Long Mott Generating Station

Construction Permit Application
Part VI
Supplemental Information

CONTENTS

VI-A

X Energy, LLC, "Xe-100 Technical Report, Preliminary Plume Exposure Pathway Emergency Planning Zone Analysis," Revision 3, March 19, 2025 (unrestricted; public)

Xe-100 Technical Report
Preliminary Plume Exposure Pathway Emergency Planning Zone Analysis

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SYNOPSIS

This report documents the results from following the Plume Exposure Pathway Emergency Planning Zone (EPZ) Sizing Methodology for the Long Mott Generating Station. The results of this analysis show that the dose consequences of events associated with Long Mott Generating Station meet the criteria established within the PEP EPZ Sizing Methodology and demonstrates the boundary of the EPZ can be set at the exclusion area boundary (EAB) of 400m.

CONFIGURATION CONTROL/DOCUMENT CHANGE HISTORY

Document Change History

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3	19-Mar-2025	Ben Chen	All	Updated proprietary markings

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Abbreviations/Acronyms

Short Form	Phrase
ANS	American Nuclear Society
AOO	Anticipated Operational Occurrence
ASME	American Society of Mechanical Engineers
BDBE	Beyond Design Basis Event
CFR	Code of Federal Regulations
DBA	Design Basis Accident
DBE	Design Basis Event
DBHL	Design Basis Hazard Level
DID	Defense-in-Depth
DLOFC	Depressurized Loss of Forced Circulation
EAB	Exclusion Area Boundary
EP	Emergency Preparedness
EPA	Environmental Protection Agency
EPZ	Emergency Planning Zone
GMRS	Ground Motion Response Spectra
HPB	Helium-Pressure Boundary
JFD	Joint Frequency Distribution
LBE	Licensing Basis Event
LMP	Licensing Modernization Project
LMGS	Long Mott Generating Station
LTR	Licensing Topical Report
MST	Mechanistic Source Term
MACCS	MELCOR Accident Consequence Code System
NEI	Nuclear Energy Institute
NRC	U.S. Nuclear Regulatory Commission
NUREG	U.S. Nuclear Regulatory Commission technical report designation
PAG	Protective Action Guides
PEP	Plume Exposure Pathway

Short Form	Phrase
PGA	Peak Ground Acceleration
PKPIRT	Phenomena and Key Parameter Identification and Ranking Tables
PLOFC	Pressurized Loss of Forced Circulation
PRA	Probabilistic Risk Assessment
PSAR	Preliminary Safety Analysis Report
QA	Quality Assurance
rem	Roentgen equivalent man
RCCS	Reactor Cavity Cooling System
RG	Regulatory Guide
RIPB	Risk-Informed Performance-Based
SAR	Safety Analysis Report
SB	Site Boundary
SB-DLOFC	Small Break DLOFC
SGTR	Steam Generator Tube Rupture
SMR	Small Modular Reactor
SG	Steam Generator
SSC	Structures, Systems, and Components
SSS	Startup/Shutdown System
STP	South Texas Project
TAP	Technical Analysis Package
TEDE	Total Effective Dose Equivalent
XDIS	Radionuclide dispersion module within XSTERM

Definitions

Phrase	Definition	Source
Anticipated Operational Occurrence	Anticipated event sequences expected to occur one or more times during the life of a nuclear power plant, which may include one or more reactor modules. Event sequences with mean frequencies of 1×10-2/plant-year and greater are classified as AOOs. AOOs take into account the expected response of all SSCs within the plant, regardless of safety classification.	LMP (NEI 18-04)
Beyond Design Basis Event	Rare event sequences that are not expected to occur in the life of a nuclear power plant, which may include one or more reactor modules, but are less likely than a DBE. Event sequences with frequencies of 5×10-7/plant-year to 1×10-4/plant -year are classified as BDBEs. BDBEs take into account the expected response of all SSCs within the plant regardless of safety classification.	LMP (NEI 18-04)
Defense-in-Depth	An approach to designing and operating nuclear facilities that prevents and mitigates accidents that release radiation or hazardous materials. The key is creating multiple independent and redundant layers of defense to compensate for potential human and mechanical failures so that no single layer, no matter how robust, is exclusively relied upon. Defense-in-depth includes the use of access controls, physical barriers, redundant and diverse key safety functions, and emergency response measures.	NRC Glossary
Design Basis Accident	Postulated accidents that are used to set design criteria and performance objectives for the design of Safety-Related SSCs. DBAs are derived from DBEs based on the capabilities and reliabilities of Safety-Related SSCs needed to mitigate and prevent accidents, respectively. DBAs are derived from the DBEs by prescriptively assuming that only SR SSCs classified are available to mitigate postulated accident consequences to within the 10 CFR 50.34 dose limits.	LMP (NEI 18-04)
Design Basis Event	Infrequent event sequences that are not expected to occur in the life of a nuclear power plant, which may include one or more reactor modules, but are less likely than AOOs. Event sequences with mean frequencies of 1×10-4/plant-year to 1×10-2/plant-year are classified as DBEs. DBEs take into account the expected response of all SSCs within the plant regardless of safety classification. The objective and scope of DBEs form the safety design basis of the plant	LMP (NEI 18-04)
Design Basis (External) Hazard Level	A design specification of the level of severity or intensity of an (external) hazard for which the SR SSCs are designed to withstand with no adverse impact on their capability to perform their RSFs	LMP/TICAP (NEI 18-04, NEI 21-07)

Phrase	Definition	Source
Event Sequence Family	A grouping of event sequences with similar challenges to the plant safety functions, response of the plant in the performance of each safety function, response of each radionuclide transport barrier, and end state. An event sequence family may involve a single event sequence or several event sequences grouped together. Each release category may include one or more event sequence families. When event sequence models are developed in great detail, identification of families of event sequences with common or similar source, initiating event and plant response facilitates application of the event sequence modeling requirements in this Standard and development of useful risk insights in the identification of risk contributors. Each event sequence family involving a release is associated with one and only one release category.	ASME/ANS-RA-S-1.4-2021
Exclusionary Area Boundary	The boundary of the area surrounding the reactor for which the reactor licensee has the authority to determine all activities, including exclusion or removal of personnel and property from the area.	NRC Glossary
Frequency-Consequence Target	A target line on a frequency-consequence chart that is used to evaluate the risk significance of LBEs and to evaluate risk margins that contribute to evidence of adequate defense-in-depth.	LMP (NEI 18-04)
Integrated Decision-Making Process	Risk-informed and performance-based integrated decision-making (RIPB-DM) process used for establishing special treatments and evaluating the adequacy of DID.	LMP (NEI 18-04)
Licensing Basis Event	The entire collection of event sequences considered in the design and licensing basis of the plant, which may include one or more reactor modules. LBEs include AOOs, DBEs, BDBEs, and DBAs	LMP (NEI 18-04)
Mechanistic Source Term	The characteristics of a radionuclide release at a particular location, including the physical and chemical properties of released material, release magnitude, heat content (or energy) of the carrier fluid, and location relative to local obstacles that would affect transport away from the release point and the temporal variations in these parameters (e.g., time of release duration) that are calculated using models and supporting scientific data that simulate the physical and chemical processes that describe the radionuclide inventories and the time-dependent radionuclide transport mechanisms that are necessary and sufficient to predict the source term.	ASME/ANS-RA-S-1.4-2021
Non-Safety-Related with Special Treatment SSC	Non-safety-related SSCs that perform risk-significant functions or perform functions that are necessary for defense-in-depth adequacy.	LMP (NEI 18-04)

Phrase	Definition	Source
Performance-Based	An approach to decision-making that focuses on desired objective, calculable or measurable, observable outcomes, rather than prescriptive processes, techniques, or procedures. Performance-based decisions lead to defined results without specific direction regarding how those results are to be obtained. At the NRC, performance-based regulatory actions focus on identifying performance measures that ensure an adequate safety margin and offer incentives and flexibility for licensees to improve safety without formal regulatory intervention by the agency. For EP, the performance-based approach focuses on licensee demonstration of required emergency response functions.	Adapted from NRC Glossary definition of performance-based regulation (page updated March 9, 2021) in order to apply to both design decisions and regulatory decision-making
Plant	The collection of site, buildings, radionuclide sources, and SSCs seeking a single design certification or one or more operating licenses under the LMP framework. The plant may include a single reactor unit or multiple reactor modules as well as non-reactor radionuclide sources.	LMP (NEI 18-04)
Plume Exposure Pathway EPZ	As defined in 10 CFR 50.33(g)(2), the area within which: (A) Public dose, as defined in 10 CFR 20.1003, is projected to exceed 10 mSv (1 rem) total effective dose equivalent over 96 hours from the release of radioactive materials from the facility considering accident likelihood and source term, timing of the accident sequence, and meteorology; and (B) Pre-determined, prompt protective measures are necessary.	10 CFR 50.33(g)(2)
PRA Safety Function	Reactor design specific SSC functions modeled in a PRA that serve to prevent and/or mitigate a release of radioactive material or to protect one or more barriers to release. In ASME/ANS-Ra-S-1.4-2013 these are referred to as "safety functions." The modifier PRA is used in the LMP GD to avoid confusion with safety functions performed by Safety- Related SSCs.	LMP (NEI 18-04), ASME/ANS-RA-S-1.4-2021
Required Functional Design Criteria	Reactor design-specific functional criteria that are necessary and sufficient to meet the RSFs.	LMP (NEI 18-04)
Required Safety Function	A PRA Safety Function that is required to be fulfilled to maintain the consequence of one or more DBEs or the frequency of one or more high-consequence BDBEs inside the F-C Target.	LMP (NEI 18-04)
Risk-Informed	An approach to decision-making in which insights from probabilistic risk assessments are considered with other sources of insights.	Adapted from NRC Glossary definition of risk-informed regulation (page updated March

Phrase	Definition	Source
		9, 2021) in order to apply to both design decisions and regulatory decision-making
Safety-Related Design Criteria	Design criteria for SR SSCs that are necessary and sufficient to fulfill the RFDCs for those SSCs selected to perform the RSFs.	LMP (NEI 18-04)
Safety-Related SSCs	SSCs that are credited in the fulfillment of RSFs and are capable to perform their RSFs in response to any Design Basis External Hazard Level.	LMP (NEI 18-04)
Site Boundary	The line beyond which the land or property is not owned, leased, or otherwise controlled by the licensee.	10 CFR 20.1003
Technology-Inclusive	The principle of establishing performance requirements developed using methods of evaluation that are flexible and practicable for application to a variety of power reactor and nonpower production or utilization facilities technologies.	LMP (NEI 18-04)
Total Effective Dose Equivalent	The sum of the effective dose equivalent (for external exposures) and the committed effective dose equivalent (for internal exposures).	NRC Glossary

1. Introduction

1.1 Purpose

The purpose of this technical report is to apply the methodology outlined in the X-energy Xe-100 Licensing Topical Report "Plume Exposure Pathway Emergency Planning Zone Sizing Methodology" [1] and the criteria within Regulatory Guide (RG) 1.242, "Performance-Based Emergency Preparedness for Small Modular Reactors, Non-Light-Water Reactors, and Non-Power Production or Utilization Facilities" [2] to establish the site-specific plume exposure pathway (PEP) emergency planning zone (EPZ) size for the Long Mott Generating Station (LMGS) site. The referenced topical report [1] contains the PEP EPZ sizing methodology for which U.S. Nuclear Regulatory Commission (NRC) approval is sought. The methodology provides an approach for determining a PEP EPZ size based on the area within which public dose, as defined in Title 10 of the Code of Federal Regulations (10 CFR) 20.1003, "Definitions", is projected to exceed 10 mSv (1 rem) total effective dose equivalent (TEDE) over 4 days (96 hours) from the release of radioactive materials from the facility, considering accident likelihood and source term, timing of the release sequence, and meteorology. Additionally, the methodology addresses the area in which predetermined, prompt protective measures are necessary.

1.2 Scope

The PEP EPZ methodology employed in this report follows the approach described in Appendix A, "General Methodology for Establishing Plume Exposure Pathway Emergency Planning Zone Size," of RG 1.242 and the risk-informed performance-based approach outlined in NEI 24-05, "An Approach for Risk-Informed Performance-Based Emergency Planning" [3]. Supporting information is drawn from NUREG-0396, "Planning Basis for the Development of State and Local Government Radiological Emergency Response Plans in Support of Light Water Nuclear Power Plants" [4]. This report is based on the following technical considerations:

- Methodology is designed to be structured and repeatable.
- Risk-informed methods are used to determine the spectrum of release sequences to be evaluated, including internal, external, and seismic events.
- Analysis of uncertainties.

The PEP EPZ methodology utilizes inputs from probabilistic risk assessment (PRA) methodologies, source term assessment, and radiological consequence analysis to determine appropriate EPZ sizing. Uncertainties associated with these inputs are addressed in their respective assessments, while overall uncertainty is considered in the final PEP EPZ analysis to be submitted for licensing.

1.3 Interfacing Documents

This technical report is one of several reports covering key regulatory issues and provided to the NRC staff as part of the Xe-100 pre-application process. This is an independent report and does not provide inputs to other preapplication documents. This technical report uses information from the Radiological Consequence Analysis Report [5], Risk Integration Report [6], LBE Bounding Atmospheric Dispersion

Factors Report [7], XDIS Preliminary Dose Methodology Report [8], Final PSAR Safety Analysis Dose Summary Report [9], Xe-100 Preliminary Long Term Dose Calculation [10], Xe-100 Mechanistic Source Term for Long-Term Consequences Report [12], and Atmospheric Dispersion and Dose Methodology LTR [15] .

1.4 Document Layout

The document is organized as follows:

- Section 2 provides a brief background on the approach.
- Section 3 provides a summary of the assumptions used in the technical report.
- Section 4 discusses the various inputs into the analysis.
- Section 5 goes over the analysis steps following the PEP EPZ methodology and presents the results.
- Section 6 summarizes the conclusions of the technical report and describes the findings.
- Section 7 lists the references and cross references used in this technical report.

1.5 Quality Assurance

1.5.1 Quality Assurance Compliance

The work documented in this report is part of the basic design process and uses the best available design inputs at the time. This work is categorized as a Preliminary in accordance with QAP 3.2 [17]. As the designs have continued to evolve, some of the inputs and assumptions may require updating. This work will need to be revised once the design has matured.

1.5.2 Verification Plan

Analysis verification was performed using the design review method via (1) technical review, (2) checking of specific technical aspects of the deliverable, and (3) editorial checking. Table 1 lists verification tasks and the individuals who performed these tasks. Reviewers are responsible for the whole document.

Table 1: Verification Tasks

Task #	Verification Task Description	Reviewers	Verification
1	The appropriateness of the methodology, suitability and completeness of the assumptions, the reasonableness of the results, completeness of the presentation of results, adequacy of the treatment of uncertainties, whether the analysis results as presented support the conclusions and whether any limitations on the conclusions are adequately described	R. Wolfgang	Results were checked against reference values for frequency and consequence.

Task #	Verification Task Description	Reviewers	Verification
2	Supporting files are identified in document and their location is specified	L McSweeney	Teamcenter is specified as the archive location.
3	For hand calculations (e.g., 4 day dose), the supporting calculations are provided and justified.	R. Wolfgang	Risk integration spreadsheet calculations were verified.
4	Results are useable by downstream stakeholders	R. Wolfgang	Risk integration results are useable for SSC classification and future iterations of the PRA model.
5	Editorial Verification	L McSweeney	Spelling, grammar, and formatting was checked.

1.6 Freeze Date

Dates and revision numbers are listed in Section 7, References. These dates and revision numbers represent the freeze dates and state of the input information that was used to produce and revise this document. Design changes and analysis results published after this date may not be reflected in this report. Where deemed necessary, changes documented after this date are stated as assumptions in this document.

2. Background

Regulatory Guide (RG) 1.242 identifies one acceptable method for establishing the EPZ boundary. The Xe-100 PEP EPZ Sizing Methodology uses this guidance to create a methodology that meets the regulatory requirements and guidance; the report was submitted to the NRC for approval. The methodology aims to ensure public safety while optimizing the emergency response planning zone to the unique design features of the Xe-100.

3. Precautions, Assumptions, and Limitations

3.1 Precautions and Limitations

Currently, meteorological data is treated in a prescriptive and conservative manner rather than a probabilistic best estimate manner. Hourly weather data from a specific site is not used. Instead, meteorological conditions are conservatively assumed, i.e.,[[
]]LME and a 1 m/s wind speed. [7] These assumptions [[

]]LME Site-specific meteorology collected in the future are expected to result in more dispersion (and therefore lower doses). Further detail on this approach is documented in the Dose & Dispersion LTR [15] as well as the following individual reports:

- "Radiological Consequence Analysis – Preliminary Scoping" [6]
- "LBE Bounding Atmospheric Dispersion Factors Report" [7], and
- "XDIS Preliminary Dose Calculation Report" [8], for LBEs.

[[

]]LME Per the Licensing Topical Report for Atmospheric Dispersion and Dose Calculation Methodology [15] Section 5.3, radioactive decay in the released plume is not credited as a means of source depletion which results in a calculated dose whose conservatism increases with time.

Presently no parametric uncertainty or modeling uncertainty has been evaluated for the exposure pathway analysis, and quantified uncertainty bounds (e.g. 95th percentiles) are not associated with any acceptance criteria. The PKPIRT assessments performed to date (e.g., Reference [11]) have not considered exposure pathways. Reasonable alternatives related to modeling associated with other site data have not yet been compiled.

3.2 Assumptions

Assumptions With a Basis:

1. To account for the various parametric uncertainties to support the calculation of dose exceedance probabilities as prescribed in the EPZ Sizing methodology, [[

   ]]LME These Mechanistic Source Term results were obtained using thermal-hydraulic models based on DBA conditions. The MST report details the released activity, i.e., MST, from the total inventory of fuel pebbles in the Xe-100 core for the depressurized loss of forced circulation (DLOFC), small break DLOFC (SBDLOFC), pressurized loss of forced circulation (PLOFC), and steam generator tube rupture (SGTR) accident scenarios. Specifically,[[ ]]LME

[[

]]LME Further detail can be found in Appendix A.

Even under the current simplified and conservative modeling approach—where meteorological conditions are fixed to minimize dispersion and processes like wet deposition, groundshine, resuspension, skin absorption, and ingestion pathways are not explicitly modeled—there remains a wide range of potential uncertainties that are not fully captured. While these omissions lead to bounding estimates rather than a best-estimate probabilistic treatment, the underlying dose result is still influenced by various multiplicative factors. These include uncertainties in the source term characteristics, environmental transfer parameters, dose conversion factors, and assumptions about receptor exposure scenarios. [[

]]LME it is acknowledged that the current model does not explicitly incorporate the full spectrum of processes and conditions—particularly those that could shift doses significantly over time and distance. This approach serves as a practical placeholder, reflecting the reality that if these factors (e.g., deposition mechanisms, groundshine over longer periods, and resuspension inhalation) were fully implemented with parametric uncertainty, the resulting distribution of doses would likely exhibit broader variability and differing skewness. In essence, this step anticipates that once a more comprehensive and probabilistic assessment is performed—potentially using codes like MACCS with detailed deposition modeling, and with site-specific meteorological data for the final EPZ sizing calculation—the final estimates will align with the broader uncertainty profiles consistent with these distributions while being less conservative.

2. To account for the conservatively bounding meteorological assumptions in lieu of site specific data, the doses are assumed to [[

]]LME calculated in the “Long Term Atmospheric Dispersion and Deposition Factors” report [13], which uses a joint frequency distribution (JFD) of speed, direction, and Pasquill stability class from the South Texas Project (STP) for 2017-2021, calculated at the site boundary. [[ ]]LME This assumed correction is applied to more

accurately represent the meteorological data of the Long Mott Generating Station site until site-specific meteorological data becomes available.

3. Further assumptions underlying this report are detailed in the supporting assessments and their respective technical documents.

4. Inputs

4.1 Design Inputs

The inputs required for the PEP EPZ sizing methodology are based on the results provided by the associated Probabilistic Risk Assessment (PRA).[5] [6] The PRA informs the selection of Licensing Basis Events (LBEs) that are necessary for the development of the spectrum of events for the EPZ analysis. These inputs also include quantified source terms, which are essential for accurately assessing the radiological doses resulting from potential accident scenarios. [12] The radiological source terms are used directly in the radiological consequence model, which is applied to evaluate doses in compliance with Regulatory Guide 1.242 and the EPZ Sizing Methodology outlined in the LTR. [5][6][1] Further detail can be found below.

4.1.1 96-Hour Doses

Although the 96-hour doses are not reported within the dose calculation reports, the calculation of the 96-hour dose values can be found in the Technical Analysis Package (TAP) of the Preliminary Long Term Dose Calculation Report. [10] The calculation takes the isotope release activity results from the MST report [12] and calculates the DBA and non-DBA doses after 96 hours. [[

]]^{LME} The method in which the 30 day doses are calculated can be found in its respective TAP. [9] The values used from the Preliminary Long Term Dose Calculation Report TAP and associated corrected doses are reported in Table 2.

Table 2: Calculation of 96-Hour Doses

Type (non-DBA Dose @ EAB)	96-Hour Dose (mrem) [10]	Long Term Correction Factor [9]	Corrected 96-Hour Dose (mrem) [10]
[[			
			]]^{LME}

The associated calculations and summary dose tables can be found within the TAP and is further detailed in Appendix B.

4.1.2 PRA LBEs Characteristics

The list of LBEs and their associated characteristic (frequency, consequence) are taken from the PRA, and the full list can be found within the Risk Integration – Preliminary Scoping Report. [6] Further details

on how the LBEs are mapped to certain dose sequences can be found in the Radiological Consequence Analysis – Preliminary Scoping Report. [5] This mapping was maintained when changing the PRA LBEs to represent a 4-day TEDE vs a 30-day TEDE for the purposes of the EPZ sizing analysis. The associated calculations and mapping tables can be found within the TAP and is further detailed in Appendix B.

4.1.3 Mechanistic Source Term Information

The mechanistic source term data from the MST for Long-Term Consequences Report [12] are used to provide input into the Preliminary Long Term Dose Calculation Report's [10] TAP, where the values for the 4-day dose calculation are derived from. The TAP from the MST for Long-Term Consequences Report [12] also contains worksheets that has the dose distributions and uncertainty analysis for each release profile to justify the dose profile distributions, as detailed further in Appendix A.

