mast to cradle

Before tracking, refer to “Transporting the Machine,” ***page 30-1***.

Section 21: Optional Remote Control

The remote control **(A)** is stored inside the toolbox. Refer to "Access - Storage for Optional Remote Control," *page 20-21.*

CONTROLS

(1) Plus/Up

Increases value or scrolls up.
Also the 1st key in remote control enable sequence

(2) Minus/Down

Decreases value or scrolls down.
Also the 2nd key in remote control enable sequence

(3) Enter

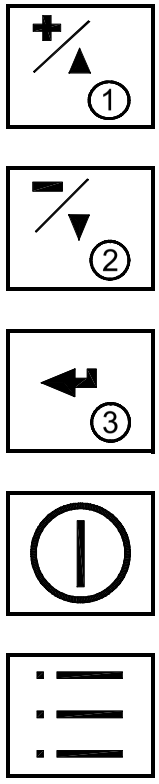
Selects a value or a selected menu item.
Also the 3rd key in remote control enable sequence

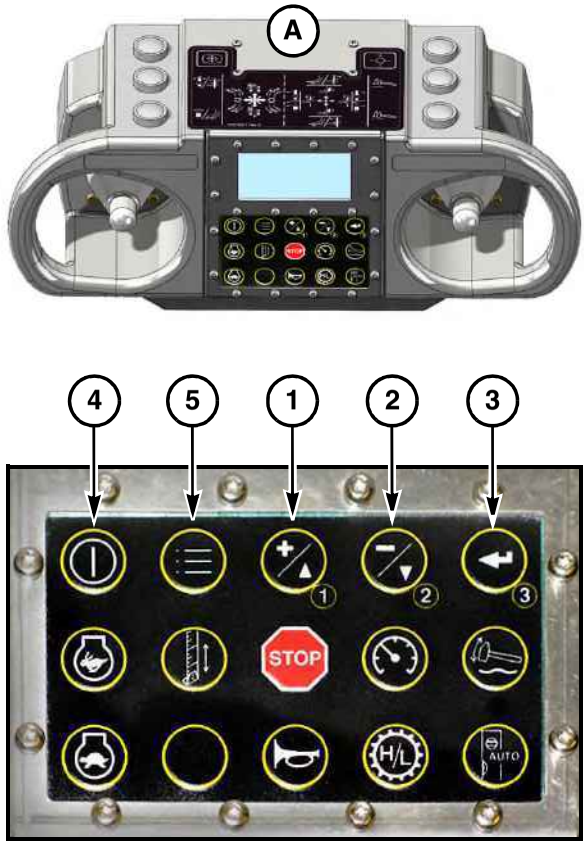
(4) Power

Press to turn remote control ON/OFF

(5) Menu

Press to access menu.
Also used to back out of a selection without saving



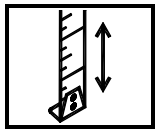


(6) Throttle Increase

Press . . . . . increases RPM

(7) Measure Mode

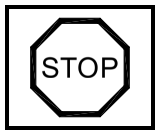
Press . . . . . select desired measure mode



(8) Engine Stop

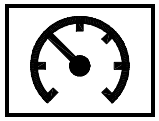
Press . . . . . stop engine

This key stops engine if remote control is connected, regardless of whether the remote is enabled or disabled.



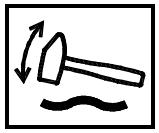
(9) Engine Screen

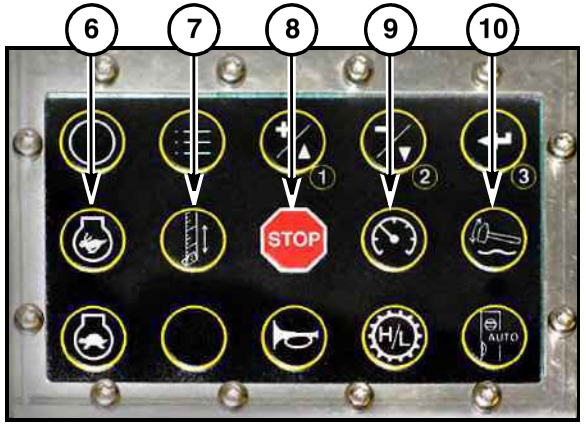
Shows engine screen. Refer to *page 20-26.*



(10) Hammer Float

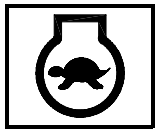
Press . . . . . hammer float ON
Press again . . . . . hammer float OFF





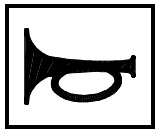
(11) Throttle Decrease

Press . . . . . decreases RPM



(12) Horn

Press . . . . . sounds horn

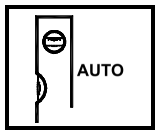


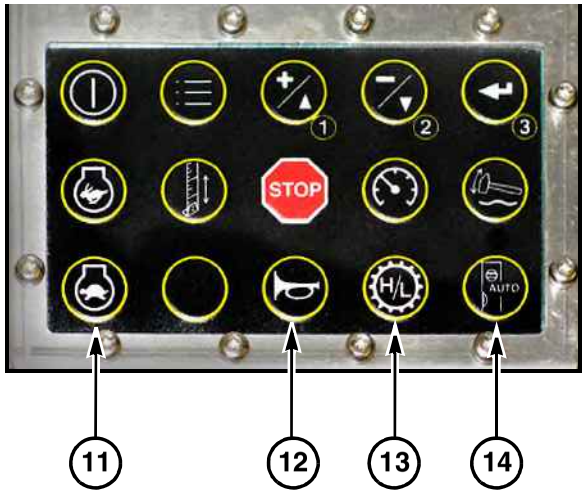
(13) 2-Speed Ground Drive Key

Press . . . . . toggles between HIGH and LOW ground drive speeds

(14) Auto Plumb

Automatically positions the mast vertically.
Press . . . . . activates Auto Plumb
Press second time . . . . . .cancels Auto Plumb





Auto Plumb does not function when:

- Mast is tilted 5° or more away from machine, or 11° or more toward machine (with hammer in low position).
- Mast is tilted 5° or more in any direction from plumb (with hammer in a high position).
- Hammer is engaged.
- Mast functions are engaged.
- Ground drive is engaged.

(15) Mast Tilt . . . . . Hold button and use right joystick **(A)** to tilt mast.

Push joystick left . . . . . mast tilts toward rear of machine

Push joystick right . . . . . mast tilts toward front of machine

Push joystick forward. . . . . mast tilts away from machine

Pull joystick back . . . . . mast tilts toward machine

(16) Mast Slide . . . Hold button and use right joystick **(A)** to slide mast.

Push joystick left . . . . . mast slides toward rear of machine

Push joystick right . . . . . mast slides toward front of machine

Push joystick forward. . . . . mast slides away from machine

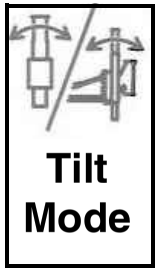
Pull joystick back . . . . . mast slides toward machine

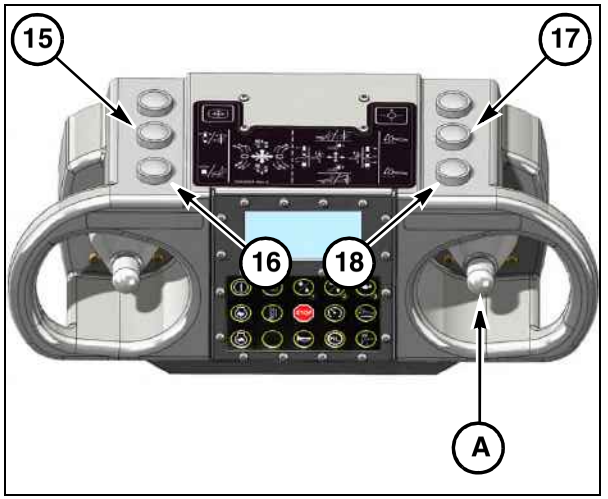
(17) Hammer ON/OFF Button

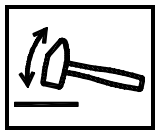
Press and release . . . . . turns hammer ON
Press again . . . . . turns hammer OFF

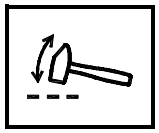
(18) Hammer Momentary On Button

Press and hold . . . . . hammer ON
Release . . . . . hammer OFF



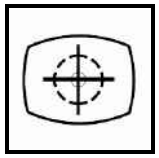






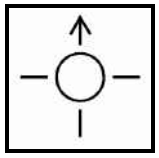
(19) GPS Auto Target (Option)

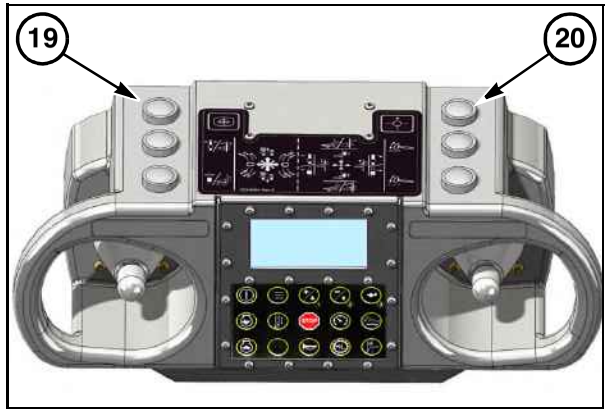
For use with machines equipped with compatible, third-party GPS system. If equipped, slides mast to a preset, GPS planned position within the horizontal slide range (both X/Y axes). Refer to "Auto Target Tolerance Screen," *page 20-30.*



(20) Auto Home Mast Slide (Enhanced Cylinder Option)

If equipped, slides mast to a preset, user adjusted position within the horizontal slide range (both X/Y axes). Refer to "Define X Home and Y Home Position Screens," *page 20-31.*





REMOTE CONTROL SCREENS

Remote control display screens are identical to machine controller screens.

Refer to "Controller Screens," *page 20-24.*

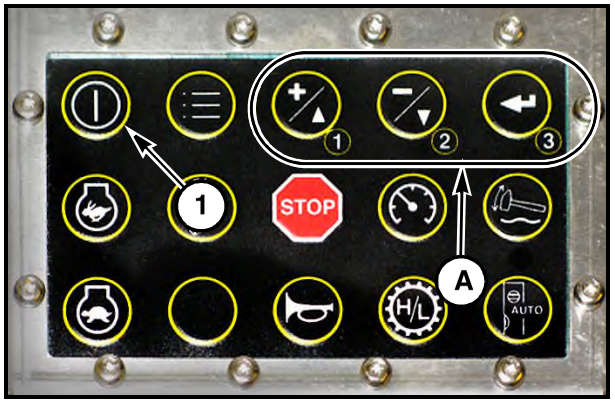
ENABLE / DISABLE REMOTE CONTROL

To enable the remote control:

Step 1: Press *Power Key* **(1)** to turn remote control ON.

Step 2: Wait for "Enter Code" to appear on the remote control display and press keys 1, 2, 3 **(A)** in sequence to enable the remote control.

If an operator sits in the seat or a joystick control on the machine is activated, remote will be disabled and functions in progress will stop. Remote cannot be enabled again until operator leaves the seat and machine joystick controls are returned to NEUTRAL.



To turn remote control OFF:

Step 1: Press and hold *Power Key* **(1)** until screen is blank.

Step 2: Release *Power Key*.

REMOTE CONTROL JOYSTICKS

(1) **Left Joystick**

(2) **Right Joystick**

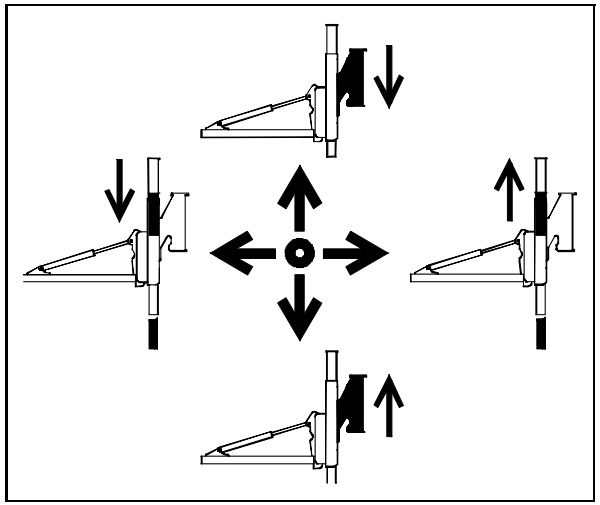
Right Joystick: Mast and Hammer Raise and Lower

Joystick left . . . . . lower mast

Joystick right . . . . . .raise mast

Push joystick forward . . . . . lower hammer

Pull joystick backward . . . . . .raise hammer



Left Joystick: Ground Drive Controls

Remote control steering functions:

(1) Move joystick forward and left.

(2) Move joystick forward.

(3) Move joystick forward and right.

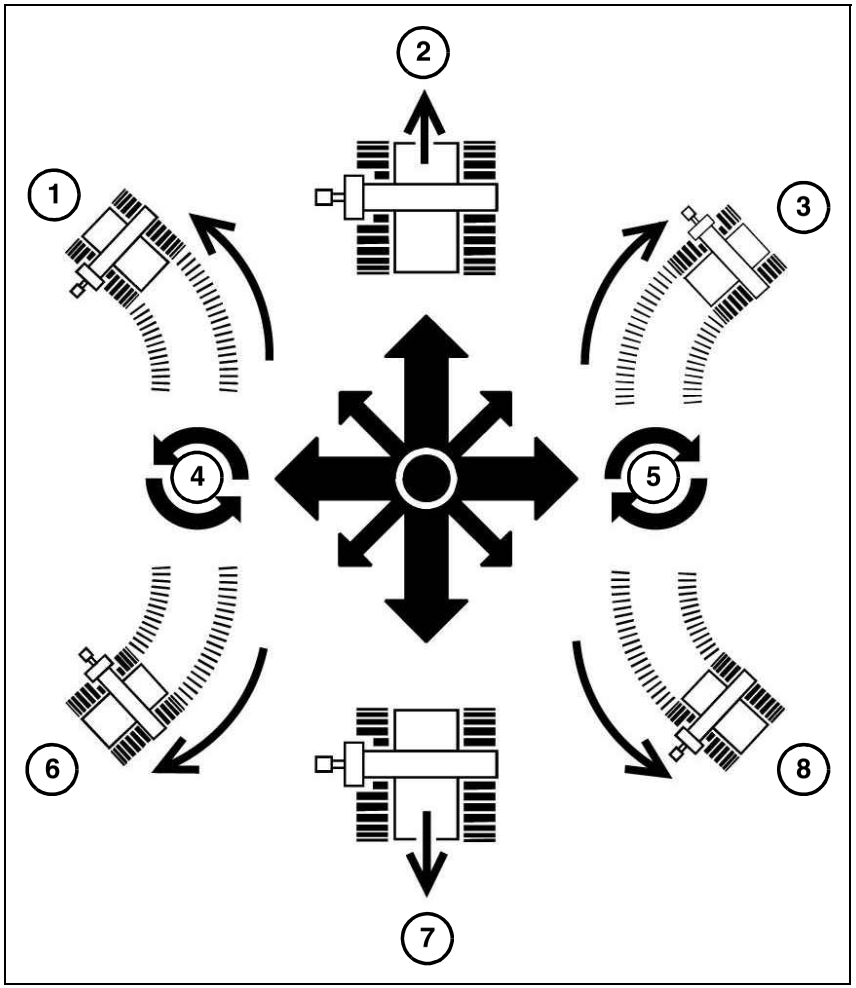
(4) Move joystick left from NEUTRAL to counterrotate counterclockwise.

(5) Move joystick right from NEUTRAL to counterrotate clockwise.

(6) Move joystick backward and left.

(7) Move joystick backward.

(8) Move joystick backward and right.



REGISTERING THE REMOTE CONTROL

The remote control must be registered to a machine the first time it is used with that machine.

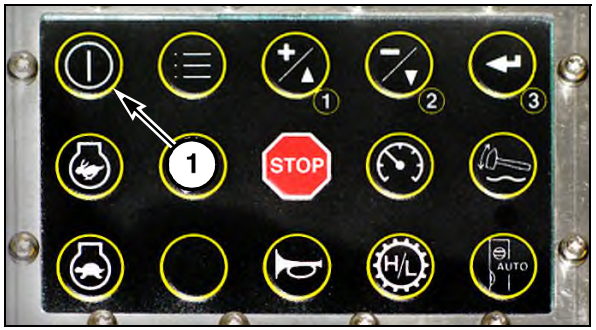
Step 1: Press *Power Key* **(1)**. The Connecting Screen **(2)** appears.

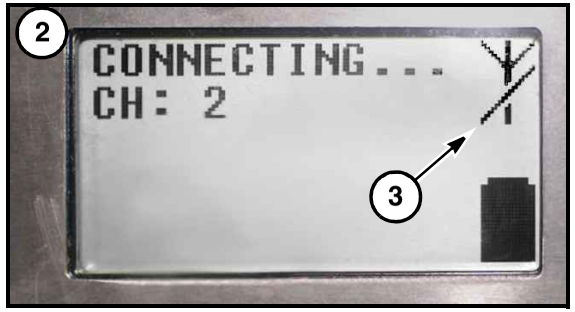
The antennae symbol **(3)** with a diagonal line appears when the remote control is not registered to the machine. The diagonal line disappears when the remote control is successfully registered.

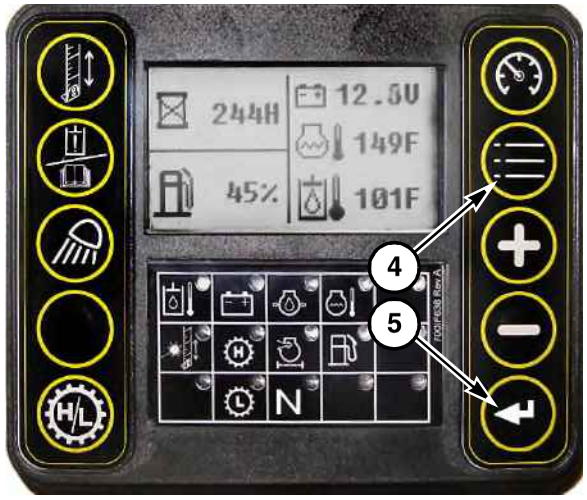
Step 2: Press the *Menu Key* **(4)** on the machine controller.

Step 3: From the menu, select Remote Register. Refer to “Main Menu Screen,” ***page 20-27.***

Step 4: Press *Enter Key* **(5)**.





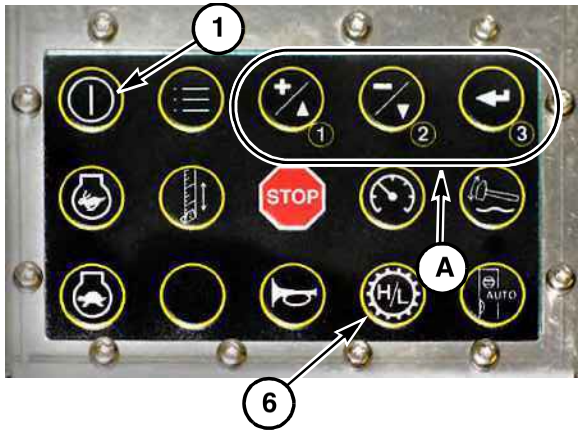


Step 5: Machine controller screen now displays instructions: Press and hold both *Power* **(1)** and *2-Speed Ground Drive* **(6)** keys on remote control; release when REGISTERING is on the remote control screen.

Step 6: When remote control screen prompts for a password, press keys 1, 2, 3 **(A)** in sequence.

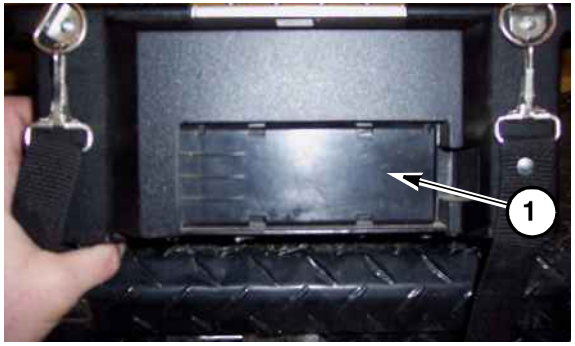
The remote control is now registered. The beacon should turn on.

The remote control screen should match the controller screen.



Remote Control Batteries

Remote control uses 6 AA batteries. Remove battery pack **(1)**. Install new batteries and place battery pack back into position.



Batteries should last 40 hours or more. A battery status symbol on the remote control LCD displays the current battery charge level/status during startup as follows:

	Battery is fully charged.		Battery is 10–90% charged.
	Battery is discharged.		Battery is not connected.

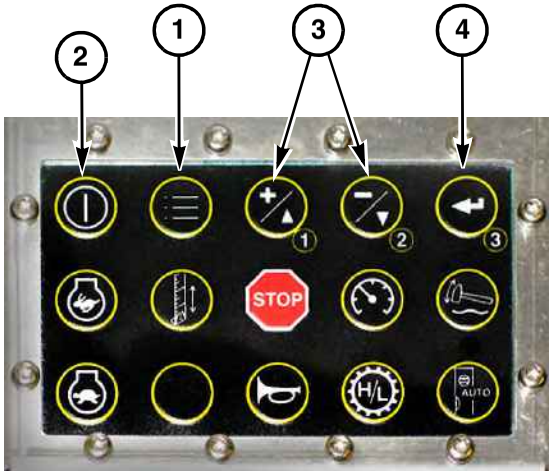
REMOTE CONTROL - SETTINGS MENU

(1) Menu Key

(2) Power Key

(3) Arrow Keys

(4) Enter Key



With remote control power on, press and hold *Menu Key* down and then press *Power Key* for approximately 2 seconds. The Settings Menu will appear. Use *Arrow Keys* to scroll through Settings Menu. Use *Enter Key* to select a highlighted menu item. Press and hold *Menu Key* down and press *Power Key* to leave a selected screen or the Settings Menu; or scroll to "EXIT."

- **VERSIONS**
  Press *Enter Key* to view software version and remote control model number.

- **BACKLIGHT**
  Press *Enter Key* to turn display backlight on/off.

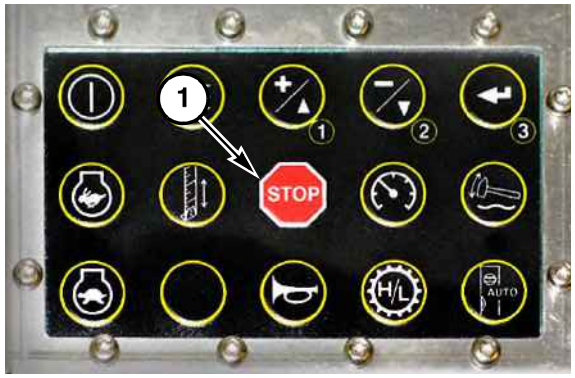
- **REGISTER**
  Refer to "Registering the Remote Control," ***page 21-9.***

- **BASE PWR**
  For Vermeer dealer use.

- **REMOTE PWR**
  For Vermeer dealer use.

- **NEXT CHAN**
  - Change the communications channel when interference from another electronic device is suspected.
  - Remote control must be enabled. Refer to “Enable / Disable Remote Control,” ***page 21-6.***
  - With remote control on, enabled, and within communication range of the machine, press the *Enter Key* once to select the next available channel. Allow up to 10 seconds for new channel to register with base unit.
- **FIELD STR**
  For Vermeer dealer use.
- **CONTRAST+**
  Press *Enter Key* repeatedly to increase display contrast to desired level.
- **CONTRAST-**
  Press *Enter Key* repeatedly to decrease display contrast to desired level.
- **SELF TST 1**
  For Vermeer dealer use.
- **SELF TST 2**
  For Vermeer dealer use.
- **MFG RANGE**
  Not used.
- **SET DEFAULT**
  Press *Enter Key* to reset remote control to default settings. After reset, the remote control must be re-registered to the base unit. Refer to “Registering the Remote Control,” ***page 21-9.***
- **EXIT**
  Press *Enter Key* to exit the Settings Menu.

Remote Control Operating Range



These operating ranges assume the remote control system, including transmitter, batteries, and receiver, are in correct operating condition.

Normal Range: within 100 ft (30 m)

Maximum Recommended Range: up to 300 ft (91 m)

- Check range before operating machine.
- Do not exceed usable operating range.
- Recharge or replace battery if range is not at least 100 ft (30 m) (refer to ***Maintenance Manual*** for procedures).
- Range may exceed 300 ft (90 m).

A symbol **(below)** on display indicates whether the remote control is in or out of range:

	Remote Control communicates with base.
	Remote Control does NOT communicate with base.

Non-communication symbol displays whenever remote control is out of range. While remote control is out of range, track functions and all momentary switch functions on the remote control stop. Communication symbol displays as soon as the remote control comes back within range.

NOTICE: *Engine Stop Key* **(1)** will not function when remote control is out of range.

Section 22: Starting Procedure

STARTING THE ENGINE

Operator should be seated at machine controls, with seat belt fastened, when starting the engine.

Step 1: Move all controls to NEUTRAL.

Step 2: Turn *Keyswitch* **(1)** to RUN position and wait for glow plug timer to expire.

Step 3: Turn *Keyswitch* to START position; release *Keyswitch* when engine starts.

- Display **(2)** shows Engine screen for 5 seconds, then shows Main screen.
- When *Keyswitch* is in RUN position, "Preheat Wait" message may appear on controller display for up to 7 seconds, depending on coolant temperature.

NOTICE: If engine does not start within 15 seconds, turn key OFF, wait 30 seconds, then repeat engine starting sequence. Do not allow the starter motor to run continuously for more than 15 seconds.

Step 4: Verify that *Oil Pressure Indicator Light* **(3)** goes out.

Step 5: Warm up engine. Do not operate the engine under load until engine has warmed up for approximately 3–5 minutes at low speed.

COLD WEATHER STARTING

Refer to the Engine Operation Manual for cold-weather starting. When temperature may drop below 5°F (-15°C), remove battery from machine and store indoors until next machine use.

When operating in cold weather, use recommended engine oil viscosity and fuel to reduce starting issues.

Step 1: Turn *Keyswitch* to RUN position. Screen stating “Preheat Wait” will appear on controller display for up to 7 seconds, depending on coolant temperature.

Press *Enter Key* to clear advisory from screen before display time has expired.

Step 2: Screen stating “Preheat Ready” will appear on controller display for a maximum of 10 seconds. Turn *Keyswitch* to START position.

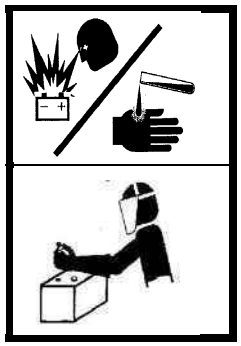
Hydraulic Fluid

Allow adequate time for hydraulic oil to warm up, especially in cold weather. Refer to the ***Specifications*** section of the ***Maintenance Manual*** for recommended hydraulic fluids.

Reduce engine speed if hydraulic pump makes a high-pitched noise, indicating lack of oil which can damage the pump.

JUMP-STARTING

Battery Explosion - Prevent



WARNING: Battery fumes are flammable and can explode. Keep all burning materials away from battery. Battery explosion can blind. Acid can blind and burn. Tools and cable clamps can make sparks.

Do not smoke. Shield eyes and face. Read instructions.

Do not jump-start or charge a battery that is frozen or low on electrolyte.

If equipped with battery caps, they must be in place and tight to reduce risk of battery explosion.

NOTICE: Use only a 12-volt system for jump-starting. Do not allow vehicle used to jump-start to be in contact with the disabled machine. Vehicles in contact have a ground connection which allows a spark to occur at the battery when the positive jumper cable is connected or removed.

Battery Burns - Prevent

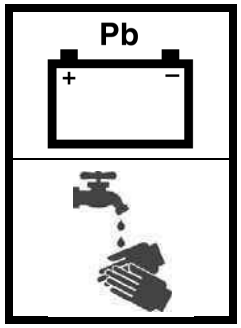
Battery contains sulfuric acid which can cause severe burns. Prevent contact with eyes, skin, and clothing.

In case of acid contact:

External: Flush with plenty of water. If eyes have been exposed, flush with water for 15 minutes and get prompt medical aid.

Internal: Drink large quantities of water or milk, then milk of magnesia, beaten egg, or vegetable oil. Call a physician immediately.

Jump-Starting Procedure



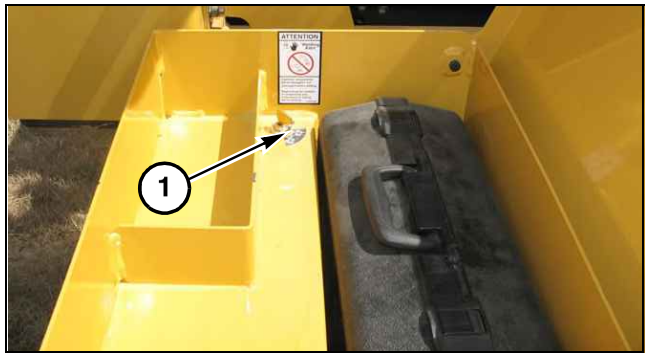
WARNING: Battery post, terminals, and related accessories contain lead and lead compounds, chemicals known to the state of California to cause cancer and reproductive harm.

Wash hands after handling.

Step 1: Turn *Keyswitch* to OFF.

NOTICE: Wait 60 seconds before disconnecting the battery. This is necessary to allow electronic controllers to complete their respective cycles.

Step 2: Turn *Battery Disconnect Switch* **(1)** to DISCONNECT.



Step 3: Connect jumper cables in this order:

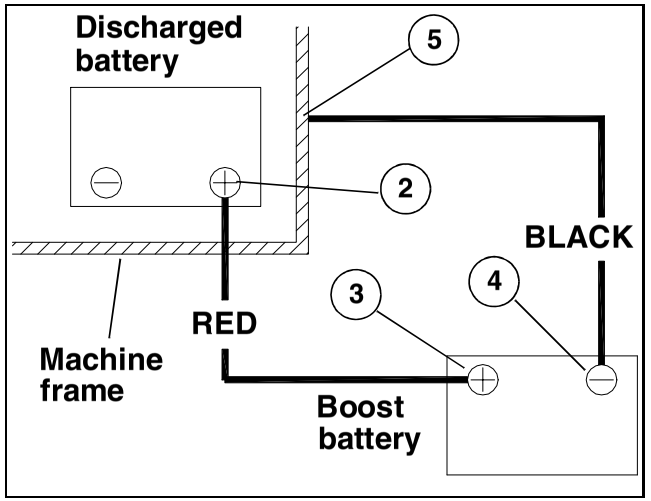
a. Red to discharged battery POSITIVE (+) terminal **(2)**.

b. Red to boost battery POSITIVE (+) terminal **(3)**.

u. Black to boost battery NEGATIVE (-) terminal **(4)**.

v. Black to frame **(5)** of machine with the discharged battery. Make connection away from battery, hydraulic lines, and moving parts. Do not attach to the NEGATIVE (-) terminal of discharged battery.

To prevent sparks near the battery, always disconnect the NEGATIVE (black) jumper cable from the frame **(5)** before disconnecting the POSITIVE (red) cable from the battery.



Step 4: Turn *Battery Disconnect Switch* to CONNECT.

Step 5: Follow ***Starting Procedure, page 22-1.***

Step 6: Remove cables in **reverse** order and install covers over cable clamps. Close and latch battery access shield.

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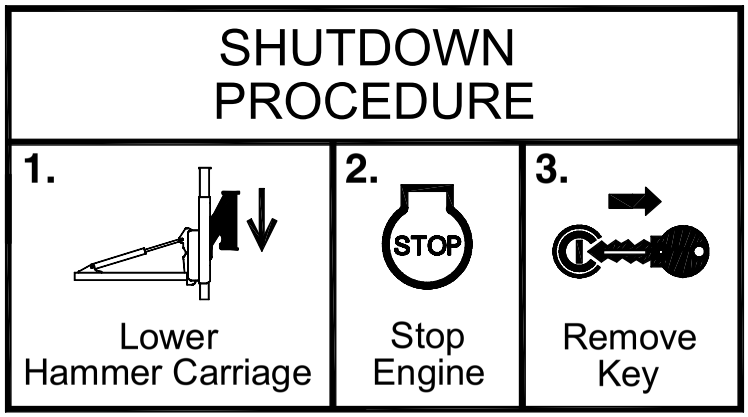
Section 23: Shutdown Procedure

For your safety and the safety of others, use the Shutdown Procedure before working on the machine for any reason, including servicing, cleaning, inspecting, or transporting the machine.



A variation of this procedure may be used if so instructed within this manual, or if an emergency requires it.

Step 1: Lower hammer.

NOTICE: Whenever practical and safe, allow engine to run at low idle for 1 to 5 minutes before shutting down after operating at full power. Please consult machine's engine manual for details.

Step 2: Reduce engine speed to low idle.

Deutz engine: Allow engine to run at low idle for 1 minute after operating at full load.

Yanmar engine: Allow engine to run at low idle for 5 minutes after operating at full load.

Step 3: Shut off engine and remove key.

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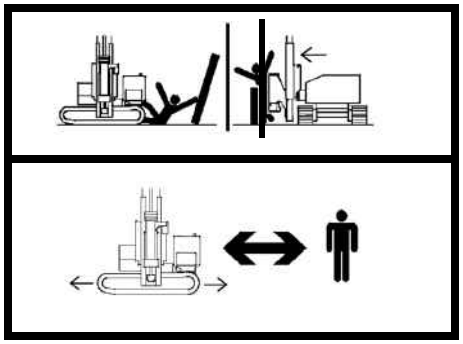
Section 30: Transporting the Machine

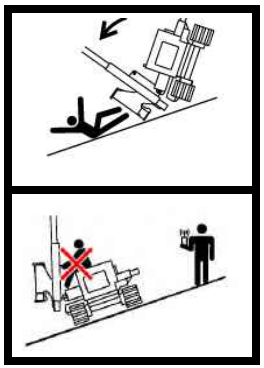
DRIVING THE MACHINE



WARNING: Machine movement can crush.

Stay away from machine while transporting.

Drive machine at a speed correct for the terrain. When using remote, do not operate machine faster than you can comfortably walk. Keep feet away from the tracks when driving. Do not stop, start or turn suddenly unless it is necessary. Keep hammer low when driving machine. If driving over uneven ground, fold mast and keep weight balanced over tracks.



WARNING: Rollover possible. Be alert and use extreme caution when operating on hillsides, or near ditches, gullies, holes, or obstructions where rollover could occur. Death or serious injury can result if crushed under the machine. Never allow anyone to be on the downhill side of the machine.

Never allow anyone to ride on machine.

Safe Operating Slope

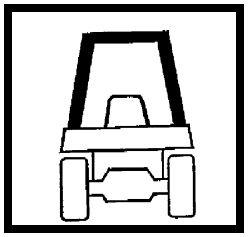
Safe operating slope depends on many factors:

- Machine weight distribution, including mast and pile position
- Height of hammer
- Even or rough ground conditions
- Potential for ground giving way, causing unplanned forward, reverse, or sideways tilt
- Nearness of ditches, ruts, stumps, or other obstructions and sudden changes in slope
- Speed
- Turning
- Braking performance
- Skill of operator

These varying factors make it impractical to specify a maximum safe operating angle in this manual. It is therefore important for the operator to be aware of these conditions and adjust operation accordingly. Maximum engine angle and braking performance are two absolute limits which must never be exceeded. These maximums are stated here because they are design limits. These angles are not operating limits and therefore must never be used alone to establish safe operating angles for varying conditions.

- Maximum engine lubrication angle - 30° all directions
- Service brake retarding force - equal to traction of both tracks
- Secondary brake - equal to traction of one track
- Park brake holding force - equal to traction of both tracks

Rollover Protective Structure (ROPS)



WARNING: The rollover protection structure (ROPS) is intended to protect the tractor operator in the event of a rollover. In order for you to be protected by the ROPS, you must wear seat belts. Follow instructions below relating to ROPS safety precautions.

- Do not operate machine with ROPS removed.
- Do not modify ROPS in any manner. Unauthorized modifications, such as welding, drilling, cutting, or adding attachments, could weaken the structure and reduce your protection.
- If ROPS has been damaged or subjected to a rollover, it must be replaced. Do not attempt any repairs.
- The ROPS has been certified to a maximum gross machine weight as stated on the label located on the ROPS. Under no circumstances may total gross weight of machine exceed weight specified on ROPS label.
- If ROPS must be replaced, be sure to use original parts ordered from Vermeer Corporation.

If rollover occurs:

- Brace yourself and stay on the machine. **Keep the seat belt fastened.**
- Hold on firmly and lean away from the point of impact.

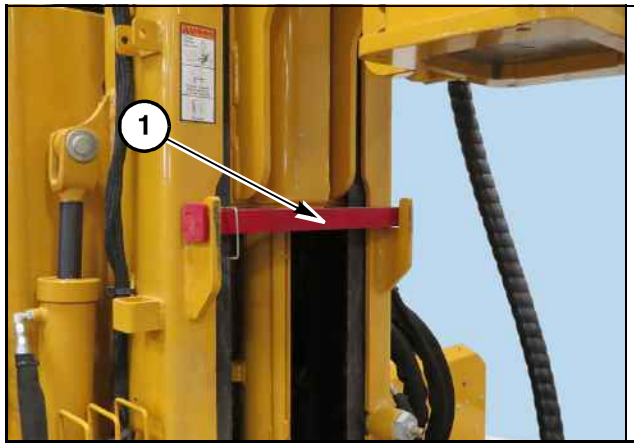
Mount and Dismount Safely

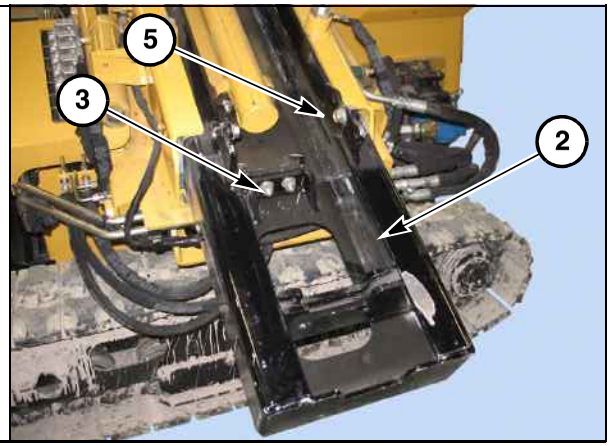
- Face machine when mounting and dismounting.
- Maintain a 3-point hand/foot contact with the access system (one hand and two feet, or two hands and one foot). Keep all handrails in place.
- Do not use any controls or screens as handholds when climbing on or off the machine.
- Never jump off the machine.
- Keep steps, platforms, and operator's area clear of objects and debris which may cause difficulties stepping on or off the machine or interfere with control movement.
- Never get on or off a moving machine.

PREPARING FOR TRAILER TRANSPORT

Machine with 10-Ft (3.048-m) Mast

Additional steps may be required if a compatible third-party GPS system is installed.





Step 1: Follow ***Starting Procedure,*** page ***22-1.***

Step 2: Center mast vertically and horizontally.

NOTICE: Failure to center mast before tilting toward machine may result in mast colliding with cradle.

Step 3: Lower mast.

Step 4: Raise hammer.

Step 5: Install hammer support bar **(1)** in bracket.

Step 6: Lower hammer to contact hammer support bar.

Step 7: Tilt mast slightly toward machine.

Step 8: Loosen bolts **(5)**.

Step 9: Fold up bottom section **(2)** of mast: remove bolts **(3)**, attach suitable lifting device to bottom section of mast. Bottom mast section weighs 85 lb (39 kg). Fold, install bolts **(3)** in side holes **(4)** with threads toward center of mast.

NOTICE: Install bolts **(3)** with threads toward center of mast. Installing bolts incorrectly may damage mast.

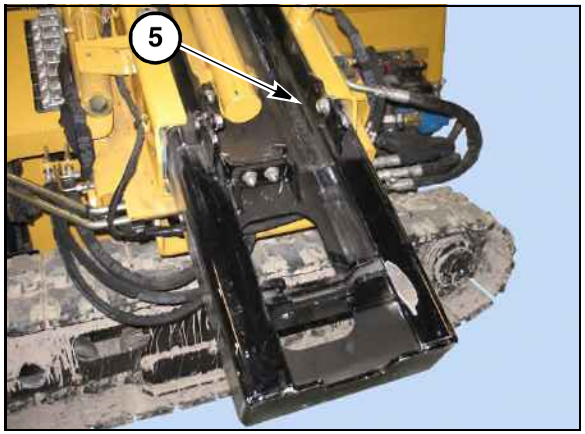
Depending on size of guide installed, the hammer may need to be raised slightly for clearance when folding bottom section. If hammer is raised for clearance, lower hammer until it contacts support bar or bottom section. If hammer does not contact support bar, then remove support bar and stow.

Step 10: Tighten bolts **(5)**.

Step 11: Tilt mast fully toward machine.

Step 12: Slide mast toward machine until it stops. Adjust as needed so that mast does not collide with cradle.

Step 13: Verify transport dimensions are correct for machine with 10-ft mast. Refer to ***page 70-5.***



Machine with 15-Ft Mast

Additional steps may be required if a compatible third-party GPS system is installed.

Step 1: Follow ***Starting Procedure,*** page ***22-1.***

Step 2: Center mast vertically and horizontally.

NOTICE: Failure to center mast before tilting toward machine may result in mast colliding with cradle.

Step 3: Lower mast.

Step 4: Raise hammer.

Step 5: Install hammer support bar **(1)** in bracket.

Step 6: Lower hammer to contact hammer support bar.

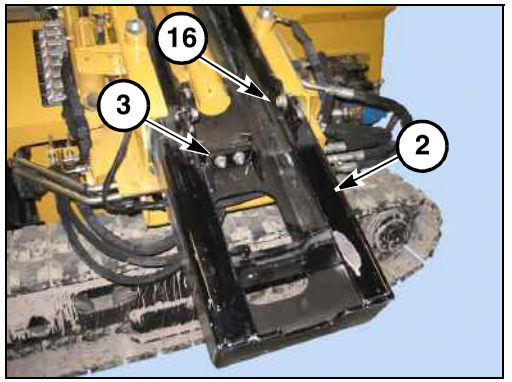
Step 7: Tilt mast slightly toward machine.

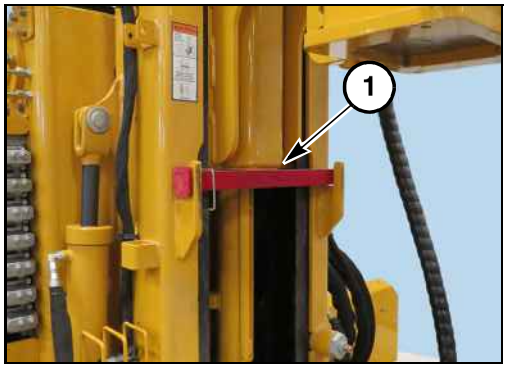
Step 8: Loosen bolts **(16)**.

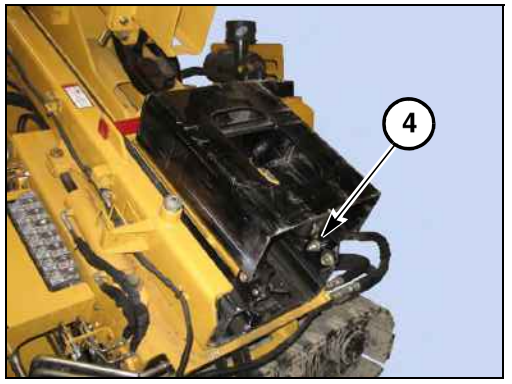
Step 9: Fold up bottom section **(2)** of mast: remove bolts **(3)**, attach suitable lifting device to bottom section of mast. Bottom mast section weighs 85 lb (39 kg). Fold, install bolts **(3)** in side holes **(4)** with threads toward center of mast.

NOTICE: Install bolts **(3)** with threads toward center of mast. Installing bolts incorrectly may damage mast.

Depending on size of guide installed, the hammer may need to be raised slightly for clearance when folding bottom section. If hammer is raised for clearance, lower hammer until it contacts support bar or bottom section. If hammer does not contact support bar, then remove support bar and stow.

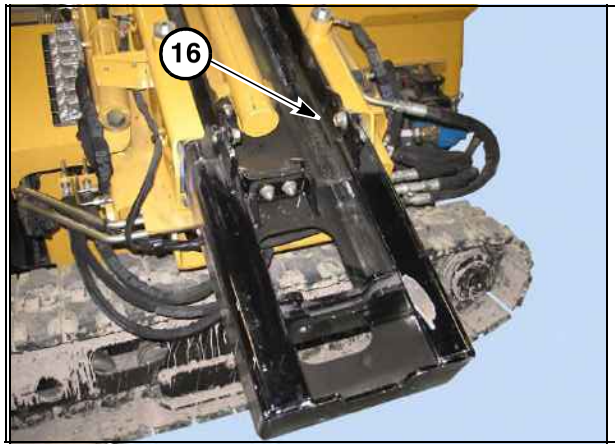


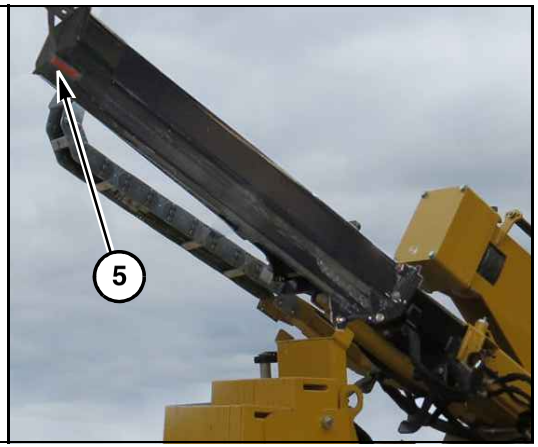




Step 10: Tighten bolts **(16)**.

Step 11: Tilt mast fully toward machine, and attach a suitable lifting device to top of mast **(5)**. Top section of 15-ft mast weighs 190 lb (86 kg).





Step 12: Raise mast until top of hinge bracket **(6)** aligns with the lower mast slide adjusters **(7)**.

NOTICE: If mast is lifted too high with bottom section folded, lower mast adjusters could fall out of holders.

Step 13: Adjust lifting device to support the mast.

Step 14: Remove four bolts **(8)** securing two halves of mast. Retain bolts in toolbox.

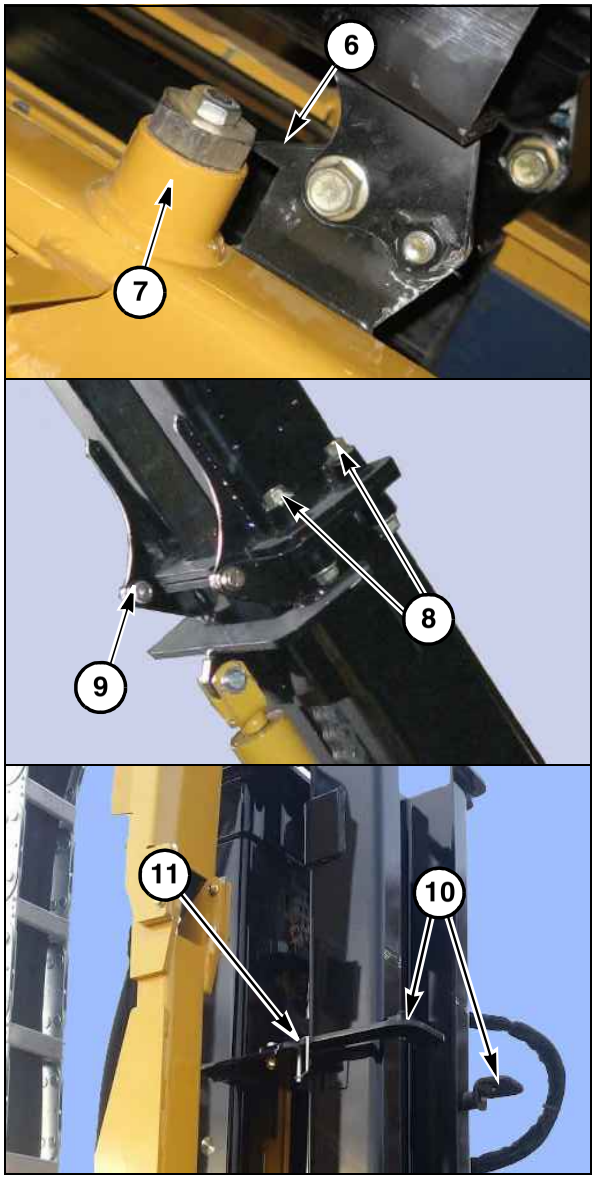
Step 15: Tilt mast away from machine, allowing top half of mast to fold down at hinge **(9)**. Adjust lifting device as needed during this process until both mast sections are vertical.

Step 16: Remove lifting device from top of mast.

Step 17: Remove linchpins **(11)** and engage locks **(10)**.

Step 18: Insert linchpins **(11)** in locks (**10**).

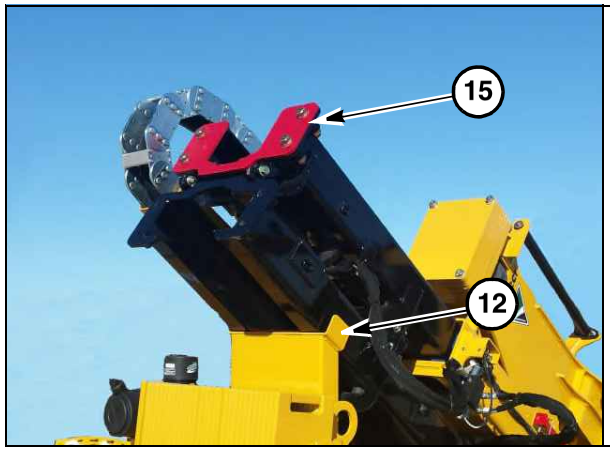
Step 19: Tilt mast toward machine until it stops.

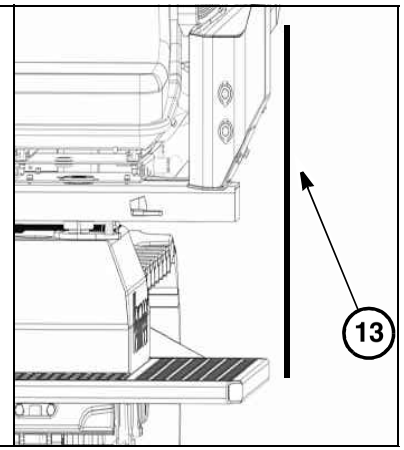


Step 20: Slide mast toward machine until it starts to contact cradle **(12)**. Adjust as needed so that mast does not collide with cradle.

Step 21: Verify that bottom of lowered mast **(13)** is even with side of operator's station platform.

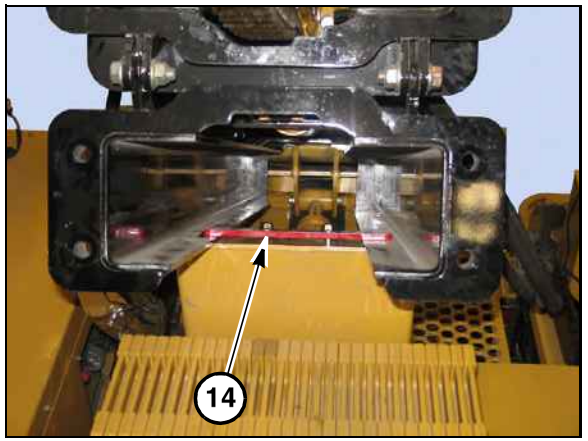
Step 22: Install lock plate **(14)** and bolts.





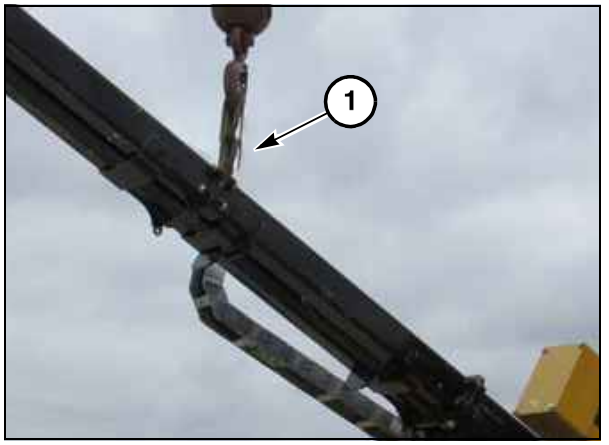
Step 23: Install mast cap plate **(15)** on lower half of mast hinge. Secure with four bolts. Use shorter bolts with plate, stored in toolbox.

Step 24: Verify transport dimensions are correct for machine with 15-ft folded mast. Refer to ***page 70-5.***



Machine with 20-Ft Mast

Additional steps may be required if a compatible third-party GPS system is installed.



Step 1: Follow ***Starting Procedure,*** page ***22-1.***

Step 2: Center mast vertically and horizontally.

NOTICE: Failure to center mast before tilting toward machine may result in mast colliding with cradle.

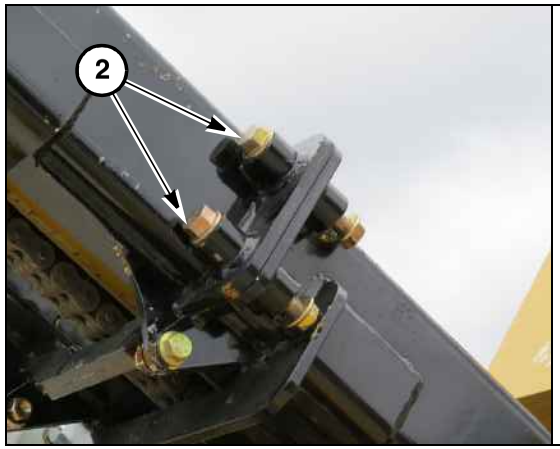
Step 3: Tilt mast completely toward machine and attach a suitable lifting device slightly above bolted joint of top two mast sections **(1)**. Top two sections of mast weigh 380 lb (172 kg) combined.

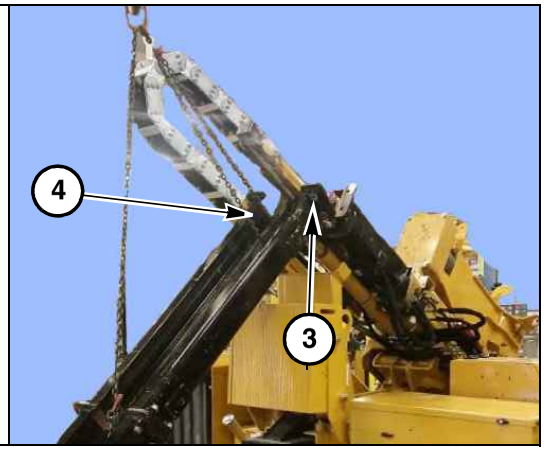
Step 4: Adjust lifting device to support the mast.

Step 5: Remove four bolts **(2)** securing top two sections of mast to lower portion of mast. Retain bolts in toolbox.

Step 6: Lower lifting device and let top two sections of mast fold down at hinge **(3)** until properly supported.

Step 7: Attach a second suitable lifting device to top two sections of mast **(4)** close to the hinge.





Step 8: Properly support top two sections of mast to prevent movement and remove bolts from hinge **(3)**.

Step 9: Lower top two sections of mast to the ground.

Step 10: If needed, remove four bolts **(5)** to disassemble top two sections of mast.

Step 11: Install mast cap plate **(6)** on lower portion of mast at hinge. Secure with four shorter bolts stored in toolbox.

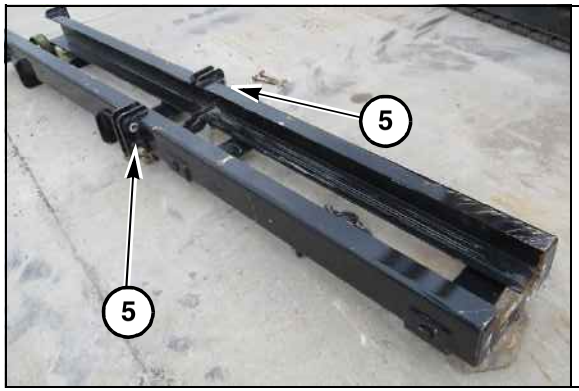
Step 12: Lower mast completely.

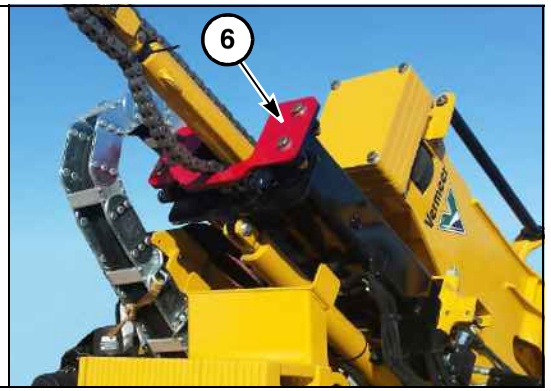
Step 13: Raise hammer.

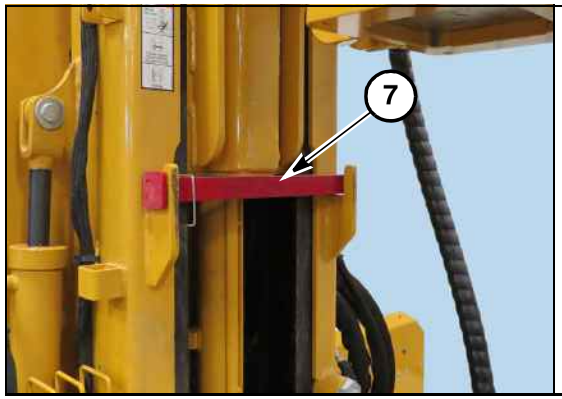
Step 14: Install hammer support bar **(7)** in top bracket (if more than one bracket).

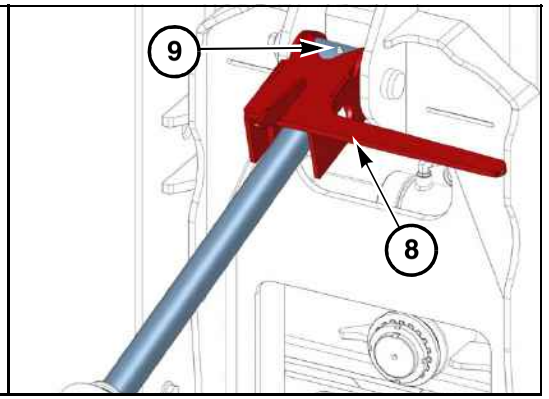
Step 15: Lower hammer to contact hammer support bar **(7)**.

Step 16: If not equipped with mast tilt positioner **(8)**, proceed to **Step 17** to remove bottom section. Leave mast tilted toward machine.



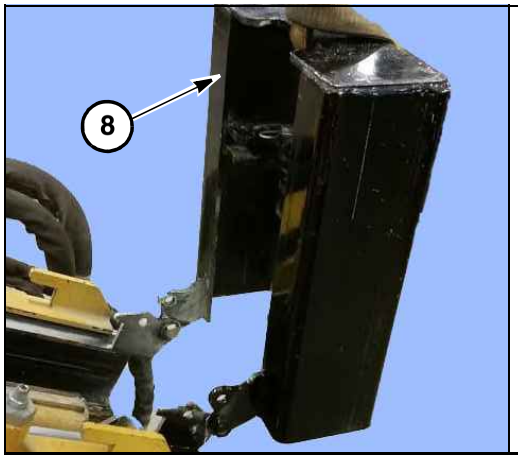


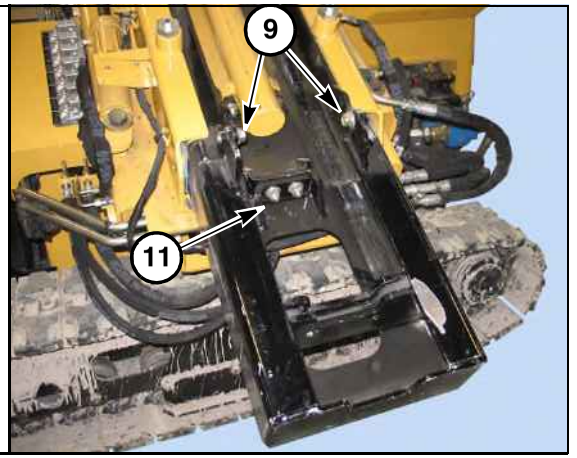




If equipped with mast tilt positioner **(8)**, tilt mast away from machine to vertical position, place on mast tilt cylinder pivot **(9)** (mast may need to be raised slightly or slid away from machine slightly to install **(7)**), tilt mast fully toward machine, then proceed to **Step 18** to fold bottom section.

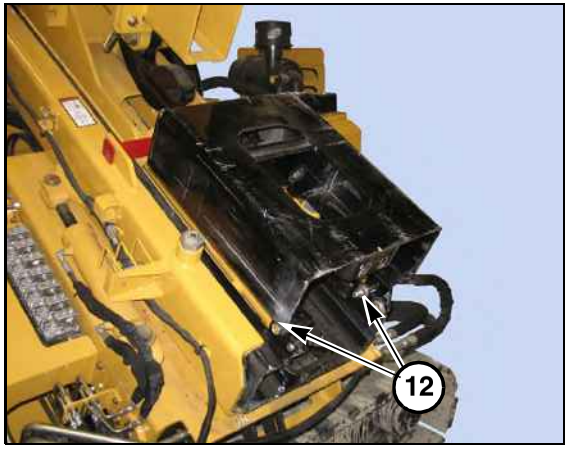
Step 17: Attach suitable lifting device to bottom section of mast **(8)**. Bottom mast section weighs 85 lb (39 kg).





- Remove bolts **(11)**, and loosen bolts **(9)**.
- Lift bottom section and remove bolts **(9)**.
- Remove bottom mast section.
- Store bolts **(9 & 11)** and bottom section.
- Tilt mast fully toward machine.
- Slide mast fully toward machine, adjusting as needed so that mast does not collide with cradle.
- Proceed to **Step 19**.

Step 18: Attach suitable lifting device to bottom section of mast **(8)**. Bottom mast section weighs 85 lb (39 kg).



- Loosen bolts **(9)** to allow folding.
- Remove bolts **(11)**.
- Fold up bottom section of mast.
- Install bolts **(11)** into holes **(12)** with threads toward center of mast.

NOTICE: Depending on size of guide installed, hammer may need to be raised slightly for clearance when folding bottom section. Lower hammer to contact support bar after folding. If hammer does not contact support bar, then remove support bar and store.

- Tighten bolts **(9)**.

Step 19: Verify transport dimensions are correct for 20-ft mast machine. Refer to ***page 70-5.***

Reducing Transport Width (20-Ft Mast Only)

After following transport preparation procedure, if machine is still too wide for local regulations, follow this procedure to fold down hose carrier.

Step 1: Attach suitable lifting device to hose carrier **(1)**. This portion of hose carrier weighs 500 lb (227 kg).

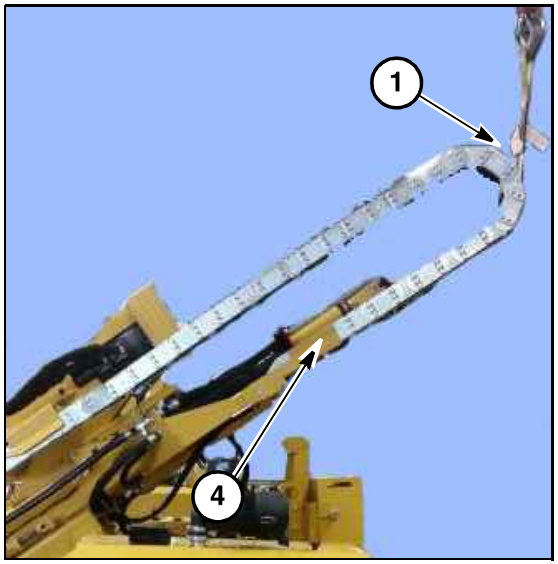
Step 2: Adjust lifting device to support the hose carrier.

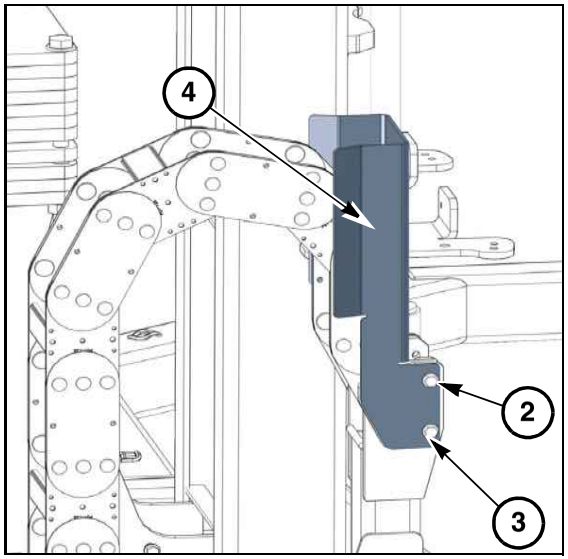
Step 3: Remove bolts **(2)** and loosen bolts **(3)** while supporting hose carrier support **(4)** to keep it from lowering quickly.

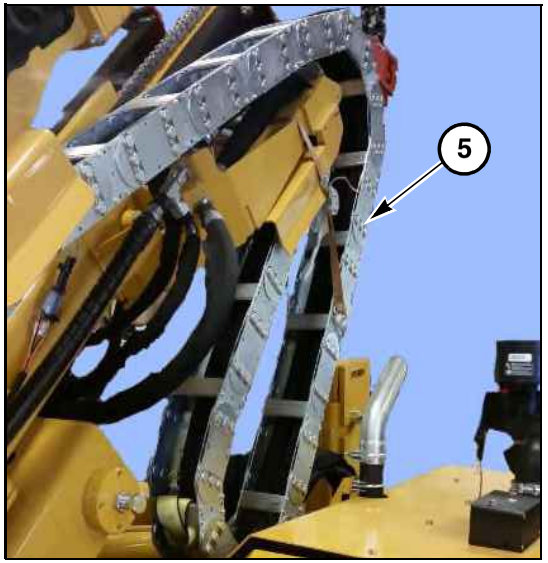
Step 4: Fold hose carrier down into position **(5)**.

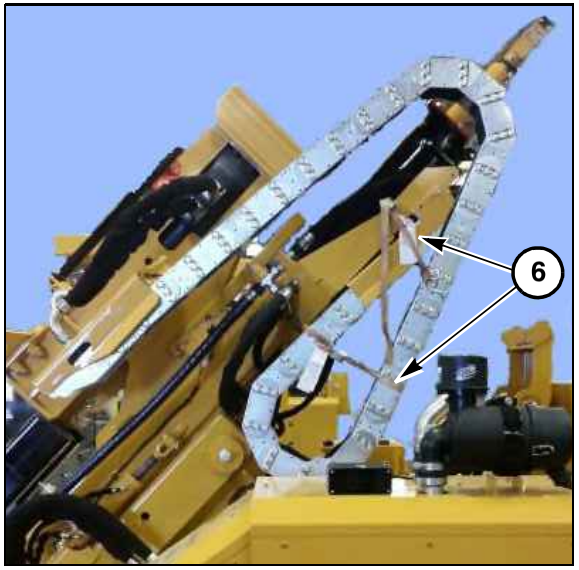
Step 5: Attach straps **(6)** to secure hose carrier.

Step 6: Verify transport dimensions are correct. Refer to ***page 70-5.***



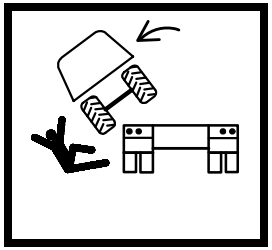






TRAILERING THE MACHINE

Loading



WARNING: Unintended machine movement may occur when loading or unloading on slippery, dirty or uneven trailer surfaces. Death or serious injury can result if struck or crushed by machine. Ensure trailer is level and all loading surfaces are clean and free of debris. Do not attempt to load onto slippery trailer surfaces. Use smooth and controlled steering movements.

- Read the towing vehicle and trailer manuals for safety precautions and information.
- Ensure gross weight of the machine with attachments is within the weight limits of the trailer and towing vehicle. Refer to "Machine Specifications," ***page 70-2.***
- Properly attach trailer to towing vehicle and chock wheels or engage park brake of towing vehicle.
- Ensure you are qualified to operate the machine. Refer to "Operator Qualifications," ***page 40-1.***
- Slowly drive machine on and off trailer squarely to minimize steering.
- Do not attempt to steer machine when balanced at trailer/ramp transition.
- Position machine at location for tie-downs and weight distribution as recommended by trailer manufacturer.

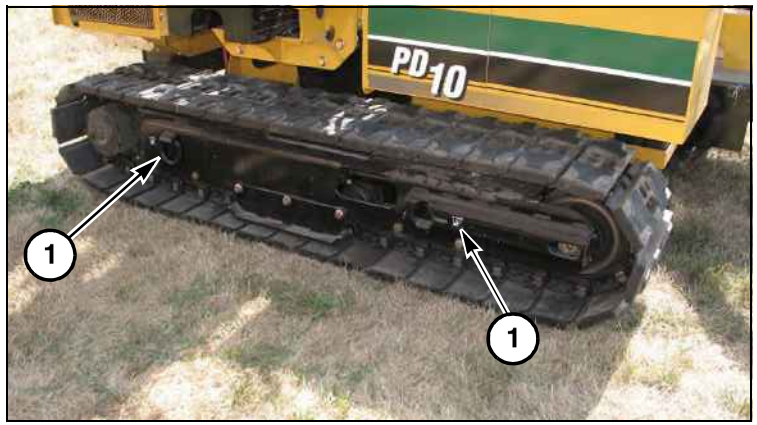
Step 1: Center machine on the trailer centerline; drive squarely onto the trailer. Stop at the tie-down position for correct weight distribution as recommended by the trailer manufacturer.

Step 2: Follow ***Shutdown Procedure,*** page ***23-1.***

Tie-Down Procedure

Fasten each corner of the machine to the trailer using tie-downs **(1)** provided on the machine.

Consult state and federal highway regulations for requirements on the proper securing of equipment.



Unloading

To unload machine, park trailer on a level surface. Unload machine only when trailer is attached to a tow vehicle.

Step 1: Remove tie-down chains.

Step 2: Follow ***Starting Procedure,*** page ***22-1.***

Step 3: Use a slow ground speed to unload machine.

LIFTING THE MACHINE

WARNING: Never lift machine over personnel. The load may fall or shift, crushing anyone beneath it.

No provisions are made for lifting the machine. If transport requires that machine be lifted, it must be loaded and secured in an appropriate container.

RETRIEVAL

Towing device (chain, cable, or strap) must have a minimum working load of 150% of towing machine weight.

NOTICE: Do not tow machine more than 500 ft (150 m). Do not exceed 1 mph (1.5 km/h).

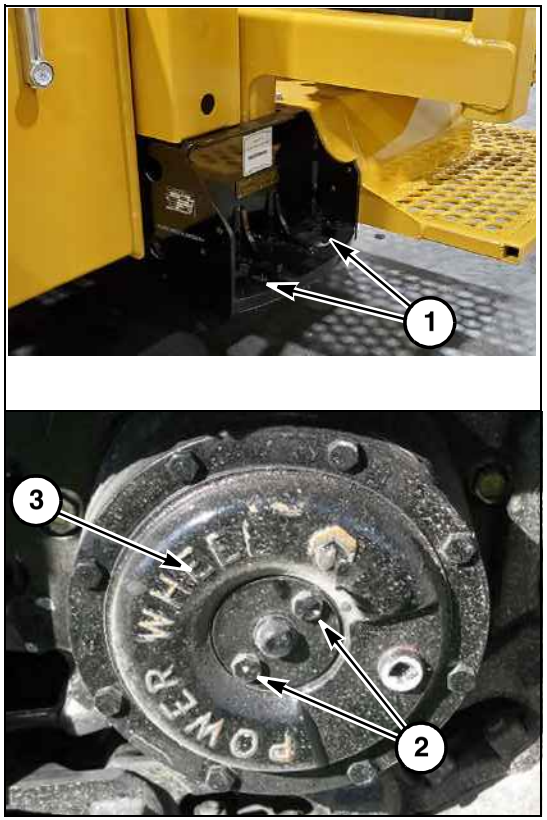
Use this procedure when towing a machine which has become mired or disabled.