4.2 Discussion

The primary analysis for the quantification of radiological consequences was performed using the methodology outlined in the PEP EPZ Sizing Methodology. [1]

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]]^{LME}

5. Results

5.1 Spectrum of Events

To prepare for the PEP EPZ determination process, a set of LBEs was identified using the PRA. The events cover the full spectrum of likely accident scenarios that can occur from the specific reactor design. Following the preliminary screening criteria established in the methodology of [[

]][LME] The list of the spectrum of events screened in for the PEP EPZ sizing analysis is listed below in Table 3. Figure 1 shows the LBEs plotted on the LMP Frequency vs Consequence curve.

Table 3: Non-Seismic LBEs for EPZ Evaluation

Event Sequence	Mean Frequency (/plant year)	30-day Mean Dose[1] (rem)	4-day Mean Dose (rem)
LD-01	1.85E-05	3.60E-01	1.47E-01
MD-64	1.69E-06	8.50E-04	4.63E-04
MD-65	1.32E-06	8.50E-04	1.37E-01
MD-77	5.67E-07	8.50E-04	4.63E-04
SD-073	1.90E-05	2.48E-01	1.26E-01
SD-074	1.55E-06	2.48E-01	1.26E-01
SD-088	1.30E-06	9.92E-01	5.04E-01
SD-131	1.27E-06	9.16E+00	6.26E-02
SFLLBRB-01	9.20E-05	3.07E-01	1.37E-01
SFLLBRB-04	1.73E-05	3.07E-01	1.37E-01
SFLMBRB-04	2.83E-05	8.50E-04	1.37E-01
SRT-006	7.61E-07	1.44E+01	5.72E-01
SRT-021	1.46E-06	1.44E+01	5.72E-01
SRT-027	8.97E-06	9.16E+00	6.26E-02

[1] Reported doses are on a per-plant basis, accounting for multi-unit considerations, 30-day or 4-day TEDE at EAB

Event Sequence	Mean Frequency (/plant year)	30-day Mean Dose[1] (rem)	4-day Mean Dose (rem)
SRT-032	8.57E-07	1.42E+01	5.76E-01
SSGTL-06	4.28E-06	1.44E+01	5.72E-01
SSGTL-17	1.29E-06	1.44E+01	5.72E-01
SSLLBRB-01	1.42E-05	3.07E-01	1.37E-01
SSLLBRB-04	2.72E-06	3.07E-01	1.37E-01
SSLMBRB-01	2.84E-05	3.07E-01	1.37E-01
SSLMBRB-04	5.46E-06	3.07E-01	1.37E-01
STLPF-10	3.34E-06	1.44E+01	5.72E-01
STLPF-25	9.85E-07	1.44E+01	5.72E-01
STLPF-31	5.94E-06	9.16E+00	6.26E-02
STLPF-36	5.94E-07	1.42E+01	5.76E-01
MD-63	8.35E-04	8.50E-04	4.63E-04
MD-68	8.44E-04	8.50E-04	4.63E-04
MD-73	1.66E-04	8.50E-04	4.63E-04
SFLMBRB-01	1.49E-04	8.50E-04	1.37E-01

[[

]]LME

Figure 1: Frequency vs Consequence Curve of Screened in LBEs

[[

]]LME As prescribed in the PEP EPZ sizing methodology, the treatment of seismic hazards will be addressed in an alternative hazards approach.

5.2 Probabilistic Dose Aggregation

For the PEP EPZ sizing analysis, assumptions were made regarding the degree of uncertainty in consequence space and dispersion factors, as discussed in Section 3.1, to develop associated dose-versus-distance curves for each LBE.

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5.3 Event Evaluation and Assessment

As noted above, this assessment utilizes the mean values for frequency and consequence when considering a 96-hour TEDE evaluation. Not all the modeling assumptions called out in Appendix B of NEI 24-05 [3] (Cloudshine, groundshine, inhalation, and resuspension dose pathways, mean meteorology, straight line trajectory) are verified at this stage of analysis, as discussed in Section 3. It is important to note that not all LBEs with radionuclide release have resulting 1 rem and 200 rem curves. This is due to the very low likelihood of certain LBEs resulting in a release of that magnitude. The following Figure 2 shows all of the LBEs that have corresponding 1 rem curves, and Figure 3 shows all the LBEs that have corresponding 200 rem curves. [[

]]LME

Figure 2: LBE 1 Rem Dose Exceedance Frequency-versus-Distance Curves

[[

]]LME

Figure 3: LBE 200 Rem Dose Exceedance Frequency-versus-Distance Curves

Next, the individual LBE dose exceedance frequency vs distance curves are then summed to develop the cumulative dose exceedance frequency vs distance curves, as shown in Figure 4. The aggregation process sums the LBE frequencies to develop the cumulative curves. The 1 rem cumulative curve is then compared to the 1E-5 per plant frequency metric in criterion A shown in the red dotted line. This results in a distance of approximately [[ ]]LME. Next, the 200 rem curve is compared to the 1E-6 per plant year frequency metric outlined in criterion B shown in the blue dotted line. This assessment derives a distance of approximately [[ ]]LME

A 5 rem exceedance curve is also included as part of the uncertainty assessment. This curve intersects the criterion A threshold of 1E-5 at [[ ]]LME, which is still well below the proposed EPZ size of 400m, and provides additional assurance that the EPA PAGs will not be exceeded outside of the EAB. For the cliff-edge assessment, only a qualitative evaluation of the shape of the cumulative dose-versus-distance curves was performed. Neither curve demonstrates behavior regarding a potential cliff-edge near the frequency evaluation criteria (i.e., a flat slope). Therefore, based on the findings of the uncertainty and cliff-edge assessments, the limiting derived distance from the 1 rem curve is around [[ ]]LME

[[

]]LME

Figure 4: LBE Cumulative Dose Exceedance Frequency-versus-Distance Curves

5.4 Assessment for Seismic Hazards

[[

]]LME

[[

]]LME

Figure 5: Seismic Event Dose-versus-Distance Curve

The analysis shows that, even under these conservative assumptions, the projected dose remains below the regulatory threshold of 10 mSv (1 rem) over 96 hours at the proposed EPZ size at the EAB as outlined in RG 1.242. When compared to the 1 rem criterion, the dose vs distance curve crosses 1 rem line at about [[ ]]LME. Since this derived distance is lower than the distance derived from the 1 rem curve as shown in Figure 4, that remains the limiting derived PEP EPZ distance.

5.5 Protective Measures Evaluation

Since the event evaluation and dose assessment found a distance exceeding the EPA PAGs within the exclusion area boundary, it can be concluded that the PEP EPZ size can be established at the exclusion area boundary. The protective measures evaluation then focuses on those LBEs that result in doses exceeding the EPA PAGs for onsite personnel, in alignment with §50.160(b)(1)(iii)(B). The protective measures evaluation centers on the LBEs that resulted in 1 rem curves, highlighted in Figure 2, and

outlined in Table 4. It is important to convey that these are based on preliminary bounding results and final protective measures and emergency plans are subject to change. For example, emergency operating procedures that will be developed as part of plant operations in future, handled by on site radiation plant workers, are not considered at this point.

Table 4: Protective Measure Evaluations – Within the EAB

Event Sequence	Event Description	Protective Measures Evaluation
LD-01	Unit 1-4 Dampers open, Unit 1-4 trips, and then Successful Passive RCCS cooling in Unit 1-4	Given extended nature of the release, evacuation of onsite personnel[2] from the site is recommended for dose savings.
MD-65	Unsuccessful HPB break isolation in Unit 1, Unit 1-4 Dampers open, Unit 1 trips, Main steam header isolates in Unit 1, Consequential trip in Unit 2-4, Unsuccessful main feedwater forced cooling with SSS for Unit 1, Unsuccessful SSS cooling in Unit 1/Unit 1-4, Successful Passive RCCS cooling in Unit 1/Unit 1-4, and then Successful Active RCCS cooling in Unit 1/Unit 1-4	Possible protective measures similar to LD-01
SD-073	Unsuccessful HPB break isolation in Unit 1, Unit 1 shuts down, Main steam header isolates in Unit 1, Consequential trip in Unit 2-4, Unsuccessful main feedwater forced cooling with SSS for Unit 1, Unsuccessful SSS cooling in Unit 1/Unit 1-4, Unsuccessful primary system pumpdown in Unit 1/Unit 1-4, Successful Passive RCCS cooling in Unit 1/Unit 1-4, and then Successful Active RCCS cooling in Unit 1/Unit 1-4	Possible protective measures similar to LD-01

[2] Onsite personnel includes nonessential workers and members of the public.

Event Sequence	Event Description	Protective Measures Evaluation
SD-074	Unsuccessful HPB break isolation in Unit 1, Unit 1 shuts down, Main steam header isolates in Unit 1, Consequential trip in Unit 2-4, Unsuccessful main feedwater forced cooling with SSS for Unit 1, Unsuccessful SSS cooling in Unit 1/Unit 1-4, Unsuccessful primary system pumpdown in Unit 1/Unit 1-4, Successful Passive RCCS cooling in Unit 1/Unit 1-4, and then Unsuccessful Active RCCS cooling in Unit 1/Unit 1-4	Possible protective measures similar to LD-01
SD-088	Unsuccessful HPB break isolation in Unit 1, Unit 1 shuts down, Main steam header isolates in Unit 1, No consequential trip in Unit 2-4, Main feedwater forced cooling without SSS for Unit 1-4, Unsuccessful SSS cooling in Unit 1/Unit 1-4, Unsuccessful primary system pumpdown in Unit 1/Unit 1-4, Successful Passive RCCS cooling in Unit 1/Unit 1-4, and then Successful Active RCCS cooling in Unit 1/Unit 1-4	Possible protective measures similar to LD-01
SD-131	Unsuccessful HPB break isolation in Unit 1, Unit 1 fails to shut down, Unit 1 fails to trip, Unsuccessful primary system pumpdown in Unit 1/Unit 1-4, Successful Passive RCCS cooling in Unit 1/Unit 1-4, and then Successful Active RCCS cooling in Unit 1/Unit 1-4	Possible protective measures similar to LD-01
SFLLBRB-01	Unit 1-4 shuts down, SG Isolation Valves close for Unit 1, Unit 1-4 Dampers open, Main feedwater forced cooling without SSS for Unit 2-4, Successful Passive RCCS cooling in Unit 1/Unit 1-4, and then Successful Active RCCS cooling in Unit 1/Unit 1-4	Possible protective measures similar to LD-01

Event Sequence	Event Description	Protective Measures Evaluation
SFLLBRB-04	Unit 1-4 shuts down, SG Isolation Valves close for Unit 1, Unit 1-4 Dampers open, Unsuccessful main feedwater forced cooling without SSS for Unit 2-4, Successful SSS cooling in Unit 2-4, Successful Passive RCCS cooling in Unit 1/Unit 1-4, and then Successful Active RCCS cooling in Unit 1/Unit 1-4	Possible protective measures similar to LD-01
SFLMBRB-04	Unit 1-4 shuts down, SG Isolation Valves close for Unit 1, Unit 1-4 Dampers open, Unsuccessful main feedwater forced cooling without SSS for Unit 2-4, Successful SSS cooling in Unit 2-4, Successful Passive RCCS cooling in Unit 1/Unit 1-4, and then Successful Active RCCS cooling in Unit 1/Unit 1-4	Possible protective measures similar to LD-01
SRT-006	Main steam header isolates in Unit 1, Consequential trip in Unit 2-4, Unsuccessful main feedwater forced cooling with SSS for Unit 1, Unsuccessful SSS cooling in Unit 1/Unit 1-4, Unsuccessful Passive RCCS cooling in Unit 1/Unit 1-4, and then Unsuccessful intentional Unit 1/Unit 1-4 vessel depressurization	Possible protective measures similar to LD-01. In the future, the PRA will be refined to realistically credit additional event mitigation that prevents RCCS failure, such as multiple means of refilling the RCCS, additional tank inventory available below the top of the RPV to support cooling, and more realistic failure probabilities for the driving risk contributors. Furthermore, additional analysis is needed to confirm the long-term plant response and associated mechanistic source terms for various RCCS failure modes.

Event Sequence	Event Description	Protective Measures Evaluation
SRT-021	Main steam header isolates in Unit 1, No consequential trip in Unit 2-4, Unit 2-4 fails to trip, Unsuccessful Passive RCCS cooling in Unit 1/Unit 1-4, and then Unsuccessful intentional Unit 1/Unit 1-4 vessel depressurization	Possible protective measures similar to LD-01. In the future, the PRA will be refined to realistically credit additional event mitigation that prevents RCCS failure, such as multiple means of refilling the RCCS, additional tank inventory available below the top of the RPV to support cooling, and more realistic failure probabilities for the driving risk contributors. Furthermore, additional analysis is needed to confirm the long-term plant response and associated mechanistic source terms for various RCCS failure modes.
SRT-027	Unsuccessful isolation of main steam header in Unit 1, Unit 2-4 fails to trip, Primary Relief Valves open in Unit 1-4, Primary Relief Valves reclose in Unit 1-4, Unit 1-4 HPB integrity maintained, Successful Passive RCCS cooling in Unit 1/Unit 1-4, and then Successful Active RCCS cooling in Unit 1/Unit 1-4	Possible protective measures similar to LD-01
SRT-032	Unsuccessful isolation of main steam header in Unit 1, Unit 2-4 fails to trip, Primary Relief Valves open in Unit 1-4, Primary Relief Valves stay Open in Unit 1-4, Successful Passive RCCS cooling in Unit 1/Unit 1-4, and then Successful Active RCCS cooling in Unit 1/Unit 1-4	Possible protective measures similar to LD-01

Event Sequence	Event Description	Protective Measures Evaluation
SSGTL-06	Unit 1 shuts down, SG Isolation Valves close for Unit 1, SG Dump Valves open for Unit 1, SG Dump Valves reclose for Unit 1, Consequential trip in Unit 2-4, Unsuccessful main feedwater forced cooling with SSS for Unit 1, Unsuccessful SSS cooling in Unit 1/Unit 1-4, Unsuccessful Passive RCCS cooling in Unit 1/Unit 1-4, and then Unsuccessful intentional Unit 1/Unit 1-4 vessel depressurization	Possible protective measures similar to LD-01. In the future, the PRA will be refined to realistically credit additional event mitigation that prevents RCCS failure, such as multiple means of refilling the RCCS, additional tank inventory available below the top of the RPV to support cooling, and more realistic failure probabilities for the driving risk contributors. Furthermore, additional analysis is needed to confirm the long-term plant response and associated mechanistic source terms for various RCCS failure modes.
SSGTL-17	Unit 1 shuts down, SG Isolation Valves close for Unit 1, SG Dump Valves open for Unit 1, SG Dump Valves reclose for Unit 1, No consequential trip in Unit 2-4, Main feedwater forced cooling without SSS for Unit 1-4, Unsuccessful SSS cooling in Unit 1/Unit 1-4, Unsuccessful Passive RCCS cooling in Unit 1/Unit 1-4, and then Unsuccessful intentional Unit 1/Unit 1-4 vessel depressurization	Possible protective measures similar to LD-01. In the future, the PRA will be refined to realistically credit additional event mitigation that prevents RCCS failure, such as multiple means of refilling the RCCS, additional tank inventory available below the top of the RPV to support cooling, and more realistic failure probabilities for the driving risk contributors. Furthermore, additional analysis is needed to confirm the long-term plant response and associated mechanistic source terms for various RCCS failure modes.
SSLLBRB-01	Unit 1-4 shuts down, SG Isolation Valves close for Unit 1, Unit 1-4 Dampers open, Main feedwater forced cooling without SSS for Unit 2-4, Successful Passive RCCS cooling in Unit 1/Unit 1-4, and then Successful Active RCCS cooling in Unit 1/Unit 1-4	Possible protective measures similar to LD-01

Event Sequence	Event Description	Protective Measures Evaluation
SSLLBRB-04	Unit 1-4 shuts down, SG Isolation Valves close for Unit 1, Unit 1-4 Dampers open, Unsuccessful main feedwater forced cooling without SSS for Unit 2-4, Successful SSS cooling in Unit 2-4, Successful Passive RCCS cooling in Unit 1/Unit 1-4, and then Successful Active RCCS cooling in Unit 1/Unit 1-4	Possible protective measures similar to LD-01
SSLMBRB-01	Unit 1-4 shuts down, SG Isolation Valves close for Unit 1, Unit 1-4 Dampers open, Main feedwater forced cooling without SSS for Unit 2-4, Successful Passive RCCS cooling in Unit 1/Unit 1-4, and then Successful Active RCCS cooling in Unit 1/Unit 1-4	Possible protective measures similar to LD-01
SSLMBRB-04	Unit 1-4 shuts down, SG Isolation Valves close for Unit 1, Unit 1-4 Dampers open, Unsuccessful main feedwater forced cooling without SSS for Unit 2-4, Successful SSS cooling in Unit 2-4, Successful Passive RCCS cooling in Unit 1/Unit 1-4, and then Successful Active RCCS cooling in Unit 1/Unit 1-4	Possible protective measures similar to LD-01
STLPF-10	Unit 1 shuts down, Main steam header isolates in Unit 1, Consequential trip in Unit 2-4, Unsuccessful circulator restoration in Unit 1, Unsuccessful Passive RCCS cooling in Unit 1/Unit 1-4, and then Unsuccessful intentional Unit 1/Unit 1-4 vessel depressurization	Possible protective measures similar to LD-01. In the future, the PRA will be refined to realistically credit additional event mitigation that prevents RCCS failure, such as multiple means of refilling the RCCS, additional tank inventory available below the top of the RPV to support cooling, and more realistic failure probabilities for the driving risk contributors. Furthermore, additional analysis is needed to confirm the long-term plant response and associated mechanistic source terms for various RCCS failure modes.

Event Sequence	Event Description	Protective Measures Evaluation
STLPF-25	Unit 1 shuts down, Main steam header isolates in Unit 1, No consequential trip in Unit 2-4, Unsuccessful circulator restoration in Unit 1, Unsuccessful Passive RCCS cooling in Unit 1/Unit 1-4, and then Unsuccessful intentional Unit 1/Unit 1-4 vessel depressurization	Possible protective measures similar to LD-01. In the future, the PRA will be refined to realistically credit additional event mitigation that prevents RCCS failure, such as multiple means of refilling the RCCS, additional tank inventory available below the top of the RPV to support cooling, and more realistic failure probabilities for the driving risk contributors. Furthermore, additional analysis is needed to confirm the long-term plant response and associated mechanistic source terms for various RCCS failure modes.
STLPF-31	Unit 1 shuts down, Unsuccessful isolation of main steam header in Unit 1, Unsuccessful circulator restoration in Unit 1, Primary Relief Valves open in Unit 1-4, Primary Relief Valves reclose in Unit 1-4, Unit 1-4 HPB integrity maintained, Successful Passive RCCS cooling in Unit 1/Unit 1-4, and then Successful Active RCCS cooling in Unit 1/Unit 1-4	Possible protective measures similar to LD-01
STLPF-36	Unit 1 shuts down, Unsuccessful isolation of main steam header in Unit 1, Unsuccessful circulator restoration in Unit 1, Primary Relief Valves open in Unit 1-4, Primary Relief Valves stay Open in Unit 1-4, Successful Passive RCCS cooling in Unit 1/Unit 1-4, and then Successful Active RCCS cooling in Unit 1/Unit 1-4	Possible protective measures similar to LD-01
MD-63	Unsuccessful HPB break isolation in Unit 1, Unit 1-4 Dampers open, Unit 1 trips, Main steam header isolates in Unit 1, Consequential trip in Unit 2-4, and then Main feedwater forced cooling with SSS for Unit 1	Possible protective measures similar to LD-01

Event Sequence	Event Description	Protective Measures Evaluation
MD-68	Unsuccessful HPB break isolation in Unit 1, Unit 1-4 Dampers open, Unit 1 trips, Main steam header isolates in Unit 1, No consequential trip in Unit 2-4, and then Main feedwater forced cooling without SSS for Unit 1-4	Possible protective measures similar to LD-01
MD-73	Unsuccessful HPB break isolation in Unit 1, Unit 1-4 Dampers open, Unit 1 trips, Main steam header isolates in Unit 1, No consequential trip in Unit 2-4, Main feedwater forced cooling without SSS for Unit 1-4, and then Successful SSS cooling in Unit 1/Unit 1-4	Possible protective measures similar to LD-01
SFLMBRB-01	Unit 1-4 shuts down, SG Isolation Valves close for Unit 1, Unit 1-4 Dampers open, Main feedwater forced cooling without SSS for Unit 2-4, Successful Passive RCCS cooling in Unit 1/Unit 1-4, and then Successful Active RCCS cooling in Unit 1/Unit 1-4	Possible protective measures similar to LD-01

Given that all of these LBEs are related to either a depressurization or a loss of forced cooling and consequential fuel heat-up that results in an extended release of radioactivity, evacuation of onsite personnel from the site would be warranted for dose savings. Based on the evaluation, protective measures of evacuation for onsite personnel within the EAB are determined to be warranted to address different accident conditions. The resultant protective actions are to be developed, described in the emergency plan, and evaluated in the future.

6. Conclusion

The results of the Long Mott Generating Station PEP EPZ determination process are summarized in Table 5. First, a spectrum of events was established using the LBEs identified through the LMP approach. An alternative hazard event selection was utilized for seismic hazards in accordance with the procedure in the PEP EPZ methodology. Next, the event evaluation and dose assessment were performed utilizing the set of LBEs. The comparison to criterion A (1 rem curve) found that doses exceeding 1 rem over 96 hours were possible at a distance of [[ ]]^{LME} from the facility. The comparison to criterion B (200 rem curve) found that doses exceeding 200 rem over 96 hours were possible at a maximum distance of [[ ]]^{LME} from the facility. The uncertainty and cliff-edge assessments determined that the 5 rem curve may extend to [[ ]]^{LME} based on a comparison to criterion A (1 rem curve). The alternative hazard assessment for the bounding seismic scenario resulted in a distance of [[ ]]^{LME} when compared to the 1 rem criteria. A protective measures evaluation was performed for the [[ ]]^{LME} LBEs that are the primary contributors to the 1 rem curve. The evaluation centered on protective measures within the EAB, as there were no derived distances that exceeded the EAB. The evaluation found that protective measures were warranted within the EAB.

Based on these findings, the PEP EPZ is established at the EAB (400m) for the Long Mott Generating Station.

Table 5: PEP EPZ Determination Results

Analysis Step	Assessment
Spectrum of Events	LBEs identified through LMP approach, used alternative hazard event selection considerations for seismic hazard.
Event Evaluation and Dose assessment	The LBE assessment resulted in the following findings: • Criterion A: 1 rem curve – Distance of [[ ]]^{LME} • Criterion B: 200 rem curve – Distance of [[ ]]^{LME} • Uncertainty/Cliff-Edge Assessment: 5 rem curve against Criterion A of 1E-5/yr- Distance of [[ ]]^{LME} • Seismic Hazard: Dose vs Distance @ 1 rem – Distance of [[ ]]^{LME}
Protective Measures Evaluation	Beyond the EAB: • Predetermined, prompt protective measures are not warranted. Within the EAB: • 27 LBEs contribute to the 1 rem curve within the EAB. • Protective measures were developed for onsite personnel, given the nature of the releases.
PEP EPZ Determination	The analysis determined that doses exceeding the EPA PAGs were not possible beyond the EAB and predetermined, prompt protective measures are not warranted. Within the EAB, protective measures are warranted. Therefore, the PEP EPZ is established at the EAB (400m).

7. Cross References and References

7.1 Cross References and References

Document Title Cross References: X-energy documents that may impact the content of this document. References: X-energy or other documents that will not impact the content of this document	Document No.	Rev./ Date of Issuance	Cross Reference/ Reference
[1] Plume Exposure Pathway Emergency Planning Zone Sizing Methodology	010229	1	Cross Reference
[2] Performance-Based Emergency Preparedness for Small Modular Reactors, Non-Light-Water Reactors, and Non-Power Production or Utilization Facilities	RG 1.242	0	Reference
[3] An Approach for Risk-Informed Performance-Based Emergency Planning	NEI 24-05	July 2024	Reference
[4] Planning Basis for the Development of State and Local Government Radiological Emergency Response Plans in Support of Light Water Nuclear Power Plant	NUREG-0396	December 1978	Reference
[5] Probabilistic Risk Assessment: Radiological Consequence Analysis – Preliminary Scoping	006870	5	Cross Reference
[6] Probabilistic Risk Assessment: Risk Integration – Preliminary Scoping	002200	5	Cross Reference
[7] Xe-100 LBE Bounding Atmospheric Dispersion Factors Report	003393	3	Cross Reference
[8] Xe-100 XDIS Preliminary Dose Methodology Report	003724	2	Cross Reference
[9] Xe-100 Final PSAR Safety Analysis Dose Summary Report	008078	2	Cross Reference
[10] Xe-100 Preliminary Long Term Dose Calculation	007330	4	Cross Reference
[11] Xe-100 Safety Analysis Phenomena and Key Parameter Identification and Ranking Tables	007086	1	Cross Reference
[12] Xe-100 Mechanistic Source Term for Long-Term Consequences Report – Preliminary	004130	5	Cross Reference
[13] Long Term Atmospheric Dispersion and Deposition Factors	XE-C-GN-004	0D	Cross Reference
[14] @RISK Risk and Decision Analysis Platform for Microsoft Excel	S/N: 8140423	Ver. 8.4.0 (Build 281)	Reference
[15] Xe-100 Licensing Topical Report Atmospheric Dispersion and Dose Calculation Methodology	007116	2	Cross Reference
[16] Xe-100 Figure of Merit Uncertainty Methods	006177	1	Cross Reference
[17] Technical Analysis Procedure	QAP 3.2	5	Reference
[18] Software Procedure	QAP 3.6	3	Reference

Appendix A. Derivation of Release Profile Distributions

[[

]]LME

Table 6: [[ ]]LME

[[				

]]LME

[3] [[

]]LME

[[

]]LME

[5] [[

]]LME

Appendix B. Electronic File Information

[[

]]LME

Table 7: Electronic File Records

File	Description and MD5-checksum Values
[[	
	]]LME

File	Description and MD5-checksum Values
[[	
	]]LME

VI-B

X Energy, LLC, "Cultural Historic Survey for Project Long Mott Service Receipt Inspection Report," Revision 2, March 26, 2025 (unrestricted; public)

Cultural Historic Survey for Project Long Mott Service Receipt Inspection Report

Document ID Number	:	**008729 Configuration**
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Date Created	:	3/26/2025
Project	:	**Long Mott Generating Station**

E-SIGNATURES

Document Approval Signees

Action	Designation	Name	Signature	Date
Preparer	Licensing Project Manager	Jessa Hultgren	Signed by: Jessa Hultgren 173092D997244BC...	March 28, 2025 | 11:13 AM ED
Approver	Licensing Manager	Milton Gorden		March 28, 2025 | 11:14 AM E

CONFIGURATION CONTROL/DOCUMENT CHANGE HISTORY

Document Change History

Rev.	Date	Preparer	Page/Section Revised	Description
1	3/19/2025	Jessa Hultgren	All	Document Generated
2	3/26/2025	Jessa Hultgren	All	Changed Security Classification from Proprietary to Unrestricted. Attached is a letter from S&L stating the following: "Sargent & Lundy, LLC (S&L) understands that X Energy, LLC (XE) would like to include the reports listed below as part of the Long Mott Energy, LLC (LME) Construction Permit application to the U.S. Nuclear Regulatory Commission (NRC)… Our confidential/proprietary statement on the transmittal of those documents requires written permission for release of same. This email serves as our permission for those reports."

SERVICE RECEIPT INSPECTION REPORT

Provide title, number and revision of contractor document and corresponding title, number and revision assigned by X-energy from Teamcenter.

Company	Document Title	Document Number	Rev.
X-energy	Cultural Historic Survey for Project Long Mott	008729	2
Supplier	Cultural Historic Survey for the Proposed Project Long Mott, Calhoun County, Texas	WSP-XES-07	1

Disposition	
☒	Accepted
☐	Rejected (Deliverable must re-submitted after comments are incorporated.)

If deliverable is rejected, rationale for disposition

This record provides evidence that the deliverable was reviewed in accordance with QAP 7.1.

The Responsible Engineer's signature above confirms that contract requirements including Quality Assurance requirements are satisfied as documented in Question #1 of the Owner Acceptance (OAR) form (QAP-7.1-F03) and that appropriate technical reviews have been completed as documented in Questions #2 through #17 of the OAR form in accordance with QAP 7.1.

If a document is rejected, all non-conformances shall be documented in a non-conformance report (XEFORM-0059).

From: Pressburger, Maury A
To: Milton Gorden; Jessa Hultgren
Cc: Jannetty, Sandra J; Boswell, Greg
Subject: SL-XEN-2025-078 - Authorization to release reports
Date: Wednesday, March 26, 2025 9:59:47 AM

Milton,

Sargent & Lundy, LLC (S&L) understands that X Energy, LLC (XE) would like to include the reports listed below as part of the Long Mott Energy, LLC (LME) Construction Permit application to the U.S. Nuclear Regulatory Commission (NRC).

- Transmittal No. SL-XEN-2024-192; Phase I Intensive Archaeological Survey for the Proposed Long Mott Project, Calhoun County, Texas – Negative Finding Report; WSPDC#: WSP-XES-08; Rev. 1; Dated 19-Feb-2024
- Transmittal No. SL-XEN-2024-193; Cultural Historic Survey for the Proposed Project Long Mott, Calhoun County, Texas; WSPDC#: WSP-XES-07; Rev. 3; Dated 10-Jan-2024

Our confidential/proprietary statement on the transmittal of those documents requires written permission for release of same. This email serves as our permission for those reports.

Very Best Regards,

Maury

Maury Pressburger
Director, Nuclear Siting
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ISSUE SUMMARY AND APPROVAL PAGE

Project No. A13766.119
Transmittal No. SL-XEN-2024-193
November 7, 2024

X-energy LLC
Cultural Historic Survey for the Proposed Project Long Mott, Calhoun County, Texas

This Cultural Historic Survey for the Proposed Long Mott Project, Calhoun County, Texas at the Union Carbide Corporation (UCC) Seadrift Operations site (the Dow Chemical Corporation [Dow] Facility) in Seadrift, Texas has been reviewed for compliance with applicable technical and contractual documents and is approved for use.

The report was prepared by WSP USA Environment and Infrastructure, Inc. (WSP) under WSP project number 325223319.

Document No.	Rev.	Purpose	Date	Sections Affected
TC#: 008729 WSPDC#: WSP-XES-07	3	Final Report	01/10/2024	All

Reviewed by

Julianna Crumlish
Senior Environmental Associate

Approved by

Greg Boswell
Consultant I

Cultural Historic Survey for the Proposed Project Long Mott, Calhoun County, Texas

FINAL REPORT

THC Tracking Number: 202308205
TC No.: 008729
WSP Project No.: 325223319
WSP Cultural Report of Investigations No.: 2023-044
WSPDC-XES-07

Prepared for:
X-energy

January 2024

WSP USA Environment & Infrastructure, Inc.
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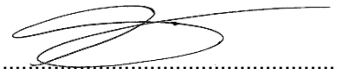
Cultural Historic Survey for the Proposed Project Long Mott, Calhoun County, Texas

Main contributors

Mekenzie R Davis, BA
Carolyn E Andrews, MArch(HP).

Approved by



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Carolyn E. Andrews, MArch(HP)
Principal Investigator

January 10, 2024

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Document revisions

No.	Details	Date
1	HM	8.18.2023
2	CEA	10.25.2023
3	CEA	12.07.2023

ABSTRACT

On July 11-13, 2023, at the request of X-energy, LLC (X-energy), WSP Environment and Infrastructure, Inc. (WSP) architectural historians conducted an aboveground cultural resource eligibility and effects survey for the proposed Project Long Mott in Calhoun County, Texas (THC Tracking No. 202308205). The purpose of the survey was to identify aboveground historic resources over 50 years of age located within the Area of Potential Effect (APE); to evaluate these resources relative to their eligibility for listing in the National Register of Historic Places (NRHP); and to assess the potential direct and indirect visual effects of the proposed undertaking upon these resources.

The APE for aboveground cultural historic resource survey was determined in consultation with X-energy and the Texas Historical Commission (THC), the State Historic Preservation Office (SHPO). The project area is in the vicinity of the Dow Seadrift Operations Property, encompassing the northeast corner of the existing facility and adjacent Dow-owned land to the northeast, near the intersection of State Highways 185 and 35 in Calhoun County, Texas. The proposed project area is largely comprised of open fields and some wooded terrain. The APE for cultural historic resources includes an additional 0.5-mile buffer radiating out from the proposed project limits to account for potential impacts to aboveground historic architectural resources that are adjacent to the project area. This area consists of a largely rural landscape, made up of single-family residences and associated outbuildings, several industrial buildings, ruins, and many agricultural storage structures. Along with structures located within the APE, WSP also documented all historic structures located on a parcel intersected by the project APE, even if the structure is located outside of the half-mile APE buffer.

A total of ten resources over 50 years old—including four residential buildings, two outbuildings, one utility site, two operating industrial or agricultural facilities, and one defunct industrial facility—were identified within the APE (**Table A.1**). Of the ten resources, a total of seven were previously surveyed by Sara McLaughlin, Sandy Shannon, Amy E. Dase, Mitch Ford, Adrienne Vaughan, and Campbell (among others) of Stantec in 2021-2022 (Hinder, Rinaldi-Williams, et al. 2023) as part of a county-wide historic resources survey. All seven of these previously surveyed resources were recommended as not eligible for listing in the NRHP by McLaughlin et al. Of the ten resources surveyed and revisited in this study, WSP recommends none as eligible for listing in the NRHP. Therefore, WSP recommends that there would be **No Historic Properties Affected** by the undertaking.

Table A.1. Historic Resources in APE and NRHP Recommendations

Resource Number	Address	Style/Form	NRHP Recommendation
AR 1	7501 TX-185, Calhoun County, TX	Mid-20th Century Industrial Complex	Not eligible due to a lack of integrity.
AR 2	NE of TX-185, Port Lavaca, TX	Industrial Ruins	Not eligible due to a lack of historic and architectural significance.
AR 3	NE of TX-185, Port Lavaca, TX	20th Century Utility Structures	Not eligible due to a lack of historic and architectural significance.
AR 4	Jesse Rigby Rd, Port Lavaca, TX	20th Century Agricultural Outbuildings	Not eligible due to a lack of historic and architectural significance.
AR 5	11525 TX-35, Port Lavaca, TX	Ranch	Not eligible due to a lack of historic and architectural significance.
AR 6	10622 TX-35, Port Lavaca, TX	Transitional Ranch	Not eligible due to a lack of historic and architectural significance.
AR 7	10548 TX-35, Port Lavaca, TX	20th Century Residential Outbuilding	Not eligible due to a lack of historic and architectural significance.
AR 8	10237 TX-35, Port Lavaca, TX	Ranch	Not eligible due to a lack of historic and architectural significance.
AR 9	10211 HWY 35, Port Lavaca, TX	20th Century Vernacular	Not eligible due to a lack of historic and architectural significance.
AR 10	10254 TX-35, Port Lavaca, TX	Mid-20th Century Cotton Gin Facility	Not eligible due to a lack of integrity.

Table A.1: Please note that precise situs data could not be determined beyond adjacent road name for ARs 2-4. For these resources, see corresponding results chapters for more robust descriptions of location.

TABLE OF CONTENTS

FIGURES

TABLES

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1.0 INTRODUCTION

At the request of X-energy, LLC (X-energy), WSP Environment and Infrastructure, Inc. (WSP) conducted an aboveground cultural resources survey for the proposed Project Long Mott in Calhoun County, Texas (THC Tracking No. 202308205) (**Figure 1.1**). This survey was conducted in order to meet the requirements of Section 106 of the National Historic Preservation Act of 1966 (36 CFR 400.4, as amended through 2000), as well as the guidelines developed by the Texas Heritage Council (THC), the State Historic Preservation Office (SHPO).

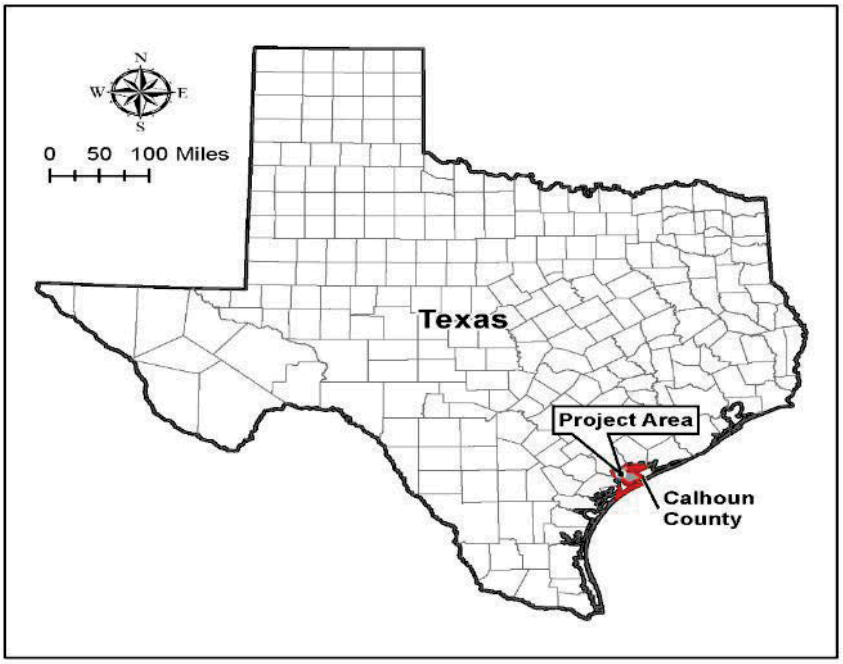

Figure 1.1. Location of Calhoun County, Texas

The survey was conducted to identify aboveground historic resources over 50 years of age located within the Area of Potential Effect (APE); to evaluate these resources relative to their eligibility for listing in the National Register of Historic Places (NRHP); and to assess the potential direct and indirect visual effects of the proposed undertaking upon these resources. Due to trespassing concerns, unless permission was granted from the property owner, photographs were taken only from the public right-of-way. The project area is in the vicinity of the Dow Seadrift Operations Property, encompassing the northeast corner of the existing facility and adjacent Dow-owned land to the northeast, near the intersection of State Highways 185 and 35 in Calhoun County, Texas. The proposed project area is comprised largely of open fields and some wooded terrain. The APE for cultural historic resources includes an additional 0.5-mile buffer radiating out from the proposed project limits to account for impacts to aboveground historic architectural resources that are adjacent to the project area. This area consists of a largely rural landscape, made up of single-family residences and associated outbuildings, several industrial buildings, ruins, and many agricultural storage structures. The APE also includes all buildings and structures located within any parcels the viewshed buffer encounters, regardless of distance. As such, the

survey includes a few resources that lay outside the 0.5-mile buffer (**Figure 2.2**). The APE for aboveground cultural resources was determined in consultation with X-energy and THC.

Table 1.1. Survey Personnel and Project Roles

Name	Title	Role
Carolyn E Andrews, MArch(HP)	Senior Architectural Historian	Background Research, Fieldwork, Principal Investigator, QA/QC, Oversight of deliverables and recommendations
Mekenzie R Davis, BA	Architectural Historian	Background Research, Fieldwork, Survey deliverables and recommendations

Architectural fieldwork was conducted on July 11-13, 2023, by Carolyn E Andrews and Mekenzie R Davis (**Table 1.1**). A total of ten resources over 50 years old—including four residential buildings, two outbuildings, one utility site, two operating industrial or agricultural facilities, and one defunct industrial facility—were identified within the APE (**Figure 2.2**). Of the resources recorded, a total of seven were previously surveyed by Sara McLaughlin, Sandy Shannon, Amy E. Dase, Mitch Ford, Adrienne Vaughan, and Campbell (among others) of Stantec in 2021-2022 (Hinder, Rinaldi-Williams, et al. 2023). All seven of these previously surveyed resources were recommended as not eligible for listing in the NRHP by McLaughlin et al. Of the ten resources surveyed and revisited in this study, WSP recommends none as eligible for listing in the NRHP. Therefore, WSP recommends that there will be **No Historic Properties Affected** for the remaining cultural historic resources.

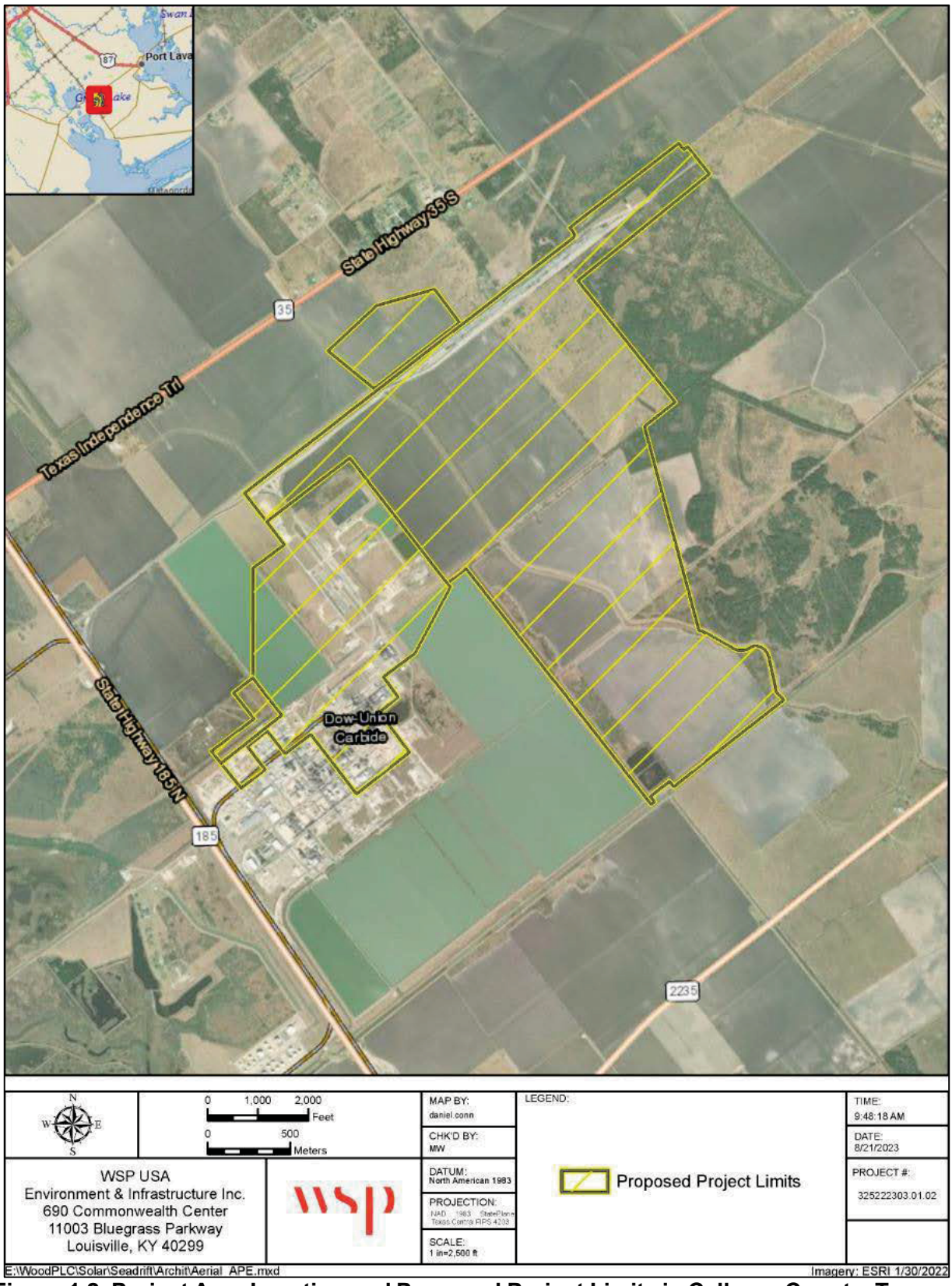

Figure 1.2. Project Area Location and Proposed Project Limits in Calhoun County, Texas.