Step 1: Connect tow towing device to tow points **(1)**.

Step 2: Remove and retain two 5/16˝ screws **(2)** on each of two planetary cover plates **(3)**, one on each side of machine.

Step 3: Flip plates over and install with longer 1-1/2˝ screws, so that gears will freewheel.

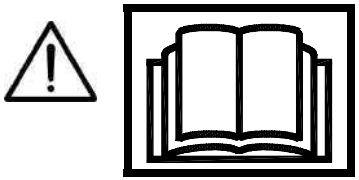
Step 4: When finished towing, install covers (using retained 5/16˝ screws) in original configuration to engage gears.



Section 40: Preparation

Preparing Personnel

OPERATOR QUALIFICATIONS



WARNING: Read Operator's Manual and safety signs before operating machine.

Allow only responsible, properly instructed individuals to operate machine.

Become familiar with the controls, operation, and use of the machine under the supervision of a trained and experienced operator.

The operator must be familiar with the workplace's safety rules and regulations, and must be mentally and physically capable of operating the machine safely.

Safety Conscious Operators and Workers

Operators and workers must use reasonable accident-prevention measures, including correctly locating all underground utilities.

TRAINING

Before operating the PD10, the operator and crew must be trained in the operation of the unit. Conduct initial training at a site free of underground utilities and review the following:

- all sections of this manual
- processes and procedures used to locate underground utilities
- jobsite safety, including safety barriers and protective clothing, as well as operating and emergency procedures
- machine shutdown procedure
- transportation of the unit
- setup of the unit
- pile driving and removal

Safety Signs and Operating Instructions

Safety signs and operating instructions provide information on potential safety hazards and safe operating instructions.

Operator Presence Switch

The Operator Presence system uses a switch in the seat **(1)** to detect the presence of an operator. The operator must be seated in order to operate a function.

If the operator leaves the seat while a operating a function, the function will stop within 3 seconds. All controls must be returned to NEUTRAL before any function can be resumed.

The Operator Presence system is intended for your safety and must be maintained in good functional condition. Contact your Vermeer dealer if it does not function properly.

Seat Belt

Seat belts must be worn at all times while the machine is being operated from the operator's station.

The seat belt is an essential part of the rollover protection system. It helps keep the operator in the protected area inside rollover protective structure. Inspect seat belt every time it is used, looking for cuts or worn webbing, or any defect in the latch assembly. If any wear or damage is noted, do not operate machine until seat belt is replaced.

If it is necessary to clean belts, use a mild soap solution and lukewarm water. Do not use bleach, dye, solvents, or other chemicals which may weaken the belts.

To fasten automatic locking retractor seat belts:

Step 1: Pull latch steadily until it reaches buckle. If retractor locks before latch reaches buckle, allow belt to full retract and then retry.

Step 2: Insert latch into buckle until positive snap is heard.

Step 3: Verify there are no twists in the seat belt webbing.

Step 4: Allow retractor to take up any slack in the webbing.

Step 5: Pull sharply on the webbing to make sure retractor is locked.

Wear seat belt low and snug.

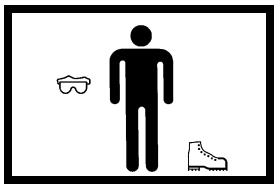
Rollover Protective Structure (ROPS)

- Do not operate machine with ROPS removed.
- Do not modify ROPS in any manner. Unauthorized modifications, such as welding, drilling, cutting, or adding attachments, could weaken the structure and reduce your protection.
- If ROPS has been damaged or subjected to a rollover, it must be replaced. Do not attempt any repairs.
- The ROPS has been certified to a maximum gross machine weight as stated on the label located on the ROPS. Under no circumstances may total gross weight of machine exceed weight specified on ROPS label.
- If ROPS must be replaced, be sure to use original parts ordered from Vermeer Corporation.

If rollover occurs:

- Brace yourself and stay on the machine. **Keep the seat belt fastened.**
- Hold on firmly and lean away from the point of impact.

PERSONAL PROTECTION



WARNING: Wear required personal protection equipment.Wear close-fitting clothing and confine long hair. Avoid wearing jewelry such as rings, wristwatches, necklaces or bracelets. Always wear safety glasses and safety shoes.

Working around the machine requires you to wear protective equipment. Always wear a hard hat, safety shoes, hearing protection, and eye protection. If working near traffic, you may need to wear reflective clothing.

Hearing protection is required when operating the machine. Hearing protection devices provide differing levels of sound reduction. It is important to select a device that is adequate and appropriate for your specific work environment. Actual sound levels may vary widely, depending on your working conditions. To determine the level of hearing protection your work environment requires, consult your local environmental noise specialist.

Safety shoes must be rated for impact (I/75), compression (C/75) and metatarsal protection (Mt/75), or have equivalent ratings, in compliance with national or regional standards.

Eye protection must consist of wraparound safety glasses or goggles.

Others working in immediate area must also wear the above listed protective equipment.

Wear close-fitting clothing and confine long hair.

Do not wear jewelry, such as rings, wristwatches, necklaces, or bracelets.

SOUND AND VIBRATION LEVELS

Levels for Deutz engine options

The stated sound levels are representative for a given operating condition. Operating conditions may vary at each jobsite. The actual sound levels for your application and operating conditions may be different.

Equivalent Continuous A-Weighted Sound Pressure at Operator's Ear
as determined by directive 2000/14/EC and ISO 6396 . . . . . 114 dB(A)

Guaranteed Sound Power Level
as determined by directive 2000/14/EC, ISO 6395, ISO 3744. . . . . 132 dB(A)

Whole Body Vibration according to ISO 2631-1 . . . . . less than 0.5 m/s^2

Right and Left Hand/Arm Vibration according to ISO 5349 . . . . . less than 2.5 m/s^2

Levels for Yanmar engine option

The stated sound levels are representative for a given operating condition. Operating conditions may vary at each jobsite. The actual sound levels for your application and operating conditions may be different.

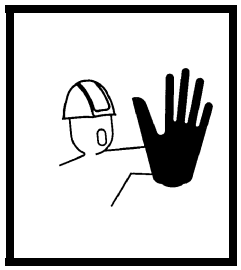
Equivalent Continuous A-Weighted Sound Pressure at Operator's Ear
as determined by directive 2000/14/EC and ISO 6396 . . . . . 105 dB(A)

Guaranteed Sound Power Level
as determined by directive 2000/14/EC, ISO 6395, ISO 3744. . . . . 123 dB(A)

Whole Body Vibration according to ISO 2631-1 . . . . . less than 0.5 m/s^2

Right and Left Hand/Arm Vibration according to ISO 5349 . . . . . less than 2.5 m/s^2

PREPARE THE AREA



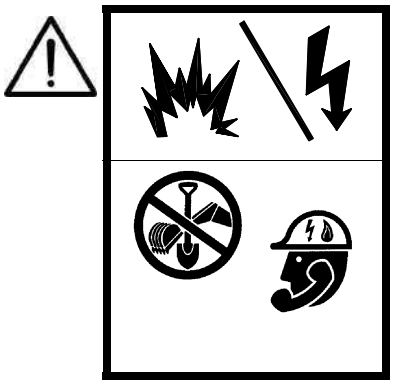
WARNING: Keep spectators away.

Look for Evidence of Underground Placement

Visually check for:

- notices of underground placements
- manhole covers
- drop boxes
- recent trenching activity

UNDERGROUND UTILITY CONTACT



WARNING: Striking an electrical line can cause electrocution. Striking gas line can cause an explosion. Cutting fiber optic cable could result in eye damage by laser light. Death or serious injury possible.

Locate utilities before driving posts. Call 811, 1-888-258-0808, or access www.call811.com (U.S. only); or contact local utility companies or national regulating authority.

Before you start any digging project, call the local One-Call system in your area and any utility company that does not subscribe to the One-Call system. For areas not represented by One-Call Systems International, contact the appropriate utility companies or national regulating authority to locate and mark the underground installations. If all utilities are not properly located, you may have an accident or suffer injuries; cause interruption of services; damage the environment; or, experience job delays.

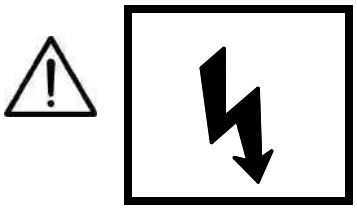
The One-Call representative will notify participating utility companies of your proposed digging activities. Utilities will then mark their underground facilities by using the following international marking codes:

Red	Electric	Green/Brown	Sewer
Yellow	Gas, Oil or Petroleum	White	Proposed Excavation
Orange	Communication, Telephone, TV	Pink	Surveying
Blue	Potable Water		

OSHA CFR 29 1926.651 requires that the estimated location of underground utilities be determined before beginning excavation or underground drilling operation. When actual excavation or bore approaches an estimated utility location, the exact location of the underground installation must be determined by a safe, acceptable and dependable method. If utility cannot be precisely located, it must be shut off by the utility company.

Striking a Utility

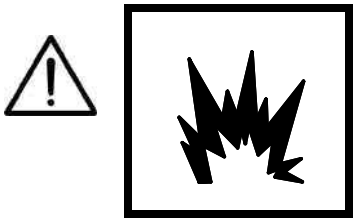
Electricity



DANGER: Electric shock can kill. If strike occurs, stay on machine. Have someone who is clear of the area contact the utility company to shut off electrical power. Do not allow anyone to approach the machine.

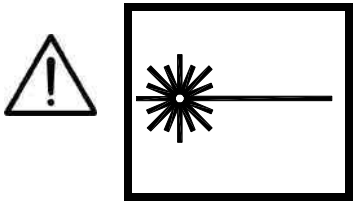
Some circuit breakers automatically reset. Do not assume power has been permanently disconnected until you confirm that the utility company has locked out power to that line.

Gas



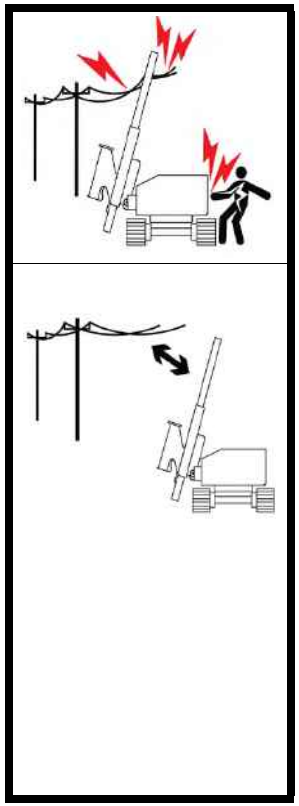
DANGER: Gas explosion can kill. If you strike a gas line, shut off engine and evacuate area immediately. Contact utility company and do not return until the utility company gives permission to do so.

Fiber Optic



WARNING: Laser light may damage eyes. Do not look into the end. Fiber optic cables carry laser light which may damage your eyes. If you are not sure what kind of cable it is, do not look into the end. Contact appropriate utility company for assistance.

ELECTRICAL SHOCK PROTECTION



DANGER: Electrocution hazard exists around an energized overhead power line. If equipment gets near or contacts energized overhead power line, all connected equipment and surrounding ground surface will be energized. Death or serious injury will result due to electrocution.

Keep machine away from energized overhead power lines according to chart below.

Voltage, kV	Minimum Clearance Distance, ft (m)
up to 50	10 (3.1)
>50 to 200	15 (4.6)
>200 to 350	20 (6.1)
>350 to 500	25 (7.7)
>500 to 750	35 (10.7)
>750 to 1000	45 (13.8)

If arcing or contact occurs, do the following:

- If on machine, stay on machine. Anyone on ground should shuffle away keeping feet close together and on the ground.
- Contact utility company to shut off electrical power.
- Do not allow anyone to approach the machine or any connected equipment.
- Do not resume operation until utility company declares area safe.

The 10-ft machine reaches a maximum height of 14 ft 11˝ (4.6 m). The 15-ft machine reaches a maximum height of 19 ft 11˝ (6.1 m). The 20-ft machine reaches a maximum height of 24 ft 11˝ (7.6 m). ***Maximum machine height may increase if a compatible third-party GPS system is installed.***

Electrocution Prevention

Electrocution is possible. Death or serious injury may result if the pile being driven strikes an energized power line. Refer to the operating instructions, and take the following precautions to prevent electrocution:

- Call your One-Call system, and any utility company that does not subscribe to the One-Call system, before your project begins. Locate underground utilities by qualified persons. Refer to ***page 40-8.***
- When operation approaches the estimated location of a utility, determine the exact location of the underground installation by safe and acceptable means.

- Never step onto or off of the machine if electrical strike occurs. You may hear popping/electrical noises or see smoke or sparks if an electrical strike occurs.

If a strike occurs while you are touching the ground, you could be electrocuted when your body becomes a direct current path to the ground.

Jobsite Assessment

Examine work area for obstructions, conditions, or situations which may impair machine operation or create a safety hazard. Use information in this manual and your own good judgment when identifying these hazards and implementing hazard prevention measures.

Check for steep slopes, banks, overhangs, drop-offs, and trenches which can cave in.

The operator or job foreman should also inspect the jobsite for:

- holes, rocks, or other hidden hazards
- traffic/site access

Remove any obstacles or materials that could result in injury or damage the machine.

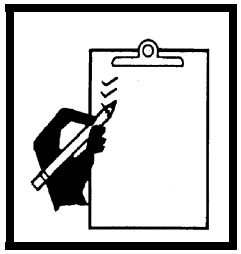
Power Line Locator System

A locator system to locate underground power lines is not included with the system but may be purchased from Vermeer dealerships.

LAWS AND REGULATIONS - CHECK

Know and obey all federal, state, and local laws and regulations that apply to your work situation.

PREPARING THE MACHINE



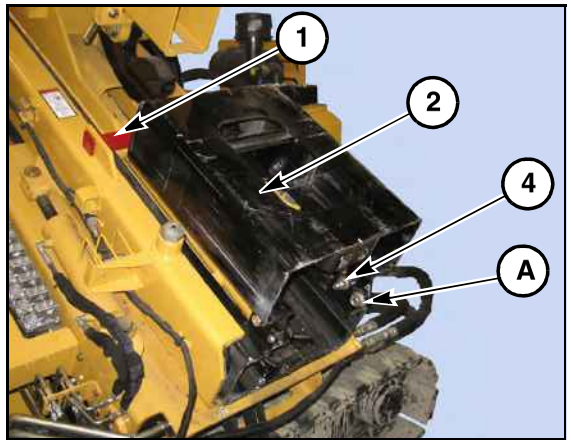
WARNING: Check machine before operating. Machine must be in good operating condition and all safety equipment installed and functioning properly.

- Ensure you understand and comply with all jobsite rules that might apply to your work situation.
- Adjust seat for best access to controls.
- If operating along a road, properly alert and divert motor and pedestrian traffic. Use all necessary signs, cones, flag persons, or lighting devices needed for the work situation.
- Clean machine to help ensure good operating condition. Refer to ***page 60-57.***

Preparing the Mast

Machine with 10-Ft Mast

Additional steps may be required if a compatible third-party GPS system is installed.



Step 1: Tilt mast to upright position.

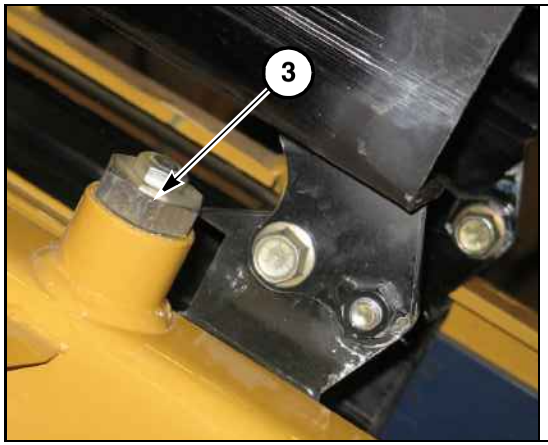
Step 2: Lower mast fully.

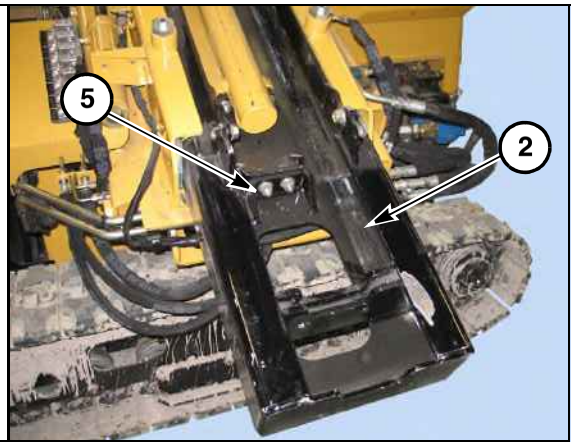
NOTICE: If mast is raised too high with bottom section folded, lower mast adjusters **(3)** could fall out of holders.

Step 3: Raise hammer.

Step 4: Install hammer support bar **(1)** in bracket.

Step 5: Lower hammer to contact hammer support bar.





Step 6: Loosen bolts at hinge **(A)** to allow mast to fold while keeping hinge together.

Step 7: Remove bolts **(4)** and fold down bottom section **(2)**.

Depending on size of guide installed, the hammer may need to be raised slightly for clearance when folding bottom section. Lower hammer to contact support bar before installing bolts in holes **(5)**.

Step 8: Install bolts in holes **(5)** and torque to 212 ft-lb (287 Nm).

Step 9: Torque bolts at hinge to 150 ft-lb (203 Nm).

Machine with 15-Ft Mast

Additional steps may be required if a compatible third-party GPS system is installed.

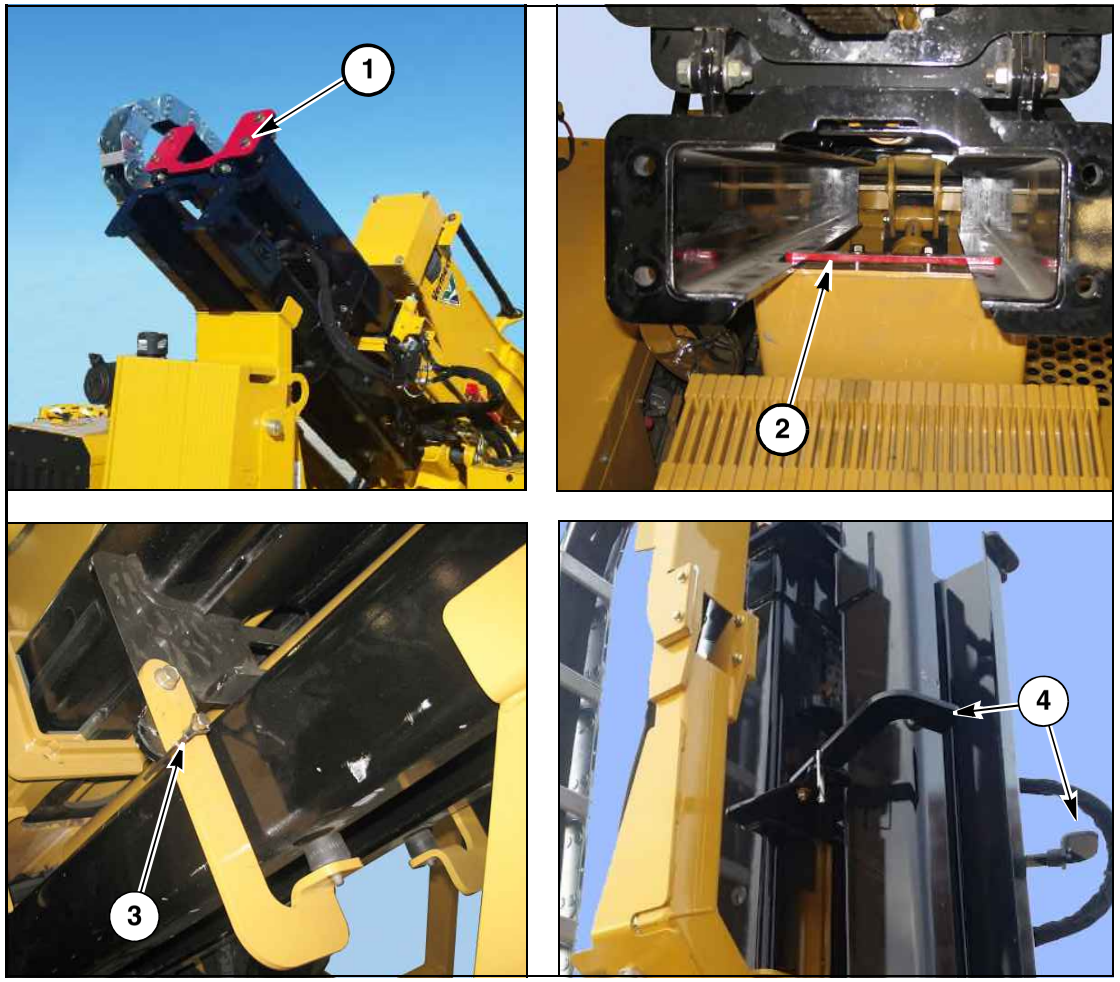
Step 1: Remove four bolts and mast cap plate **(1)**. Retain in toolbox for use during transport.

Step 2: Remove bolts and lock plate **(2)**. Retain in toolbox for use during transport.

Step 3: Tilt mast to the upright position.

Step 4: Remove linchpins **(3)** in locks.

Step 5: Swing out locks **(4)**. Insert linchpins to hold locks open.



Step 6: Attach suitable lifting device **(5)** to top of mast. Top section of 15-ft mast weighs 190 lb (86 kg).

Step 7: Raise lifting device until top of mast clears cradle **(12)**.

Step 8: Simultaneously tilt mast toward machine and adjust lifting device until hinge is within reach.

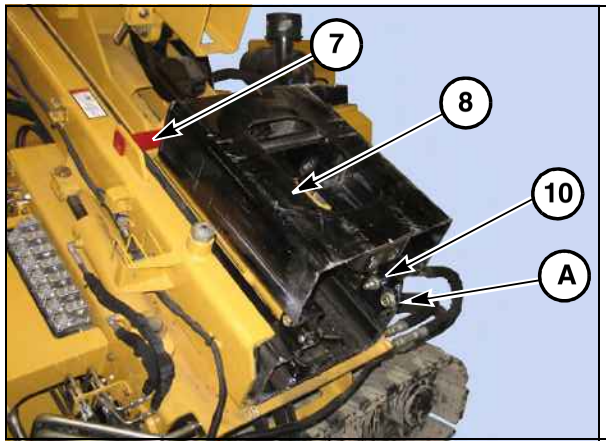
Step 9: Insert four longer bolts **(6)** retained in toolbox and tighten. Torque to 376 ft-lb (510 Nm).

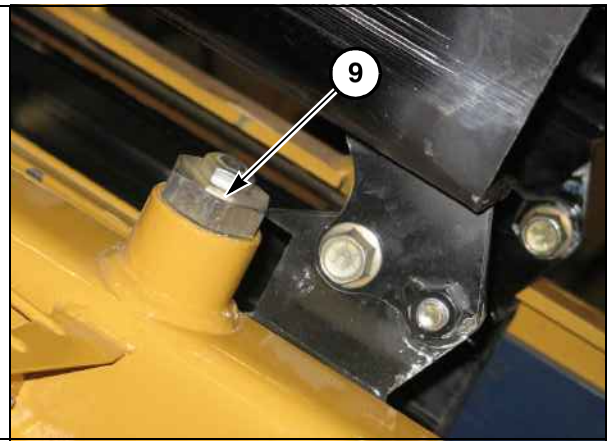
Step 10: Remove lifting device.

Step 11: Tilt mast until it is slightly toward machine from vertical.

Step 12: Completely lower mast to allow bottom section **(8)** to pivot at hinge **(A)**.

NOTICE: If mast is lifted too high with bottom section folded, lower mast adjusters **(9)** could fall out of holders.



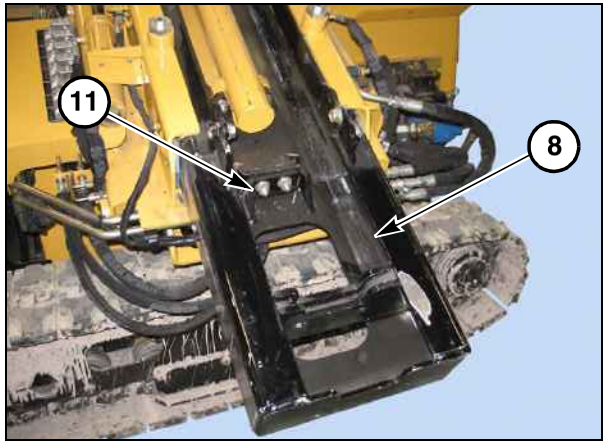


Step 13: Ensure hammer support bar **(7)** is installed.

Step 14: Loosen bolts at hinge to allow mast to fold.

Step 15: Remove bolts **(10)** and unfold bottom section of mast.

Depending on size of guide installed, the hammer may need to be raised slightly for clearance when folding bottom section. Lower hammer to contact support bar before installing bolts in holes **(11)**.



Step 16: Install bolts in holes **(11)** and torque to 212 ft-lb (287 Nm).

Step 17: Torque bolts at hinge to 150 ft-lb (203 Nm).

Machine with 20-Ft Mast

Raise hose carrier if it has been folded for transport. Proceed to **Step 5** if hose carrier was not folded.

Step 1: Remove transport straps **(1)**.

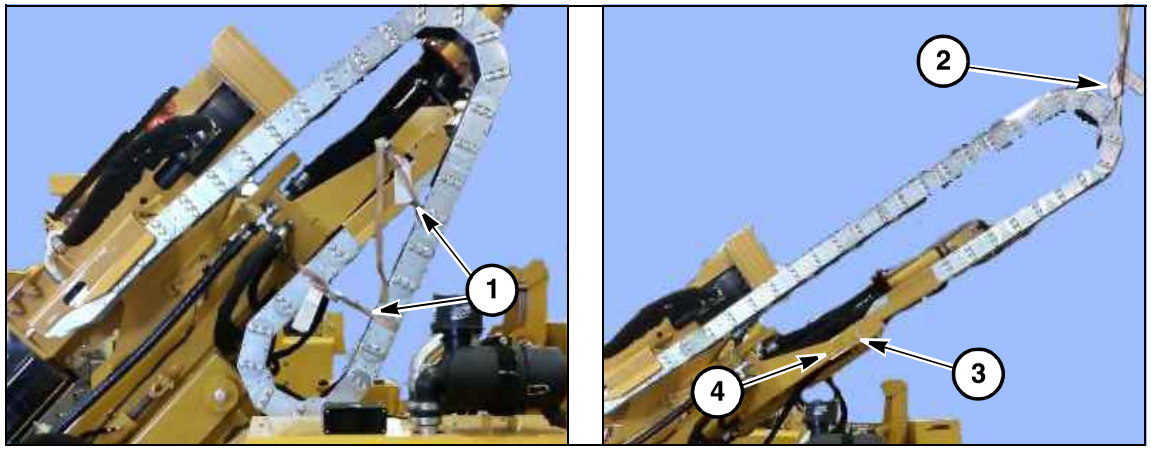
Step 2: Attach suitable lifting device to hose carrier **(2)**. This portion of hose carrier weighs 500 lb (227 kg).

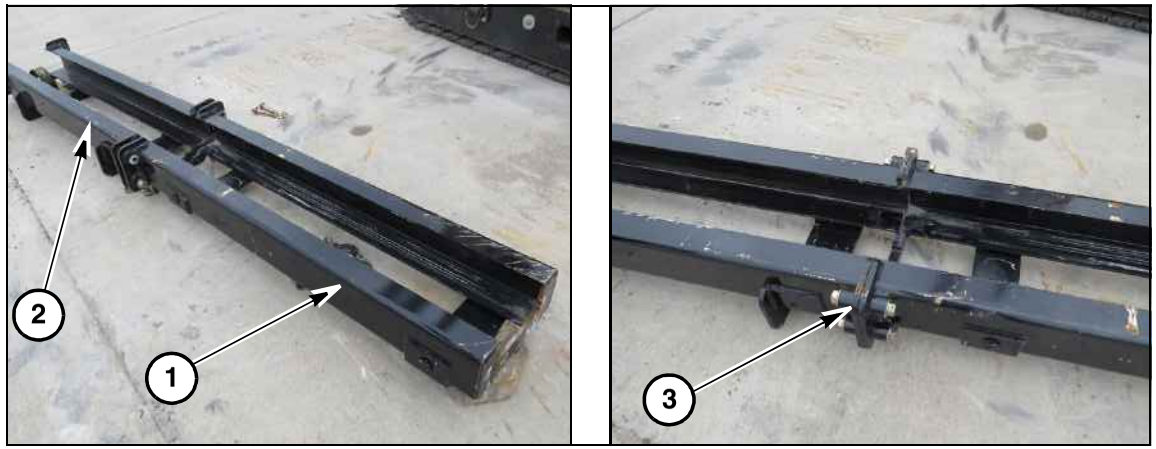
Step 3: Unfold hose carrier.

Step 4: Install bolts **(3)** and tighten bolts **(4)**.

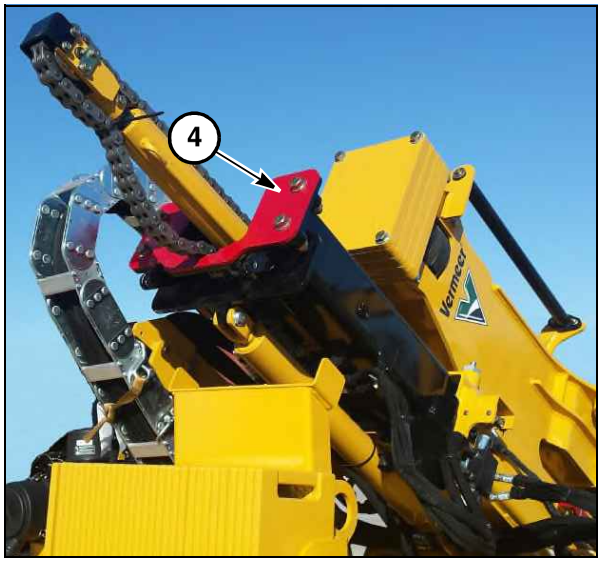
Additional steps may be required if a compatible third-party GPS system is installed.

Step 5: Attach top **(1)** and middle **(2)** portions of mast together. Torque bolts **(3)** to 376 ft-lb (510 Nm).

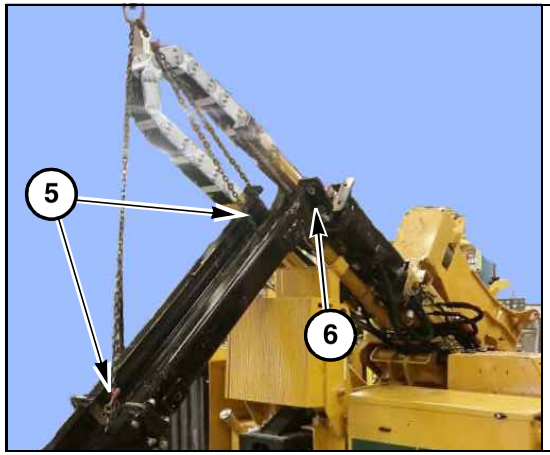


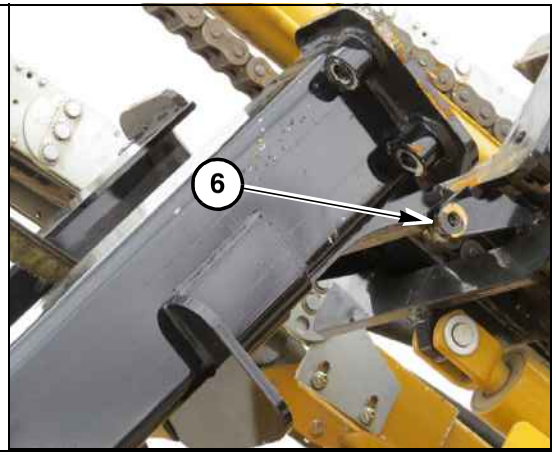


Step 6: Remove bolts and mast cap plate **(4)** on lower portion of mast. Retain in toolbox for use during transport.



Step 7: Attach suitable lifting device to top two sections of mast at two points **(5)** and align with hinge bolt holes **(6)** on machine. Top two sections of mast weigh 380 lb (172 kg) combined.

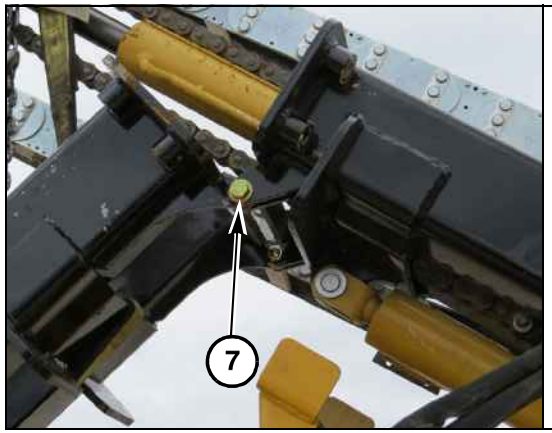




Step 8: Install bolts **(7)** into hinge and tighten to retain joint, but allow mast to unfold.

Step 9: Remove lifting device connection near hinge.

Step 10: Raise top two mast sections to align with bottom section.



Step 11: Install bolts **(8)**; torque to 376 ft-lb (510 Nm).

Torque bolts **(7)** to 150 ft-lb (203 Nm)

Step 12: Remove lifting device.

Tilt mast out of cradle and away from machine until mast is almost vertical.

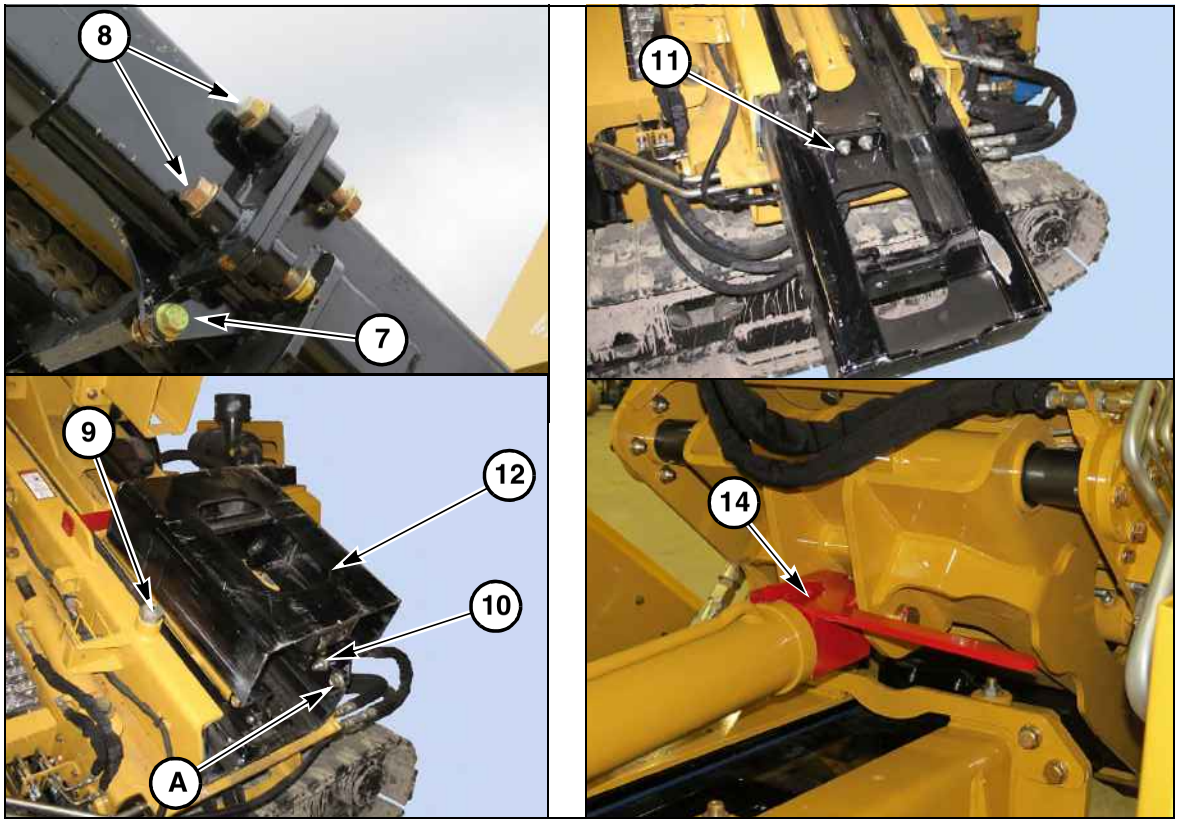
NOTICE: If mast is lifted too high with bottom section folded or removed, lower mast adjusters **(9)** could fall out of holders.