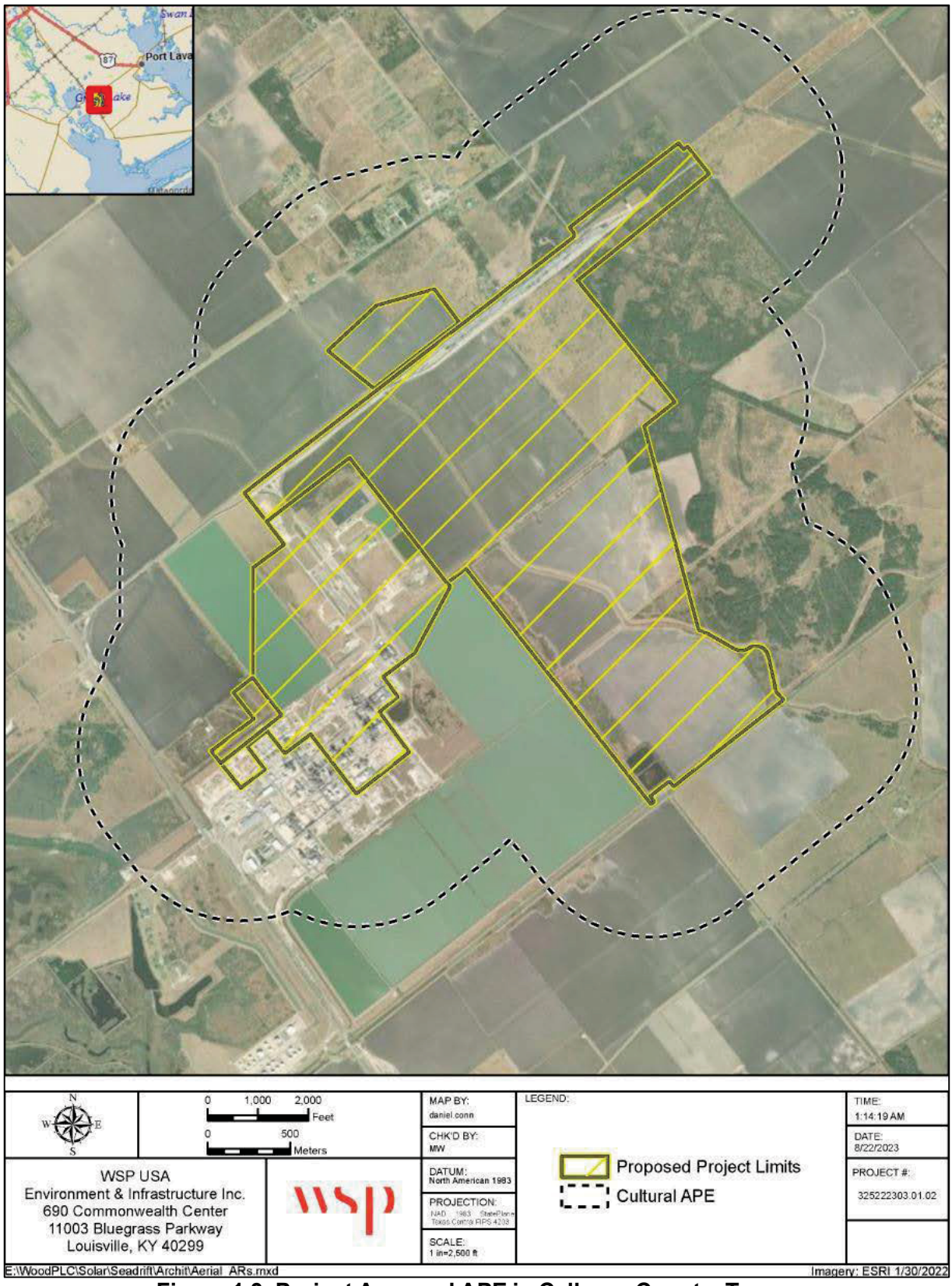

Figure 1.3. Project Area and APE in Calhoun County, Texas.

2.0 PROJECT AREA PHYSICAL SETTING

2.1 Physiographic Region

Calhoun County, Texas, encompasses 540 square miles located in the southwestern part of the Gulf Coast Prairie. The county is bordered by Refugio, Jackson, Victoria, Matagorda, and Aransas Counties. The Gulf of Mexico serves as the southwestern border of the county and Matagorda Island is included in the county's total area. The terrain is characterized as a broad, nearly uninterrupted plain punctuated infrequently by sloping areas adjacent to drains and inland bays, with elevations only ranging from sea level to 56 feet above sea level. The highest points in the county are located in the northeastern region of the county, near Bloomington and along the border with Victoria County (Mowery and Bower 1978). The low elevations of the county are consistent with other areas along the northeastern extent of Texas' Gulf coast which comprise the Northern Humid Gulf Coastal Prairies physiographic region (**Figure 2.1**). Calhoun County soil is comprised of loams underlain by cracking, clayey subsoils, including deep black soils and sandy clay; and Matagorda Island is chiefly deep shell sand. Twenty-one to thirty percent of the land in Calhoun County is considered prime farmland and is drained by the Guadalupe River, Chocolate Bayou, and many creeks (Kleiner 2020).

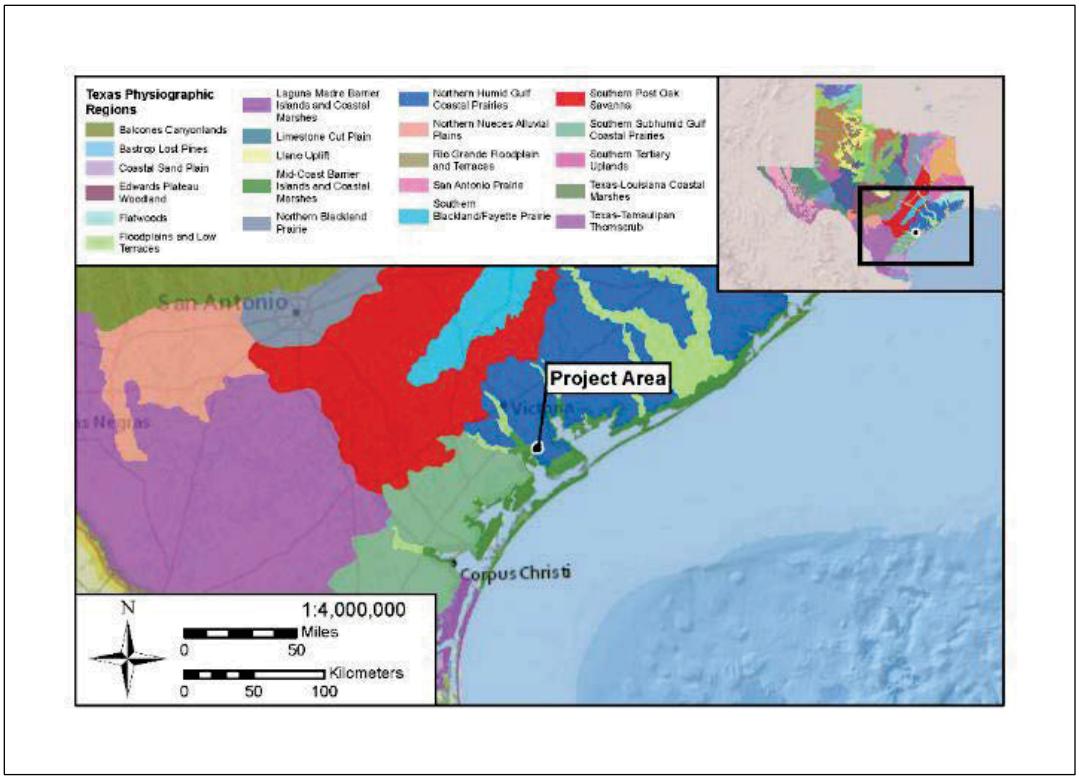

Figure 2.1. Texas Physiographic Map Depicting Project Area (EPA, 2023).

2.2 Area of Potential Effect

The APE for the aboveground cultural resources survey, determined through consultations with X-energy and THC, is based upon the project's potential direct and visual effects upon historic resources. The APE is based on the project area, which encompasses the northeast corner of

the existing Dow Seadrift Operations Property and adjacent land to the northeast, southwest of State Highway 35 in Port Lavaca, Texas (**Figure 2.2**). The proposed project area is comprised largely of open fields and some wooded terrain. The APE for cultural historic resources includes an additional 0.5-mile buffer radiating out from the proposed project limits to account for impacts to aboveground historic architectural resources that are adjacent to the project area.

Along with historic resources located within the APE, WSP documented all historic resources located on a parcel intersected by the project APE, even if the structure is located outside of the 0.5-mile APE buffer. Entire parcels that touch the APE were surveyed and buildings located within those parcels that were over 50 years old were considered to be inside the APE. The APE consists of a largely rural landscape, made up of single-family residences and associated outbuildings, several industrial buildings, ruins, and many agricultural storage structures.

Historically the APE contained a primarily rural character with many large farms dominating the landscape. Beginning in the mid-20th century, an influx of industrial development in Calhoun County marked the area with large industrial plants, resulting in the variety of land uses within the APE seen today. On the 1911 Calhoun County map, the project area is shown just east of Green Lake, an inland tidal lake, from which a 19th century settlement derived its name (**Figure 2.3**). Texas Historical Marker # 2268 indicates that the community was established in the late 1840s and was comprised of wealthy cotton plantation owners from Texas as well as an extensive enslaved population. The Green Lake settlement declined following the Civil War and was all but abandoned by 1875. There is no extant evidence of the settlement in the landscape and Calhoun County currently owns the lake and surrounding area which is being developed as a proposed Green Lake Park (Calhoun County Historical Commission 1988; Venable 2022). Today the mixed character of the APE landscape is reflected in the expanses of farmland, sprawling industrial complexes, and residential buildings and structures dotting the landscape (**Figures 2.4 - 2.8**).

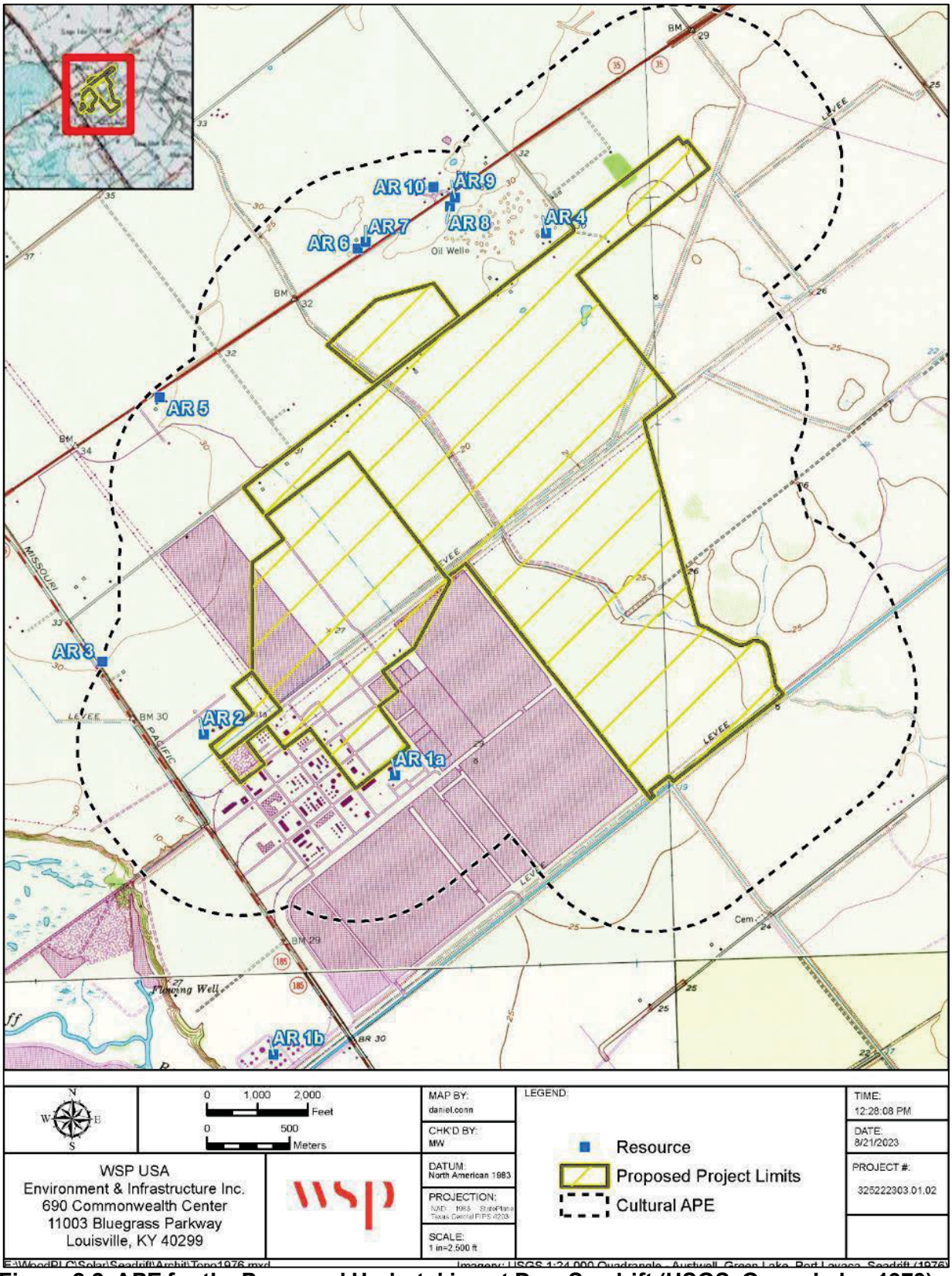

Figure 2.2. APE for the Proposed Undertaking at Dow Seadrift (USGS, Green Lake, 1973).

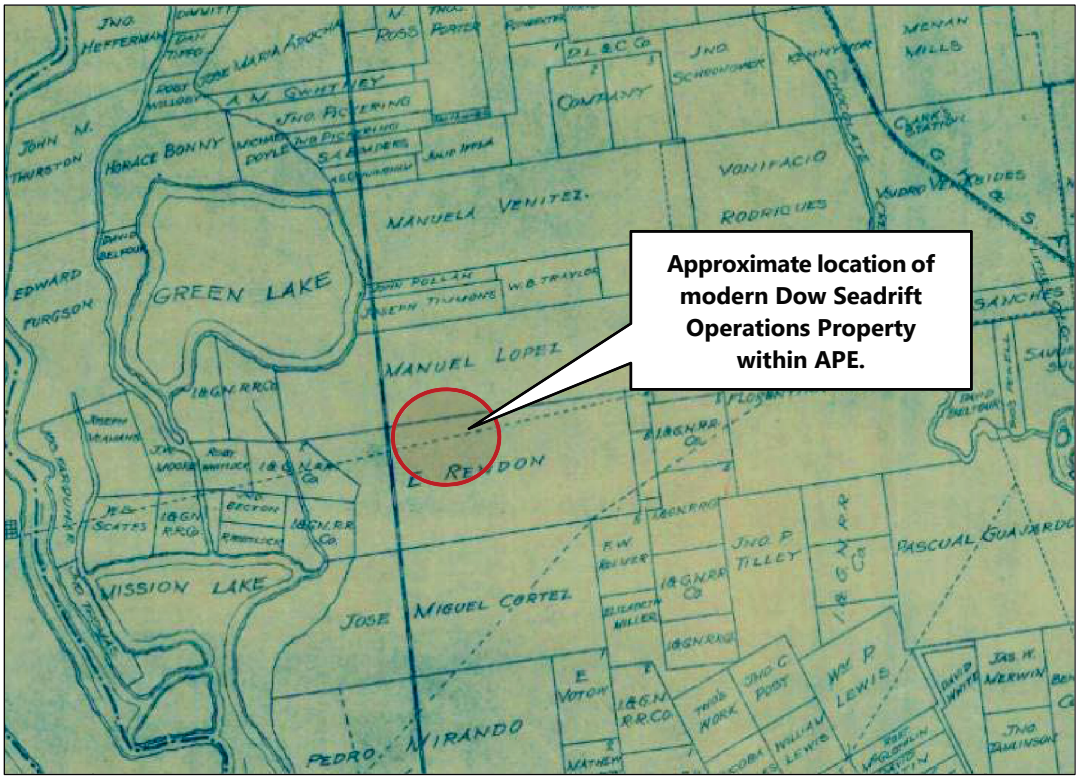

Figure 2.3. 1911 Calhoun County Map Depicting Green Lake and Surrounding Lot Owners (Texas General Land Office, 1911).

Figure 2.4. The Project Area Showing Mixed Characteristics and Land Uses.

Figure 2.5. Industrial Elements (AR 1a) within the APE.

Figure 2.6. Foundations of Historic Industrial Structures and Modern Industrial Construction (AR 10) within the APE.

Figure 2.7. Abandoned Residential Structure (AR 9) within the APE.

Figure 2.8. Typical Agricultural/ Residential Outbuilding and Vegetation Overgrowth (AR 4) within the APE.

3.0 BACKGROUND RESEARCH

3.1 Previous Sites and Surveys

Prior to commencing fieldwork, WSP conducted a thorough literature review of several resources to identify what architectural resources were previously surveyed and recorded within the APE and within a 1-mile buffer around the APE to inform historic context. The NRHP was checked to determine if any resources in the APE were already listed. Site file and database checks for architectural resources were searched via the THC Texas Historic Sites Atlas on July 24, 2023. Based on the site file and database check, there are 7 previously surveyed resources within the APE (**Table 3.1** and **Figure 3.1**).

It should be noted, however, that a total of 2,973 resources within Calhoun County were previously surveyed by Sara McLaughlin, Sandy Shannon, Amy E. Dase, Mitch Ford, Adrienne Vaughan, and Campbell (among others) of *Stantec* in 2021-2022 as recorded in *Historic Resources Survey of Aransas, Refugio, and Calhoun Counties: Calhoun County Survey Report* (Hinder, Rinaldi-Williams, et al. 2023). Of the 2,973 resources recorded by McLaughlin et al., 7 are within the APE and 20 sites are located within the additional 1-mile buffer around the APE. Of the 27 previously surveyed resources, a total of 26 were recommended not eligible for listing in the NRHP, and one resource, the historic Victoria Barge Canal (Site #3300074805), was recommended eligible for listing in the National Register under Criterion A by McLaughlin et al. for association with transportation industry, and maritime history (**Table 3.2** and see **Figure 3.1**). Site #3300074805 is located outside of the APE and its period of significance of 1954-1958 corresponds to the canal's original construction period. Although the Union Carbide Chemical Company is historically associated with Site #3300074805, this association is best embodied by resources outside of the APE, indicating that the ten resources evaluated in this survey are not significantly associated with the Victoria Barge Canal.

Table 3.1. Previously Surveyed Resources within the APE

Site #	THC Atlas Number	Historic Name	Location	Previous Recommendation
AR 1	3300077702/ 3300077703	Union Carbide Facility	7501 TX-185	Not Eligible
AR 4	3300076586	NA	Jesse Rigby Rd	Not Eligible
AR 5	3300076612	NA	11525 TX-35	Not Eligible
AR 6	3300076611	NA	10622 HWY 35	Not Eligible
AR 8	3300076613	NA	10237 HWY 35	Not Eligible
AR 9	3300076614	NA	10211 HWY 35	Not Eligible
AR 10	3300076587	Moreman Community Cotton Gin	10254 HWY 35	Not Eligible

Table 3.2. Previously Surveyed Resources within the 1-mile Buffer around the APE

Texas Atlas #	Historic Name	Location	NRHP Eligibility
3300076602	NA	216 Farik Rd	Not Eligible
3300076603	NA	188 Farik Rd	Not Eligible
3300076606	NA	1623 Whatley Rd	Not Eligible
3300076607	NA	2898 Whatley Rd	Not Eligible
3300076608	NA	Whatley Rd	Not Eligible
3300076609	NA	163 Whatley Rd	Not Eligible
3300076610	NA	241 Whatley Rd	Not Eligible
3300076615	NA	144 Crober Rd	Not Eligible
3300076616	NA	8260 TX-35	Not Eligible
3300076617	NA	150 Sikes Rd	Not Eligible
3300076618	NA	778 Sikes Rd	Not Eligible
3300076621	NA	373 Woods Rd	Not Eligible
3300076622	NA	281 Woods Rd	Not Eligible
3300076623	NA	147 Woods Rd	Not Eligible
3300076624	NA	109 Woods Rd	Not Eligible
3300076625	NA	39 Woods Rd	Not Eligible
3300076626	NA	3698 FM2235	Not Eligible
3300076627	NA	3698 FM2235	Not Eligible
3300074796	Morales Cemetery	FM2235	Not Eligible
3300074805	Victoria Barge Canal	Long Mott Vicinity	Criterion A

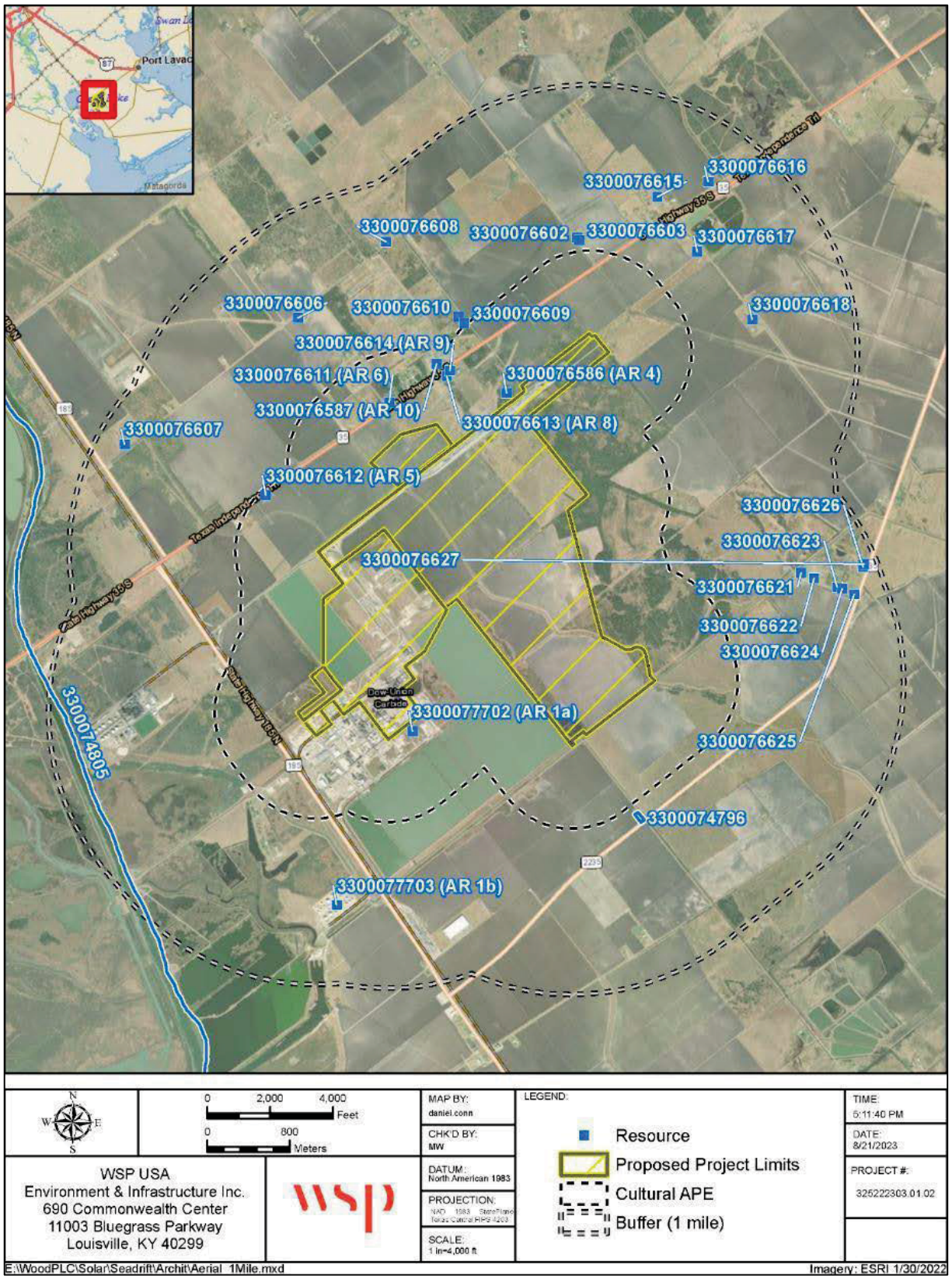

Figure 3.1. View of Previously Surveyed Resources within the APE and Surrounding 1-Mile Buffer.

3.2 Archival Research

In addition to the literature review, detailed archival research was also conducted. Archival research, which included local histories, Texas Historic Sites Atlas, historic maps, primary source collections, aerial photographs, and the Calhoun County Appraisal District (CAD) records, and other pertinent information, was conducted to identify specifications of existing buildings and to gain a better understanding of the history and development of the project area (**Table 3.3**).

Table 3.3. Archival Resources Researched for the Project

Resource	Date	Topographer/ Author	Information
Calhoun County Appraisal District (CAD) Property Search	2022	Calhoun County	Current Owners, Building Specifications and Materials, Property Valuation Appraisal (PVA), and Construction Dates
Texas Historic Sites Atlas	2020	Texas Historical Commission	Previously identified historic sites, Texas Historic Markers, and historic cemeteries
The Portal to Texas History	2023	University of North Texas	Primary source materials including maps, photographs, articles, etc. from or about Texas
Calhoun County Museum	2023	Calhoun County Historical Commission	Artifacts relating to the history, natural history, and maritime history of Calhoun County
Calhoun County Cadastral map (1:80,000)	1911	Unknown	Development of the local area
USGS 15-minute Topographic Maps	1953	U.S. Geological Survey	Development of the local area and location of buildings
USGS 15-minute Topographic Maps	1973	U.S. Geological Survey	Development of the local area and location of buildings
USGS Historic Single Frame Aerial Imagery	1981	U.S. Geological Survey	Development of the local area and location of buildings

4.0 NRHP CRITERIA AND METHODS

WSP staff utilized NRHP Bulletin #15, *How to Apply the National Register Criteria for Evaluation* (United States Department of the Interior 2002), to assess the buildings over 50 years of age for NRHP eligibility. Moreover, the methodology for the architectural field survey follows the standards established by THC. Fieldwork entails inspection and documentation of buildings, cemeteries, or structures over 50 years of age within the architectural survey areas. Fieldwork includes written and photographic documentation of resources with digital photographs, for the purposes of determining the architectural and historic details of each structure or building.

During the fieldwork, WSP staff attempted to contact every homeowner while on site, by knocking on doors; however, surveys are typically conducted during regular business hours, when most property owners are at work. While each resource was individually photographed, if consent to photograph all elevations of the house could not be fully obtained, that resource could not be fully documented due to trespassing concerns. In these instances, photographs were taken from publicly accessible points, such as roads and sidewalks, to ensure that the surveyor was not trespassing on private property. This limited what portions of some of the resources were accessible for documentation during the fieldwork.

4.1 NRHP Criteria for Eligibility

According to 36 CFR 60.4 (CFR 2004; United States Department of the Interior 2002), cultural resources eligible for listing in the NRHP are defined as buildings, structures, objects, sites, and districts that have "integrity," and that meet one or more of the criteria. The evaluation criteria for extant structures and buildings, as detailed in National Register Bulletin #15, are as follows:

- Criterion A (Event): Association with one or more events that have made a significant contribution to the broad patterns of national, state, or local history.
- Criterion B (Person): Association with the lives of persons significant in the past.
- Criterion C (Design/Construction): Embodiment of distinctive characteristics of a type, period, or method of construction; or representation of the work of a master; or possession of high artistic values; or representation of a significant and distinguishable entity whose components may lack individual distinction.
- Criterion D (Information Potential): Properties that yield, or are likely to yield, information important in prehistory or history. Criterion D is most often (but not exclusively) associated with archaeological resources. To be considered eligible under Criterion D, sites must be associated with specific or general patterns in the development of the region. Therefore, sites become significant when they are seen within the larger framework of local or regional development. This criterion is typically used to assess the significance of archaeological sites.

4.2 NRHP Criteria for Integrity

In addition to identifying if a structure or archaeological site is potentially eligible for NRHP listing according to these four criteria, a structure or property's integrity must be identified. As stated in the National Register Bulletin #15 *How to Apply the National Register Criteria for Evaluation*, "Integrity is the ability of a property to convey significance" (United States Department of the Interior 2002). Integrity of a building must be judged in accordance with the three criteria, and while it is ". . . sometimes a subjective judgment, . . . it must always be grounded in an

understanding of a property's physical features and how they relate to its significance" (United States Department of the Interior 2002). There are seven aspects of integrity as identified by NPS:

- **Location:** Location is the physical setting where a building was built, or a historic event occurred. It is important in understanding the how and why of a building or property and in helping recapture the historic event. If a property is moved, it can affect the historic associations of the building.

- **Design:** Design is the form, plan, space, structure, and style of a property. It results from the decisions made during the original conception of the property or during its alteration. Design applies to function and technology as much as it applies to aesthetics. It includes the decisions that made the plan of the property, including use of space, fenestration (windows), ornamentation, and layout.

- **Setting:** Setting should not be mistaken with location. It is the physical environment of the property and involves how the character of the property was created. It includes the actual physical setting of the property - topographic features, vegetation, and manmade features. The relationship between the property and these features defines setting.

- **Materials:** Materials are the physical elements used or deposited during a specific period of time and in a particular pattern to create the building or property. Materials not only show the preference of the person who created the building but can also indicate what materials were available or popular at the time of construction or alteration. If a building has been altered, the original materials as identified within the building's period of significance, must have been saved. Materials must be original, not recreations.

- **Workmanship:** Workmanship is the evidence of the technology of a particular culture or a group of people during a particular period of time as deemed significant. It provides evidence on the craftsmanship of the age, the aesthetic styling, and the methodology of design. Workmanship in historic buildings includes carving, painting, joinery, tooling, and graining.

- **Feeling:** Feeling is defined in the bulletin as "a property's expression of the aesthetic or historic sense of a particular period of time" (United States Department of the Interior 2002). It conveys the property's historic significance through the presence of physical features.

- **Association:** Association is the direct association between a historic event or person with the building or property. To have integrity of association, the building must retain its original location and the presence of physical features that convey the historic significance of the property.

To properly assess integrity, a series of steps must be followed. First, the physical features must be defined and determined if visible enough to convey historic significance. Second, it must be determined if the property is the lone example of its kind, or if it needs to be compared with other, similar properties. Finally, the aspects of integrity must be identified and established as essential to the historic significance of a property.

5.0 HISTORIC CONTEXT

5.1 History of Calhoun County, Texas

Located along the coast of the Gulf of Mexico, Calhoun County encompasses 540 square miles including over 560 linear miles of coastline (Calhoun County 2023). This coastal position has historically presented residents with both prosperity and adversity. Perhaps the most significant events in shaping the character of Calhoun County's buildings, structures, and objects have been devastating weather events that periodically stripped the county of precedent elements of the built environment (Hinder, Rinaldi-Williams, et al. 2023; **Figure 5.1**). On April 4, 1846, Calhoun County was formed from parts of Victoria, Jackson, and Matagorda counties and named for John C. Calhoun of South Carolina, who had advocated for Texas statehood amid the annexation of the Republic of Texas. Port Lavaca (population, 12,281) is the seat of government and the county's largest town (Kleiner 2020).

Evidence such as stone tools and projectile points, shelter sites, and shell middens reflect the early presence of indigenous communities in the land that comprises Calhoun County. Karankawa tribes and subgroups such as the Tonkawa populated the shoreline and inland across the Coastal Plain until the mid-19th century, when permanent European settlements began to take root. Although there is evidence of early 16th century documentation of the area by the Spanish, exploration of the area that would become Calhoun County is widely attributed to the 1685 expedition of Frenchman Robert Cavalier de La Salle. La Salle is believed to have landed near Powderhorn Lake. A monument was erected by the Texas Centennial Commission in 1936 to mark the site (Kleiner 2020).

The colony established by La Salle at Fort St. Louis failed, and settlement of the area did not begin in earnest until the 1820-1830s, when European settlers established the first towns in the area, including Port Lavaca, Linnville, Cox's Point, and Indianola. Early tribulations for these communities included disease, conflict with indigenous populations, and weather events. A serious conflict with Comanche tribes in 1840 at Linnville led to the collapse of the earliest Anglo settlement and is often credited as the inciting incident for the growth of the nearby Lavaca settlement (Kleiner 2020; Travel South Texas 2023). A settlement of 100 German families brought to the land of Calhoun County by Prince Carl of Solms-Braunfels in 1844 became known as Indianola and quickly became a major seaport. By 1846 it had become the county seat, defeating nearby Port Lavaca for the title after the annexation of the Republic of Texas, until it was destroyed by a hurricane in 1875. Alongside these settlers, native Tejanos, a mixture of European communities, and Black and White migrants from the southern United States developed robust networks of trade and commerce rooted in industries such as cattle ranching, shipping, plantation agriculture, and manufacturing (Kleiner 2020).

Railroad expansion weaved through Calhoun County in the antebellum period, and centralized population and commerce at Indianola, which replaced Lavaca as the county seat in 1852. Both Lavaca and Indianola remained important trade centers until 1861, but a series of epidemics, natural disasters, and drops in population at Indianola resulted in reinstating the renamed "Port Lavaca" as county seat in 1887. The network of rail and shipping lines which incited Union troops to blockade and occupy the valuable port cities of Calhoun County continued to proliferate following the Civil War. The Morgan Lines, San Antonio and Mexican Gulf, and Indianola Railways were completed by 1872 and incorporated into the Southern Pacific Railroad by the onset of the following century (Kleiner 2020; Travel South Texas 2023).

At the turn of the 20th century, investments by land companies stimulated agricultural production, especially of cotton. Over the course of this transition, improved technology and farming techniques spurred the construction of agricultural processing complexes by cotton and grain farmers. Many local ranching operations turned to cotton as the cattle industry began to shrink, and the resultant complexes typically featured a gin house, trash burners and hoppers, and storage buildings. Cotton gins and gin complexes at Port Lavaca were founded as early as 1902 and include the Farmer's Ginning Company, Planter's Gin, Citizen's Light & Water Company Gin, Blue Gin, and Farmer's Gin. In the rural areas surrounding the shipping center, complexes included the 1913 Long Mott Gin and the 1934 Moreman Gin, the latter of which is located within the project APE. To preserve functionality, the few extant complexes in the region have undergone alterations and new construction (Calhoun County Historical Commission 2023; Hinder, Rinaldi-Williams, et al. 2023).

New developments such as Port O'Connor and Olivia served to establish communities of Irish, Scottish, German, and Czech immigrants. The county population increased gradually and reached 4,325 inhabitants by 1920 including 584 Black residents. A decade later, approximately a quarter of the county residents were described as "Mexican." Transportation continued to improve with the construction of the St. Louis, Brownsville, and Mexico Railway, which terminated at Port O'Connor. The growth of railway trade reduced the prominence of former shipping centers such as Port Lavaca, which was reduced to a small fishing town which maintaining its status as county seat (Kleiner 2020; Travel South Texas 2023; Hinder, Rinaldi-Williams, et al. 2023).

The World War and Cold War periods brought improvements to the county economy, but growth was punctuated by the Great Depression and natural disasters. However, construction of the Lavaca Bay causeway in 1931, discoveries of natural gas and oil in 1934- 1935, and the opening of several petrochemical plants (Alcoa, Union Carbide Company, etc.) encouraged steady population growth after the 1950s. Other major industries during the late 20th century included shipping, cold storage, and fishing and shrimping. By 1958 eleven manufacturers and seventy-seven mineral-related enterprises operated out of Calhoun County. Agricultural production at the end of the 20th century included cattle, sorghum, rice, corn, pecans, and soybeans but, along with the ranching industry, contended with inefficient irrigation, soil compaction, poor drainage, and shoreline erosion. Other important industries included oil and gas extraction, fish packaging, heavy construction, and industrial chemical production, tourism, and recreation (Klein 2020; Hinder, Rinaldi-Williams, et al. 2023).

Today, Calhoun County draws tourists to the area with its popular costal destinations including Port Lavaca, Port O'Connor, and Seadrift which are among the oldest settlements in the county. Matagorda Island sits along the coast, apart from the inland section of the county and serves as a National Wildlife Refuge and State Natural Area. It is home to 19 state or federally listed threatened or endangered species, a large herd of white-tailed deer, alligators, and other wildlife, demonstrating the important role of conservationist land use in Calhoun County (Travel South Texas 2023). In 2020 the census counted 20,106 people living in Calhoun County, a 2 percent drop from the 2010 population. Estimates for 2022 suggest further population decline in the early decades of the 21st century. Approximately 50.5% of residents were Hispanic, with White (40.8%), Asian (5.2%), Black (3.2%), and mixed ancestry and indigenous (2.6%) residents comprising the remainder of the population (United States Census Bureau 2023). Aluminum manufacturing, plastics, and other manufacturing concerns were key elements of the county's economy. Cotton, cattle, corn, and grain sorghum are the chief agricultural products (Klein 2020).

Figure 5.1. View of Damage in the Aftermath of a Hurricane in 1942 (Calhoun County Historical Commission).

5.2 Port Lavaca, Texas

Calhoun County's communities vary in scale but follow common patterns of development characteristic of Texan towns. Small communities like Green Lake and Long Mott, located just outside of the APE, emerged from the 1850s through the 1890s as a result of migrant and immigrant families seeking land and opportunity. Aside from this formative pattern, these and larger communities like Port Lavaca have common attributes. People met at centralized nodes to trade goods or participate in institutional or social activities with most communities revolving around a school or church, during the earliest periods of settlement. Growing communities would then institute additional services and diversify property types which included retail stores, cotton gins, religious buildings and cemeteries, and post offices. Coastal communities ballooned rapidly in Calhoun County as they seized commercial opportunity and economic security offered by access to water-related transportation. These communities subsequently diversified further, developing additional commercial and community properties, such as offices, a variety of retail stores, hospitals, theaters, and libraries (Ficklen Maywald 2020; Hinder, Rinaldi-Williams, et al. 2023).

The town of Lavaca (later, Port Lavaca) originated in large part due to the flight of settlers from nearby Linnville, which burned in 1840 during a significant attack by Comanche warriors. Port Lavaca serves as the county seat and throughout the nineteenth century the community operated as a major shipping hub, despite economic blows meted out during the Civil War and regular hurricane damage (**Figure 5.2**). The town was laid out by 1845 and rose as the county's economic center over the 19th and 20th century, supported by its beef-shipping, seafood, shipbuilding, and dredging industries. With the establishment of Calhoun County in 1846, Lavaca received a post office, became the county seat, and supported many newspapers, shipping activities, and a district school. During the Civil War, Lavaca's importance as a port city resulted in its occupation by Union troops and it became a center of military activity. After the federal occupation and associated wartime damage, railroad companies resurged across the nation and, the San Antonio and Mexican Gulf Railway connection between Lavaca and Victoria was restored in 1887. Around this time, Lavaca became known as Port Lavaca, or "cow port" which nods both to the importance of the shipping and ranching industries in the community.

Port Lavaca was incorporated in 1909, and the turn of the 20th century brought major infrastructure improvements and economic troubles. After going bankrupt in 1916 and reincorporating in 1919, the dredging industry restored economic viability to the town's shipping channel, a seawall was constructed to protect the area from further hurricane damage, improvements to roadways, and the construction of a causeway connected Port Lavaca and the nearby community of Point Comfort. The second half of the 20th century brought an influx of residents to the area, as discoveries of oil and natural gas drew gas and petrochemical companies into the area. Large facilities such as the Union Carbide Corporation (Dow), Du Pont and Alcoa plants currently dominate both the economy and much of the landscape (**Figure 5.3**). Additional industries that make up the economy of Port Lavaca today include agriculture and livestock, construction, mineral extraction, and tourism. Conservation also characterizes the landscape of modern Port Lavaca, as parks, wildlife reserves, and historic buildings and districts are identified, established, and maintained by local and state entities as well as Port Lavaca's community members (Ficklen Maywald 2020; Hinder, Rinaldi-Williams, et al. 2023).

Figure 5.2. Port Lavaca Main Street Theater Marquee and Welcome Sign.

Figure 5.3. View of Alcoa Plant beyond the Causeway between Port Lavaca and Point Comfort.

5.3 Union Carbide Company and Dow Seadrift Facility

The industrial character of Calhoun County's landscape has changed dramatically from the early industries of processing raw material for primarily local use. Beginning in the 20th century, industrial undertakings expanded to include municipal utilities, wholesale seafood, shipbuilding, and dredging. The discovery of oil and gas in fields near improved waterways attracted large corporations to the county in the mid-1930s. With this discovery, the petrochemical industry exploded in Calhoun County. By 1956, 22 small oil fields were in the area and by 1982 the county exported more than 850 thousand barrels of crude oil, over 310,000 barrels of condensates, and myriad manufactured petrochemical products and consumer goods out of plants such as the Union Carbide Corporation (UCC) Seadrift Facility. The UCC facility at Seadrift currently operates under the ownership of the Dow Chemical Company. Prior to becoming a subsidiary of Dow in 2001, UCC was the second largest company to take advantage of minerals in Calhoun County, after ALCOA (Hinder, Rinaldi-Williams, et al. 2023).

The UCC focuses on the manufacture of building-block chemicals such as ethylene and propylene, which are converted into widely used plastics resins, primarily polyethylene. It also produces ethylene oxide and ethylene glycol, solvents and intermediates, vinyl acetate monomer, water-soluble polymers, and polyolefin-based compounds. The Union Carbide and Carbon Corporation was formed in 1917 from the combination of four existing companies and in 1920, the company set up its chemicals division. The company continued to acquire related chemical producers, and the resultant need to restructure the UCC was addressed in 1950's with the establishment of the Metals Division a food casings business.

The company decided to change its name to the UCC in 1957, by that time having established about 400 plants in the United States and abroad. Rising demands for consumer products such as batteries and anti-freeze resulted in the creation of another division strictly for consumer products in 1959. From 1952 to 1954, the prominent construction firm Brown & Root out of Alabama built the UCC Seadrift plant near Green Lake in Port Lavaca, Texas (**Figure 5.4**). From 1956 through the 1970s, the plant was expanded upon to include a variety of processing units, utilities, and the world's largest styrene plant (Kleiner 2020). The UCC Seadrift facility played a significant role in the demographic and economic growth of the surrounding area during the latter half of the 20th century and continues to provide jobs for residents of many nearby communities.

Because of their later construction dates, the UCC/Dow Seadrift Facility and other complexes associated with petrochemical manufacturing have survived the effects of hurricanes (Hinder, Rinaldi-Williams, et al. 2023). Seadrift Dow is the 5th oldest UCC/Dow facility, the 3rd oldest of the gulf coast operations, the second largest Dow facility in Texas, and employs over 1,200 people (Dow 2023). Despite withstanding the hurricane damage that marked so much of the local built environment through history, an explosion and fire at the Seadrift campus occurred in 1991, destroying and damaging many of the structures surrounding the ethylene oxide process unit (Journal of Commerce 1991). This, along with continuous updates to the facility structures has affected the integrity of the few remaining structures associated with the original construction of the complex.

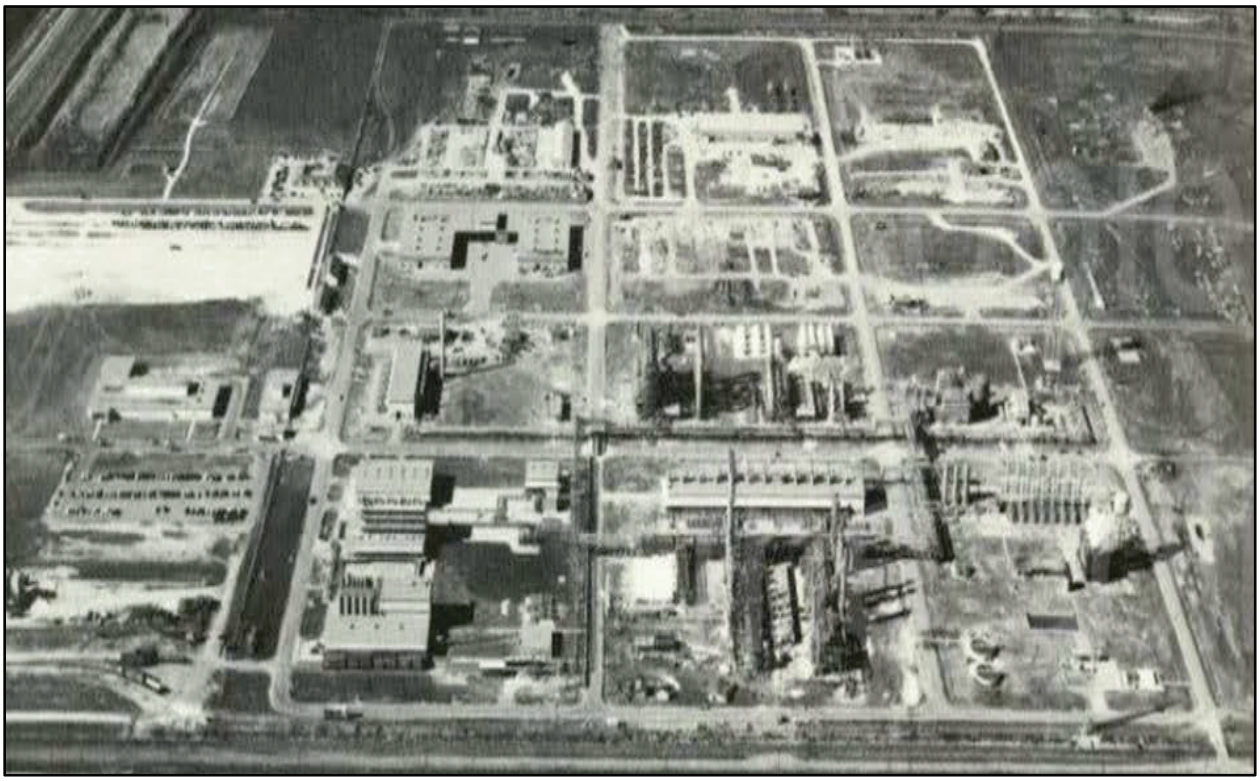

Figure 5.4. Union Carbide Seadrift Facility in 1954 (Hinder, Rinaldi-Williams, et al. 2023).