Step 13: Ensure hammer support bar is installed.

Step 14: If equipped, remove mast tilt positioner **(14)**, then proceed to **Step 15**.

If not equipped with a mast tilt positioner, proceed to **Step 18**.

Step 15: Loosen bolts at hinge **(A)** to allow bottom section of mast **(12)** to pivot.



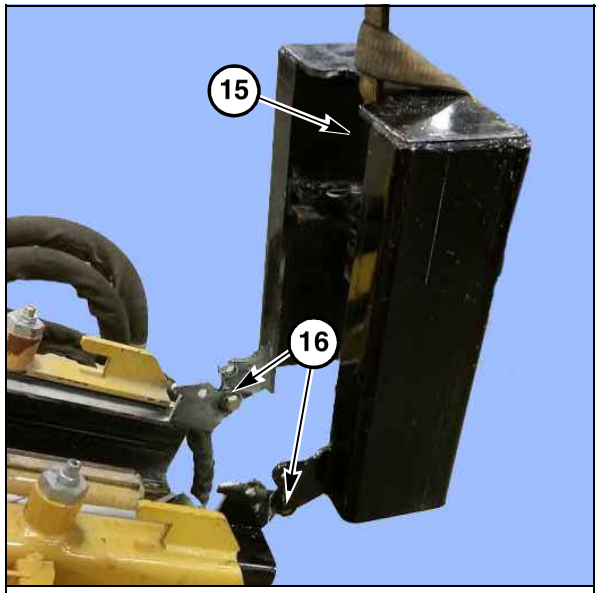
Step 16: Remove bolts **(10)** and unfold bottom section of mast.

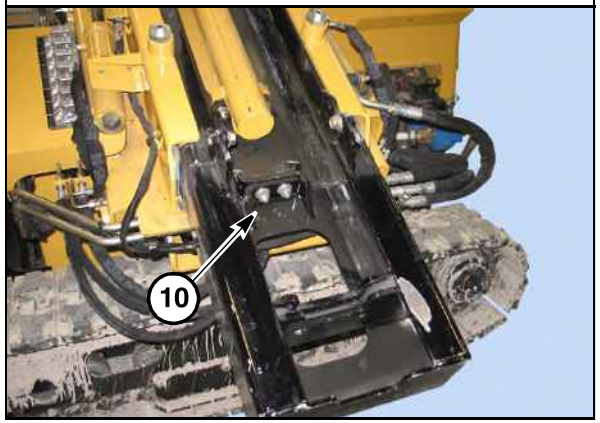
Depending on size of guide installed, hammer may need to be raised slightly for clearance when folding bottom section. Lower hammer to contact support bar before installing bolts in holes **(11)**.

Step 17: Install bolts **(10)** in holes **(11)**, torque to 212 ft-lb (287 Nm).

Step 18: Attach bottom section of mast:

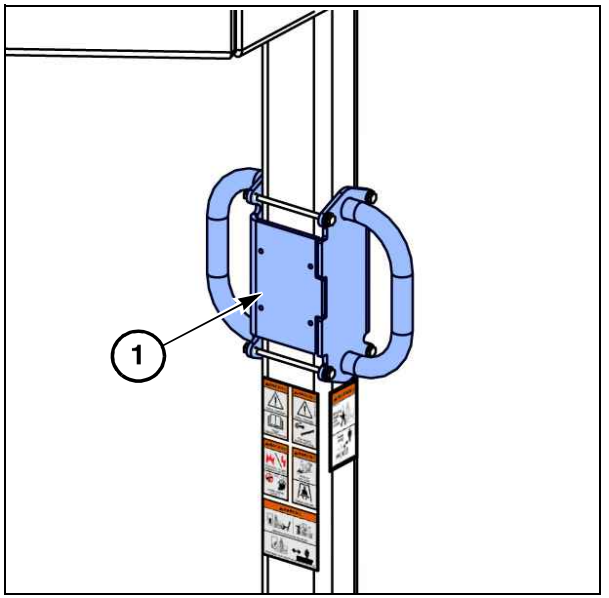
- Lower mast completely.
- Attach suitable lifting device to bottom section of mast **(15)**. Bottom section weighs 85 lb (39 kg).
- Lift bottom section of mast into position.
- Install bolts **(16)** so that bottom section can pivot.
- Unfold bottom mast section into work position, then tighten bolts and remove lifting device.
- Install bolts **(10)** that were stored during transport. Torque to 212 ft-lb (287 Nm).





Mounting Compatible Third-Party GPS System

Mounting accommodations have been provided for the owner's convenience in mounting a compatible third-party GPS system. Vermeer makes no representation as to the compatibility of any third-party GPS system.



Display

(1) Mounting location

Mounting location has standard VESA 1/4-20 UNC threaded hole pattern. Use only holes provided to mount display. Do not drill or weld on the ROPS bar. Unauthorized modifications of the ROPS could weaken the structure and reduce protection. Refer to "Rollover Protective Structure (ROPS)," *page 30-3.*

Display must not block operator's view of pile installation process. If necessary, reposition display to rotate operator's station, or to improve walkway access.

Antenna

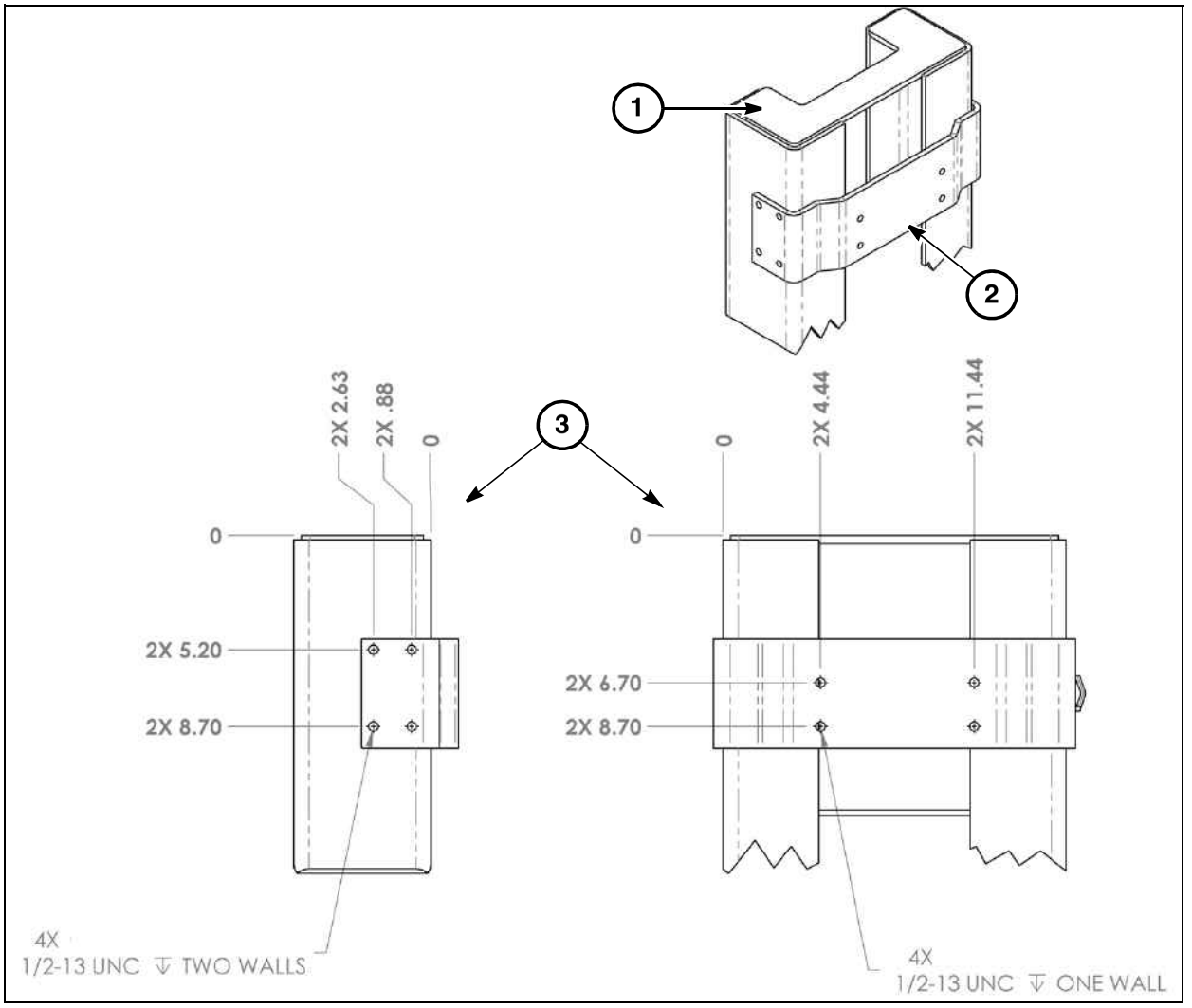
An antenna can be attached to the mast. Refer to compatible third-party GPS Operator's Manual for more information.

(1) Top of mast

(2) Bracket

(3) Bolt hole specifications

NOTICE: Use bolts that will not protrude through mast and interfere with hammer carriage when fully raised.



Compartment

The lockable compartment **(1)** provides a mounting location **(2)** with pre-drilled holes for a receiver or battery, a 12-pin electrical connector **(3)**, and storage for components.

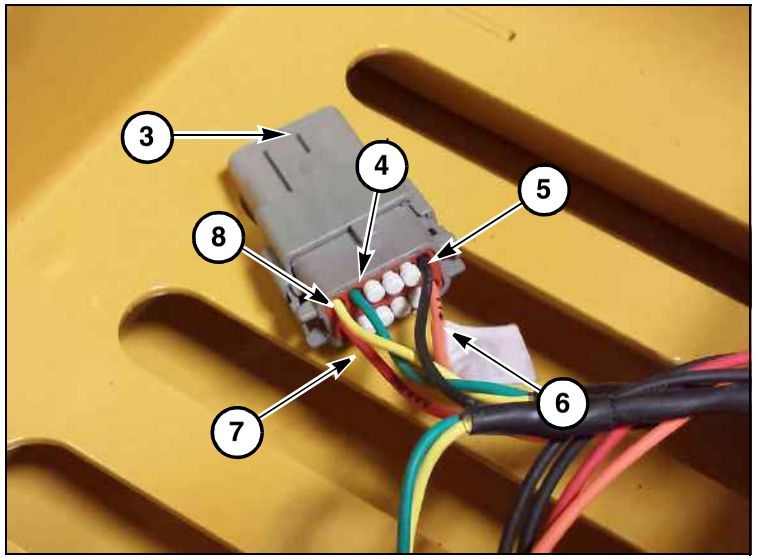
(4) CAN Low

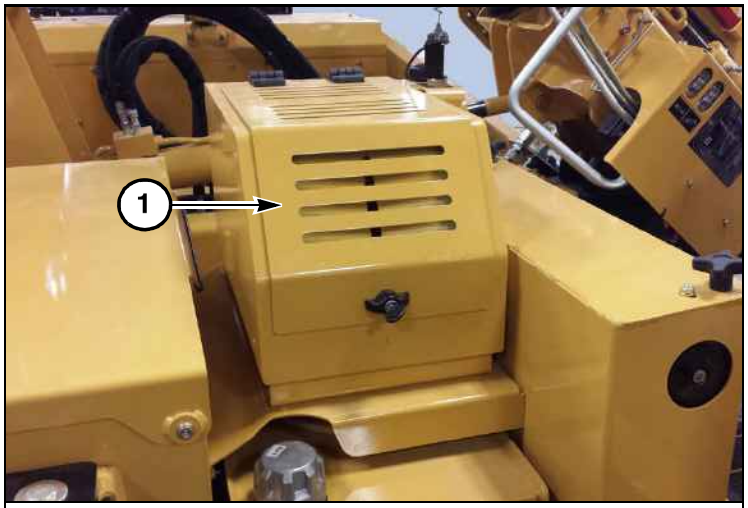
(5) Ground

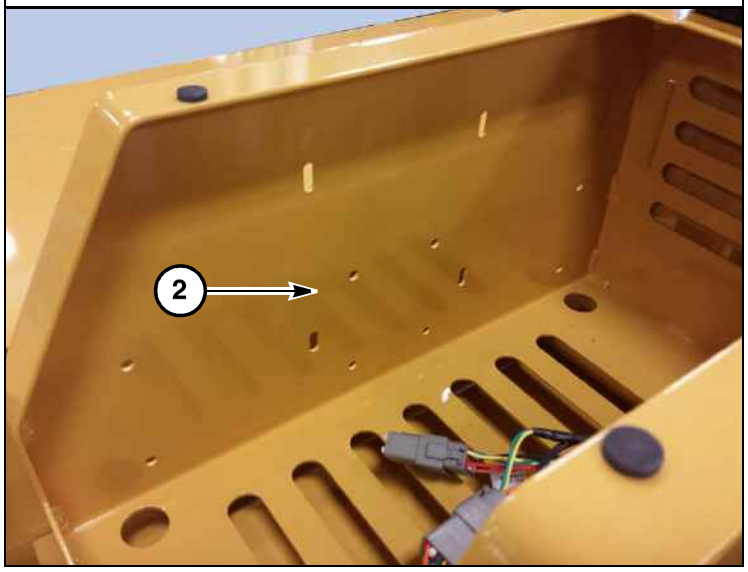
(6) 12V Power, Switched

(7) 12V Power, Unswitched

(8) CAN High







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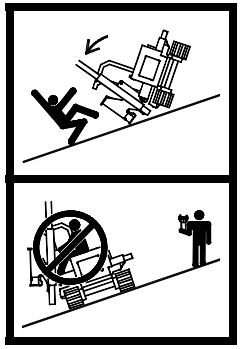
Section 50: Operating the Machine

WARNING: Before attempting to operate the machine, read “Safety Messages” for important safety information. Refer to ***page 10-1.***

Familiarize yourself with the location and function of the controls before operating. Refer to “Controls,” ***page 20-1.***

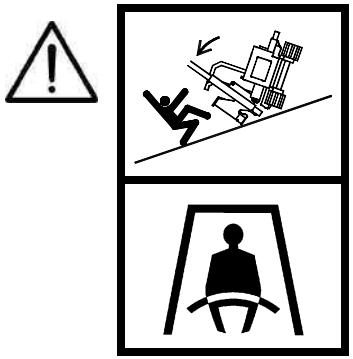
ROLLOVER POSSIBLE



WARNING: Rollover can crush.

Stay uphill.

No riding.



WARNING: Rollover can crush.

Fasten seat belt.

Take precautions to prevent rollover.

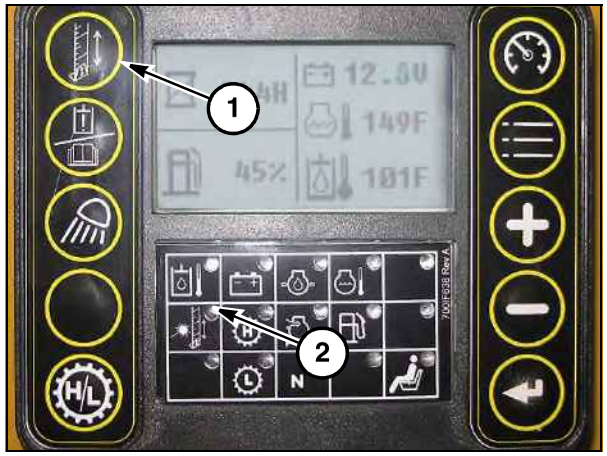
- Do not operate on slopes where rollover could occur.
- Do not operate near large holes, ditches, steep banks, or other terrain that may cause the machine to tip sideways.
- Operate at speeds and in a manner consistent with terrain and operating conditions.
- Before driving or operating machine, survey area around machine for persons or obstacles.

DRIVING PILES USING OPERATOR'S STATION

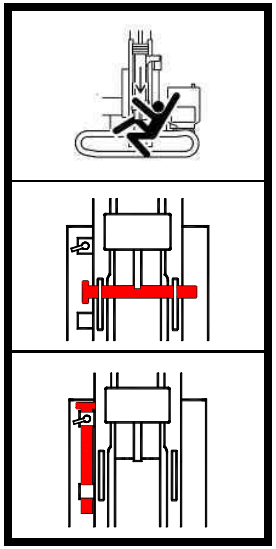
This procedure requires a second person to handle piles.

Step 1: Press *Measure Mode Key* **(1)** to select desired mode based on machine configuration. Refer to "Measure Mode Selections," ***page 20-25.***

Measure Mode Light **(2)** will come on when an automatic measure mode is selected.



Step 2: Tilt mast to vertical with switch **(3)** and joystick. Refer to ***page 20-14.***



WARNING: Falling hammer can crush.

Engage support before working on or under hammer.

Storage

Step 3: Ensure hammer support bar **(4)** is installed and supporting hammer.

Step 4: If necessary, install hammer support bar and lower hammer to contact support bar.

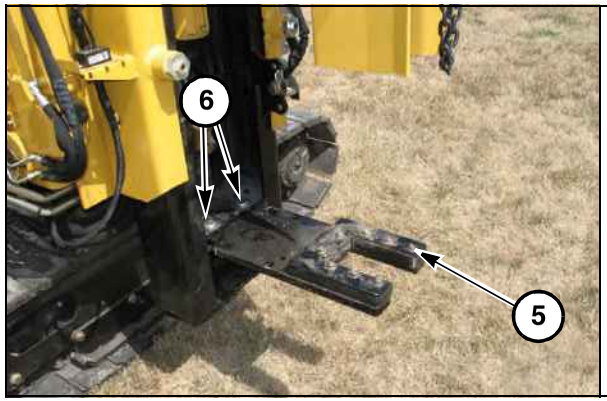
Step 5: Shut down engine and remove key.

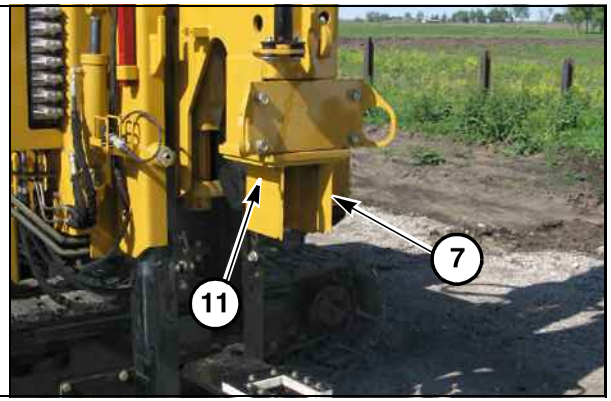
Step 6: Attach lower guide plate **(5)** with pins and hairpins **(6)**.

Step 7: Attach upper guide **(7)** with bolts **(11)**.

Step 8: Follow ***Starting Procedure,*** page ***22-1.***

Step 9: Raise hammer slightly to remove hammer support bar. Stow bar.

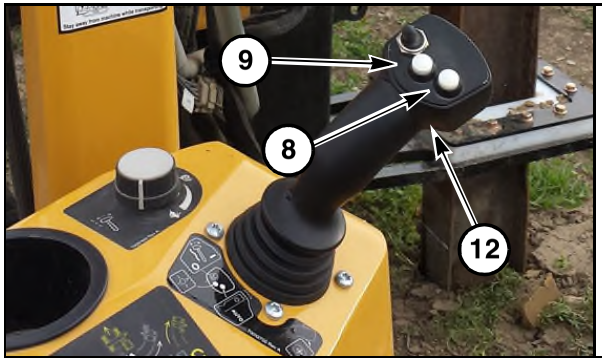


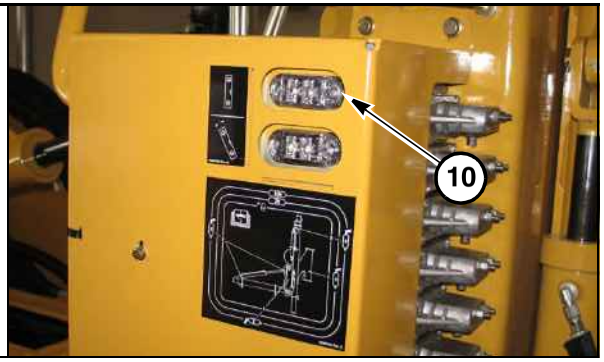


Step 10: Engage Auto Home Mast Slide **(9)** (if equipped) to provide a consistent starting point.

Step 11: Position machine and mast. Leave enough mast slide travel to disengage lower guide plate **(5)** from the pile after the pile is driven if side load guide is used.

Guides **(5)** & **(7)** can be changed depending on pile size and shape.





Step 12: Lower hammer on mast.

Step 13: Engage Auto Plumb **(8)** to fine-tune the mast position.

If green light **(10)** is on, mast is within plumb tolerance range.

Activating Auto Plumb with hammer raised may make the mast sway, which may result in a slower cycle time. Activating Auto Plumb with the hammer raised may also decrease machine stability.

Step 14: Engage GPS Auto Target **(12)**, if equipped with compatible third-party GPS system.

If using a lifting device to help position pile:

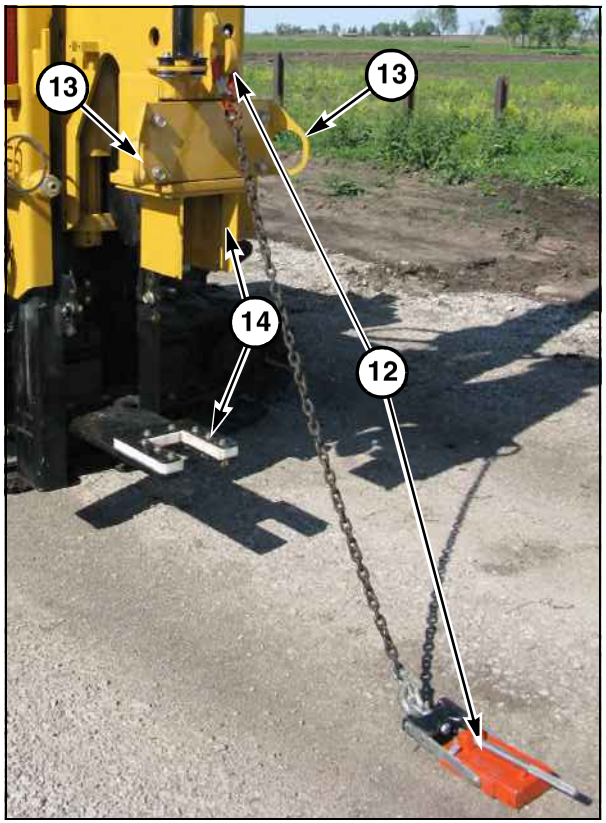
- Select a device that is correct for the type of pile being driven. Consider weight, shape and material composition.
- Inspect lifting device throughout the day, and repair or clean as necessary.
- Do not lift the pile overhead or off the ground more than necessary.
- Position pile before lifting so that top end is pointing away from all personnel.
- Attach lifting device above midpoint of pile so that pile is lifted upright to facilitate installation.

If using a magnet to lift the pile:

- Remember that the magnet will be lifting in shear (reduced capacity). Use only a magnet specifically designed for this type of lifting. Follow magnet manufacturer's instructions for safe lifting.
- The magnet's lifting capability depends on several factors, including pile weight, material type, material thickness, coatings, and cleanliness.
- Pile and magnet must be dry and free of ice, dirt, foliage and debris. The magnet must be in full contact with the surface of the pile being lifted.

Step 15: If using a lifting device, attach lifting device **(12)** to pile and location on machine as shown.

Lifting device can be routed through one of the guide loops **(13)** to help direct pile into position. Do not attach lifting device to guide loops.

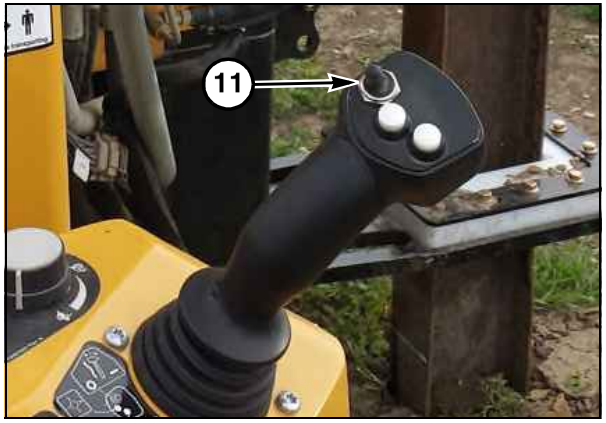


WARNING: Falling loads can result in death or serious injury. Do not exceed rated lift capacity of lifting device.

Step 16: Raise hammer by pulling back on right joystick, while second person helps guide pile into position.

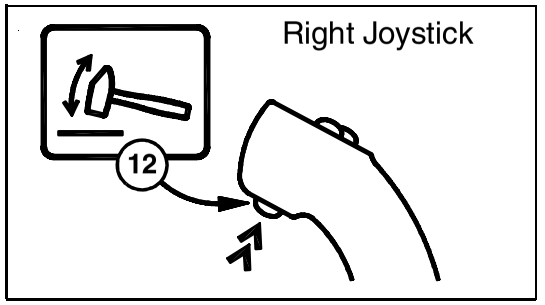
Step 17: Insert pile into upper and lower guides **(14)**.

Step 18: Slowly lower hammer onto the pile, and turn hammer FLOAT on with switch **(11)**.



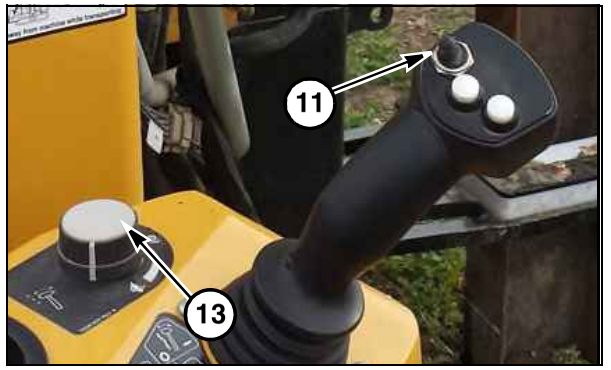
Step 19: Start hammer with *Hammer ON/OFF Switch* **(12)** on back of right joystick.

- If using a Measure mode with elevation, and a laser receiver or compatible third-party GPS system with an elevation component is installed and functional, hammer blows stop when hammer reaches the preset elevation.
- If using a manual Measure mode, press switch **(12)** again to stop hammer when correct height is reached.



Step 20: If necessary to prevent interference, remove lifting device before pile is fully driven.

Step 21: If a single strike is needed, adjust dial **(13)** to lower hammer speed. Start with 50% until you are more experienced.



Step 22: Press and hold switch **(15)** until hammer strike occurs.

Step 23: Disengage hammer FLOAT with switch **(11)**.

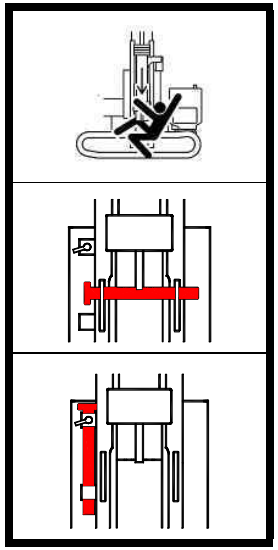
Step 24: If necessary, remove lifting device from pile and step away from machine.

Step 25: When pile reaches desired height, lift hammer high enough to clear pile.

Step 26: If using side load guide, slide mast toward machine until lower guide is clear of pile.

Step 27: Move machine to next position.

EXTRACTING PILES USING OPERATOR'S STATION



WARNING: Falling hammer can crush.

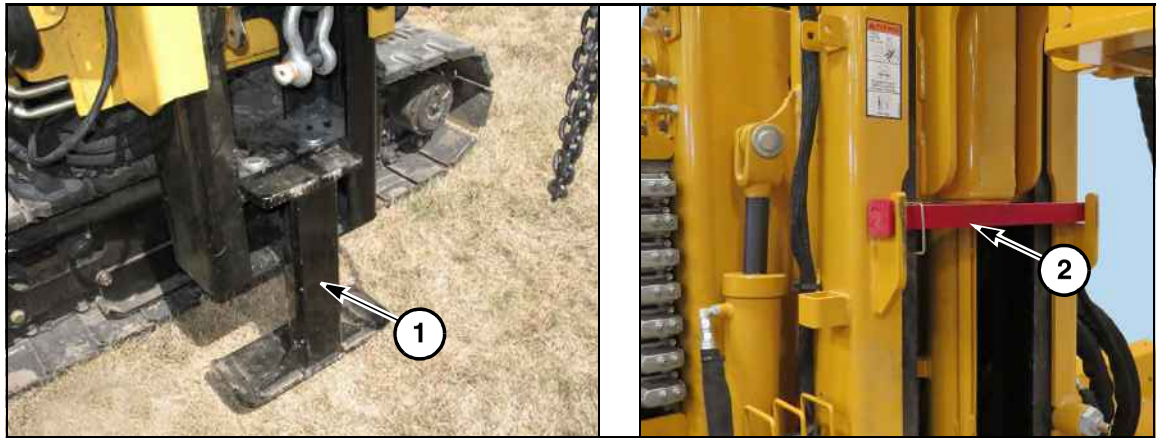
Engage support before working on or under hammer.

Storage

Step 1: Adjust mast height and hammer height so that extraction foot **(1)** and hammer support **(2)** can be installed.

Step 2: Install hammer support bar **(2)** and lower hammer onto bar.

Step 3: Shut down engine and remove key.

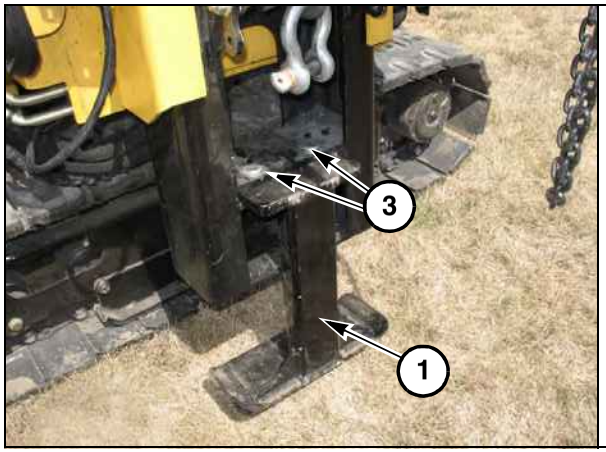


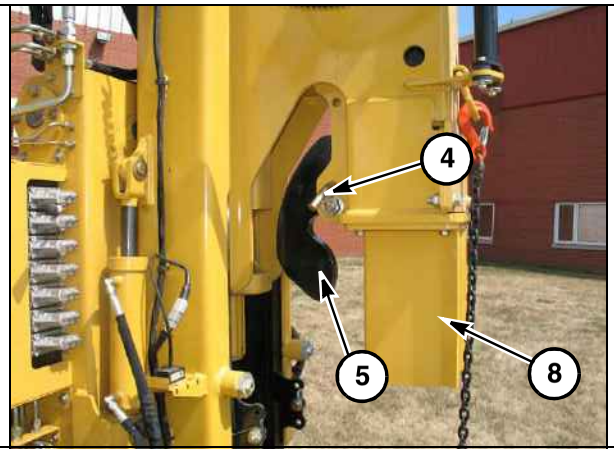
Step 4: Install extraction foot **(1)** and secure with pins **(3)**.

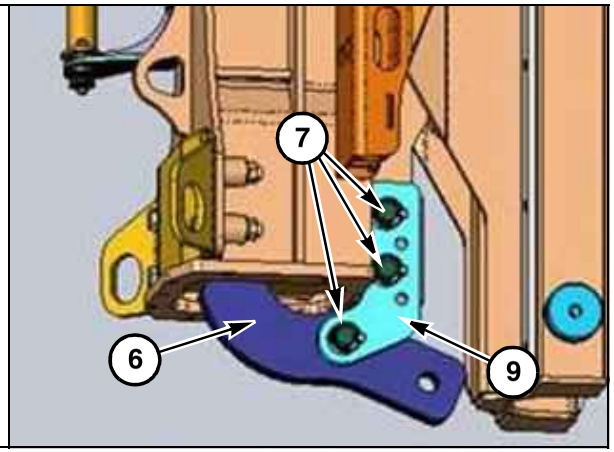
WARNING: Plate **(5)** is heavy and will swing down when pin **(4)** is removed. Keep hand away from leading edge of plate when removing pins, or crushing injury may result.

Step 5: **Smaller opening hammer box:** Remove linchpin and pull pin **(4)** to allow plate **(5)** to swing down to position shown in center photo. Store pin **(4)** in same hole.

Larger opening hammer box: Remove upper guide **(8)**. Install plate **(6)** and bracket **(9)** (stored in toolbox) with pins **(7)**. Secure pins with quick release pins.

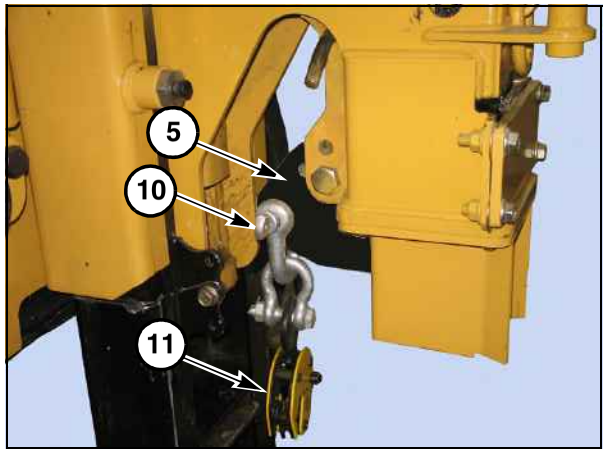






Step 6: Insert shackle **(10)** with clamp **(11)** (or other appropriate coupling device) into plate **(5)**.

Shackles bear significant shock loading due to impact. Use correctly sized shackles. Shackles and clamp are not provided. Appropriate clamping device varies, depending on pile type, size, and shape.



Step 7: Follow ***Starting Procedure,*** page ***22-1.***

Step 8: Raise hammer slightly to remove hammer support bar. Stow bar.

Step 9: Position clamp above pile.

Step 10: Lower mast until extraction foot touches the ground.

Step 11: Lower hammer until clamp can attach to top of pile.

Step 12: Shut down engine and remove key.

Step 13: Attach clamp to pile.

Step 14: Follow ***Starting Procedure,*** page ***22-1.***

Step 15: Slowly lift hammer until clamp locks onto pile and is tensioned.

Step 16: Slowly lift hammer by pulling on right joystick.

Step 17: Activate the hammer with *Momentary Hammer Engage Switch* **(12)**.

Step 18: Stop hammer percussion when pile becomes easy to extract, and continue to extract with hammer lift.

Step 19: Tilt pile away from all personnel and lower hammer until pile is on the ground.

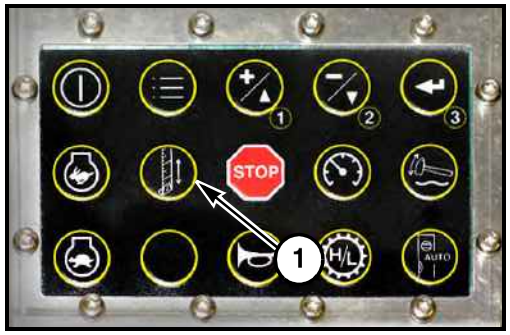
- If pile is light enough, the ground crew can assist with lower end of the pile as hammer is lowered.
- If pile is too heavy or very long, drive the machine rearward so the top of the pile is lowered away from the operator. Always drive machine in direction that prevents piles from lowering towards personnel.

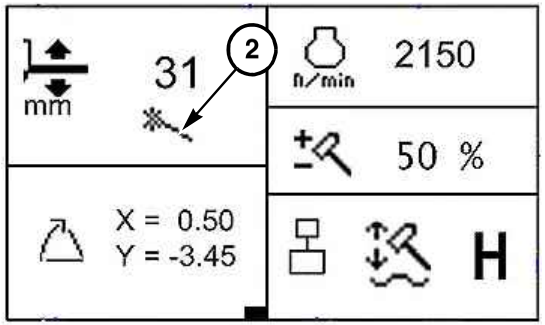
Step 20: Remove clamp.

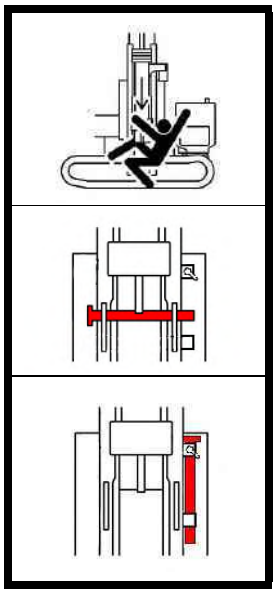
DRIVING PILES USING REMOTE CONTROL (OPTION)

Step 1: Press *Measure Mode Key* **(1)** to select desired mode based on machine configuration. A symbol **(2)** will appear on screen (varies by measure mode selected).

Step 2: Tilt mast to vertical with key **(3)** and joystick **(4)**.







WARNING: Falling hammer can crush.

Engage support before working on or under hammer.

Storage position.

Step 3: Tilt mast to vertical with key **(3)** and joystick **(4)**. Adjust hammer height with right joystick so hammer support bar **(5)** can be installed.

Step 4: Install hammer support bar **(5)** and lower hammer to contact bar.

Step 5: Shut down engine and remove key.

Step 6: Attach lower guide plate **(6)** with pins and hairpins **(7)**.

Step 7: Attach upper guide **(8)** with bolts **(9)**.

Step 8: Follow ***Starting Procedure,*** page ***22-1.***

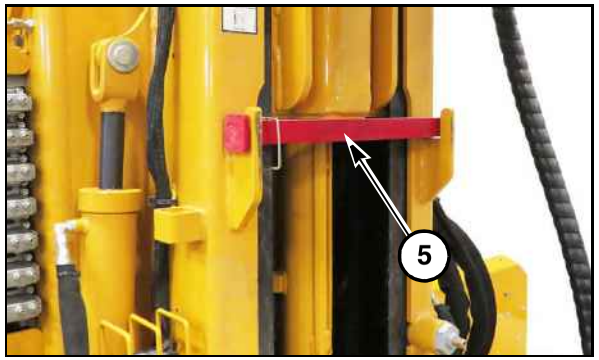
Step 9: Raise hammer slightly to remove hammer support bar. Stow bar.

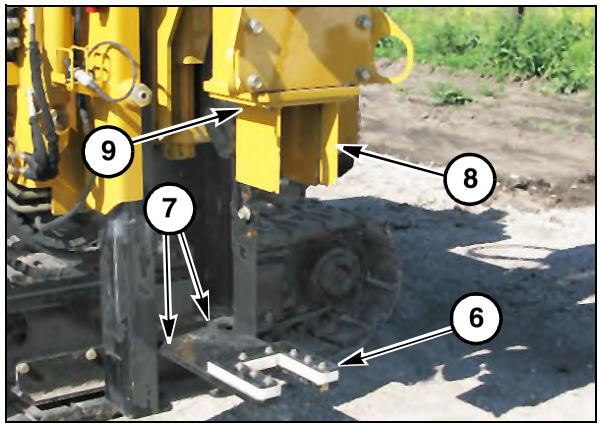
Step 10: Engage *Auto Home Mast Slide* **(10)** (if equipped) to provide a consistent starting point.

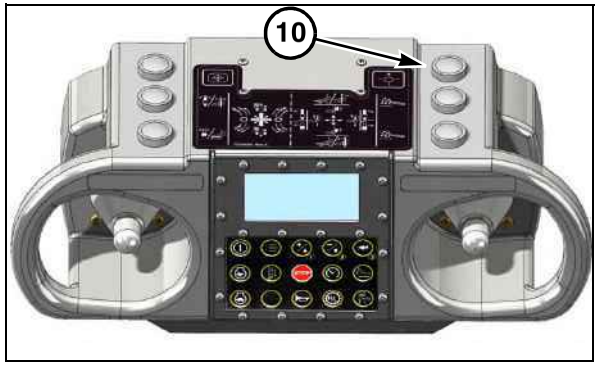
Step 11: Position machine and mast. Leave enough mast slide travel to disengage lower guide **(6)** from the pile after the pile is driven.

Upper guide and lower guide can be changed depending on pile size and shape.

Step 12: Lower hammer on mast.







Step 13: Engage Auto Plumb **(11)** to fine-tune mast position.

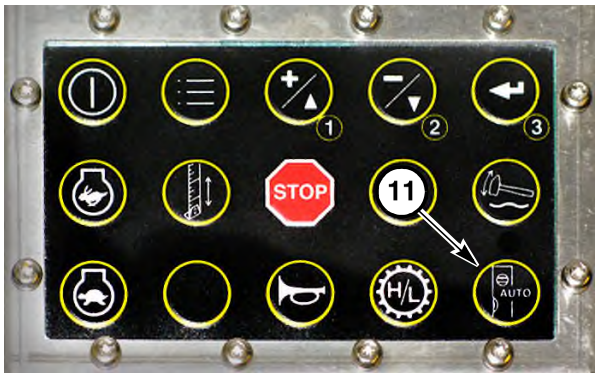
When green light **(12)** is on, mast is within plumb tolerance range. Refer to "Mast Plumb Lights," ***page 20-17.***

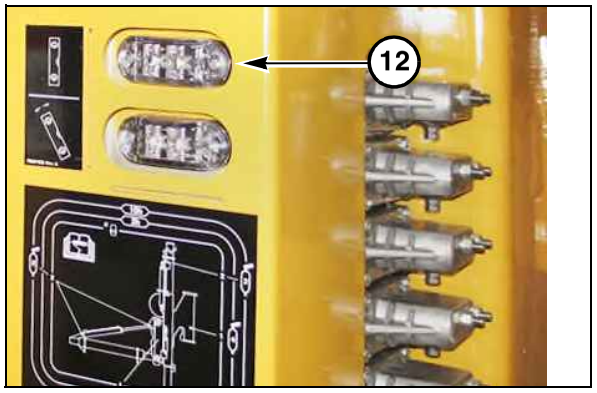
NOTICE: Activating Auto Plumb with hammer raised may make the mast sway, which may result in a slower cycle time. Activating Auto Plumb with the hammer raised may also decrease machine stability.

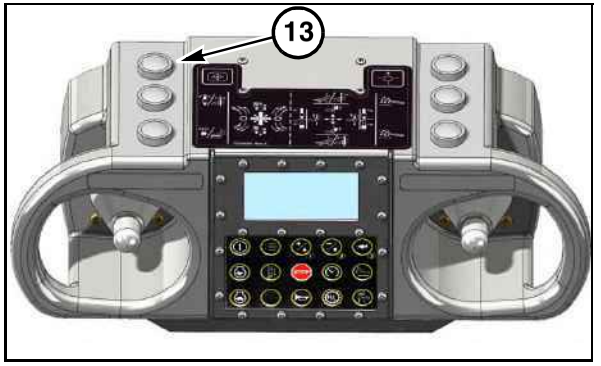
Step 14: Engage *GPS Auto Target* **(13)** (if equipped with a compatible third-party GPS system).

If using a lifting device to help position pile:

- Select a device that is correct for the type of pile being driven. Consider weight, shape and material composition.
- Inspect lifting device throughout the day and repair or clean as necessary.
- Do not lift the pile overhead or off the ground higher than necessary.
- Position pile before lifting so that top end is pointing away from all personnel.
- Attach lifting device above midpoint of pile so that pile is lifted upright to facilitate installation.

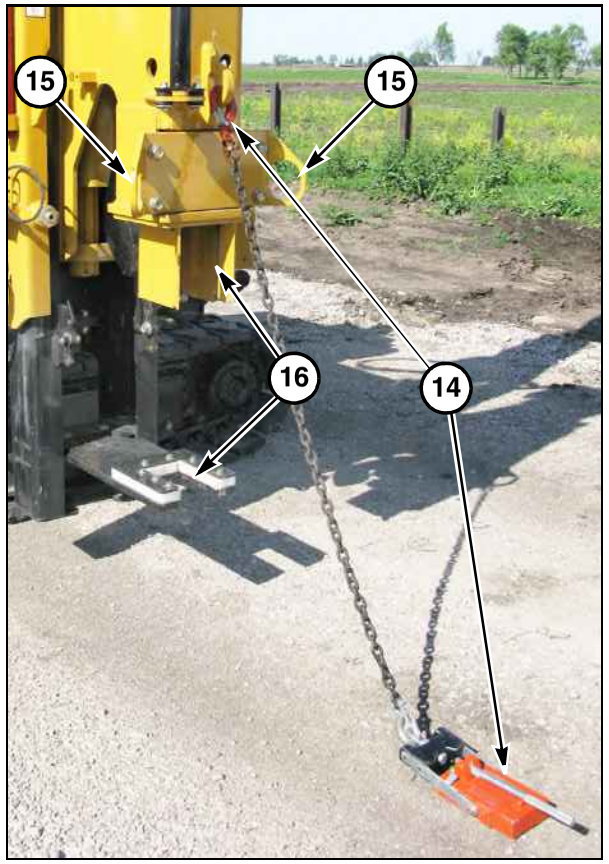






If using a magnet to lift the pile:

- Remember that the magnet will be lifting in shear (reduced capacity). Use only a magnet specifically designed for this type of lifting. Be sure to follow magnet manufacturer's instructions for safe lifting.
- The magnet's lifting capability depends on several factors, including pile weight, material type, material thickness, coatings, and cleanliness.
- Pile and magnet must be dry and free of ice, dirt, foliage and debris. The magnet must be in full contact with the surface of the pile being lifted.



Step 15: If a lifting device is being used, attach lifting device **(14)** to pile and location on machine as shown.

Lifting device can be routed through one of the guide loops **(15)** to help direct pile into position. Do not attach lifting device to guide loops.

WARNING: Falling loads can result in death or serious injury. Do not exceed rated lift capacity of lifting device.

Step 16: Raise hammer by pulling back on right joystick, while second person helps guide pile into position.

Step 17: Insert pile into upper and lower guides **(16)**.

Step 18: Slowly lower hammer onto the pile, and turn *Hammer Float Key* **(17)** ON.

Step 19: Start the hammer with *Hammer ON/OFF Button* **(18)**.

- If using a Measure Mode with elevation, and a laser receiver or compatible third-party GPS system with an elevation component is installed and functional, the hammer blows stop when it reaches the preset elevation.
- If using a manual Measure Mode, press key **(19)** again to stop hammer when correct height is reached.
- The Main Screen displays percent of hammer speed. Refer to "Main Screen," ***page 20-24.***

Step 20: If necessary to prevent interference, remove lifting device before pile is fully driven.

Step 21: If a single strike is needed, adjust *Hammer Speed Dial* **(20)** to lower hammer speed. Start with 50% until you are more experienced.

Step 22: Press and hold button **(21)** until hammer strike occurs.

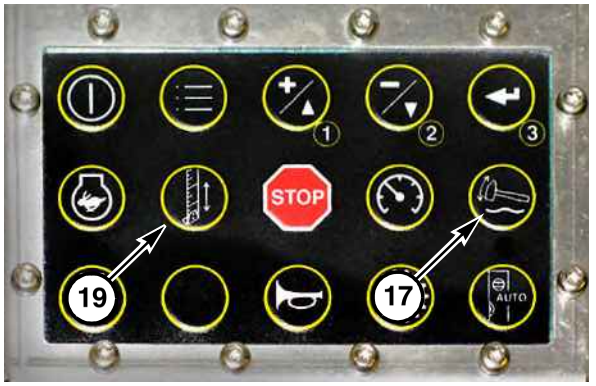
Step 23: Disengage hammer FLOAT with key **(17)**.

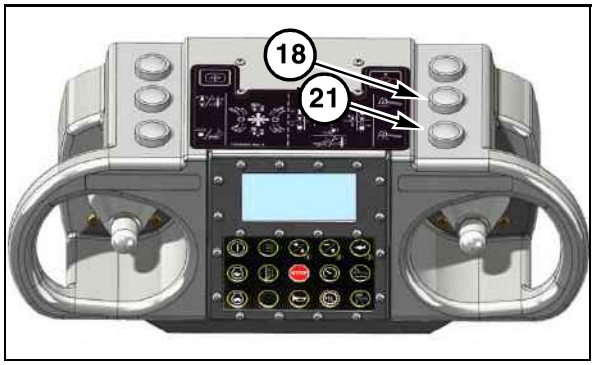
Step 24: If necessary, remove lifting device from pile and step away from the machine.

Step 25: Lift hammer high enough to clear pile.

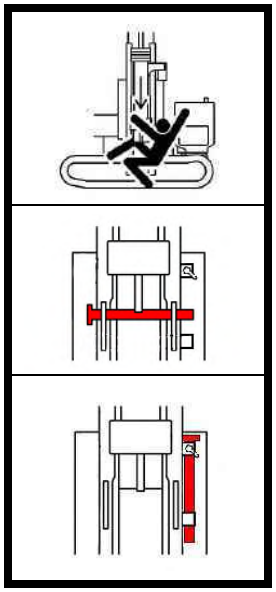
Step 26: If using side load guide, slide mast toward machine until lower guide is clear of pile.

Step 27: Move machine to next position.





EXTRACTING PILES USING REMOTE CONTROL (OPTION)



WARNING: Falling hammer can crush.

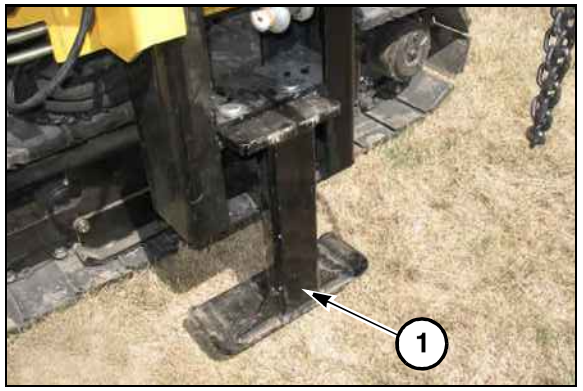
Engage support before working on or under hammer.

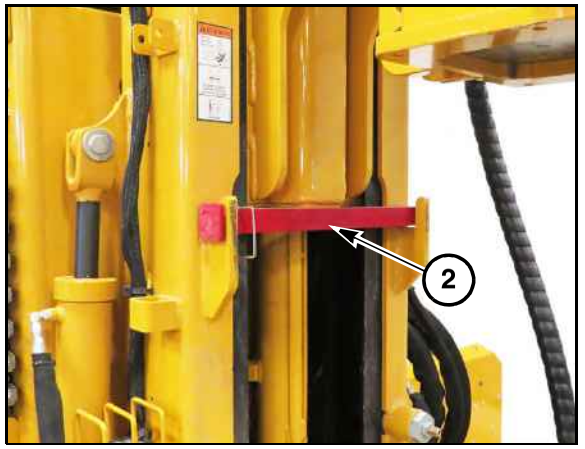
Storage position.

Step 1: Adjust mast height and hammer height so extraction foot **(1)** and hammer support bar **(2)** can be installed.

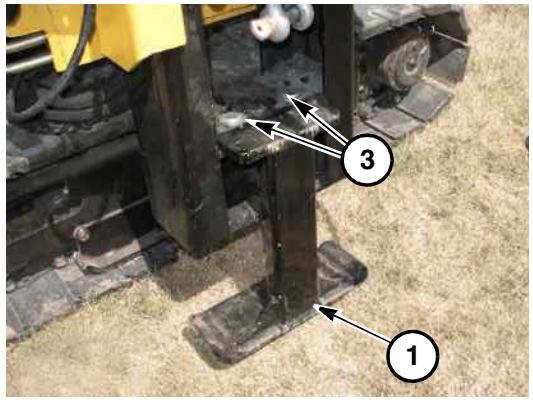
Step 2: Install hammer support bar **(2)** and slowly lower hammer onto bar.

Step 3: Shut down engine and remove key.





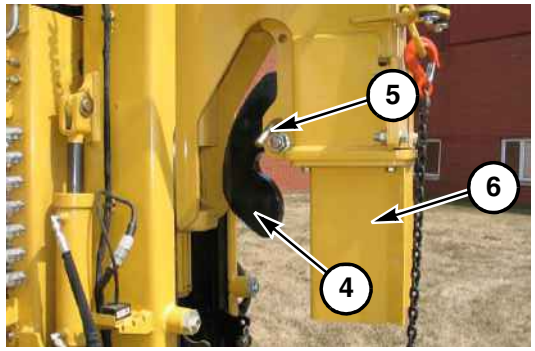
Step 4: Install extraction foot **(1)** and secure with pins **(3)**.

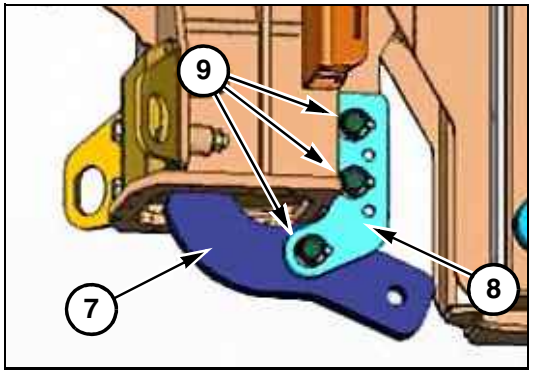


WARNING: Plate **(4)** is heavy and will swing down when pin **(5)** is removed. Keep hand away from leading edge of plate when removing pins, or crushing injury may result.

Step 5: **Smaller opening hammer box:** Remove linchpin and pull pin **(5)** to allow plate **(4)** to swing down to position shown in center photo. Store pin in same hole.

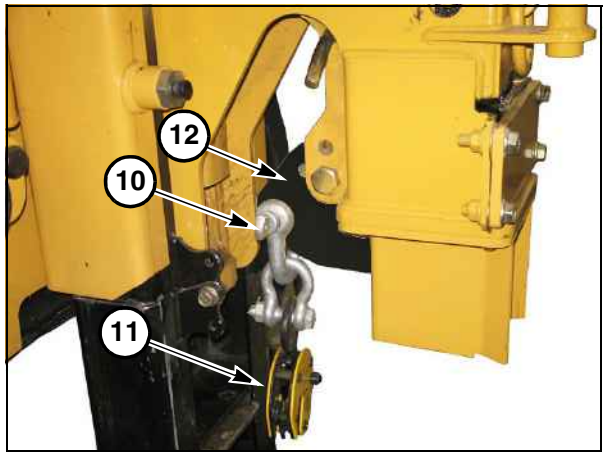
Larger opening hammer box: Remove upper guide **(6)**. Install plate **(7)** and bracket **(8)** (stored in toolbox) with pins **(9)**. Secure pins with quick-release pins.





Step 6: Insert shackle **(10)** with clamp **(11)** into plate **(12)**.

Shackles experience significant shock loading due to impact. Use correctly sized shackles. Shackles and clamp are not provided. Appropriate clamping device varies, depending on pile type, size, and shape.



Step 7: Follow ***Starting Procedure,*** page ***22-1.***

Step 8: Raise hammer slightly to remove hammer support bar. Stow bar.

Step 9: Position clamp above pile.

Step 10: Lower mast until extraction foot touches the ground.

Step 11: Lower hammer until clamp can attach to top of pile.

Step 12: Shut down engine and remove key.

Step 13: Attach clamp to pile.

Step 14: Follow ***Starting Procedure,*** page ***22-1.***

Step 15: Slowly lift hammer until clamp locks onto pile and is tensioned.

Step 16: Slowly lift hammer by pulling on right joystick. Activate the hammer with the *Hammer Momentary On Button* **(13)**.

Step 17: Stop hammer percussion when pile becomes easy to extract, and continue to extract with hammer lift.

Step 18: Tilt pile away from all personnel and lower hammer until pile is on ground.

- If pile is light enough, the ground crew can assist with moving lower end of pile as hammer is lowered.
- If pile is too heavy or very long, drive machine rearward so top of pile is lowered away from operator. Always drive machine in direction that prevents pile from lowering toward personnel.

Step 19: Remove clamp.

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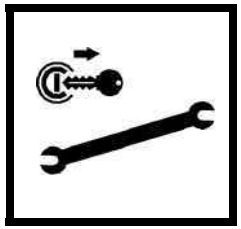
Section 60: Maintenance



WARNING: Failure to use shutdown procedure can result in unexpected hazard(s). Death or serious injury could result due to entanglement, crushing, cutting, or other hazardous contact. Follow Shutdown Procedure after operating, before performing any service or maintenance, and before transporting. Refer to ***Shutdown Procedure, page 23-1***.

Visually inspect machine daily before starting the machine.

Make no modifications to your equipment unless specifically recommended or requested by Vermeer Corporation.

Properly maintain condition of all safety signs. Refer to ***page 60-21.***

Avoid damaging components when cleaning machine. Refer to ***page 60-57.***

WELDING ALERT - ELECTRONIC COMPONENTS

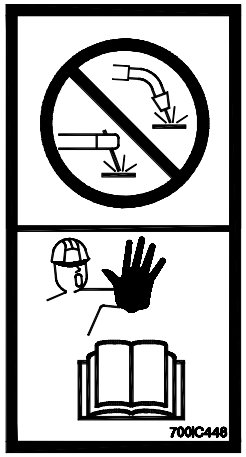
NOTICE: Electronic modules and controllers will be damaged from stray voltages and currents generated during welding if not unplugged ***before welding***.

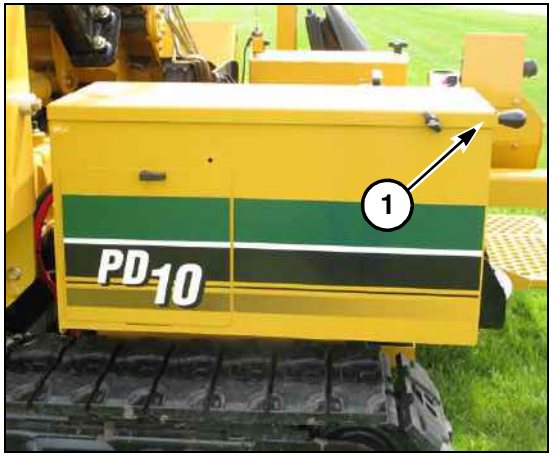
To prevent extensive and costly damage to the electrical components:

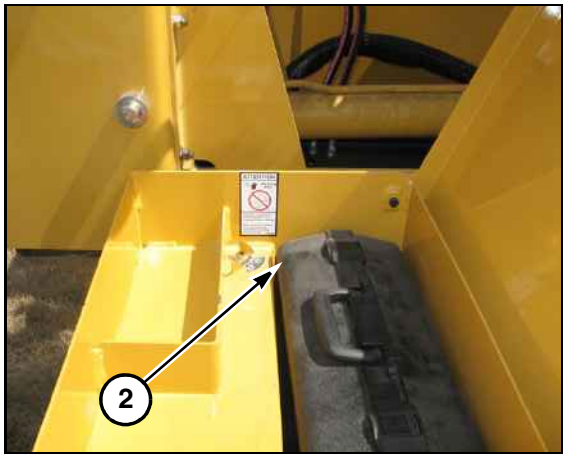
Step 1: Follow ***Shutdown Procedure,*** page ***23-1.***

NOTICE: Wait 60 seconds before disconnecting the battery. This is necessary to allow electronic controllers to complete their respective cycles.

Step 2: Open toolbox **(1)** to access *Battery Disconnect Switch* **(2)**. Turn switch to DISCONNECT.



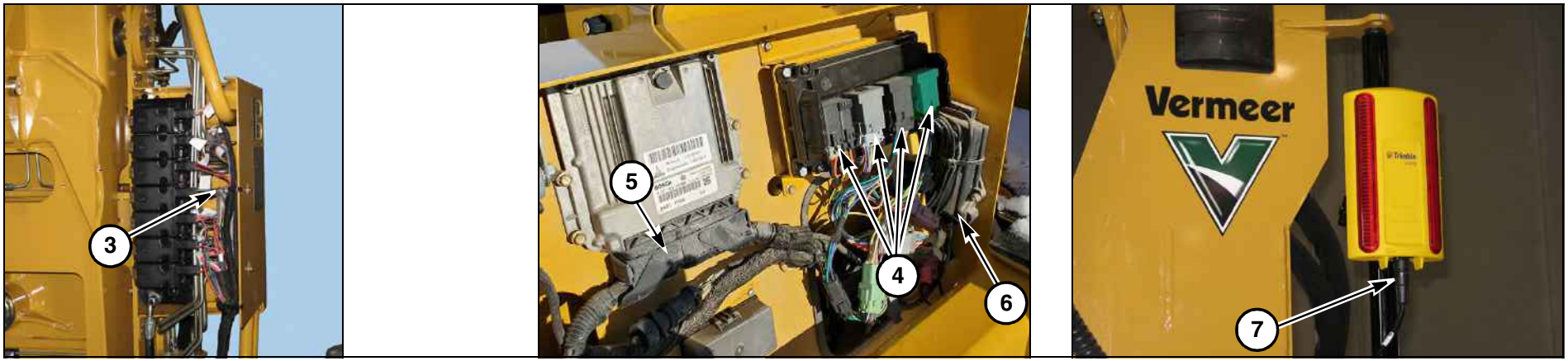




NOTICE: Disconnecting the battery ground with the battery disconnect switch does not prevent damage to the electronic components during welding. Each of the modules must have the electrical connector unplugged.

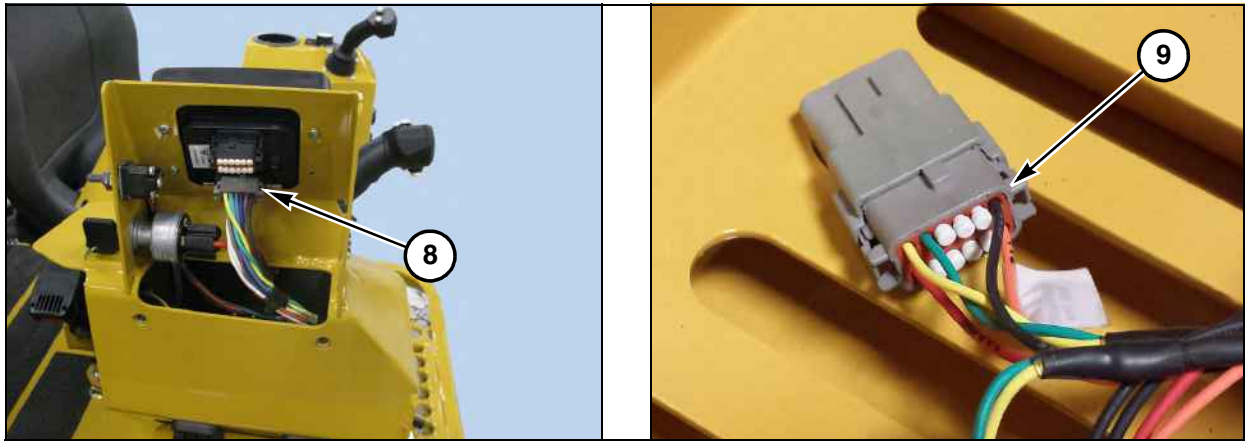
Step 3: Unplug Sauer Plus 1 output module **(3)**, MC4-24-20 module **(4)**, ECU **(5)**, and if equipped, radio remote base **(6)**.

Step 4: If equipped, unplug laser receiver **(7)**.

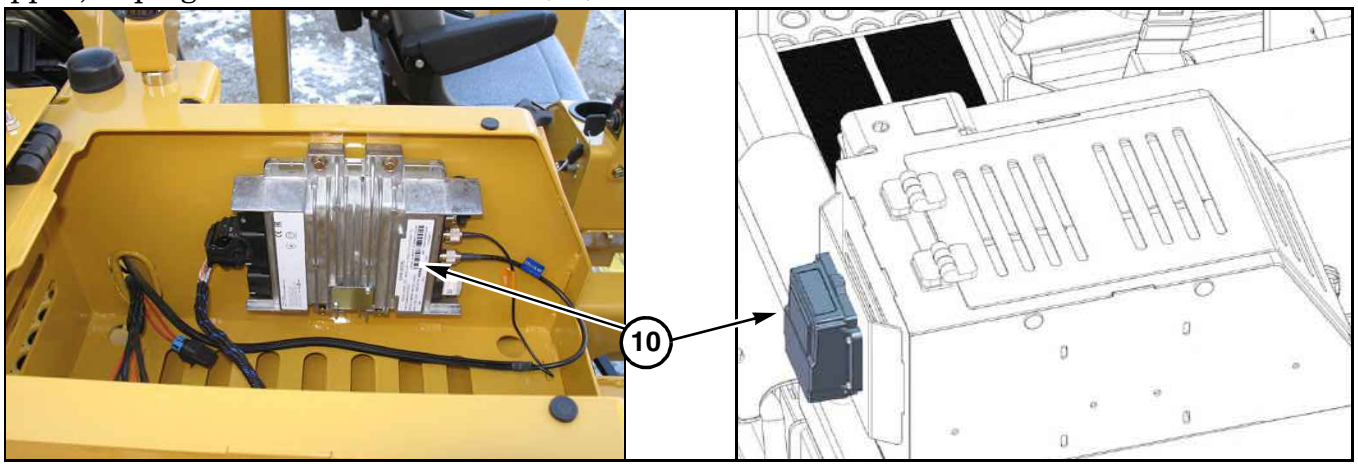


Step 5: Unplug DP10 controller **(8)**.

Step 6: If equipped, unplug compatible third-party GPS connection **(9)**.

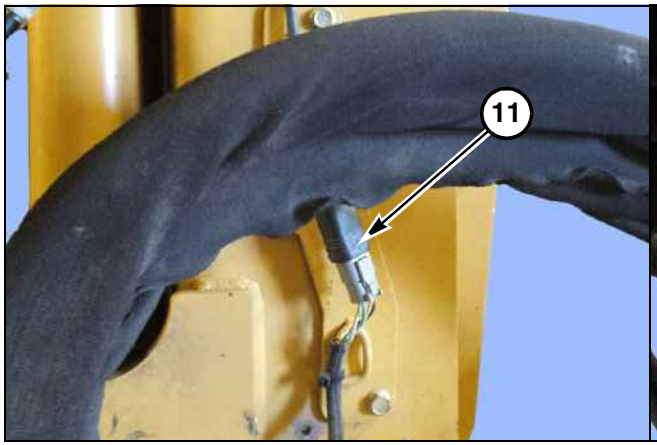


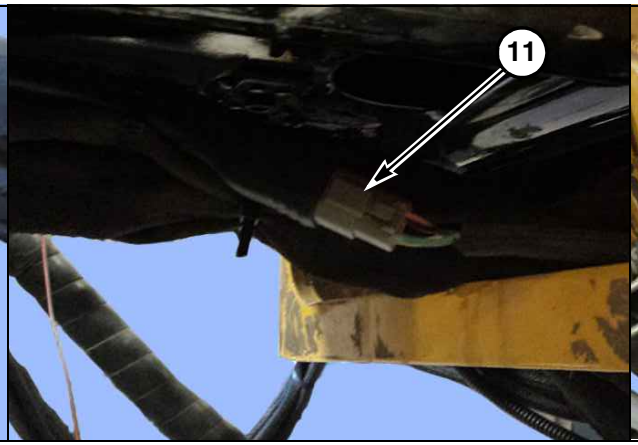
Step 7: If equipped, unplug telematics connections **(10)**.

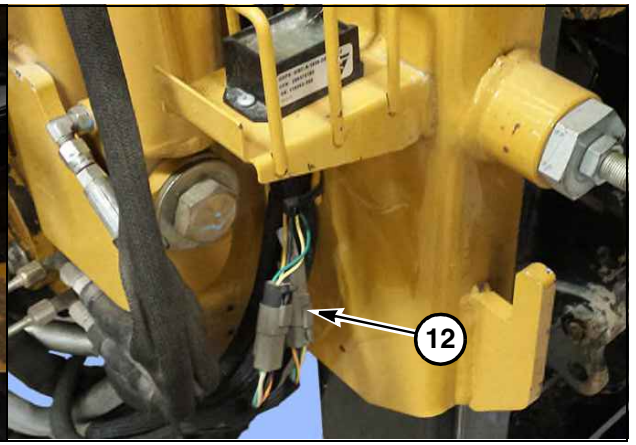


Step 8: If equipped, unplug two LVDT sensors **(11)**, and inclinometer connection **(12)**.

Two connections for inclinometer shown. Some machines may be configured with only one inclinometer connection. All inclinometer connections need to be unplugged, regardless of configuration, before welding.







ENGINE MAINTENANCE INTERVALS

Refer to the Engine Operation Manual, supplied with each machine, for maintenance instructions that are not included in this manual. Shorten maintenance intervals when operating under dusty, dirty conditions.

GREASING THE MACHINE

As a general rule, grease machine after it is shut down for the day. This protects the metal under the seals from corrosion caused by condensation as the temperature drops.

Ensure all fittings and grease applicator nozzle are clean before applying grease. If any grease fittings are missing, replace them immediately.

RECOMMENDED FLUIDS

Refer to "Lubricants," ***page 70-1***, for fluid and lubricant requirements.

MAINTENANCE INTERVALS - HOURMETER

The engine display screen is used to determine maintenance intervals for the machine. The display indicates the total number of hours the engine has been in operation. Refer to "Engine Screen," ***page 20-26.***

The maintenance intervals outlined in these maintenance sections are based on normal operating conditions. When operating under severe conditions, shorten the intervals.

Initial = Initial maintenance on new machine. Regular maintenance interval may be different.

- = Regular maintenance interval.

For Vermeer maintenance replacement part numbers, refer to the ***Parts Manual*** or call your Vermeer dealer.

Service	Maintenance Interval - Service Hours										
	4	10 or Daily	50 or Weekly	100	250	500	750	1000	1500	2000	As Required
Hammer Point - Lubricate	●										
Nuts and Bolts - Check Torque	●										
Engine - Check for Leaks and Damaged or Missing Parts		●									
Electrical & Hydraulic Components - Check		●									
Engine Oil - Check/Fill		●									
Hydraulic Fluid - Check		●									
Radiator - Check/Fill		●									
Fuel Tank - Fill		●									
Fuel/Water Separator - Check/Drain		●									
Mast Tilt Cylinder - Grease		●									
Air Cleaner Restriction Indicator - Check		●									
Wear Pads - Check			●								
Track Planetary Gearbox Oil Level - Check			●								
Safety Signs Maintenance				●							
Overall Machine - Check				●							
Backup Alarm - Check				●							
Controls - Check				●							
Neutral Start Interlock - Check				●							
Indicator Lights - Check				●							
Operator Presence System - Check				●							
Park Brake - Check				●							
Seat Belt Maintenance				●							

Service	Maintenance Interval - Service Hours										
	4	10 or Daily	50 or Weekly	100	250	500	750	1000	1500	2000	As Required
Hydraulic System - Check				●							
Hammer Proximity Switches - Check				●							
Ground Drive System - Inspect				●							
Remote Control - Test				●							
Track Pads and Bolt Tension - Check				●							
Track Chain Tension - Check				●							
Percussion Hammer Lifting Chain, Anchor, and Pins - Check/Clean/Lubricate				●							
Engine Oil and Filter Change					●						
Radiator and Oil Cooler - Clean					●						
Hydraulic Filters - Replace					Initial						
Cooling Fan V-Belt - Check/Adjust Tension					●						
Governor Lever and Engine Speed Control - Check **(Yanmar engines only)**					●						
Hydraulic Filters - Replace						●					
Battery Maintenance						●					
Chain - Inspect						●					
Blunt Tool/Striker Block - Remove & Inspect						●					
Hammer - Disassemble & Inspect							●				
Hydraulic Fluid - Change								●			
Fuel Filters - Replace								●			
Cooling System - Drain and Clean								●			
Track Planetary Oil - Change								●			

Service	Maintenance Interval - Service Hours										
	4	10 or Daily	50 or Weekly	100	250	500	750	1000	1500	2000	As Required
Fuel Injectors - Clean and Test **(Yanmar engines only)**									●		
Crankcase Breather System - Inspect **(Yanmar engines only)**									●		
Fuel and Engine Coolant Hoses - Check/ Replace **(Yanmar engines only)**										●	
Intake and Exhaust Valves - Lap **(Yanmar engines only)**										●	
Battery - Replace											●
Air Cleaner Element - Replace											●
Wear Pads - Adjust											●
Rollover Protection Structure (ROPS) - Check											●
Track Tension - Adjust											●
Hammer - Service											●
Fuses and Relays - Replace											●
Mast Removal/Assembly											●
Storage Procedure											●
Cleaning the Machine											●

ACCESS TO WALKWAY

Step 1: Rotate seat to transport position.