5.4 Regional Architecture

Within and surrounding the APE, national trends and major weather events dictated the development and preservation of regional architecture. Within the APE, structures and buildings are characteristic of post-war and modern construction, with all constructed during the period between c. 1950 and 1973. Hurricane Carla punctuated this era of architectural development in 1961, causing significant damage to many buildings in the region and the subsequent redevelopment of the area. This redevelopment resulted in the primarily modern character of extant structures. The impact of natural disasters such as hurricanes, however, is not confined to the 20th century. Surviving structures from earlier period of development in Calhoun County are often rare and extensively damaged. Those that have been maintained, typically present with unsympathetic modifications or repairs. While generally following national trends, buildings in the rural parts of the county—such as the residential and non-residential buildings identified within the APE—are more often modest in character with little stylistic ornamentation (Hinder, Rinaldi-Williams, et al. 2023).

Permanent dwellings in Calhoun County were constructed with local materials and reflected individualized construction trends of their inhabitants prior to the construction of railroads. When railroads appeared locally, buildings, and their construction was based on availability of inexpensive materials imported from distant mills and factories (McAlester 2015, 135). This period is associated with the varieties of residential forms that are broadly described as National Folk houses and emerged in Calhoun County after 1861, with the arrival of the rail line connecting Port Lavaca to Victoria. This trend lasted in Calhoun County and other rural areas well into the 20th century, and can also be seen in more urban areas, such as Port Lavaca, due to the slow development of municipal infrastructure. Victorian-era houses, more complex buildings following the simplistic construction of National Folk buildings, were introduced to rural areas such as the project APE through the publication and dissemination of pattern books. Of these several architectural styles associated with this period, Queen Anne and Folk Victorian structures are the most common extant examples in Calhoun County, though none were identified within the APE. This period persisted into the 1910s, overlapping with the Eclectic era of residential architecture. Eclectic style construction occurred in the region between 1880 and 1940; residences were constructed in the style of historic domestic buildings in Europe. Though elements of this stylistic trend appear on vernacular buildings throughout the region, no extant examples of this architectural period have been identified in Calhoun County. Hinder, Rinaldi-Williams, et al. (2023) present a thorough description of the architectural trends in the county, as well as the challenges that have reduced the historic building stock in the area.

Modern architecture in the area is a combination of styles, with storm and flood prevention resulting in instances of brick or concrete-block construction lifted with pilings, piers, stilts, or concrete-masonry-unit blocks in low-land areas. Rural houses typically do not exhibit a clear style or historical form and often embody modest, one-story house forms lacking complexity and non-essential stylistic features (**Figure 5.5**). Minimal Traditional houses reflect the mid-20th century FHA principles of austere construction are common in Calhoun County. However, because of their simplicity and frequency in the landscape, individual Minimal Traditional-style residences are typically found ineligible for individual NRHP designation. Ranch style houses are also ubiquitous in Calhoun County. The Ranch style residence, promoted as modern on the inside and traditional on the outside, became the most common style across the nation in the 1950s and 1960s. Ranch-style houses date from about 1935 to 1975 and the ubiquity of these houses means that they are typically found ineligible for listing in the NRHP as individual resources. Variations of the Ranch include the Minimal Ranch or Transitional Ranch, which is exemplified by AR 6 (**Figure 5.6**). These buildings are small in scale; lack overhanging roof eaves and other elaborations; may have

a broader profile than Minimal Traditional residences; and may be devoid of character defining details including a picture window, horizontal-sash double-hung windows, eaves, brick skirting, or an attached garage (McAlester 2015, 602). Transitional Ranch houses rarely possess sufficient architectural distinction and are consequently found individually ineligibility for listing in the NRHP in most cases.

Agricultural and industrial resources are often devoid of architectural influences. Most of these resources evolved to reflect new technology and practices and are restricted to necessary structural components and exterior materials. These utilitarian forms are often a reflection of the development of different building and structure types for storage needs, production, protection of interior equipment, and processing of material. However, in some instances, industrial and agricultural facilities embody architectural significance in the design of features such as barns, public spaces, processing plants, and office buildings (Dase 2003; Moorhead et al. 2012). These resources dominate much of the APE, the surrounding areas of Port Lavaca and Seadrift, and Calhoun County generally.

Figure 5.5. An Example of the Simple and Unornamented Character of Many Residences and Non-Residential Buildings (AR 9) in and around the APE.

Figure 5.6. An Example of a Transitional Ranch House (AR 6) within the APE.

6.0 SITE DESCRIPTION AND EVALUATION

The architectural survey area was developed in consultation with X-energy and THC and was based on a review of the density of the setting, the project's direct and visual effects upon historic resources, as well as an understanding of the specifications of the proposed undertaking. The architectural survey area consisted of 0.5-mile buffer radiating out from the proposed project limits to account for impacts to aboveground historic architectural resources that are adjacent to the project area, and included all buildings and structures located within any parcels the viewshed buffer encountered, regardless of distance (**Figure 6.1**).

A total of 10 resources over 50 years of age were identified within the architectural survey area and recorded during the survey: four residential buildings, two outbuildings, one utility site, two operating industrial or agricultural facilities, and one defunct agricultural facility (**Table 6.1**). Of these resources, seven were previously recorded. These seven resources were revisited, and the three additional resources were newly surveyed for this study. As part of the fieldwork, all resources were individually photographed. When permission was not granted to enter the property, photographs were taken from the publicly accessible points.

WSP staff assessed the buildings and structures individually, according to several overarching themes developed with three NRHP criteria, applicable specifically to architecture and defined by research used to develop the historic context. These themes included the development of the area (Criterion A), the association with early settlers in Calhoun County, Port Lavaca, Seadrift, and other nearby areas (Criterion B), and the evaluation of architecture within the region (Criterion C).

Of the 10 resources over 50 years of age surveyed, none were previously recommended eligible for listing in the NRHP. Two of these resources, AR 1 and AR 10, were closely examined under Criterion A for significance at a local level for association with early settlement in Calhoun County. Survey revealed that these two resources have undergone significant alterations, including the modification and replacement of the majority of historic-age industrial and agricultural elements and buildings, resulting in a substantial loss of integrity of design, materials, and workmanship. In summary, WSP recommends none of the 10 resources over 50 years of age surveyed for this project as eligible for listing in the NRHP due to lack of historic and architectural significance and/or loss of integrity. Based on these findings, WSP recommends that there would be **No Historic Properties Affected** by the proposed undertaking.

Table 6.1. Historic Resources in APE and NRHP Recommendations

Resource Number	Address	Style/Form	NRHP Recommendation	Determination of Effect
AR 1	7501 TX-185, Calhoun County, TX	Mid-20th Century Industrial Complex	Not eligible due to a loss of integrity.	No Historic Property Affected

Resource Number	Address	Style/Form	NRHP Recommendation	Determination of Effect
AR 2	NE of TX-185, Port Lavaca, TX	Industrial Ruins	Not eligible due to a lack of historic and architectural significance.	No Historic Property Affected
AR 3	NE of TX-185, Port Lavaca, TX	20th Century Utility Structures	Not eligible due to a lack of historic and architectural significance.	No Historic Property Affected
AR 4	Jesse Rigby Rd, Port Lavaca, TX	20th Century Agricultural Outbuildings	Not eligible due to a lack of historic and architectural significance.	No Historic Property Affected
AR 5	11525 TX-35, Port Lavaca, TX	Ranch	Not eligible due to a lack of historic and architectural significance.	No Historic Property Affected
AR 6	10622 TX-35, Port Lavaca, TX	Transitional Ranch	Not eligible due to a lack of historic and architectural significance.	No Historic Property Affected
AR 7	10548 TX-35, Port Lavaca, TX	20th Century Residential Outbuilding	Not eligible due to a lack of historic and architectural significance.	No Historic Property Affected
AR 8	10237 TX-35, Port Lavaca, TX	Ranch	Not eligible due to a lack of historic and architectural significance.	No Historic Property Affected
AR 9	10211 TX-35, Port Lavaca, TX	20th Century Vernacular	Not eligible due to a lack of historic and architectural significance.	No Historic Property Affected
AR 10	10254 TX-35, Port Lavaca, TX	Mid-20th Century Cotton Gin Facility	Not eligible due to a lack of integrity.	No Historic Property Affected

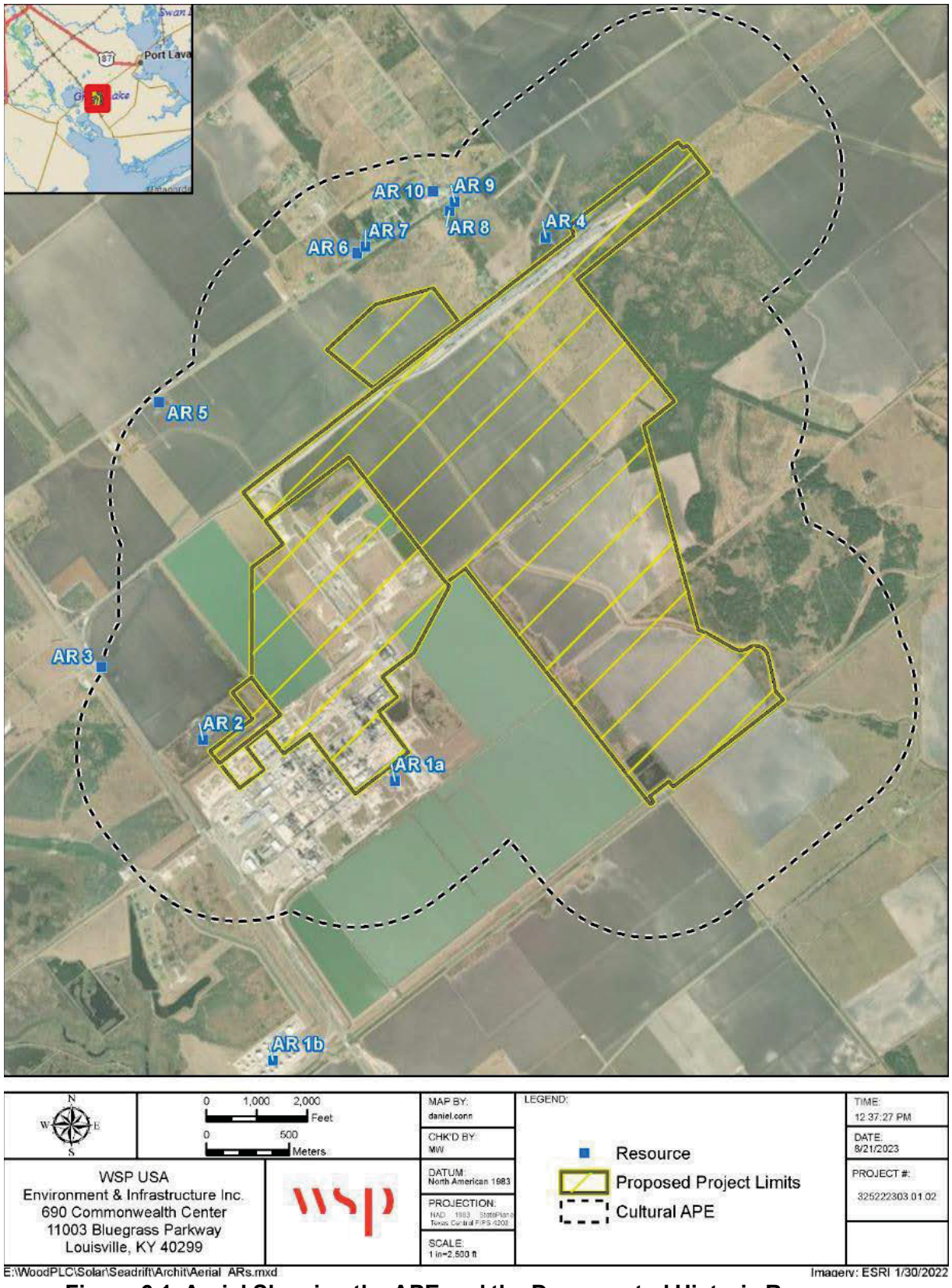

Figure 6.1. Aerial Showing the APE and the Documented Historic Resources.

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7.0 AR 1: 7501 TX-185 (DOW SEADRIFT FACILITY)

7.1 AR 1a

AR 1a is a southwest facing, 20th century industrial facility located at 7501 TX-185, Calhoun County, Texas (**Table 7.1**). The facility is bound on the southwest by TX-185 and by agricultural fields along all remaining elevations. The property sits on level ground which is primarily covered by concrete parking areas, walkways, and roadways. The building is accessed via a series of paved roads and gated entrances that extend from the nearby major roadways (**Figure 7.1**). Union Pacific Railroad (UPRR) and BNSF Railway lines extend northwest, southeast, and northeast from AR 1a. The facility is comprised of a variety of modern, modified, and historic age structures and buildings that serve the functions necessary to petrochemical plant operations.

According to the Calhoun County, TX PVA, AR 1a sits on a lot encompassing 998.63 acres of industrial-zoned land and is currently owned by the UCC, a subsidiary of the Dow Chemical Company (**Table 7.1**). The PVA records no construction date for the facility. AR 1a is illustrated in a 1954 aerial, the earliest image available (see **Figure 5.4**). The 1973 Green Lake topographic map shows a complex in the current location of AR 1a, which does not appear on the 1953 Green Lake topographic map (**Figure 7.2**). These maps, along with archival research indicate that the plant was constructed between 1952-1954 and subsequent expansions and modifications took place in the early 1960s, early 1970s, and early 1990s.

Table 7.1. Summary of AR 1a

Address	7501 TX-185 (28.507226, -96.775422)
County	Calhoun County
Date of Construction	1952-1954
Square Footage (Living Area)	NA
Acreage	998.63
Owner	Union Carbide Corporation (Dow)
Architectural Type	Mid-20th Century Industrial Complex
Integrity	AR 1a is in good condition but has undergone significant modifications and additions.
NRHP Recommendation	AR 1a is recommended not eligible listing in the NRHP due to diminished integrity.

Building Description

AR 1a is a southwest facing, 20th century industrial facility. Located in the vicinities of Seadrift and Port Lavaca, the plant is comprised of a combination of modern and historic age structures which retain varying levels of integrity (**Figures 7.3-7.5**). The historic age buildings that comprise AR 1a are generally utilitarian in appearance with few or no stylistic elements. The buildings have generally continued to serve their functions, aside from Buildings 13 and 14, which are former administrative buildings currently slated for demolition through a separate project (**Table 7.2**). Though the plant technology and many of the supporting structures have changed over time, the general function and feeling of the Seadrift facility has remained consistent as a site of petrochemical processing and manufacturing. Observation was conducted from outside of the facility fence line to comply with Dow/ UCC safety protocols.

Table 7.2. Overview of AR 1a Historic Buildings

Internal Building No.	Current Function	Historic Function	Year Built	Year Modified
1	Administration	Administration	1953	NA
2	Laboratory	Laboratory	1953	NA
13	—	Administration	c.1960	NA
14	—	Administration	c. 1960	NA
140	Warehouse	Warehouse	1953	c.1991
380	Warehouse	Warehouse	1962-1963	NA

Building 1 is the most ornamented of the historic-age structures that comprise AR 1a and displays contemporary stylistic elements but is nonetheless consistent with the rest of the facility in its overall utilitarian design. The building is one-story, covered by a flat metal roof with wide eave overhangs, and has an L-shaped floor plan with a wing extending northwest from the main block. The southeast (main) elevation, from west to east, features the main entrance; a secondary entrance covered by a flat entryway roof; a row of four pairs of four-light, fixed, aluminum windows; a third entrance similar to the second, featuring a flat roof supported by two cylindrical metal supports and accessed via a low-pitch concrete ramp embedded with a metal handrail; a row of five pairs of four-light, fixed, aluminum windows; a fourth entryway of consistent character; and a fifth entryway featuring a set of double doors, each inset with a single light, which features a concrete ramp and metal handrail, but no entryway roof or supports. The main entrance is comprised of a set of metal double doors inset with two large panes which access a vestibule enclosed on the northeast and southwest sides by six fixed windows and covered by a flat, metal roof extending from the elevation below the principal roofline. The eaves of the roof overhang the enclosed vestibule which features a wide metal fascia (**Figure 7.6**). The southwest elevation features a row of sixteen wall openings—pairs of four-light, fixed, aluminum windows—followed by three wall openings of the same configuration to the north (**Figure 7.7**). The northwest elevation of the wing features one wall opening: a set of two abutted rectangular vents inset within an aluminum frame (**Figure 7.8**). The northwest and northeast elevations of the main portion of Building 1 were not visible from the facility fence line.

Building 2 is largely obscured from view by a non-historic, front-gable secondary roof structure. A partial view of the southeast (main) elevation reveals wide overhanging eaves; corrugated metal siding; a flat porch roof over the main entrance; and at least two additional wall openings to the west: a second entrance and a window of unknown sash operation. A partial view of the southwest elevation suggests there are additional entrances (**Figures 7.9-7.10**).

Buildings 13 and 14 are two-story, southwest-facing industrial buildings connected along their northwest (Building No. 13) and southeast (Building No. 14) sides via a two-story, enclosed walkway (**Figure 7.11-7.13**). The southwest elevations of both buildings feature linear wall openings extending from the roofline to grade. Building 13 features two columns of six fixed, aluminum windows on either side of a central window configuration: two columns of six fixed, aluminum windows on either side of a 12-light rectangular, fixed, aluminum window. Below the most central wall opening, a flat roof extends over the main entryway of the building. The entrance is comprised of a set of metal framed double doors inset with large lights. Building 14 features two columns of six fixed windows along the same elevation. A partial view of an addition along the northwest elevation of Building 14 reveals an unornamented entrance and a vent.

Building 140 is a one-story, southeast-facing industrial warehouse clad in non-historic corrugated metal siding that is covered by a low-pitched front-gable roof. A significant portion of Building 140

was destroyed during an on-site explosion in 1991 and consequently is not historic. However, the portion below the metal, gable roof was constructed as part of the original UCC facility. Along the southeast elevation, the historic portion of the building features two overhead garage doors. Along the southwest elevation, two additional overhead garages and a possible entrance are located beneath a flat, metal roof which extends from below the principal roofline and is supported by suspension cables (**Figure 7.14**).

Building 380 is a 1.5-story, northwest-facing industrial warehouse clad in non-historic corrugated metal siding covered by a flat roof and rests on a concrete foundation. The building measures approximately 12,860 square feet, and a second story of approximately 912 sq. ft. rises from the northwest corner of the roof. Along the northwest elevation of the first story, the building displays two entrances, accessed by metal staircases affixed with metal handrails, and two vents extending from the exterior wall, approximately halfway between the roofline and grade. Along the northeast elevation, no wall openings are visible, but modern aerials suggest an outbuilding covered by a low-pitched, gable roof is located parallel to this elevation. The southeast elevation features four slatted, square vents. The southwest elevation features three overhead garages and an entrance accessed via metal stairs affixed with metal handrails. The second story features one entrance, accessed via a metal staircase along the northwest elevation and a rolling metal garage door along the southwest elevation (**Figures 7.15-7.16**). Archival research indicates that building 380 was constructed as part of the facility expansions in the early 1960s. Documentation of this building was provided by Dow personnel, as it is not visible from the fence line along any elevation of the facility.

Current Condition
AR 1a is in good condition but has undergone significant alterations, including the modification and replacement of many industrial elements and buildings, leaving little original material remaining. Still, the historic-age structures identified in this survey retain overall integrity of location, setting, feeling, and association.

7.2 AR 1b

AR 1b consists of 21 industrial aboveground storage tanks located at 7501 TX-185, Port Lavaca, Calhoun County, Texas (**Table 7.3**). The structures are bound on the north by an open field, on the east by TX-185, on the west by a port along the Victoria Barge Canal, and on the south by agricultural fields. The property sits on level ground covered in a well-maintained lawn and accessed via a gated entry and gravel road that extends from TX-185 along the south boundary of the property. A railroad line also cuts through the property, parallel to the entryway (**Figure 7.17**).

According to the Calhoun County, TX PVA, AR 1b is currently owned by Union Carbide Corporation, a subsidiary of the Dow Chemical Company (**Table 7.3**). The PVA records have no construction date for the structures but indicate that AR 1b sists on a parcel encompassing 256.24 acres, 56.24 of which is industrial acreage. Eight elements of AR 1b are depicted as early as 1956 on historical aerial images, the earliest image available (**Figure 7.18**). All extant elements of AR 1b are seen in the 1981 aerial image. The 1976 Austwell topographic map shows a group of structures in the location of AR 1b, and the 1963 Austwell topographic map, the next earliest available, does not depict the resource (**Figure 7.19**). These maps, along with archival research indicate that AR 1b was built in two phases: the first occurred in 1954 as part of the original construction of the nearby Union Carbide facility (AR 1a) and the second occurred between 1963

and 1973, when the remainder of the extant storage tanks were constructed to expand the resource.

Table 7.3. Summary of AR 1b

Address	7501 TX-185 (28.4954959, -96.7763641)
County	Calhoun County
Date of Construction	1954; 1963-1973
Square Footage (Living Area)	NA
Acreage	56.24
Owner	Union Carbide Corporation (Dow)
Architectural Type	Mid-20th Century Industrial Complex
Integrity	AR 1b is in fair condition but displays some signs of weathering and deterioration.
NRHP Recommendation	AR 1b is recommended not eligible for listing in the NRHP due to diminished integrity.

Building Description
AR 1b consists of 21 industrial aboveground storage tanks which are part of a larger 20th century Industrial facility (**Figures 7.20-7.22**). Located on the southwest side of TX-185, the structures are cylindrical in shape and vary in circumference from approximately 100 ft to 450 ft. Each tank is painted or finished with a white coating and are organized in a rough grid. The fencing around the resource obscures the view of AR 1b from the public right of way, but partial views of the resource and modern aerial imagery indicate that at least four of the earliest built tanks display slight to moderate surface rust (see **Figure 7.22**). Above ground storage tanks of this variety are considered bulk storage containers and are often used to store oil and oil products before and during the use or distribution of these chemicals. This type of storage is common to petrochemical facilities, and necessary for production and distribution operations.

Current Condition
AR 1b is in fair condition, but displays some signs of deterioration, including rust and superficial damage.

7.3 AR 1 NRHP Recommendation

AR 1, including AR 1a and AR 1b, was evaluated for National Register eligibility using the three NRHP criteria identified in this research. AR 1 was closely considered for eligibility for listing in the NRHP at the local level under Criterion A based on its effect on the development and history of the local regional area and its association with the UCC and the local petrochemical industry. UCC opened the Seadrift facility in 1954 and was a major employer in the area, generating development at Port Lavaca, Seadrift, and other nearby communities in the late 20th century. UCC currently operates at the plant as a subsidiary of the Dow Chemical Company, and the facility continues to provide economic and industrial opportunities to local populations as the second largest Dow facility in Texas. But while AR 1 retains integrity of location, setting, feeling, and association, it severely lacks integrity of design, materials, and workmanship. The overall footprint of the facility is in the same location as it was originally, but it has expanded and been altered over many iterations of redesign. Only six of the approximately 50 existing buildings on the facility are of historic age, and of those, one was significantly altered c. 1991 and two will be

demolished through a separate project. Several storage tanks within the footprint of AR 1b are of historic age but their significance is dependent upon that of AR 1a.

Under Criterion B, the resource lacks significance, as it cannot be linked to anyone of historic relevance in the region, state, or nation. Under Criterion C, the resource is not eligible due to a lack of architectural significance and material integrity. AR 1 consists of elements from the original construction of the plant, as well as subsequent expansions in the late 20th century. Construction methods, materials, and details of AR 1 are not unique architectural elements that would constitute a distinguished example of a Mid-20th Century Industrial complex, and the existing structures have been altered to an extent that the resource lacks material integrity. Additionally, the buildings and other industrial elements do not represent the work of a master architect or builder.

In summary, AR 1 is recommended as not eligible for listing in the NRHP. No further work is recommended.

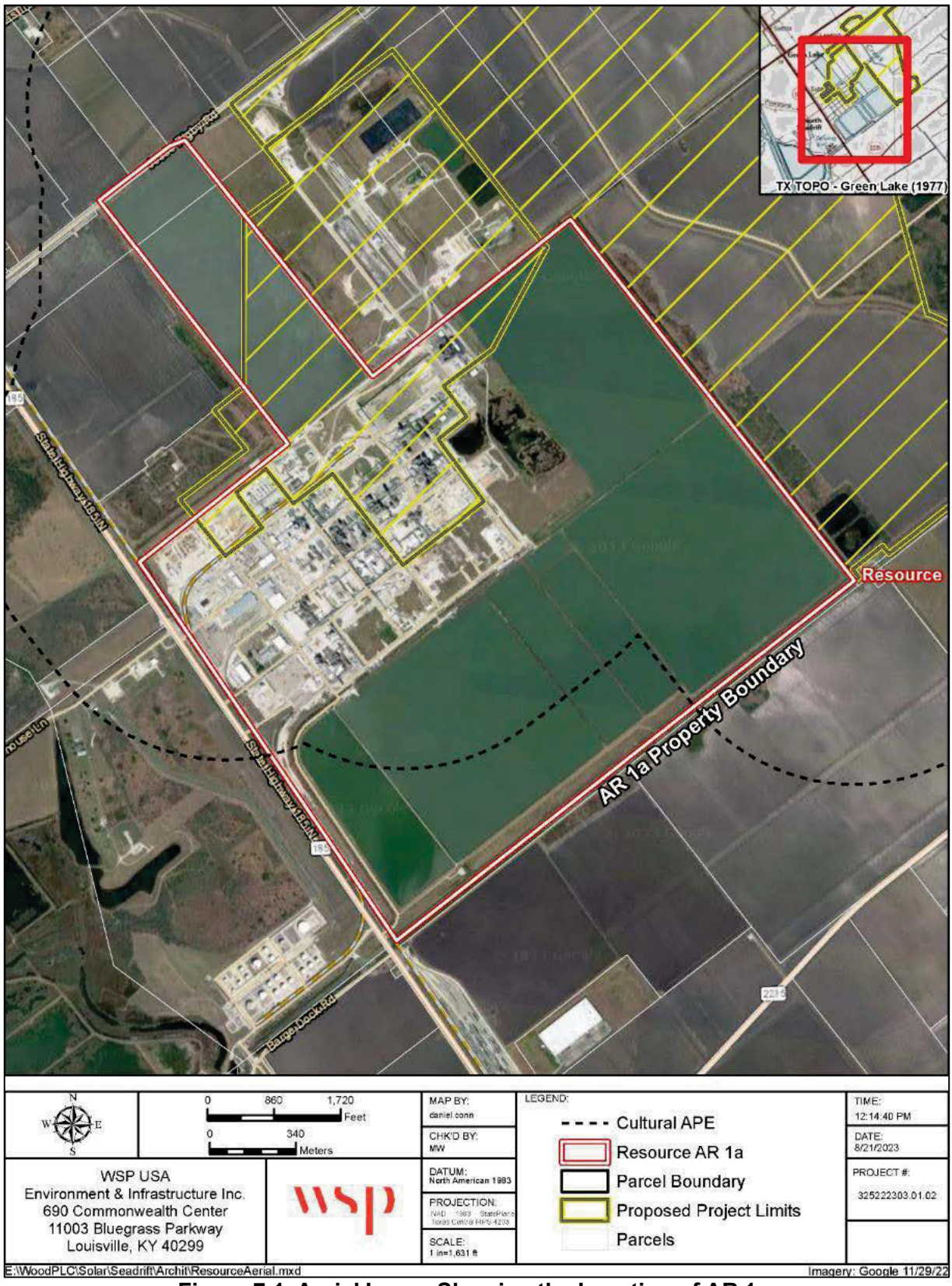

Figure 7.1. Aerial Image Showing the Location of AR 1a.

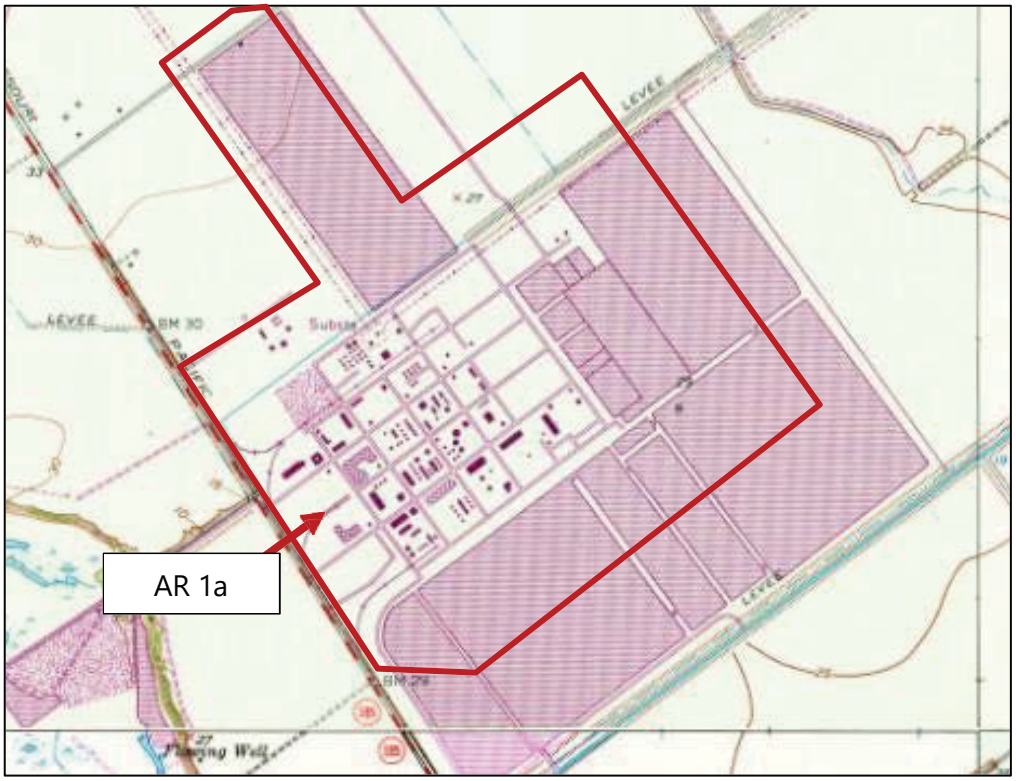

Figure 7.2. AR 1a Shown on the 1973 Green Lake Historic Topographic Map.

Figure 7.3. Overview of AR 1a, facing Southeast.

Figure 7.4. View of Signage Associated with AR 1a.

Figure 7.5. Oblique Aerial of AR 1a, facing North (The Center for Land Use Interpretation, 2009).

Figure 7.6. AR 1a, View of Southeast Elevation of Building 1, facing North.

Figure 7.7. AR 1a, View of Southwest Elevation of Building 1, facing Northeast.

Figure 7.8. AR 1a, View of Northwest Elevation of Building 1, facing Southeast.

Figure 7.9. AR 1a, View of Southeast Elevation of Building 2, facing Northeast.

Figure 7.10. AR 1a, Partial View of Southwest Elevation of Building 2, facing East.

Figure 7.11. AR 1a, View of Southwest Elevation of Buildings 13 & 14, facing East.

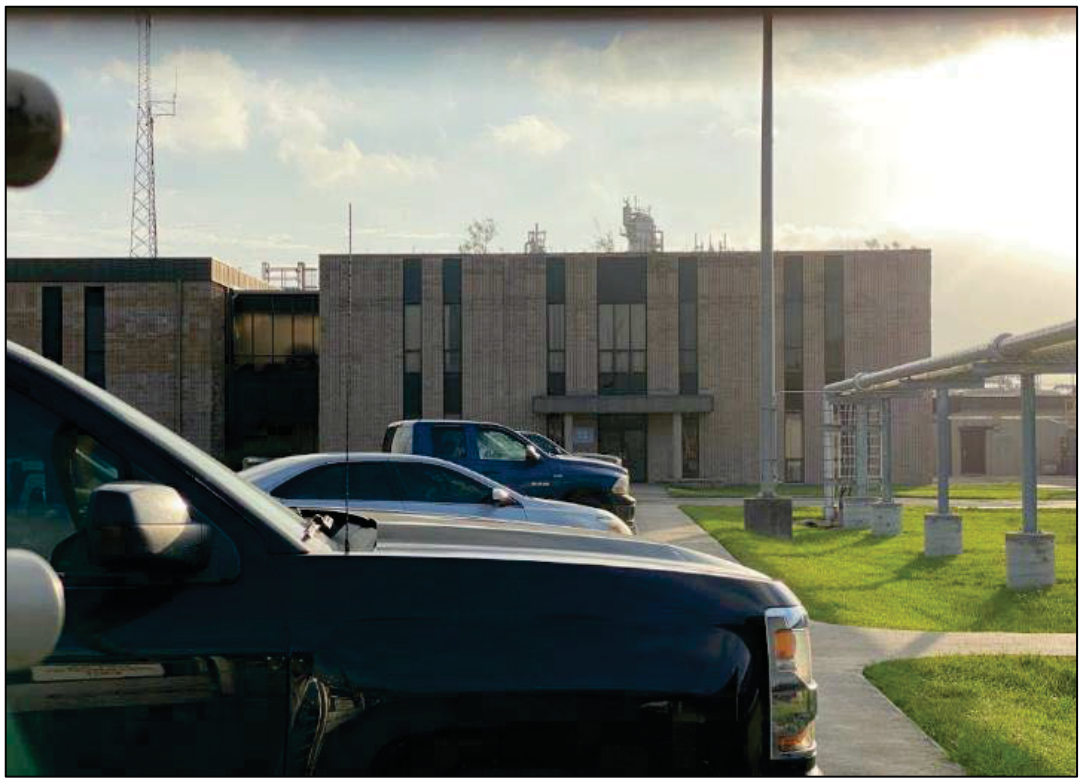

Figure 7.12. AR 1a, View of Southwest Elevation of Building 13, facing East.

Figure 7.13. AR 1a, View of Southwest and Northwest Elevations of Building 14, facing East.

Figure 7.14. AR 1a, Partial View of Southwest and Southeast Elevations of Building 140, facing Southeast.

Figure 7.15. AR 1a, View of Northwest and Southwest Elevations of Building 380, facing East.

Figure 7.16. AR 1a, Partial View of Northeast and Southeast Elevations of Building 140, facing West.

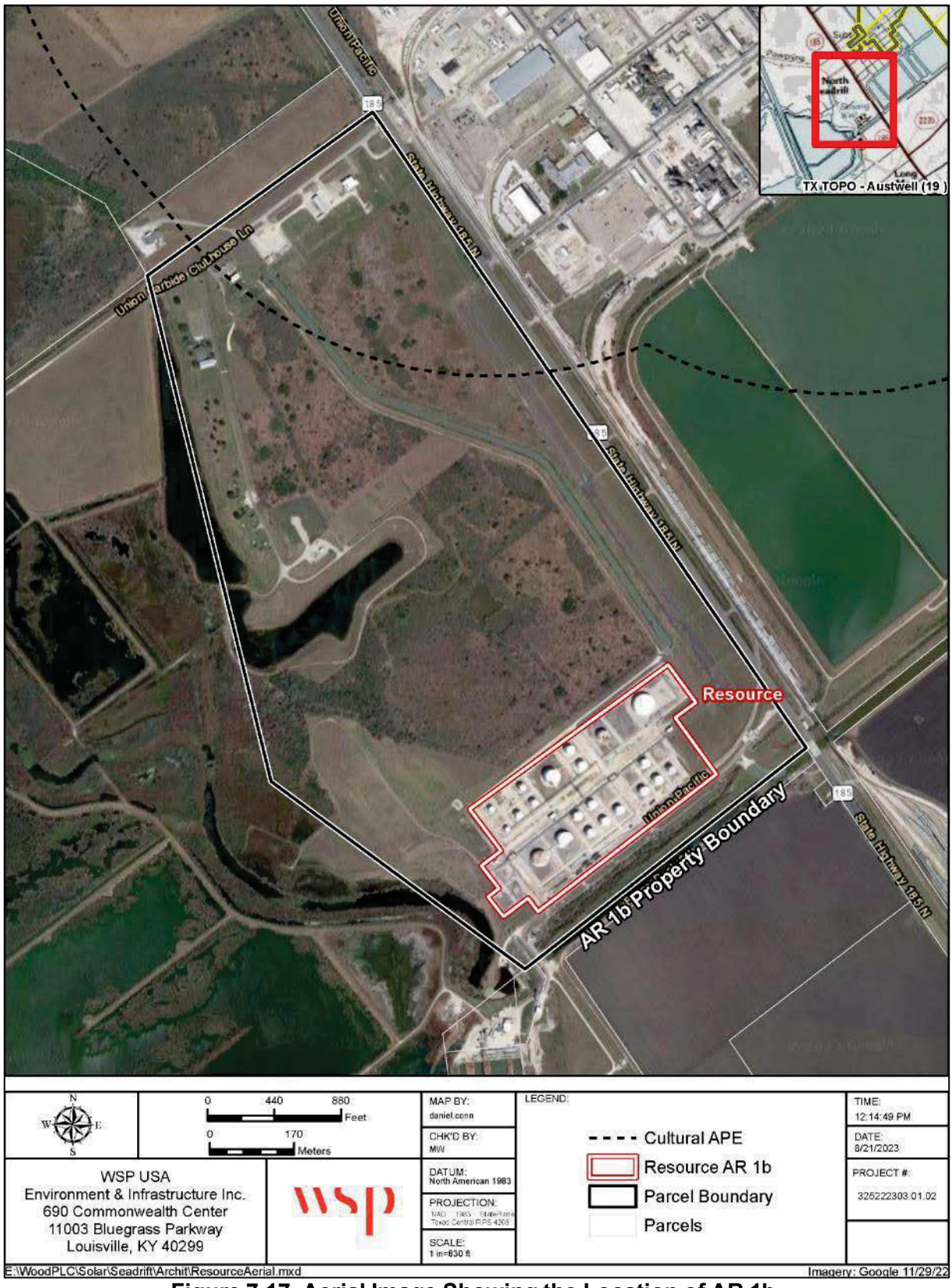

Figure 7.17. Aerial Image Showing the Location of AR 1b.

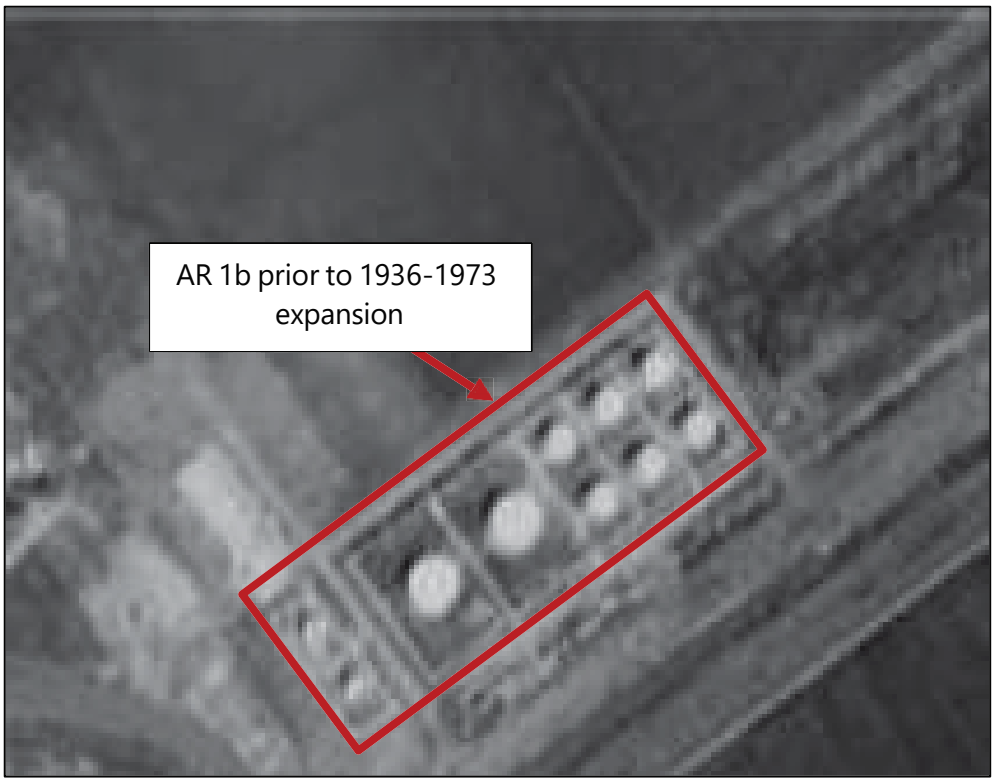

Figure 7.18. AR 1b Shown on the 1956 Historic Aerial Image.

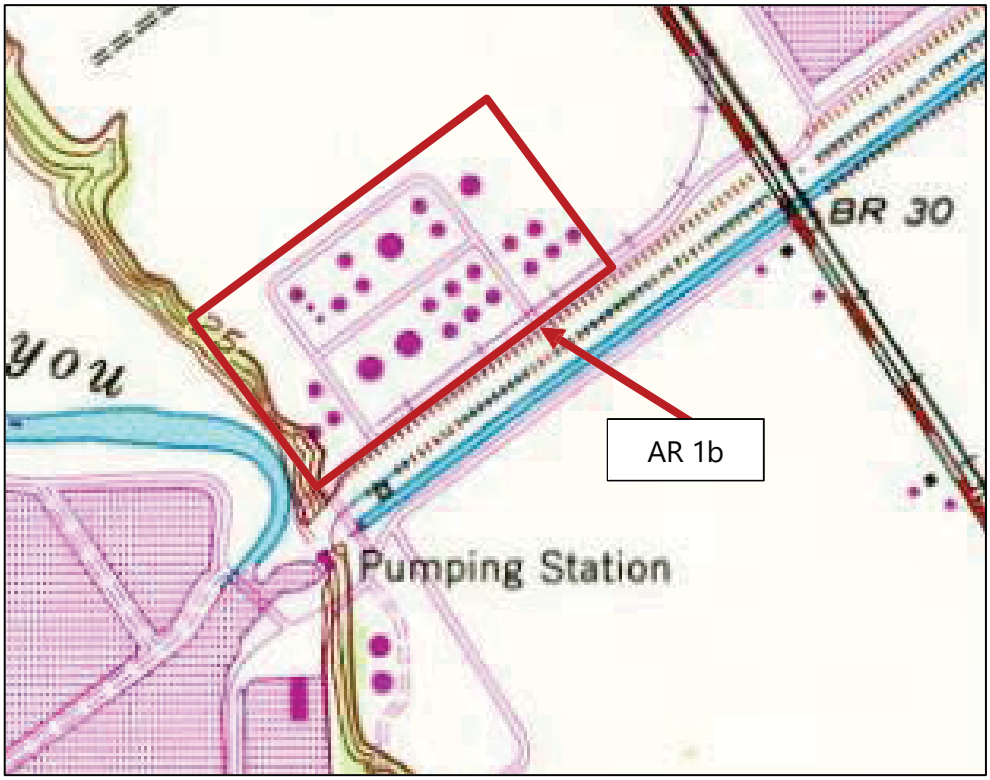

Figure 7.19. AR 1b Shown on the 1973 Austwell Historic Topographic Map.

Figure 7.20. The East Elevation of AR 1b, Facing Southwest.

Figure 7.21. The North and East Elevations of AR 1b, facing Southwest.

Figure 7.22. View of Rusting and Mixed Condition of AR 1b Elements, facing Northwest.