Step 2: Slide seat fully back toward machine.

Step 3: Pull seat tip lever **(1)** out.

Step 4: Tip seat forward **(2)** to provide access to walkway.

Every 4 Hours

HAMMER POINT - LUBRICATE

In harsh environments, grease hourly.

Step 1: Support hammer in one of two ways:

- Lower hammer onto a post that has been driven in to a height that allows access to grease point.
- Lower hammer onto similar device that adequately supports hammer.

Step 2: Place hammer in FLOAT.

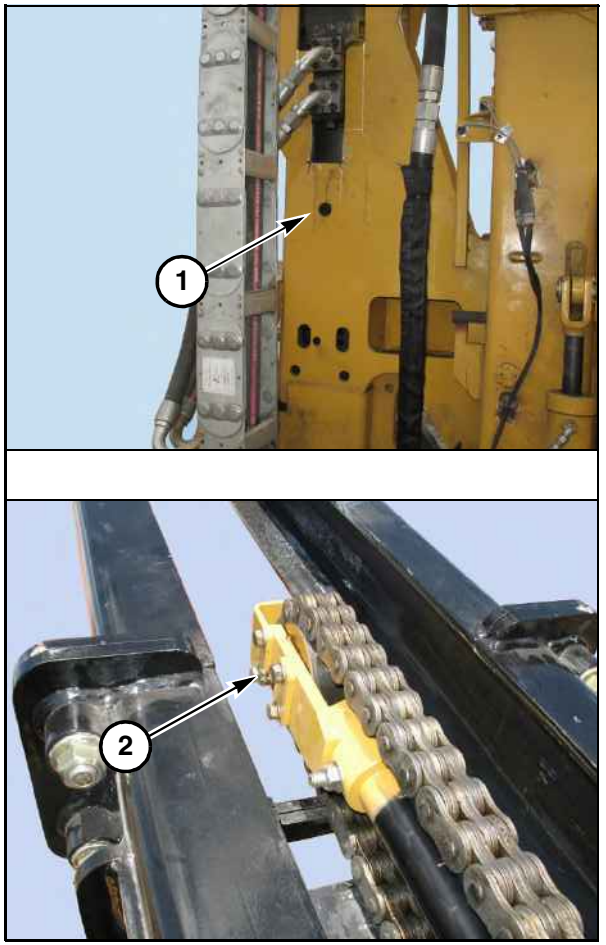
NOTICE: Before and during greasing, fully compress strike plate. Lower seals will be damaged if hammer is greased without full compression of striker plate.

Step 3: Purge fitting **(1)** with chisel paste hammer grease. Refer to "Lubricants," ***page 70-1.***

Step 4: **10-ft & 15-ft Mast:** Raise hammer slightly and tilt mast down to access hammer lift roller fitting **(2)** for two shots of grease.

20-ft Mast: Lower hammer, slide mast out, and tilt mast toward machine to access hammer lift roller fitting **(2)** for two shots of grease.

Refer to "Lubricants," ***page 70-1.***



NUTS AND BOLTS - CHECK TORQUE

Tighten all nuts and bolts every 4 hours or every half day of work.

Every 10 Hours or Daily

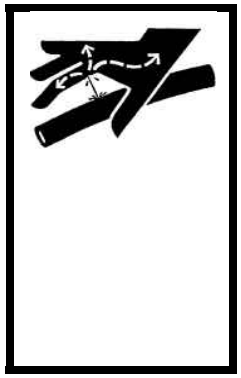
ENGINE - CHECK

Refer to the Engine Operation Manual supplied with machine for complete information.

Check for:

- oil leaks
- fuel leaks
- coolant leaks
- damaged or missing parts
- loose, missing or damaged fasteners

MACHINE - CHECK

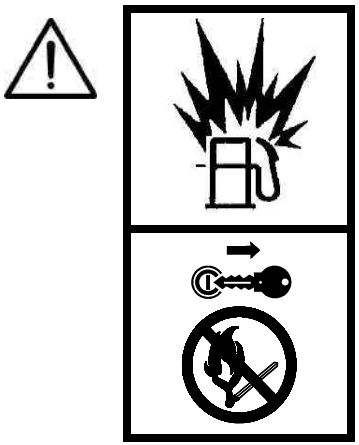


WARNING: Pressurized fluid can penetrate body tissue and result in death or serious injury. Leaks can be invisible. Keep away from a suspected leak. Relieve pressure in the hydraulic system before searching for leaks, disconnecting hoses, or performing other work on the system. If you must pressurize the system to find a suspected leak, use an object such as a piece of wood or cardboard rather than your hands. When loosening a fitting where some residual pressure may exist, slowly loosen the fitting until oil begins to leak. Wait for leaking to stop before disconnecting the fitting. Fluid injected under the skin must be removed immediately by a surgeon familiar with this type of injury.

Check for:

- cracks or abrasions in electrical harnesses
- damage or corrosion on electrical connectors
- hydraulic hoses for cracks or abrasions
- loose or corroded hydraulic clamps

FUEL TANK - FILL



WARNING: Fuel and fumes can explode and burn.

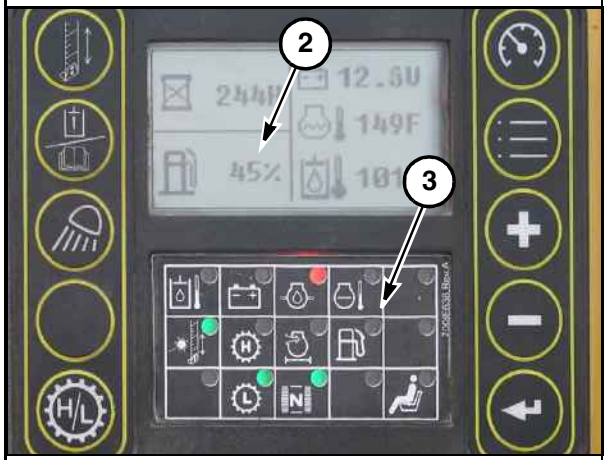
Shut off engine before refueling. No flame. No smoking.

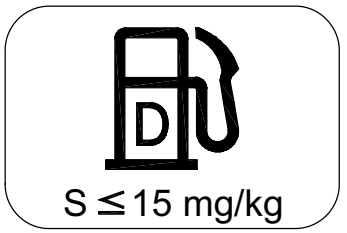
Fill fuel tank at the end of each day to reduce condensation. Do not fill to the very top; leave room for expansion.

(1) Fill Cap

(2) Fuel Gauge (on display)

(3) Fuel Low Indicator Light

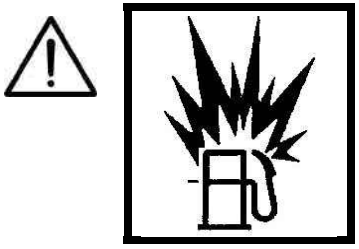




Diesel Fuel - Sulfur Content

Tier 4 engines require Ultra Low Sulfur Diesel (ULSD) fuel, with sulfur content less than 15 ppm (15 mg/kg). Use of fuels other than what is specified in the engine manual will impact engine performance, damage engine emissions systems and may result in engine and exhaust system warranty being voided.

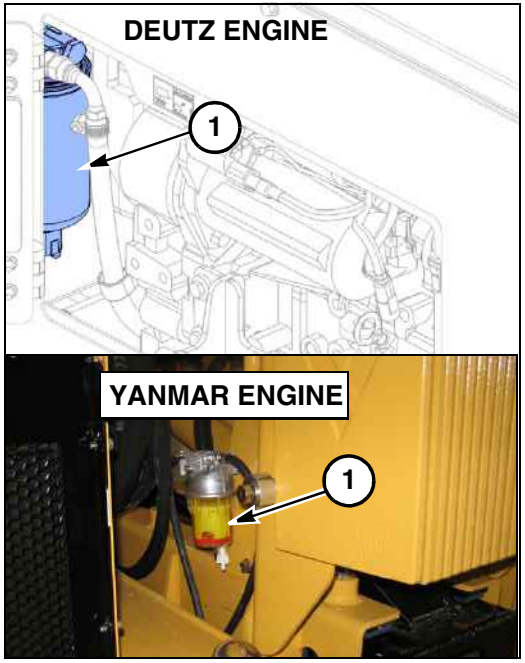
FUEL/WATER SEPARATOR - CHECK/DRAIN



WARNING: Fuel and fumes can explode and burn.

Keep heat, flames, and sparks away from fuel. Always clean up spilled fuel. Do not smoke.

Check fuel/water separator for water or debris. Drain water from bottom as needed.

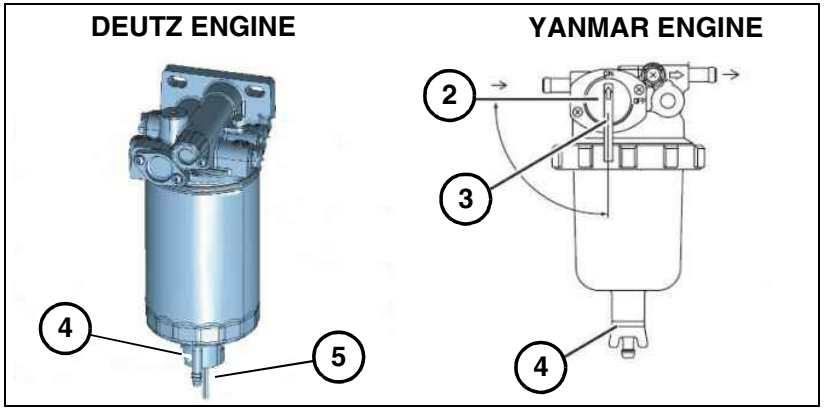


Deutz Engine

Step 1: Place suitable container(s) under separator **(1)**.
Step 2: Disconnect electrical cable **(5)**.
Step 3: Loosen drain plug **(4)**. Drain fluid until pure diesel fuel runs out.
Step 4: Tighten drain plug to 1.2 ft-lb (1.6 Nm)
Step 5: Connect electrical cable.
Step 6: Check for fuel leaks.

Yanmar Engine

Step 1: Place suitable container(s) under separator **(1)**.
Step 2: Close fuel cock **(2)**.
Step 3: Open drain cock **(4)**. Drain water.
Step 4: Close drain cock.
Step 5: Open fuel cock **(3)**.
Step 6: Turn *Keyswitch* to ON for 10 to 15 seconds to prime the fuel system.
Step 7: Check for fuel leaks.

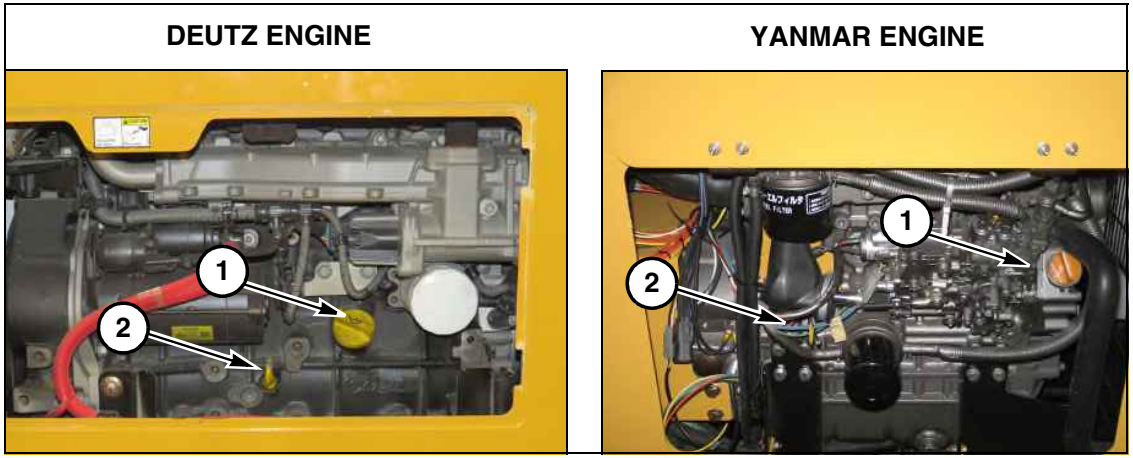


Engine Oil - Check/Fill

With engine level, fill to full mark on dipstick. Do not overfill. Refer to "Lubricants," ***page 70-1.***

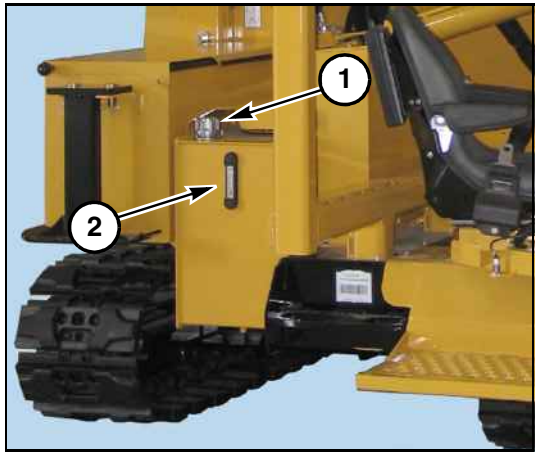
(1) Engine Oil Fill Cap

(2) Dipstick



Hydraulic Fluid Level - Check

NOTICE: Clean hydraulic fluid is very important. Do not spill dirt or other contaminants into the tank. Filter all hydraulic fluid through a 5-micron filter before adding it to the tank. Check hydraulic fluid level. Refer to "Lubricants," ***page 70-1.***



Machine must be level and in transport position.

Step 1: Retract all cylinders.

Step 2: Check fluid level.

Step 3: If fluid is required, remove fill cap **(1)**.

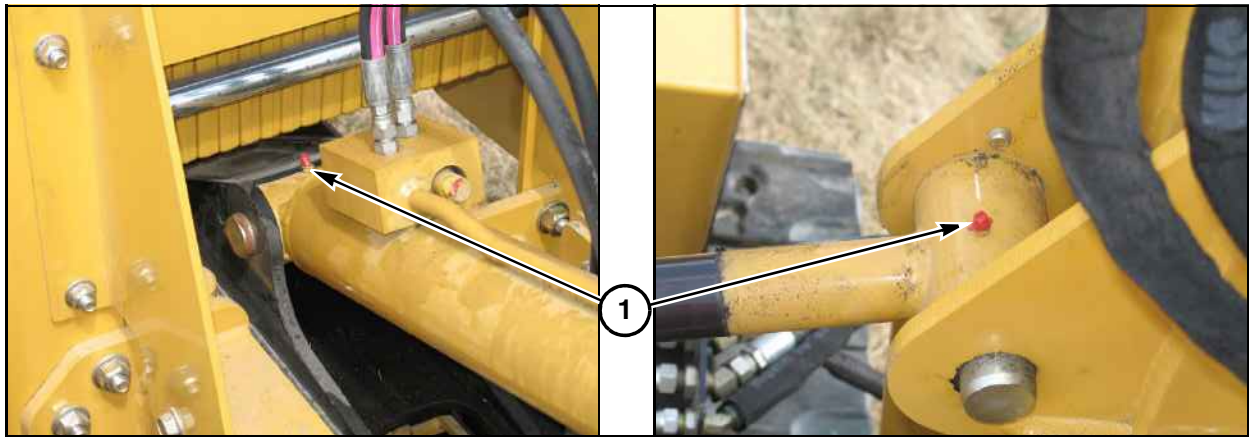
Step 4: Fill to within the upper half of the sight gauge **(2)**.

Step 5: Install fill cap.

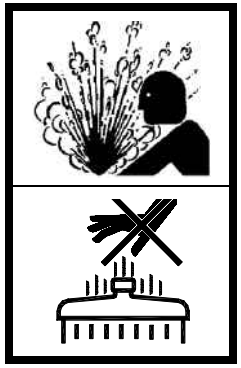
NOTICE: If fluid smells burned, contains air bubbles, or appears contaminated, contact Vermeer dealer immediately.

MAST TILT CYLINDER - GREASE

(1) 3 shots, 1 fitting each end



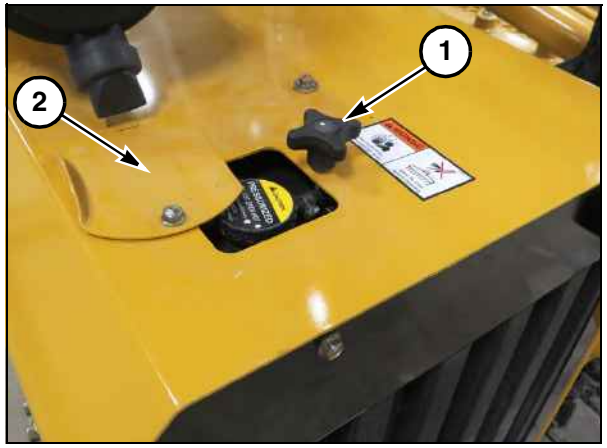
RADIATOR - CHECK/FILL



WARNING: Hot fluid under pressure can erupt and scald if opened.

Allow to cool before opening radiator cap.

Unscrew knob **(1)** to slide plate **(2)** to the side.



Do not remove radiator cap from a hot engine. Wait until the temperature has decreased before removing the cap. Failure to do so can result in personal injury from heated coolant spray or steam. Remove radiator cap slowly to relieve coolant system pressure.

Make a 50/50 mixture of coolant and distilled or deionized water. Lift hood and fill radiator to within 1/2˝ (13 mm) of the bottom of fill pipe **(1)**.

NOTICE: This machine was factory-filled with a 50/50 mixture of Shell Rotella ELC NF (Extended Life Nitrite Free) coolant. Compatible coolants include Chevron Delo ELC NF and Exxon Mobil Delvac ELC NF. Never add pure antifreeze to the system; always dilute to a 50/50 mixture.

AIR CLEANER RESTRICTION INDICATOR - CHECK

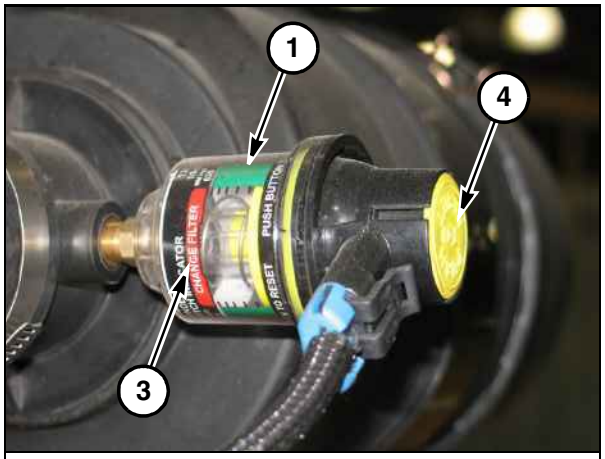
Check air cleaner restriction indicator daily. Air restriction indicator **(1)** and LED light **(2)** indicate when the filter element is dirty. Replace filter element when yellow indicator reaches red line **(3)**, which is also when LED **(2)** illuminates. Push button **(4)** to reset indicator.

- **Do not** remove the elements until the indicator shows they need to be replaced.
- **Do not** wash or blow out the elements. **Elements must be replaced**.

Refer to "Air Cleaner Element - Replace," *page 60-50.*

The air restriction indicator does not function correctly if:

- Elements are damaged or not seated correctly in housing.
- Air cleaner housing or element is damaged.
- Air transfer duct between air cleaner and engine is damaged or clamps are loose.
- Connection between air cleaners and restriction indicator is damaged or pinched.



Every 50 Hours or Weekly

Refer to the Engine Operation Manual supplied with machine for complete information.

- Check/clean radiator fins.
- Perform initial check/adjustment of cooling fan V-belt tension after the first 50 hours, and every 250 hours thereafter.
- Check battery.

Initial Oil and Filter Change

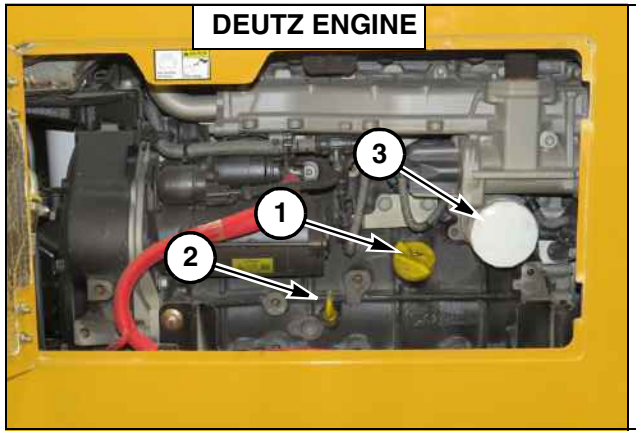
Replace engine oil and filter after the first 50 hours of operation, and every 250 hours thereafter. Refer to "Lubricants," *page 70-1.*

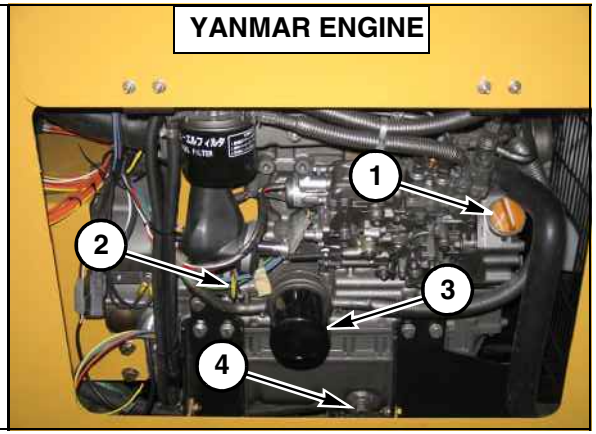
(1) Oil Fill

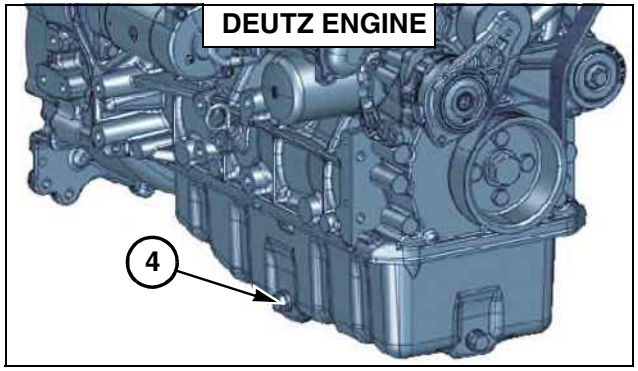
(2) Dipstick

(3) Oil Filter

(4) Drain Plug







Change oil and replace filter while engine is still warm. Engine must be level.

Step 1: Follow ***Shutdown Procedure,*** page ***23-1.***

Step 2: Remove oil fill **(1)** cap.

Step 3: Remove drain plug **(4)** and drain oil into suitable container.

Step 4: Install drain plug.

Step 5: Remove oil filter **(3)** with oil filter wrench (counterclockwise). Clean gasket surface of filter head.

Step 6: Coat gasket of new filter with engine oil.

Step 7: Install new filter by hand (clockwise) until filter gasket contacts filter head surface.

Step 8: Tighten new filter an additional 3/4 of a turn using filter wrench.

Step 9: Add new engine oil to engine. Refer to “Lubricants,” ***page 70-1.***

Step 10: Follow ***Starting Procedure,*** page ***22-1.*** Check for oil leaks.

Step 11: After engine is warm, shut it off. Follow ***Shutdown Procedure,*** page ***23-1.***

Step 12: Check engine oil level using dipstick **(2)**. Oil level must be between MIN and MAX marks on dipstick. Add oil as necessary.

WEAR PADS - CHECK

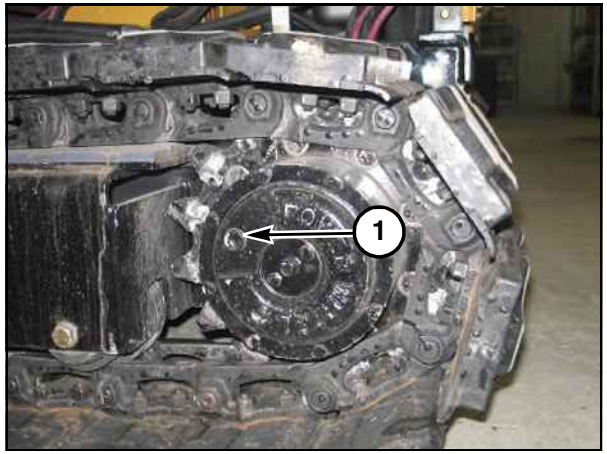
Refer to “Wear Pads - Adjust,” *page 60-52.*

TRACK PLANETARY GEARBOX OIL LEVEL - CHECK

Check oil level with plug at 3:00 or 9:00 position. Fill to check plug level.

(1) Fill/Check/Drain Plug

Refer to “Lubricants,” *page 70-1.*



Every 100 Hours

SAFETY SIGNS MAINTENANCE

Safety signs located on your machine contain important and useful information that help you operate your equipment safely. Refer to the ***Parts Manual*** for locations.

To assure that all safety signs remain in place and in good condition:

- Keep safety signs clean. Use soap and water - not mineral spirits, abrasive cleaners, or other similar cleaners that will damage the sign.
- Replace damaged or missing safety signs. When attaching safety signs, the temperature of the mounting surface must be at least 40°F (5°C). The mounting surface must be clean and dry.
- When replacing a machine component with a safety sign attached, replace the safety sign also.

Replacement safety signs can be purchased from your Vermeer equipment dealer.

BACKUP ALARM - CHECK

The backup alarm must operate correctly to alert workers in the area when the machine is moving in reverse.

Check that the backup alarm sounds when:

- the operator is seated
- the operator's station is in Transport mode and
- the machine is propelled in REVERSE.

The backup alarm does not sound when using the remote control.

OVERALL MACHINE - CHECK

Shields and Guards – Check that all shields and guards are installed and are fastened securely to machine. Replace and repair shields or guards that are damaged or have missing parts.

Hardware – Check machine for loose, worn, or missing parts and hardware. Tighten loose parts and replace worn or missing parts. Refer to the ***Parts Manual*** for replacement parts.

Frame – Check machine frame and contact Vermeer dealer immediately if you notice bending or cracking.

ROPS – Check ROPS and contact dealer immediately if you notice any bends, cracks, breaks, or signs of flexing.

Operator's Platform – The operator's platform acts as a barrier to help keep the operator away from the tracks. If platform is damaged, repair or replace.

Fire Prevention – Keep engine compartment, battery, hydraulic lines, fuel tank and operator's station clean of accumulated trash, grease, and debris.

Slip Resistant Material – Check for worn or missing slip-resistant strips. Replace at once if damaged. Refer to the ***Parts Manual*** for replacement parts.

Electrical Harness – Check that electrical harness and all wires are correctly supported and not rubbing on sharp corners. Support loose wires hanging under machine frame.

Horn – Press horn button to sound horn. Repair or replace if horn does not sound.

JOYSTICKS, DIAL, SWITCHES - CHECK

- Check joysticks, joystick switches/buttons, and dial for freedom of movement. Refer to ***page 20-12.***
- Check that joysticks spring-return to NEUTRAL.
- Check dial for noticeable detent in center position. Refer to ***page 20-17.***

NEUTRAL START INTERLOCK - CHECK

Neutral Start Interlock system must operate correctly for safety.

Step 1: Clear area around machine.

Step 2: With engine OFF, move controls out of NEUTRAL.

Step 3: Follow ***Starting Procedure,*** page ***22-1.*** The functions that are out of NEUTRAL must not move until all of them are returned to NEUTRAL, and then back out of NEUTRAL.

Contact your Vermeer dealer function movement is detected before all controls are returned to NEUTRAL.

INDICATOR LIGHTS - CHECK

Check indicator light operation. Turn *Keyswitch* to ON for bulb test. All indicator cluster lights should light for 5 seconds. If any bulbs do not light, contact your Vermeer dealer.

PARK BRAKE - CHECK

This procedure should be done while machine is in transport mode.

WARNING: Machine could move if park brakes are not functioning properly. Death or serious injury can result if a bystander is struck or run over. Clear area of all personnel before checking park brake holding capacity.

Step 1: Follow ***Starting Procedure,*** page ***22-1.***

Step 2: Bring engine to 1500 rpm.

Step 3: Press *Menu Key* **(1)** on display and select *Calibration* from the menu list. Refer to ***page 20-27.***

Step 4: Select *Brake Test* from *Calibration* menu. Refer to ***page 20-28.***

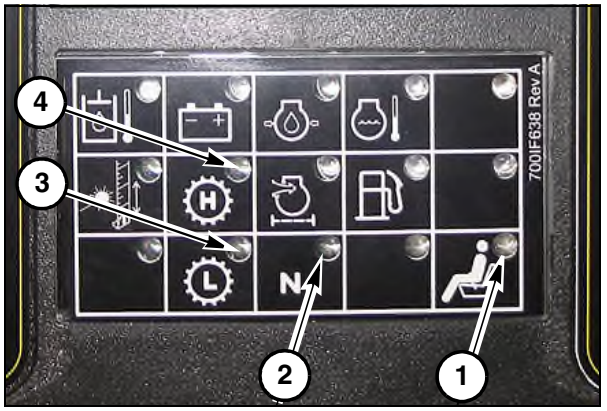
Step 5: Engage ground drive after selecting brake test. Machine should not move during test. Contact local Vermeer dealer if machine moves during test.

"Disengage Ground Drive, Then Retry" will be shown on display if ground drive is active before selecting test.

Step 6: Return ground drive controls to NEUTRAL and press *Menu Key* **(1)** to exit test.

PARK BRAKE TEST	
ENGAGE GROUND DRIVE MACHINE SHOULD NOT MOVE PRESS MENU TO EXIT	DISENGAGE GROUND DRIVE THEN RETRY

Operator Presence System - Check



The machine is equipped with an Operator Presence system. This system is intended for operator safety and must be maintained in good functional condition.

Follow ***Starting Procedure,*** page ***22-1.*** After starting the machine, check that Operator Presence system operates correctly.

- *Operator Presence Indicator* **(1)** must light whenever operator is in seat.
- *Neutral Indicator* **(2)** must light when all controls are in NEUTRAL. If any control is not in NEUTRAL, the light goes off.
  - Machine must not move when Ground Drive is in NEUTRAL.
  - Hammer and mast must not move when controls are in NEUTRAL.

Contact Vermeer dealer if system does not work correctly.

Ground Drive Range Indicator Lights - Check

Check that green light **(3)** or **(4)** is on when the transmission is in LOW or HIGH range, respectively.

Operator's Station - Test

Before performing this test, clear area around machine.

Step 1: Sit in seat with operator's station in transport mode position. Operator's station controls for hammer, float, auto plumb, auto home or auto target (if equipped) must not function.

Step 2: Sit in seat with station in work mode position. All controls should function.

Step 3: Rise out of seat. Operator Presence Indicator light will go out. No operator's station controls should function.

Transport Mode Position

Work Mode Position

Remote Control - Test

Before performing this test, clear area around machine.

Enable remote control. Refer to "Enable / Disable Remote Control," ***page 21-6.*** The beacon must turn on and horn must sound three times.

SEAT BELT MAINTENANCE

Cleaning

Sponge webbing clean with mild soap and water. **Do not** use bleach, dye, or household detergents.

Maintenance

Seat belt webbing should not be allowed to run against sharp surfaces. Seat belts exposed to extreme conditions or climates must be inspected frequently and thoroughly. Seat belts which have been cut, frayed, malfunction in any way, or were installed on a vehicle subsequently involved in an accident must be replaced. Always replace the entire seat belt system including belt, buckle, retractor, and mounting hardware.

WARNING: Failure to properly inspect and maintain the seat belt may result in death or serious injury. It is critical that any time a machine is involved in an accident, the entire seat belt system must be replaced. A seat belt should be considered to have a finite life and must be replaced as needed throughout the life of the machine. Seat belt must be inspected for needed maintenance every 100 hours or more often if exposed to severe environmental or vocational conditions.

Inspection

Step 1: Check webbing. Pull the webbing completely out of the belt retractor and inspect the full length of the webbing for cuts, wear, fraying, dirt, and stiffness. If a belt shows cuts, fraying, extreme or unusual wear, the system should be replaced.

Step 2: Check buckle and latch for correct operation and to determine if latch plate is excessively worn, deformed, or if buckle is damaged or casing is broken.

Step 3: Check retractor web storage device operation by extending webbing to determine it locks properly and that it spools out and retracts webbing properly.

Step 4: Check web in areas exposed to ultraviolet rays from the sun or to extreme dust or dirt. If the original color of the web in these areas is extremely faded and/or the web is packed with dirt, the physical strength of this web may have deteriorated. If this condition exists, replace the system.

HYDRAULIC SYSTEM - CHECK

WARNING: Pressurized fluid can penetrate body tissue and result in death or serious injury. Leaks can be invisible. Keep away from a suspected leak. Relieve pressure in the hydraulic system before searching for leaks, disconnecting hoses, or performing other work on the system. If you must pressurize the system to find a suspected leak, use an object such as a piece of wood or cardboard rather than your hands. When loosening a fitting where some residual pressure may exist, slowly loosen the fitting until oil begins to leak. Wait for leaking to stop before disconnecting the fitting. Fluid injected under the skin must be removed immediately by a surgeon familiar with this type of injury.

Hydraulic System Pressure - Relieve

Relieve all pressure in the hydraulic system before disconnecting hoses or performing other work on the system.

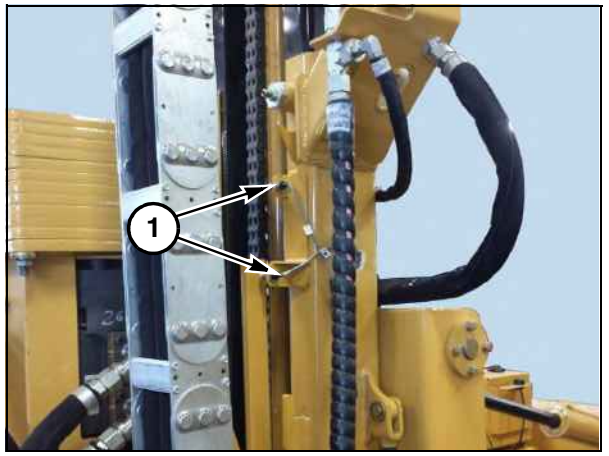
When loosening fittings in hoses where residual pressure may exist, slowly loosen the fitting until oil begins to leak. Wait for leaking to stop before disconnecting the fitting. Ensure all connections are tight and hoses are in good condition before applying pressure to the system.

Hydraulic Systems - Check

Check machine and all attachments. Refer to the ***Parts Manual*** for replacement parts.

- Ensure all connections are tight and hoses are in good condition before applying hydraulic pressure to the system.
- Check for leaking hoses, kinked hoses, and for hoses that rub against each other or other parts of the machine. Replace all deteriorated or damaged hoses. When a hose with a protective sleeve is replaced, always install a new protective sleeve over the new hose.
- Check hydraulic cylinders for leaks and damage. Repair or replace as required.

HAMMER PROXIMITY SWITCHES - CHECK



S/N 1001–2263

Warm hydraulic oil, then check proximity switches **(1)** for function.

With the hammer in the “sensing area” between two switches:

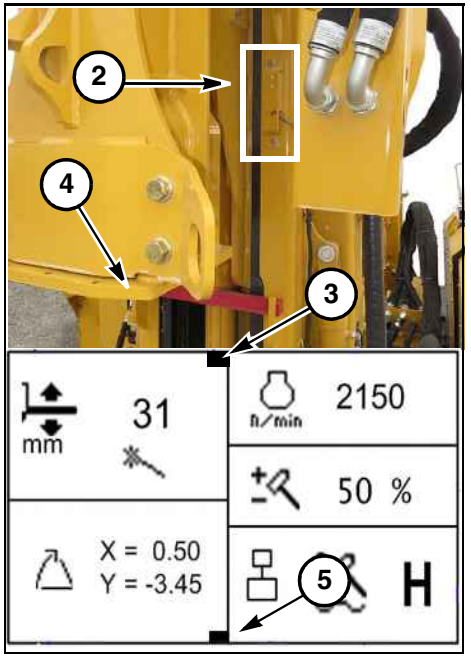
- Tilt mast to the rear of machine and check the gap.
- Tilt mast to the front and check gap.

Correct switch clearance is 1/4–1/2˝ (6–13 mm) for the entire hammer position range.

Adjust hammer adjusters correctly before adjusting switch gap. Refer to ***page 60-53.***

To adjust: Loosen nuts on back sides of switches.

S/N 2264–



While in the Main Screen, raise hammer. Hammer position indicator **(3)** must illuminate when bottom of hammer carriage **(4)** is above sensor **(2)**. Ensure position indicator illuminates on machine display and remote control display.

While in the Main Screen, lower hammer. Hammer position indicator **(5)** must illuminate when bottom of hammer carriage **(4)** is below sensor **(2)**. Ensure position indicator illuminates on machine display and remote control display.

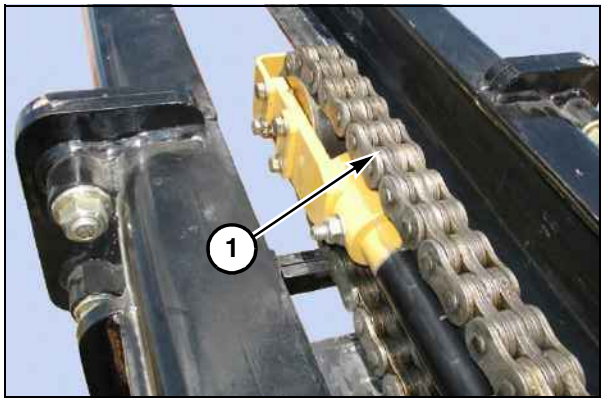
If test fails, contact your Vermeer dealer.

PERCUSSION HAMMER LIFTING CHAIN, ANCHOR, AND PINS - CHECK/CLEAN/LUBRICATE

Inspect lifting chain, anchor and pins. Refer to “Chain - Inspect,” *page 60-39.*

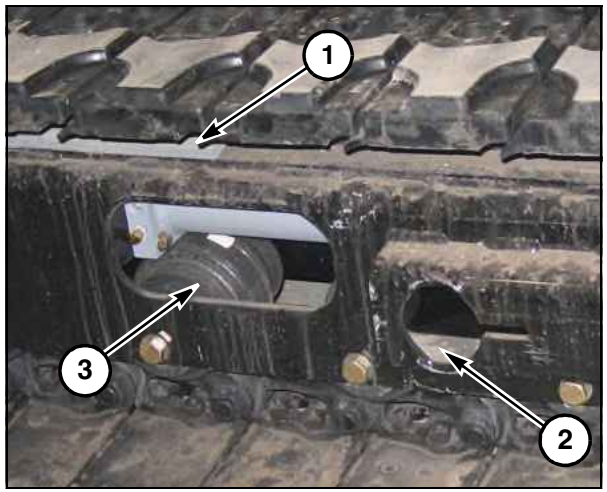
Clean chain **(1)** with an appropriate cleaner like a paraffin-derived product.

Lubricate with dry spray lubricant.



GROUND DRIVE SYSTEM - INSPECT

Check condition of wear plates. Replace wear plates if missing or if thickness is less than 1/16˝ (1.6 mm).



(1) Upper Track Wear Plate
One each per track.

(2) Lower Track Wear Plates
One each per track.

In extremely dusty conditions, check daily.

Replace wear plates before heads of mounting screws are damaged. Refer to the ***Service Manual*** for procedures.

(3) Lower Track Rollers
Seven on each side. Ensure all rollers roll when track weight is on them and machine is moving. Replace a roller if it does not turn.

Track Pads and Bolt Torque - Check

Check for loose or damaged track pads. Replace damaged pads. Tighten loose bolts.

Track Chain Tension - Check

Refer to “Track Tension - Adjust,” ***page 60-54.***

Every 250 Hours

Refer to the Engine Operation Manual supplied with machine for complete information.

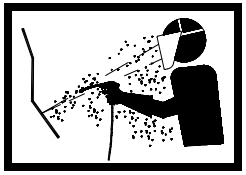
- Check/adjust cooling fan V-belt tension.
- Check/adjust governor lever and engine speed control **(Yanmar engines only)**.

Oil and Filter - Change

Replace engine oil and filter after the first 50 hours of operation, then every 250 hours.

Refer to "Initial Oil and Filter Change," ***page 60-18.***

Radiator and Hydraulic Oil Cooler - Clean



WARNING: Eye injury possible. Wear a face shield when using compressed air to clean or dry solvent-coated parts.

Clean fins with water or compressed air. Partially blocked fins will increase hydraulic oil and engine operating temperature. Be careful not to damage cooler fins, which will decrease cooling performance.

NOTICE: Verify water nozzle is at least 12˝ (30.5 cm) from the cooler and air nozzle is at least 8˝ (20.3 cm) from the cooler. Direct the water or air straight through the cooler to avoid bending the cooler fins.

HYDRAULIC FILTERS - INITIAL REPLACEMENT

Capacities and specifications are listed in “Lubricants”. Refer to ***page 70-1.***

Replace hydraulic fluid filter:

- after initial 250 service hours, then every 500 service hours
- each time hydraulic fluid is changed

(1) Charge Filter

(2) Return Filter

Step 1: Follow ***Shutdown Procedure,*** page ***23-1.***

Step 2: Thoroughly clean area around filter to keep contaminants out of hydraulic system.

Step 3: Place a suitable container under machine to collect oil.

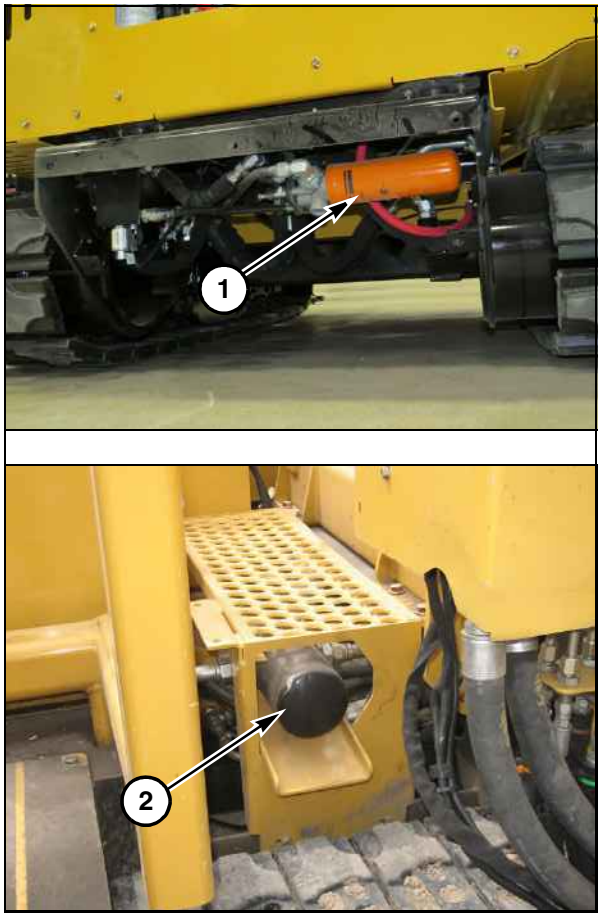
Step 4: Use a filter wrench to turn filter body counterclockwise to remove filter.

Step 5: Carefully clean mating surface of filter head with a lint-free cloth. Look for cracks or pitting in filter head. If needed, replace filter head.

Step 6: Apply a thin film of oil to gasket of new filter.

Step 7: Install filter onto filter head. Tighten clockwise by hand until filter gasket contacts filter head.

Step 8: Turn 3/4 to 1 additional turn.

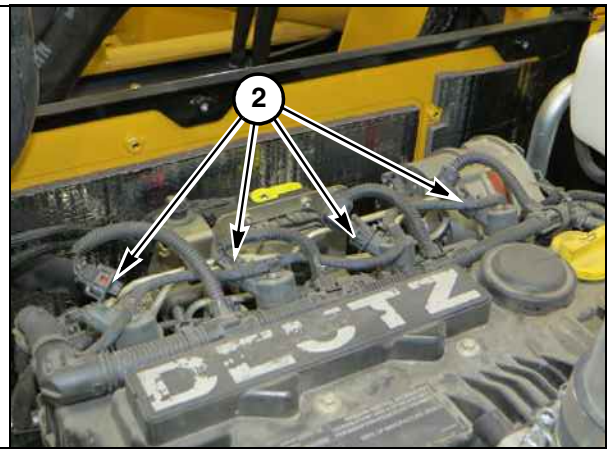


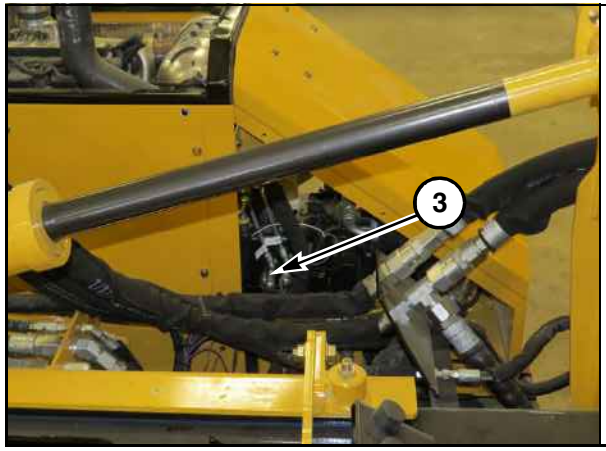
Hydraulic System - Restore

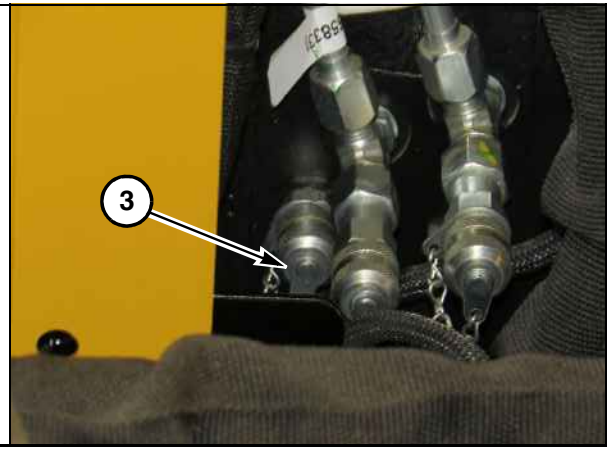
Step 1: Remove top shield **(1)**. Disconnect four fuel injectors **(2)** to prevent engine from starting.

Step 2: Install a low-pressure gauge with a range of 0–600 psi (0–4.1 MPa) on port **(3)**. Crank engine until a minimum charge pressure of 200 psi (1.4 MPa) is reached.

NOTICE: Never operate starter motor for more than 15 seconds at a time. Cycle key OFF and ON to reset. Allow starter motor to cool 30 seconds between attempts. Turn key to OFF position before restarting.







Step 3: After charge pressure has been reached, connect fuel injectors.

Step 4: Follow ***Starting Procedure,*** page ***22-1.*** Operate engine at low idle for 4 minutes while checking for leaks.

NOTICE: Do not operate hammer, mast, or ground drive controls, or raise engine speed above low idle for at least 4 minutes.

Step 5: Follow ***Shutdown Procedure,*** page ***23-1.***

Step 6: Check hydraulic fluid level. The fluid level must be within the upper half of the sight gauge with all cylinders retracted.

Step 7: Start engine.

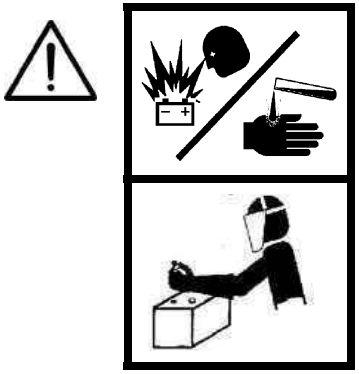
Step 8: Cycle all hydraulic cylinders and hammer functions to fill all components.

Every 500 Hours

HYDRAULIC FILTERS - REPLACE

Refer to “Hydraulic Filters - Initial Replacement,” *page 60-34.*

BATTERY MAINTENANCE



WARNING: Battery fumes are flammable and can explode. Keep all burning materials away from battery. Battery explosion can blind. Acid can blind and burn. Tools and cable clamps can make sparks.

Do not smoke. Shield eyes and face. Read instructions.

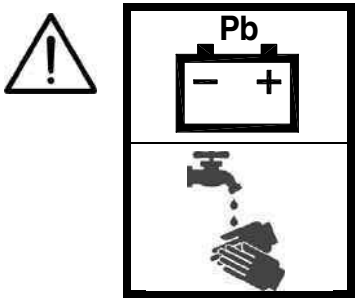
- Use a flashlight to check electrolyte level, if equipped.
- Work in a well-ventilated area.
- Prevent breathing fumes from battery.
- Prevent contact with skin, eyes, or clothing.
- Keep flame and sparks away, and do not smoke.
- Keep out of reach of children.
- Do not short across battery terminals or allow tools to short from battery terminals to frame.
- Do not jump-start or charge a battery with frozen electrolyte.

In case of acid contact:

External: Flush with plenty of water. If eyes have been exposed, flush with water for 15 minutes and get prompt medical aid.

Internal: Drink large quantities of water or milk, then milk of magnesia, beaten egg, or vegetable oil. Call a physician immediately.

Battery Terminals - Clean



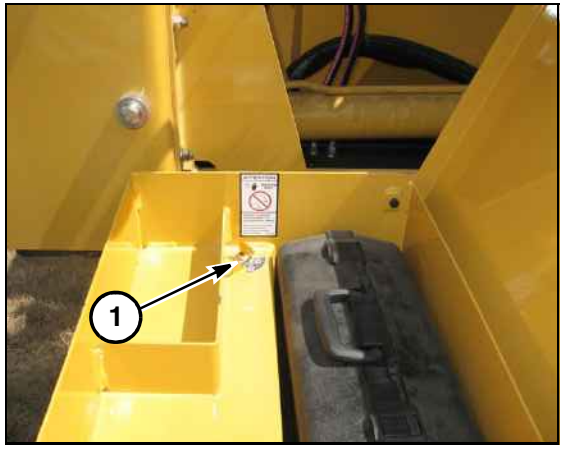
WARNING: Battery post, terminals, and related accessories contain lead and lead compounds, chemicals known to the state of California to cause cancer and reproductive harm.

Wash hands after handling.

Step 1: Follow ***Shutdown Procedure,*** page ***23-1.***

Step 2: Disconnect battery ground with the *Battery Disconnect Switch* **(1)**.

Step 3: Open battery compartment.



Step 4: Remove negative (-) cable **(2)**, then positive (+) cable **(3)**.

Step 5: Clean terminals and clamps with a stiff wire brush.

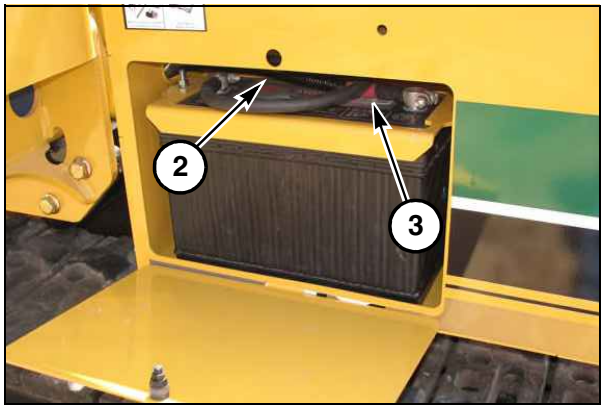
Step 6: Apply a light coating of petroleum jelly around base of each terminal.

NOTICE: Keep top of battery clean. If necessary, wash it with a baking soda solution, then rinse with clean water. Do not let baking soda solution enter battery.

Step 7: Install positive cable, then negative cable. Install plastic cap over positive cable clamp.

Step 8: Close battery compartment.

Step 9: Reconnect battery ground with *Battery Disconnect Switch*.



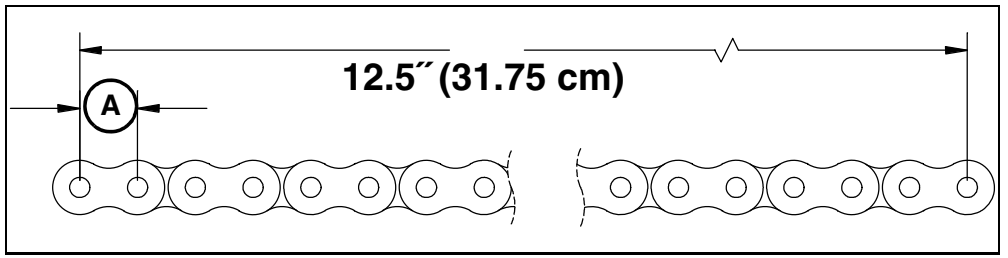
Battery Cables and Connections - Check

Check battery cables for wear. Verify all battery connections are clean, tight, and corrosion-free.

CHAIN - INSPECT

Check chain assemblies for split leaves, loose pins, excessive wear, or elongation.

To measure chain wear:



Step 1: Fully lower hammer, then raise enough to put full weight of hammer onto chain.

Step 2: Measure 11 pins of chain center to center **(A)**. The correct measurement for 11 pins of new chain is 12.5˝ (31.75 cm).

Replace chain if 11 pins measure more than 12.75˝ (32.4 cm).

BLUNT TOOL/STRIKE BLOCK - REMOVE & INSPECT

Blunt Tool/Strike Block - Remove

Step 1: Remove four bolts and nuts to remove cover plate **(1)** from hammer housing **(2)**.

Step 2: Rotate extractor plate **(3)** and secure with pin.

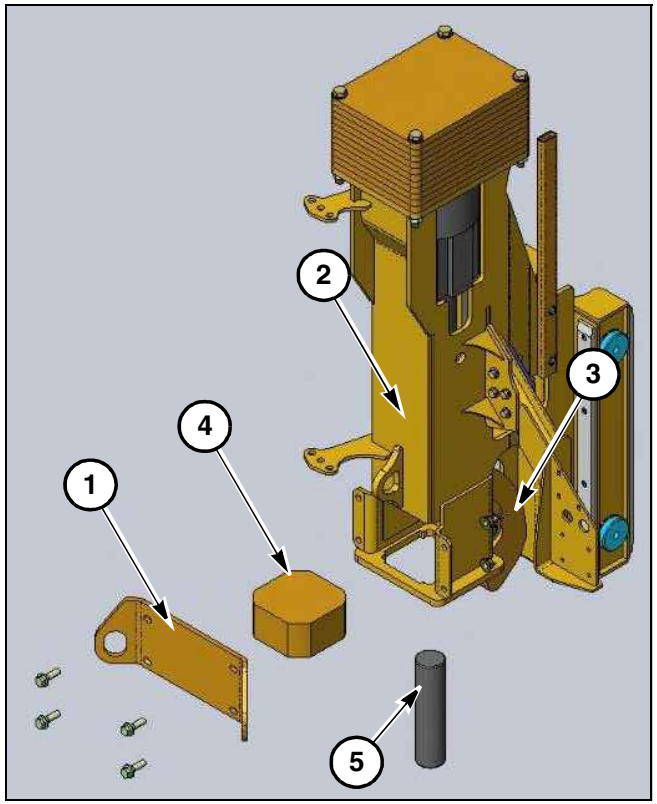
WARNING: In Step 3, when sliding striker block **(4)** out of opening in hammer housing, maintain a firm grip on block as it weighs in excess of 50 lb (23 kg). Also, slide block out very slowly and keep one hand on it. At the same time, reach inside from below with other hand to grasp end of blunt tool **(5)**. This prevents the tool, which weighs in excess of 20 lb (9 kg), from falling freely out of hammer assembly, potentially causing injury. Get an assistant to help.

Step 3: Slowly slide striker block **(4)** out from hammer housing just enough to allow blunt tool **(5)** to come out of bushing. Be prepared to prevent blunt tool from falling out of hammer once striker blocker has cleared end of tool.

Step 4: Remove blunt tool.

Step 5: Inspect blunt tool for burrs and excessive wear.

- Carefully grind off burrs.
- Replace tool if excessively worn. Contact your Vermeer dealer.



Bushing - Inspect

If bushing ID is the same as retainer ring ID, bushing must be replaced.

Bushing - Remove

Remove retainer ring. Bushing may drop out.

If bushing does not slide out easily, contact your Vermeer dealer.

Blunt Tool/Striker Block - Install

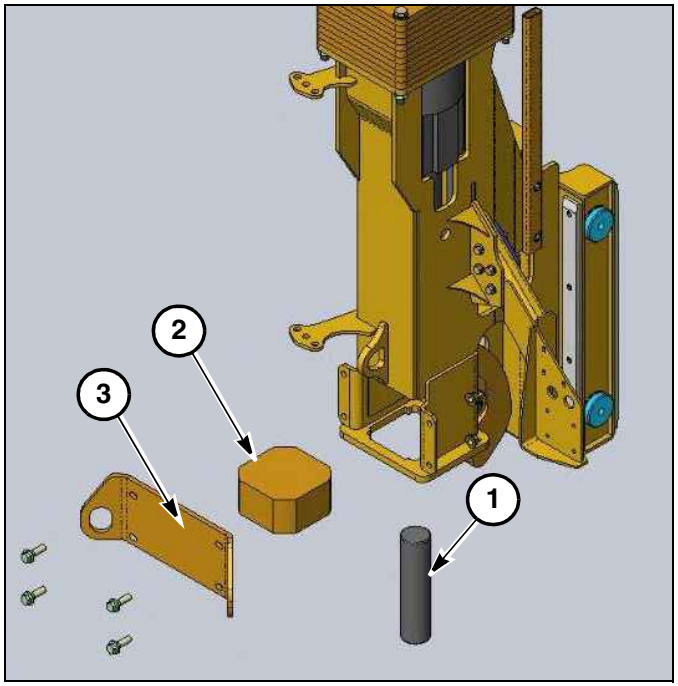
Step 1: Install bushing.

Step 2: Install retainer ring.

Step 3: Install blunt tool **(1)** into bushing.

Step 4: Install striker block **(2)**.

Step 5: Install cover plate **(3)** and secure with four bolts and nuts.



Every 750 Hours

Hammer Disassemble/Inspect

Hammer assembly should be removed and disassembled for inspection every 750 hours.

Contact Vermeer dealer.

Every 1000 Hours

Refer to the Engine Operation Manual supplied with machine for complete information.

- Adjust intake/exhaust valve clearance.

HYDRAULIC FLUID - CHANGE

Capacities and specifications are listed in “Lubricants”. Refer to ***page 70-1.***

NOTICE: If fluid smells burnt, contains air bubbles, or appears contaminated, consult your Vermeer dealer immediately.

Step 1: Operate engine until hydraulic fluid is warm.

Step 2: Follow ***Shutdown Procedure,*** page ***23-1.***

Step 3: Remove fill cap **(1)** and O-ring and strainer under cap.

Step 4: Remove two drain plugs from bottom of hydraulic tank and drain fluid into a suitable container, 36 gal (140 L) capacity minimum.

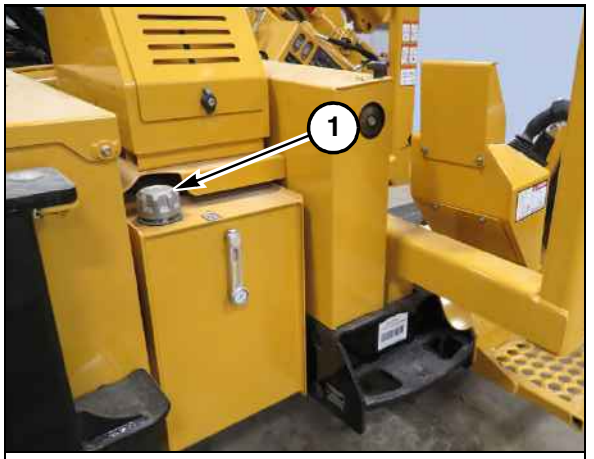
Step 5: Remove strainer **(2)** from inside of tank.

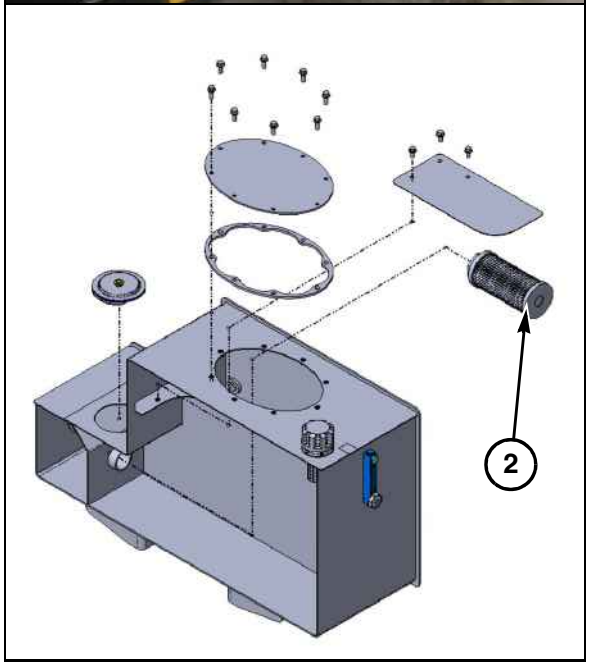
Step 6: Clean and inspect drain plugs.

NOTICE: Contact your Vermeer dealer if excessive metal particles are found on the magnetic drain plugs.

Step 7: Install drain plugs.

Step 8: Replace hydraulic filters. Refer to “Hydraulic Filters - Initial Replacement,” ***page 60-34.***





Strainer - Clean and Inspect

Clean strainer with a petroleum-based paint thinner or other good cleaning solvent. Scrub strainer with a soft-bristled brush.

Inspect strainer. Consult a Vermeer dealer if you find:

- lacquers which may have formed as a result of hot spots in the hydraulic system
- an extremely dirty strainer that will not come clean
- metallic particles on the screen mesh
- evidence of a hydraulic system failure
- evidence of holes or other damage that would allow unfiltered fluid to circulate in the hydraulic system

Strainer - Install

Install strainer and fill cap.

Tank - Fill

NOTICE: Clean hydraulic fluid is very important for longer life and good operation of hydraulic components. Take care not to spill dirt or other contaminants into the tank when checking or adding hydraulic fluid. Filter all hydraulic fluid through a 5-micron filter before adding it to the tank.

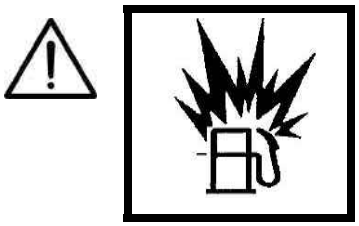
Step 1: Fill hydraulic fluid tank. Refer to “Lubricants,” ***page 70-1.***

Step 2: Install and tighten fill cap.

Hydraulic System - Restore

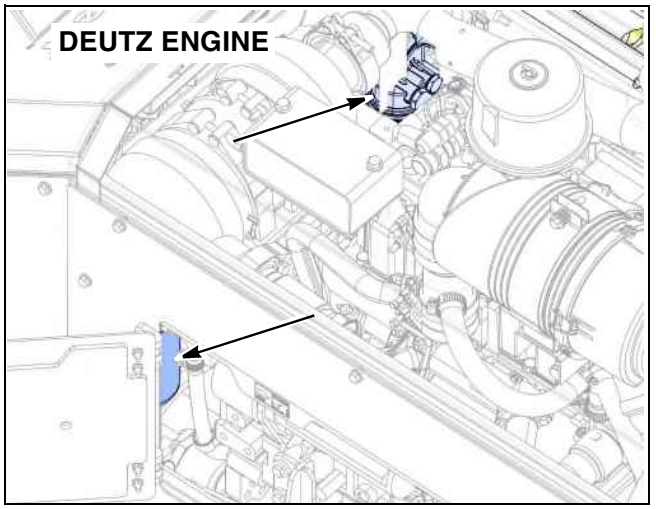
Refer to “Hydraulic System - Restore,” ***page 60-35.***

FUEL FILTERS - REPLACE

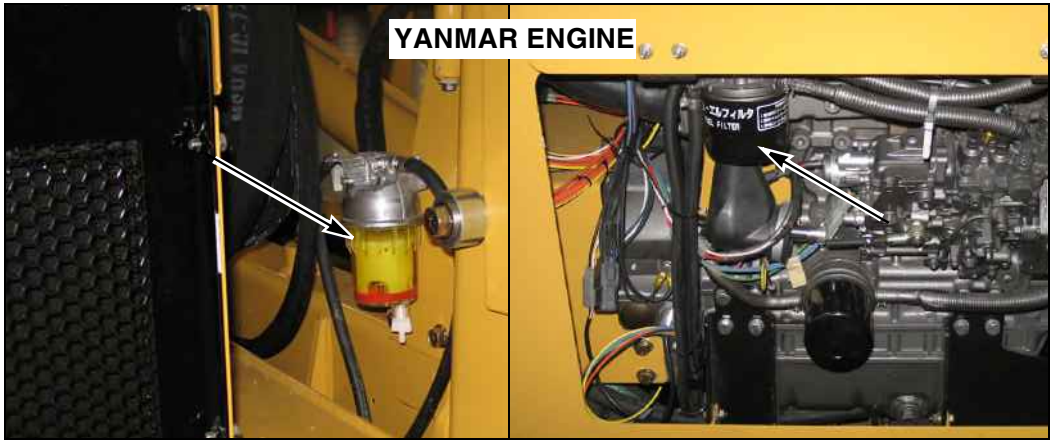


WARNING: Fuel and fumes can explode and burn.

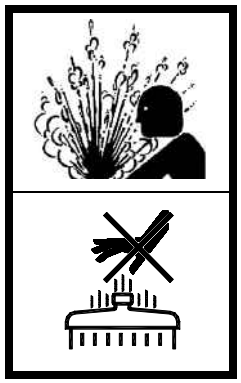
Keep heat, flames, and sparks away from fuel. Always clean up spilled fuel. Do not smoke.



Refer to the Engine Operation Manual for procedures.



COOLING SYSTEM - DRAIN AND CLEAN



WARNING: Hot fluid under pressure can scald.

Allow engine to cool before opening radiator cap.

Capacities and specifications are listed in “Lubricants”. Refer to ***page 70-1.***

Drain, flush, and refill cooling system with new coolant every 1000 hours or every year. Refer to the Engine Operation Manual for complete procedure.

NOTICE: Use a 50/50 mixture of Extended Life (ELC) Nitrite-Free (NF) coolant and distilled or deionized water. Never add pure antifreeze to the system; always dilute to a 50/50 mixture. Never use Supplemental Cooling Additives (SCAs) with ELC coolant. Refer to the Engine Operation Manual

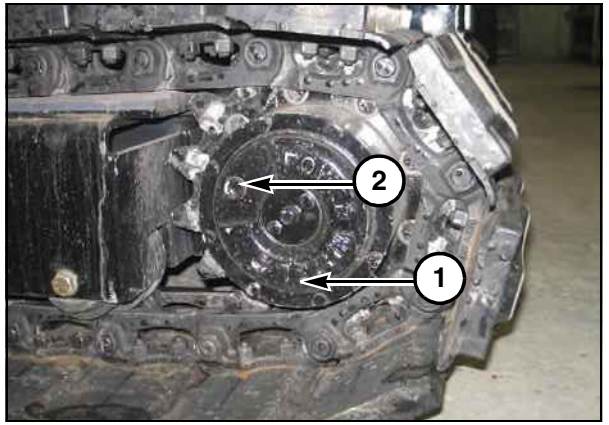
TRACK PLANETARY OIL - CHANGE

Fill/Check/Drain Plug

(1) Drain position: Rotate plug to bottom to drain.

(2) Fill/check at 3:00 or 9:00 position: Fill to check plug level.

Refer to “Lubricants,” ***page 70-1.***



Every 1500 Hours (Yanmar Engines Only)

Refer to the Engine Operation Manual supplied with machine for complete information.

- Inspect, clean and test fuel injectors.
- Inspect crankcase breather system.

Every 2000 Hours (Yanmar Engines Only)

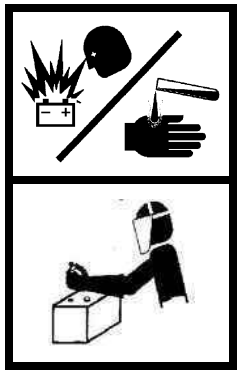
Refer to the Engine Operation Manual supplied with machine for complete information.

- Check and replace fuel hoses and engine coolant hoses.
- Lap the intake and exhaust valves.

Maintenance As Required

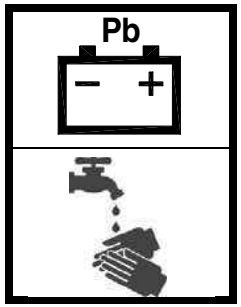
BATTERY - REPLACE

Replacement batteries must meet standard battery specifications provided in “Machine Specifications.” Refer to *page 70-2.*



WARNING: Battery fumes are flammable and can explode. Keep all burning materials away from battery. Battery explosion can blind. Acid can blind and burn. Tools and cable clamps can make sparks.

Do not smoke. Shield eyes and face. Read instructions.



WARNING: Battery post, terminals, and related accessories contain lead and lead compounds, chemicals known to the state of California to cause cancer and reproductive harm.

Wash hands after handling.

Step 1: Follow ***Shutdown Procedure,*** page ***23-1.***

Step 2: Turn *Battery Disconnect Switch* **(1)** to DISCONNECT.

Step 3: Open battery compartment **(2)**.

Step 4: Remove battery hold-down bracket **(3)**.

Step 5: Remove negative (-) cable **(4)** first. Then remove positive (+) cable **(5)**.

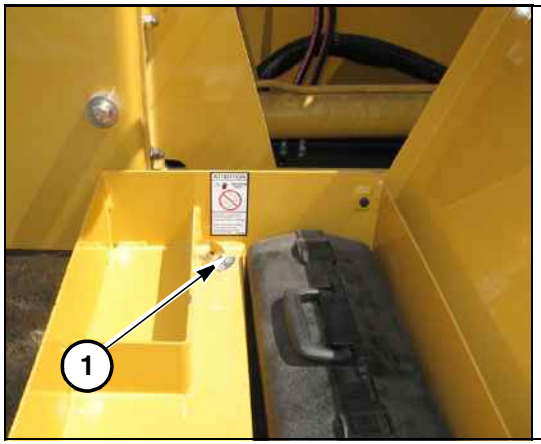
Step 6: Remove battery and install new battery.

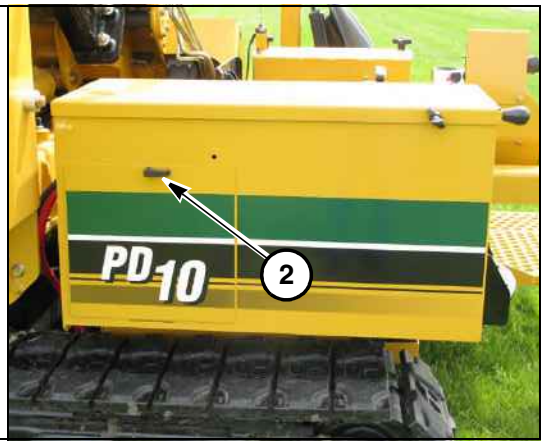
Step 7: Apply a light coating of petroleum jelly around base of each terminal.

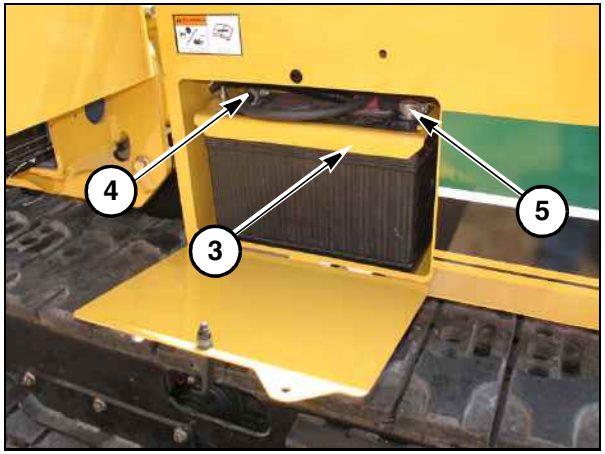
Step 8: Install battery hold-down bracket **(3)**.

Step 9: Install positive (+) cable **(5)** and then negative (-) cable **(4)**. Check that red cap is correctly installed over positive cable clamp.

Step 10: Turn *Battery Disconnect Switch* to CONNECT.







AIR CLEANER ELEMENT - REPLACE

When air filter indicator **(1)** reaches the red band **(2)**, ***replace primary filter element***. A message “AIR RESTRICT” also is displayed on the controller screen.

Secondary element is replaced every third time primary element is replaced.

NOTICE: Do not attempt to clean and return a used element to service. **The air cleaner element must be replaced.**

Step 1: Release latches **(3)** and remove cover **(4)**.

Step 2: Remove dirty air cleaner element.

Step 3: Check replacement air cleaner element for damage.

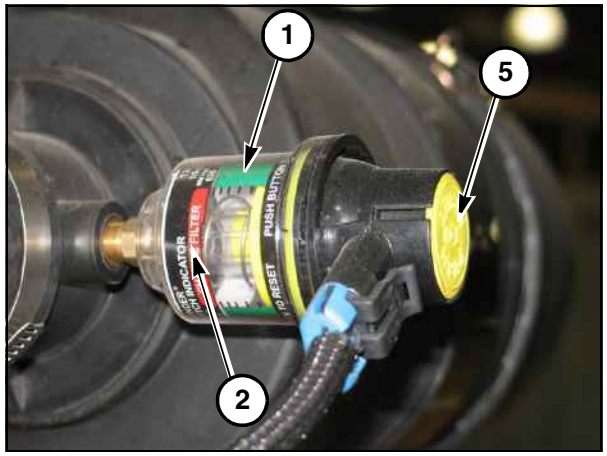
Step 4: Wipe inside of housing with a clean cloth.

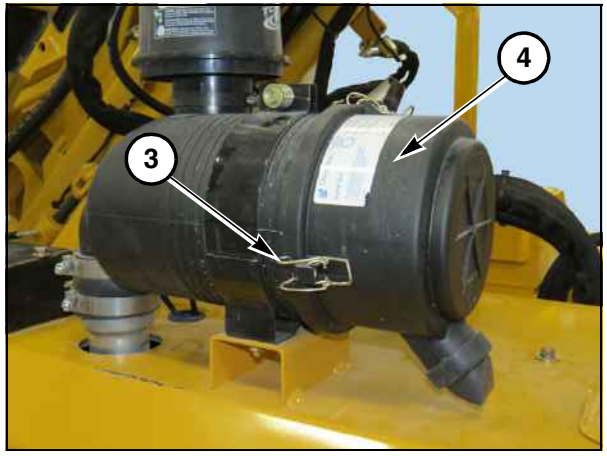
Step 5: Install replacement air cleaner.

Install end of element against closed end of air cleaner assembly, and seat it correctly.

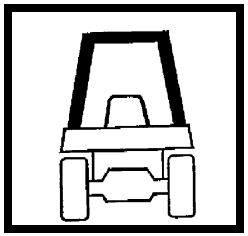
Step 6: Install end of air cleaner assembly. Close all buckles correctly.

Step 7: Reset indicator by pushing on yellow button **(5)** on end of indicator.





ROLLOVER PROTECTION STRUCTURE (ROPS) - CHECK



WARNING: The rollover protection structure (ROPS) is intended to protect the tractor operator in the event of a rollover. In order for you to be protected by the ROPS, you must wear seat belts. Follow instructions below relating to ROPS safety precautions.

- Do not remove ROPS.
- Do not modify ROPS in any manner. Unauthorized modifications, such as welding, drilling, cutting, or adding attachments, could weaken the structure and reduce your protection.
- If ROPS has been damaged or subjected to a rollover, replace it. Do not attempt any repairs.
- The roll bars have been certified to a maximum gross machine weight as stated on the ROPS label located on the ROPS. Under no circumstances may total gross machine weight exceed the weight specified on ROPS label.
- If ROPS must be replaced, be sure to use original parts ordered from Vermeer Corporation.

WEAR PADS - ADJUST

The slide adjuster material is self-lubricating; the slides are intended to be run dry. Lubrication such as oil or grease may cause dirt to accumulate, which will increase wear. Dry lubricant such as graphite may be used.

To adjust, tighten adjuster bolts to remove clearance between pad and slide frame.

NOTICE: Do not overtighten beyond removing clearance. Overtightening accelerates wear and reduces performance.

Adjust when movement of the black slide rails is greater than 1/16” (1.6 mm) when tilting the mast to its limits, or when auto plumb is having difficulty.

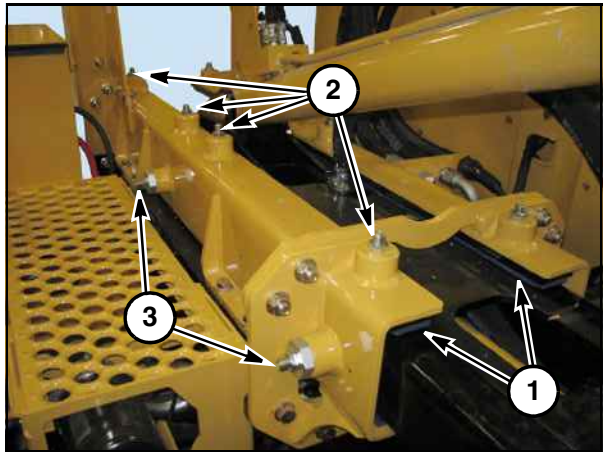
Replace wear pads **(1)** when their thickness is 1/4˝ (6 mm) or less.

Base

Tighten bolts **(2)** (four on each side).

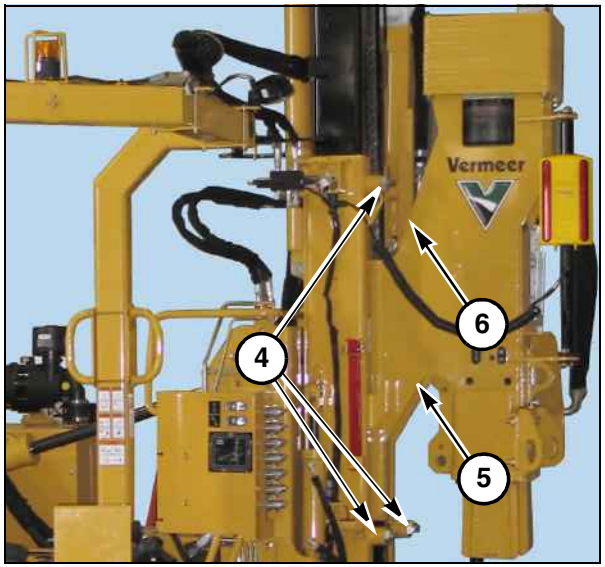
Check wear with mast moved fully rearward.

Adjust two bolts **(3)** when base slide moves side-to-side. Adjustment bolts (3) are only on side shown. Other side is welded.



Mast

Tighten six bolts **(4)** (two on either side of hammer and two on side of mast base) to minimize mast movement as it is raised and lowered.

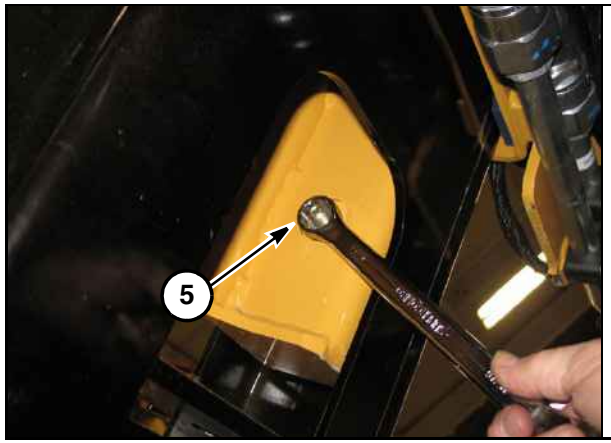


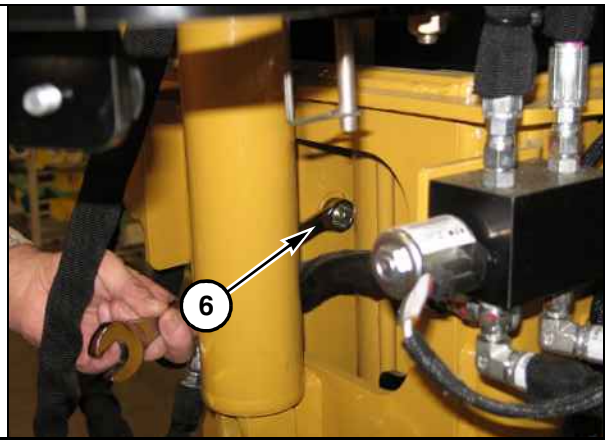
Hammer

Two adjustment bolts are located inside the mast at top and bottom of hammer, one on each side.

Raise mast fully and install hammer support bar before adjusting two bolts **(5)** on bottom of hammer (shown from bottom of mast).

Lower mast and tilt toward machine partway to adjust two bolts **(6)** on top of hammer.



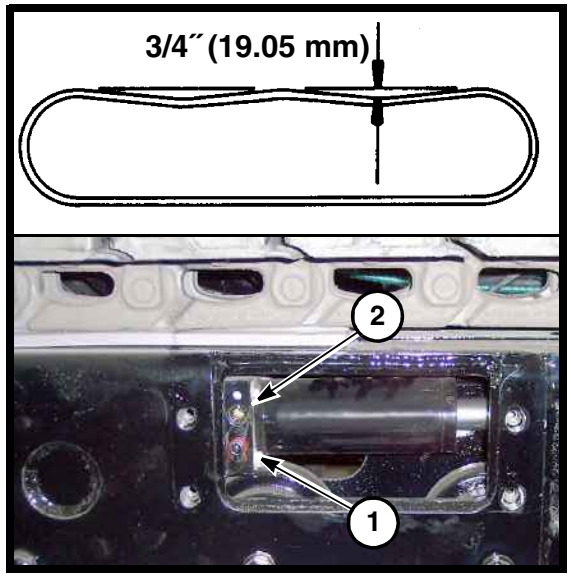


If the hammer carriage adjusters are overtightened, the hammer will not float or will float too slowly. This decreases hammer performance.

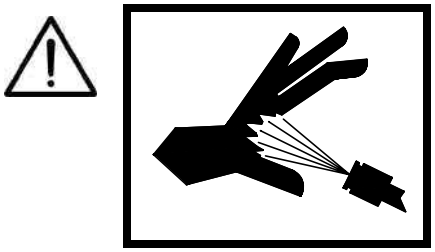
TRACK TENSION - ADJUST

Track tension is set with a grease cylinder which compresses a spring against the idler roller.

Remove cover plate (if equipped). With clean tracks, the correct tension is 3/4˝ (19.05 mm) of slack when measured as shown.



To increase: Attach grease gun to the fitting on ball check **(1)**, one on each track. Add grease to grease cylinder until track is correctly tensioned.



WARNING: Tensioning system contains grease under pressure. Death or serious injury possible if struck by fitting or if grease is injected under skin. Follow adjustment procedure and wear suitable protective clothing and proper face shield.

To decrease: Slowly loosen Allen screw **(2)** about one-half turn. Track may need to be turned for screw to be loosened. Allow grease to come out until track tension is correct. Tighten screw and clean up expelled grease.

HAMMER - SERVICE

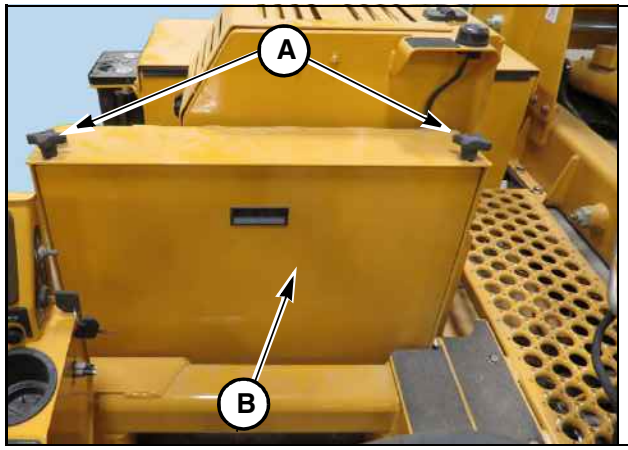
Contact your Vermeer dealer.

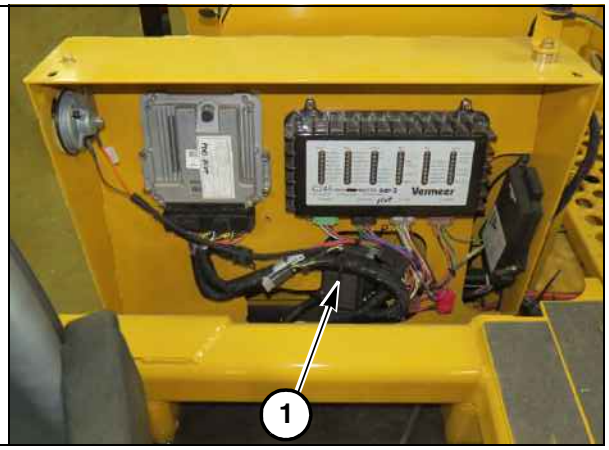
FUSES AND RELAYS - REPLACE

Unscrew knobs **(A)** and remove shield **(B)**.

(1) Fuse Panel

DP-10 Supply 10 amp	C248 Supply 25 amp
Tractor Supply 10 amp	Remote Receiver 10 amp
Telematics Supply 5 amp	12V Outlet 15 amp
GPS Supply 5 amp	Work Lights 10 amp





REMOTE CONTROL BATTERIES - REPLACE

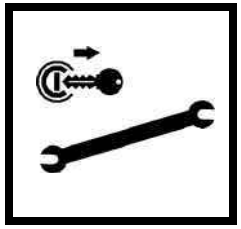
Replace remote control batteries as needed. Refer to “Remote Control Batteries,” ***page 21-11.***

MAST - REMOVAL

Refer to ***Service Manual*** or contact your Vermeer dealer.

STORAGE

Preparing for Storage



WARNING: Failure to use shutdown procedure can result in unexpected hazard(s). Death or serious injury could result due to entanglement, crushing, cutting, or other hazardous contact. Follow Shutdown Procedure after operating, before performing any service or maintenance, and before transporting. Refer to ***Shutdown Procedure, page 23-1***.

- Store machine inside or under cover.
- Fully lower mast and hammer.
- Clean off foreign material and wash machine. Repaint bare metal to inhibit rust.

NOTICE: Machine controls and electrical/electronic devices are not rated to withstand high pressure water and high temperature power washers. Water intrusion will likely cause malfunction or damage to any devices hit directly by the water spray. Keep pressure washer stream away from machine controls and electrical/electronic devices. Compressed air can also push moisture through some connector and component seals. Do not point air nozzle directly at seal areas.

- Coat exposed cylinder rods with grease.
- Clean and oil chain.
- Grease the machine.
- Repair leaks.
- Repair or replace worn or broken parts
- Replace damaged safety signs and decals.

- Drain the fuel tank.
- Refer to the Engine Operation Manual for engine storage instructions.
- Disconnect battery cables. If necessary, remove battery. Refer to “Battery - Replace” and store where the temperature will not drop below freezing. Refer to ***page 60-48.*** Check fluid level and charge fully; recheck every 30 days and charge if necessary.

Removing from Storage

- Remove all protective coverings and grease.
- Fill fuel tank.
- Check engine oil and hydraulic fluid levels.
- Charge battery and install in machine if removed.
- Refer to the Engine Operation Manual for restoring engine to operation.

Cleaning the Machine

Machine controls and electrical/electronic devices are not rated to withstand high pressure water and high temperature power washers. Water intrusion will likely cause malfunction or damage to any devices hit directly by the water spray. Keep pressure washer stream away from machine controls and electrical/electronic devices. Compressed air can also push moisture through some connector and component seals. Do not point air nozzle directly at seal areas.

Section 65: Troubleshooting

PERCUSSION HAMMER

Symptom	Cause	Solution
Mast Auto Plumb inoperative	Operator's station not in work position	Pivot operator's station to work mode position.
	Advisory or fault	Contact your Vermeer dealer.
	Valve control not getting signal from joystick	Contact your Vermeer dealer.
	Mast tilt limit out of range	Manually move mast within tilt range. Lower hammer to increase range.
Mast Auto Plumb failed	Hammer carriage too high on mast	Lower hammer.
	Plumb tolerance too tight	Readjust plumb tolerance.
	Mast pivot or slides loose	Contact your Vermeer dealer.
Hammer does not work	Operator's station in transport mode position	Pivot operator's station to work mode position.
	Valve control not getting signal from joystick	Contact your Vermeer dealer.
	Tool is stuck in hammer	Contact your Vermeer dealer.
	Hammer not sitting on pile	Lower hammer to pile.
	Hammer control dial not working	Contact your Vermeer dealer.
Hammer runs slow	Hammer speed adjustment set low	Adjust hammer speed knob to a higher setting.
	Hammer valve section not working properly	Contact your Vermeer dealer.
	Tool is stuck in hammer	Contact your Vermeer dealer.
	PFC pump controls incorrect	Contact your Vermeer dealer.

(Page 1 of 2)

Symptom	Cause	Solution
Hammer will not lift	Float switch in float position	Move switch out of float position.
	Hammer carriage lift chain disconnected	Contact your Vermeer dealer.
	Damaged or worn hydraulic pump	Contact your Vermeer dealer.
Hammer will not float down or is too slow	Float switch not in float position	Move switch to float position.
	Cold hydraulic oil	Warm hydraulic system through operation.
	Improper viscosity oil used for ambient temperature	Warm hydraulic system or change to proper weight oil.
	Hammer carriage slides too tight	Adjust slides. Refer to ***page 60-53.***
	Mast is bent	Contact your Vermeer dealer.
Piles will not install on grade using laser receiver	Laser receiver not installed or connected	Install or connect laser receiver.
	“Measure mode” not on	Press “Measure mode” key to turn on.
	Laser receiver not receiving laser signal	Check laser height, location, power, etc. is correct.
		Ensure laser is red.
		Obstruction between laser and receiver
		Ensure receiver is receiving correct laser if there is more than one laser on job site.
Top of pile is deformed beyond use	Pile is too thin for ground conditions	Use appropriate pile for ground conditions
		Adjust central valve on hammer. Contact your Vermeer dealer about this procedure.
	Striker block making uneven contact with pile	Use proper size of guide for size of pile being driven.

MACHINE

Symptom	Cause	Solution
Will not move with operator's station in transport position	Operator's station proximity switch is faulty, disconnected or out of adjustment	Contact your Vermeer dealer.
	Ground drive joystick not working	Contact your Vermeer dealer.
	Ground drive pumps not working	Contact your Vermeer dealer.
	Operator Presence system not working	Contact your Vermeer dealer.
	Ground drive neutral light not on	Place joystick in NEUTRAL.
Will not move with operator's station in work position	Operator's station proximity switch is faulty, disconnected or out of adjustment	Contact your Vermeer dealer.
	Ground drive joystick not working	Contact your Vermeer dealer.
	Ground drive pumps not working	Contact your Vermeer dealer.
	Operator Presence system not working	Contact your Vermeer dealer.
	Ground drive neutral light not on	Place joystick in NEUTRAL.
No hydraulic power	No hydraulic fluid	Fill with fluid.
	Damaged or worn hydraulic pump(s) or motor(s)	Contact your Vermeer dealer.
	Relief valve damaged	Contact your Vermeer dealer.
	Plugged hydraulic filters or strainer	Replace filters or service strainer.
	Pump control system damaged or not functioning	Contact your Vermeer dealer.

Symptom	Cause	Solution
Slow hydraulic power	Low hydraulic fluid level	Add hydraulic fluid.
	Plugged hydraulic filters or strainer	Replace filters or service strainer.
	Worn hydraulic pump(s) or motor(s)	Contact your Vermeer dealer.
	Hydraulic pump out of adjustment	Contact your Vermeer dealer.
	Wrong hydraulic fluid viscosity	Change hydraulic fluid.
	Hydraulic fluid cold	Let system warm up before operating hydraulics.
Machine moves with joystick in NEUTRAL	Hydraulic pump out of adjustment	Contact your Vermeer dealer.
Machine won't move at all	Operator not in seat	Operator sit in seat
	Operator’s station not locked into work or transport position	Pivot operator’s station to work or transport mode position.
	Operator Presence system not working	Contact your Vermeer dealer.
	Ground drive neutral light not on	Place joystick in NEUTRAL.
Not tracking straight	Damaged or worn hydraulic pump or motor	Contact your Vermeer dealer.
	One track is over tensioned	Adjust track tension.

ENGINE

This troubleshooting list does not cover all possible symptoms. Refer to manufacturer's engine operation manual for a more comprehensive list.

Symptom	Cause	Solution
Engine hard to start or does not start	Ground drive neutral light not on	Place joystick in NEUTRAL.
	No fuel	Add fuel.
	Wrong fuel	Use correct fuel.
	Leak in fuel line	Repair fuel line.
	Dirt or water in fuel system	Remove fuel, clean tank, replace fuel filter and fuel.
	Fuel filter is dirty	Replace fuel filter.
	Wrong weight engine oil	Use correct engine oil.
	Restricted air filter	Replace air filter.
	Fuel injectors dirty	Contact your Vermeer dealer.
	Cold engine	Wait for preheat timer to expire before cranking.
	Low engine cranking speed	Check battery and battery cable(s) condition. Replace/repair as needed.
Engine lacks power	Fuel filter is dirty	Replace fuel filter.
	Restricted air filter	Replace air filter.
	Fuel injectors dirty	Contact your Vermeer dealer.
	Wrong fuel	Use correct fuel.
	Engine is overheated	Contact your Vermeer dealer.

Low battery charge	Alternator not charging	Contact your Vermeer dealer.
	Worn or damaged alternator drive belt	Tighten or replace belt.
	Loose or corroded battery cables	Clean and tighten cables.
	Defective battery cell	Replace battery.
Remote control will not work	No/low power	Replace batteries.
	Remote not communicating	Register remote.
	Remote locked out	Remove operator from seat.
		Put operator's station controls in NEUTRAL.
		Enable remote with correct key sequence.

Section 70: Specifications

LUBRICANTS	
Lubricant/Capacity	**Specifications**
Engine oil with filter: **Deutz:** 9.5 qt (9 L) **Yanmar:** 7.8 qt (7.4 L)	An Engine Operation Manual is supplied with each machine. Refer to the manual for engine service requirements.
Hydraulic tank: 36 gal (136 L) ***NOTICE:*** Do not spill dirt or other contaminants into the tank. Filter all fluid through a 10-micron filter before adding. ***NOTICE:*** Use of other hydraulic oil without written factory approval jeopardizes warranty.	**ISO 68 Oil**: -10° to 100°F (-23° to 38°C) Vermeer HyPower 68, Shell Tellus T-68, or Mobil DTE16M **[Below 23°F (-5°C), refer to Starting Procedure]** **ISO 100 Oil**: 10 to 120°F (-12 to 49°C) Vermeer HyPower 100, Shell Tellus T-100, or Mobil DTE18M **[Below 41°F (5°C), refer to Starting Procedure]**
Grease	**EP grease**: Vermeer LC Ultra or equivalent
Hammer grease	Chisel paste
Planetary oil: all-purpose gear lube 31 oz (920 ml) per planetary; 62 oz (2 L) total	Oils must conform to API GL5 or MIL-L-2105D specifications. -20 to 100°F (-29 to 38°C): 80W-90 20 to 120°F (-7 to 49°C): 85W-140
Coolant: **Deutz:** 1.7 gal (6.4 L) **Yanmar:** 1.5 gal (5.7 L)	Use a 50/50 mixture of Extended Life (ELC) Nitrite-Free (NF) coolant and distilled or deionized water. Never add pure antifreeze to the system; always dilute to a 50/50 mixture. Never use Supplemental Cooling Additives (SCAs) with ELC coolant. Refer to the Engine Operation Manual.
Lift chain lubricant	Dry spray lubricant

MACHINE SPECIFICATIONS

Deutz Engines				
Model	Deutz D2.9L4 Tier 4 Final/Stage IIIA	Deutz D2.9L4 Tier 4 Interim/Stage IIIA	Deutz TD2.9L4 Tier 4 Interim/Stage IIIB	Yanmar 4TNV88 Tier 4 Interim/Stage IIIB
Maximum power (net)	49 hp (37 kW) at 2600 rpm		67 hp (50 kW) at 2600 rpm	47 hp (35 kW) at 3000 rpm
Fuel capacity	28 gal (106 L)			
Fuel type	Tier 4 engines require Ultra Low Sulfur Diesel (ULSD) fuel, with sulfur content less than 15 ppm (15 mg/kg). Use of fuels other than what is specified in the engine manual will impact engine performance, damage engine emissions systems and may result in engine and exhaust system warranty being voided.			
Maximum engine inclination	30° all directions ***NOTICE:*** Maximum engine inclination angle does not indicate safe machine operating angle.			
Battery (1)	12-volt negative ground, 950 cold cranking amps, 30 sec @ 0°F (-18°C) Reserve capacity: 195 min. of 25-amp output @ 80°F (27°C)			
Hydraulic pump	Sauer Danfoss H1 hydrostatic			

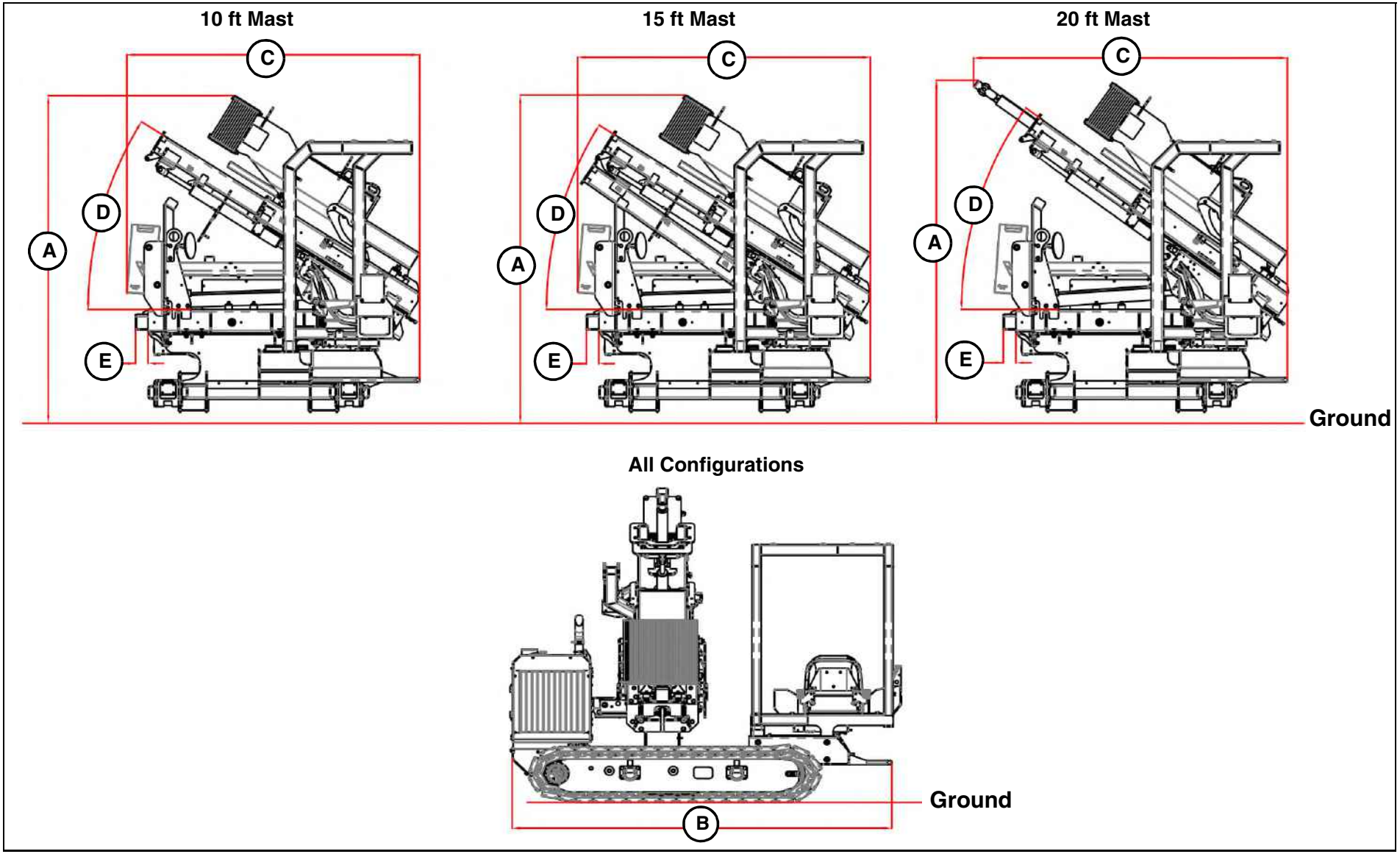
Remote Controls		
Model	R524J 6-Button	
Batteries / life	6 - AA / 40 hours	
Normal range	100 ft (30 m)	
Maximum recommended range	300 ft (91 m)	
Maximum oil flow	27 gpm (102 L/min)	
Maximum pile dimension	**Standard Opening - 170 mm:** Round: 7.2″ (18.3 cm) diameter Square: 6.2″ (15.8 cm) Rectangular: 4.6 x 7.2″ (11.7 x 18.3 cm)	**Large Opening - 225 mm:** Round: 9.3″ (23.6 cm) diameter Square: 8.3″ (21.1 cm) Rectangular: 6.7 x 9.3″ (17 x 23.6 cm)
Hammer		
Hammer energy class	738 ft-lb (1000 J), 1500 blows per minute maximum ***NOTICE:*** Do not use hammer without pile or post.	
Working pressure	1700 psi (117 bar)	
Minimum oil flow	14 gpm (53 L/min)	
Maximum oil flow	27 gpm (102 L/min)	
Maximum pile dimension	**Standard Opening - 170 mm:** Round: 7.2″ (18.3 cm) diameter Square: 6.2″ (15.8 cm) Rectangular: 4.6 x 7.2″ (11.7 x 18.3 cm)	**Large Opening - 225 mm:** Round: 9.3″ (23.6 cm) diameter Square: 8.3″ (21.1 cm) Rectangular: 6.7 x 9.3″ (17 x 23.6 cm)
Laser (Option)		
Laser receiver	Trimble LR410	
Operating distance	1500 ft (457.2 m) maximum	

Operational Dimensions

	10 ft (3.1 m) Mast	**15 ft (4.6 m) Mast**	**20 ft (6.1 m) Mast**
Max. Operating Height (max. height may increase with installation of a compatible third-party GPS system)	179˝ (455 cm)	239˝ (607 cm)	299˝ (760 cm)
Max. Operating Length	122˝ (310 cm)		
Min./Max. Operating Width	121˝ (307 cm) / 145˝ (368 cm)		
Machine Weight	14,135 lb (6412 kg)	14,320 lb (6495 kg)	15,590 lb (7072 kg)
Composite mast/hammer frame weight (pivot frame, hose carrier, mast base, hammer carriage w/ hammer, lower mast	2717 lb (1232 kg)	2917 lb (1323 kg)	3127 lb (1418 kg)
Mast Angle (front/back)	5° front/back with hammer low; 5° front/20° back with hammer high		
Mast Angle (left/right)	11° hammer low/5° hammer high		
Mast Extension	NA	5 ft (1.5 m)	2 pieces at 5 ft (1.5 m) = 10 ft (3 m)
Max. Pile Height	10 ft (3 m)	15 ft (4.6 m)	20 ft (6.1 m)

Transport Dimensions

	10 ft (3.1m) Mast	15 ft (4.6 m) Mast	20 ft (6.1 m) Mast bottom section removed and hose carrier lowered	20 ft (6.1 m) Mast with tilt cylinder positioner and hose carrier lowered
Max. Transport Height **(A)**	108″ (274 cm)			112″ (284 cm)
Max. Transport Length **(B)**	122″ (310 cm)			
Max. Transport Width **(C)**	98.7″ (251 cm)	94.3″ (240 cm)	101.5″ (258 cm)	100.5″ (255 cm)
Lateral Mast Tilt Angle **(D)**	32°			38°
Lateral Mast Slide Length **(E)**	8.5″ (21.6 cm)		7.5″ (19.1 cm)	8.5″ (21.6 cm)
Reference illustration on next page.				


10 ft Mast
15 ft Mast
20 ft Mast
C
D
A
E
Ground
All Configurations
B
Ground

COUNTERWEIGHTS

Weight Configuration for S/N 1001–2000

Configuration for 10-Ft Mast Machine

Requires standard weight kit **(1)**.

Configuration for 15-Ft Mast Machine

Includes standard weight kit **(1)** and adds either a second row of weights **(2)**, or weights on track frame **(3)**.

Configuration for 20-Ft Mast Machine

Requires standard weight kit **(1)** and undercarriage weights (not shown).

Weight Configuration for S/N 2001–

All configurations require standard weight kit **(1)** and undercarriage weights (not shown).

Weights on track frame **(3)** are required for 20-ft mast, in addition to single row of weights **(1)**, and undercarriage weights (not shown).

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Y

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Revision History

Revision	Date	Page(s)	Description
o-m1_00	05/12	All	Production manual released.
o-m2_00	07/13	All	Second edition production manual
o-m2_05	12/19	Front, Section 16, 30-5, 30-6, 30-7, 30-10, 30-11, 30-12, 30-14, 40-10, Section 60, 70-1	Updated safety graphics, updated warranty, corrected Yanmar oil capacity, moved Welding Statement to Maintenance section, updated for new telematics, updated transporting machine section.
o-m2_06	12/20	Receiving and Delivery vi, Section 15-1, Section 20-1, 20-21, 20-29, 20-30, 20-31, 20-37, 20-38, Section 21 all, Section 50-12 through 21, Section 22-4, Section 23-1, Section 60-2, 60-7, 60-54, Section 70-3.	Updated remote controller picture in Receiving and Delivery. Added new operator note. Added remote control messages and location of remote control. Added remote picture. Added inclinometer information. Updated entire remote control Section 21. Added 60 second delay and low idle notes. Added remote control test at 100 hours maintenance. Added note for replacing remote batteries. Added remote control specifications.
o-m2_07	04/22	Front, 30-16, 30-18, 60-3, 60-12, 70-1, 70-2, Back	Updated tow point, fuel tank, controller change, engine oil capacity

When operated in California, any off-road diesel vehicle may be subject to the California Air Resources Board In-Use Off-Road Diesel Vehicle Regulation. It therefore could be subject to retrofit or accelerated turnover requirements to reduce emissions of air pollutants. For more information, please visit the California Air Resources Board website at http://www.arb.ca.gov/msprog/ordiesel/ordiesel.htm.

CALIFORNIA
Proposition 65 Warning

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

CALIFORNIA
Proposition 65 Warning

Battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. Wash hands after handling.

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Pella, Iowa 50219-0200