8.0 AR 2: NORTHEAST OF TX-185

AR 2 consists of remnants of an industrial facility located northeast of TX-185, Port Lavaca, Calhoun County, Texas (**Table 8.1; Figure 8.1).** The resource is bound on the southwest by TX-185, on the northeast and southwest by the Dow Seadrift facility, and on the northwest by fallow agricultural fields. The structures sit on level terrain covered by an unmaintained field and obscured from the public right of way by overgrown trees and foliage. A gravel road extends northeast along the northwest lot boundary from TX-185 and features a security gate approximately 250 ft from the highway. A UPRR line runs along the southwest boundary of the property from the neighboring Dow facility. The overall condition of the facility and lot suggest that the property is currently abandoned.

According to the Calhoun County, TX PVA, AR 2 is owned by ISP Technologies LLC, but the date of construction is not listed. The PVA lists GAF Chemicals Corporation as the owner of AR 2 prior to 1991, the corporate entity that is today ISP Technologies LLC, reflecting continued ownership. The structure first appears in publicly available aerial imagery in 1981, and in USGS topographic maps in 1973 for Green Lake, TX (**Figure 8.2**). These maps suggest the facility was built before 1973. Archival research indicates that ISP Technologies LLC adopted the "GAF Chemical Corporation" name in 1968, suggesting that AR 2 was constructed between 1968 and 1973 (GAF 2023). Historic aerial images also indicate that the plant was deconstructed to its foundations between 2004 and 2008, likely following significant changes in the company focus and shareholders during the 1990s (**Figure 8.3**).

Table 8.1. Summary of AR 2

Address	Northeast of TX- 185 (28.51382, -96.77892)
County	Calhoun County
Date of Construction	1968-1973
Square Footage (Living Area)	Approximately 2,300 sq. ft.
Acreage	42.0
Architectural Type	20th Century Industrial Ruins
Owner	ISP Technologies LLC
Integrity	AR 2 is in poor condition and has been deconstructed to its foundations, which has significantly diminished integrity.
NRHP Recommendation	AR 2 is not eligible for the NRHP due to a lack of architectural significance and integrity.

Building Description

AR 2 consists of remnants of an industrial facility located northeast of TX-185. AR 2 consists of structure foundations, which can be seen in modern aerials of the site, and one extant structure. The single remaining structure, seen from modern aerial images, features a gable roof inset with 10 openings, which may have contained glass lights in the past. The metal roof is highly corroded and extends over approximately 2,300 sq. ft. The remaining building appears to be a former storage structure, workshop, or machinery garage. Several gravel or asphalt roads are aligned in a roughly gridded pattern among the extant structure and remaining building foundations. The site is overgrown with vegetation and not visible from the public right-of-way, preventing further assessment of remaining and remnant features (**Figures 8.4-8.5**).

Current Condition
AR 2 is in poor condition and has been razed to structures' foundations, aside from one structure, resulting in diminished integrity.

NRHP Recommendation
AR 2 was evaluated for National Register eligibility using the three NRHP criteria identified in this research. AR 2 is recommended not eligible for listing on the NRHP due to a lack of architectural significance and material integrity. Although AR 2 is associated with the local petrochemical industry which generated development at Port Lavaca, Seadrift, and other nearby communities in the late 20th century, AR 2 no longer conveys this association. Hence, under Criterion A, AR 2 is recommended as not eligible. Under Criterion B, AR 2 is recommended as not eligible because no links were found between the building and person or persons with cultural or historic significance. Under Criterion C, the resource is recommended as not eligible because it has no elements that make it a unique example of twentieth century industrial architecture. Therefore, the resource is recommended as not eligible for listing in the NRHP. No further work is recommended.

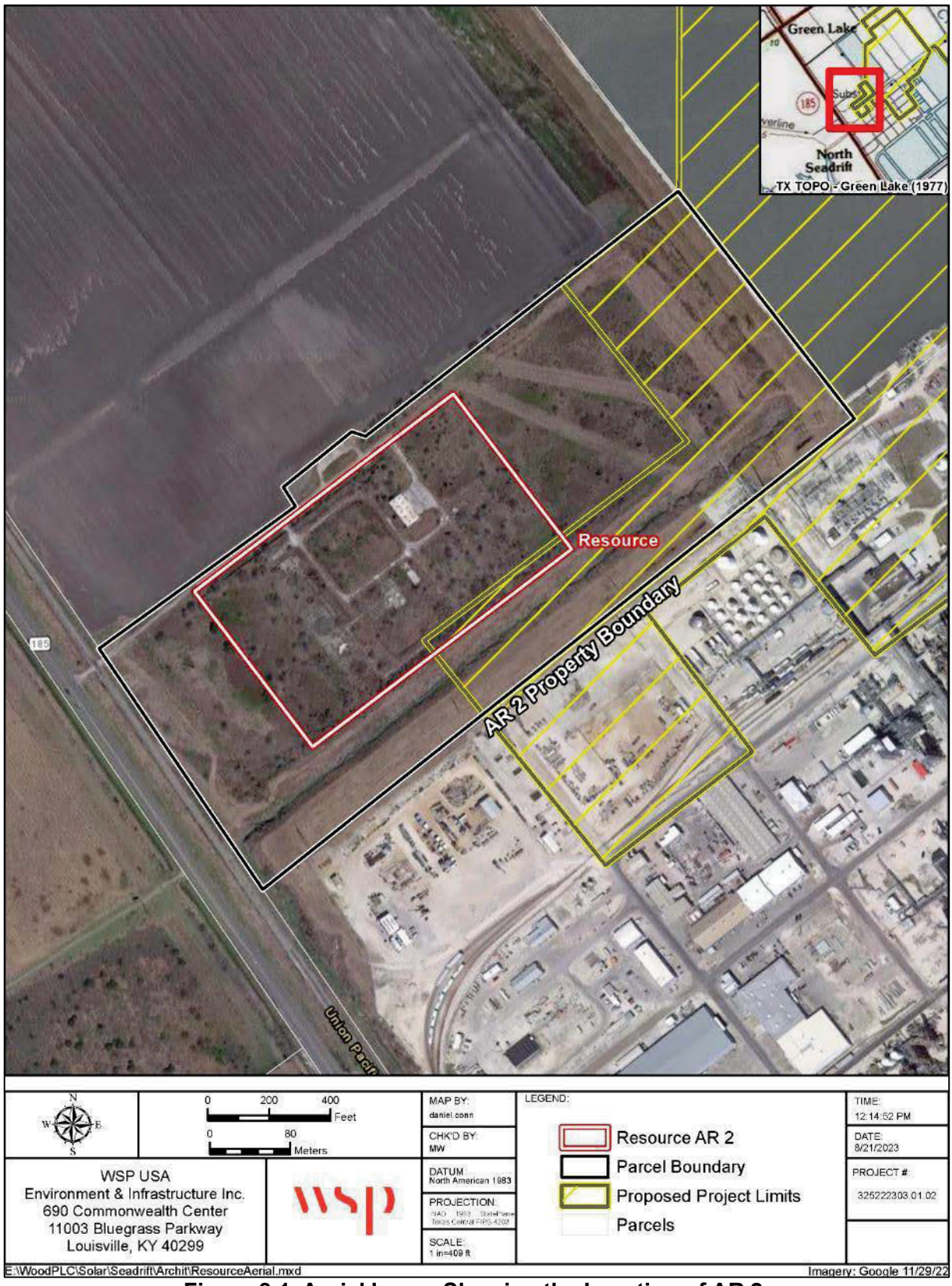

Figure 8.1. Aerial Image Showing the Location of AR 2.

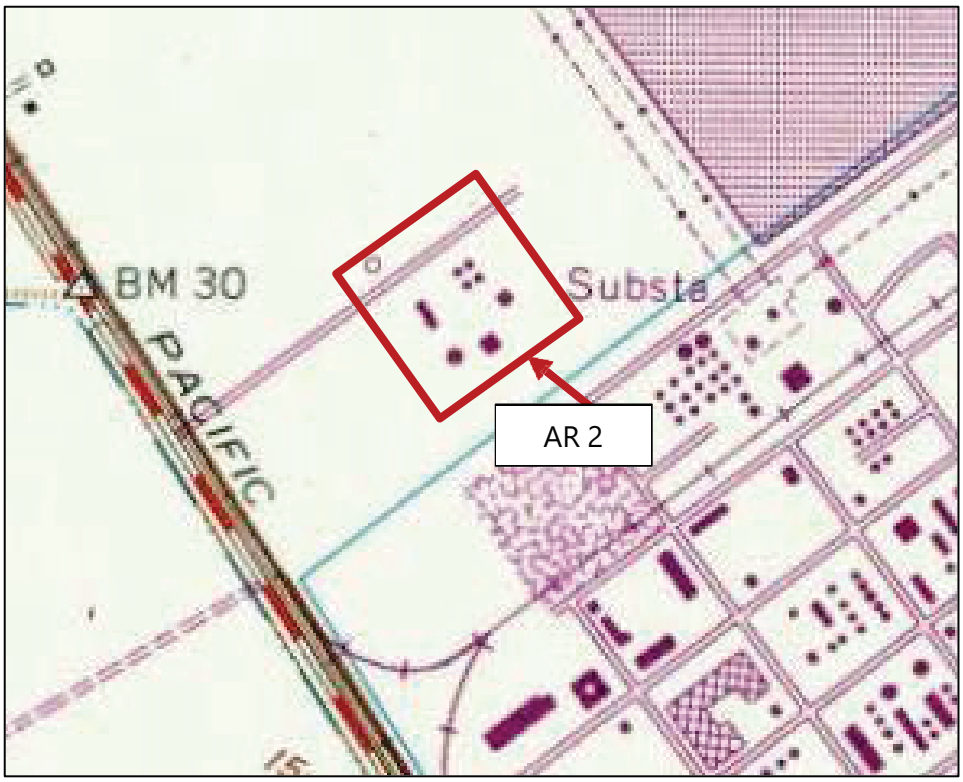

Figure 8.2. Location of AR 2 on the 1973 Green Lake USGS Topographic Map.

Figure 8.3. View of AR 2 Prior to Deconstruction on the 1983 Historic Aerial Image.

Figure 8.4. View of Vegetation Obscuring AR 2, facing Northeast.

Figure 8.5. View of No Trespassing Sign at Gravel Road Leading to AR 2.

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9.0 AR 3: NORTHEAST OF TX- 185

AR 3 consists of two utility structures located northeast of TX- 185, Port Lavaca, Calhoun County, Texas (**Table 9.1; Figure 9.1**). The property is bound on the southwest by TX-185 and a Union Pacific Railroad (UPRR) line, and on all remaining elevations by agricultural fields. The two structures sit on a leveled area of approximately 0.17 acres that is surfaced with gravel; the graveled area is part of a parcel totaling 126 acres of agricultural land. AR 3 is accessed via a gravel turnoff that extends northeast from TX-185 across the railroad lines and terminates at the southwestern extent of the graveled area. Several other utility-related elements surround the structures, including piping, signage, and a power supply line. Signs posted in the surrounding area indicate that flammable materials at AR 3 should be treated with caution.

According to the Calhoun County, TX PVA, AR 3 is currently owned by ISP Technologies LLC. The PVA lists GAF Chemicals Corporation as the owner of AR 3 prior to 1991, the corporate entity that is today ISP Technologies LLC, reflecting continued ownership. The structure first appears in publicly available aerial imagery in 1981 but does not appear on topographic maps (**Figure 9.2**). The aerial image suggests the facility was built before 1981. Archival research indicates that ISP Technologies LLC adopted the "GAF Chemical Corporation" name in 1968, suggesting that AR 3 was constructed between 1968 and 1973 as part of the nearby GAF Facility (GAF 2023; see Chapter 8).

Table 9.1 Summary of AR 3

Address	Northeast of TX- 185 (28.51760, -96.78507)
County	Calhoun County
Date of Construction	1968-1973
Square Footage (Living Area)	NA
Acreage	Approximately 126.0
Owner	ISP Technologies LLC
Architectural Type	20th Century Utilities
Integrity	AR 3 is in fair condition, but shows signs of disuse and neglect, such as rust and surface damage.
NRHP Recommendation	AR 3 is not eligible for the NRHP due to lack of architectural significance and integrity.

Building Description

AR 3 consists of two utility structures: a storage structure clad in corrugated metal siding and covered by a front gable roof, and a control or maintenance structure covered by a flat roof and clad in metal sheet siding (**Figure 9.3**). The storage building is located near the southwest corner of the gravel area and the second structure sits at the northwest extent of the gravel area. Both structures rest on concrete slab foundations and display signs of neglect and disuse. The storage shed features an entryway along its southwest (front) elevation and a small rectangular vent along the foundation line of the northwest elevation (**Figure 9.4**). The second structure features a whirlybird roof vent extending centrally from the roof; an entryway featuring a solid metal door with a padlock latch along the south (main) elevation; and a metal, double-hung window along with a rectangular vent along the foundation line located along the west elevation (**Figures 9.5** and **9.6**). The roof features aluminum box-style gutters and a radio receiver and antenna are

attached to the east elevation of the building. Additional elevations of either structure were not visible from the public right of way.

Current Condition
AR 3 is in fair condition but shows signs of disuse and neglect, such as rust and surface damage. Additionally, the storage structure appears to be missing a door and the site appears to be unmaintained overall.

NRHP Recommendation
AR 3 was evaluated for National Register eligibility using the three NRHP criteria identified in this research. AR 3 is recommended not eligible for the National Register due to a lack of architectural significance. Although AR 3 is associated with the local petrochemical industry which generated development at Port Lavaca, Seadrift, and other nearby communities in the late 20th century, AR 3 does not individually convey this association. Hence, under Criterion A, AR 3 is recommended as not eligible. Under Criterion B, AR 3 is recommended as not eligible because no links were found between the building and person or persons with cultural or historic significance. Under Criterion C, the resource is recommended as not eligible because it has no elements that make it a unique example of its architectural style or form. Therefore, the resource is recommended as not eligible for listing in the NRHP. No further work is recommended.

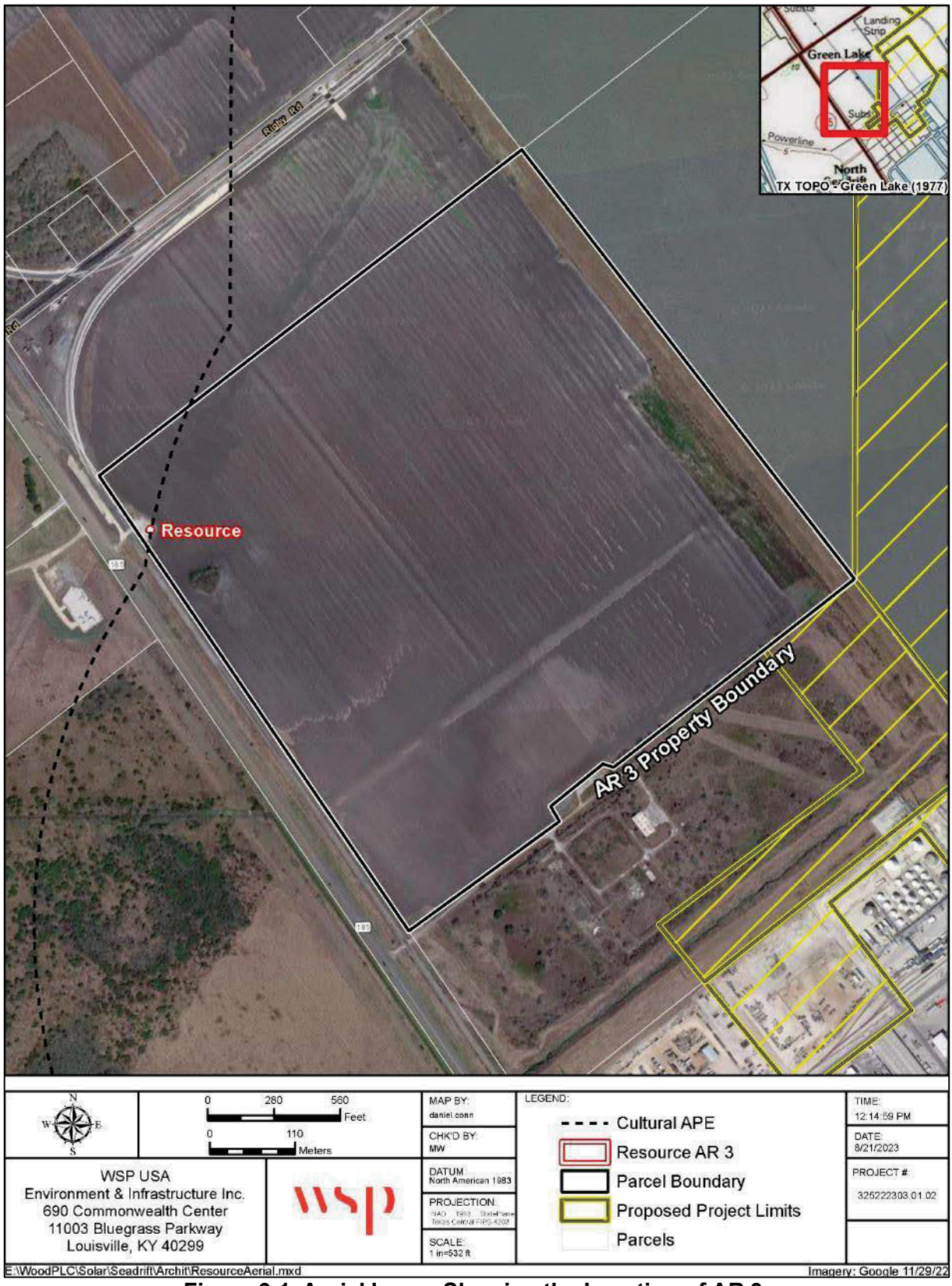

Figure 9.1. Aerial Image Showing the Location of AR 3.

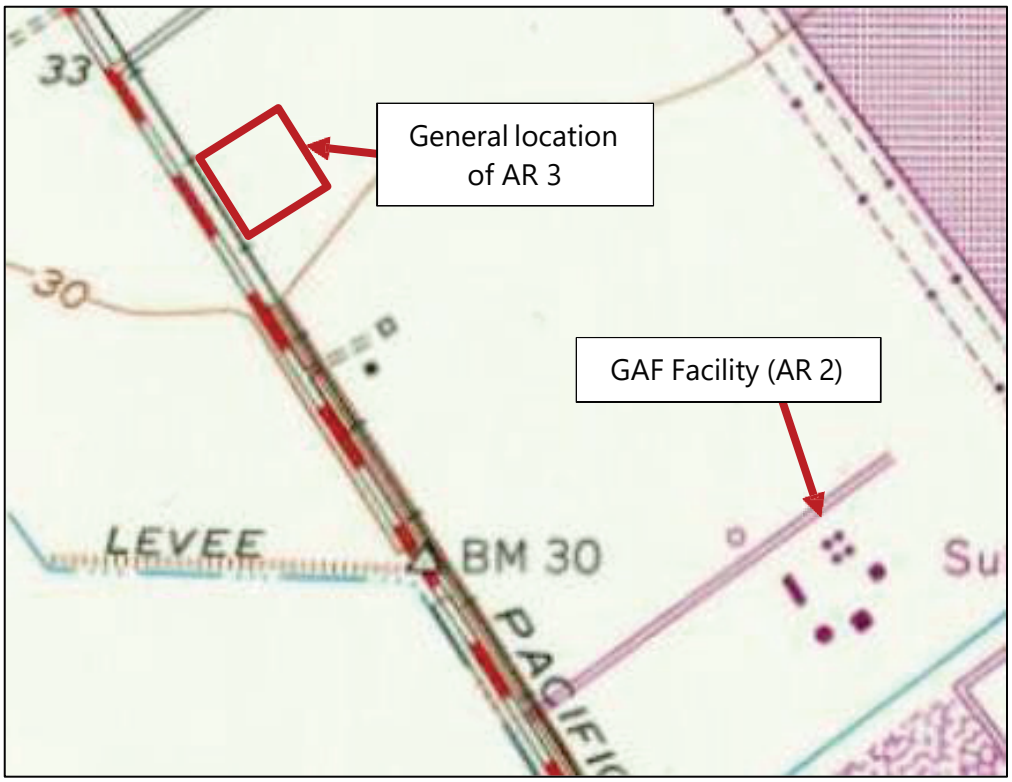

Figure 9.2. Location of AR 3 on the 1973 Green Lake USGS Topographic Map.

Figure 9.3. Overview of AR 3, facing East.

Figure 9.4. View of Storage Shed, facing West; Note the Piping and Receiver Surrounding the Structure.

Figure 9.5. View of the Second Structure Comprising AR 3, facing East; Note Surrounding Piping and Power Line Pole.

Figure 9.6. View of South Elevation of Northwestern Structure, facing North.

10.0 AR 4: JESSE RIGBY RD

AR 4 consists of two southeast-facing agricultural storage buildings located at approximately 213 Jesse Rigby Rd, Port Lavaca, Calhoun County, Texas (**Table 10.1; Figure 10.1**). The buildings are bound by unused lots on the north- and south-west, Jesse Rigby Road on the northeast, and Jesse Rigby Road and a railroad interchange on the southeast. The resource sits on 165.74 acres of grassy, level terrain overgrown with shrubbery and trees which appears to be abandoned. AR 4 is accessible via a gravel drive that extends northwest from Jesse Rigby Road to AR 4. There is evidence in the vegetation patterns and archival research of additional structures which stood on the lot containing AR 4, however these are no longer extant.

According to the Calhoun County, TX PVA, AR 4 is currently owned by the Union Carbide Corporation, a subsidiary of the Dow Chemical Company, and was constructed in 1965**.** The PVA also details a residential building, a garage, and a storage building constructed in 1951, along with a grain bin constructed in 1965, which are no longer extant. AR 4, consisting of two Quonset huts, first appears in publicly available aerial imagery in 1981 and in USGS topographic maps in 1973 for Green Lake, TX (**Figure 10.2**). These maps corroborate the 1965 construction date listed in the PVA.

Table 10.1. Summary of AR 4

Address	Jesse Rigby Rd (28.54011, -96.75685)
County	Calhoun County
Date of Construction	1965
Square Footage (Living Area)	NA
Acreage	165.74 acres
Owner	Union Carbide Corporation (Dow)
Architectural Type	20th Century Agricultural Outbuildings
Integrity	AR 4 is in poor condition, showing signs of damage, disuse, and neglect.
NRHP Recommendation	AR 4 is not eligible for the NRHP due to lack of architectural and historic significance.

Building Description

AR 4 consists of two southeast-facing agricultural storage buildings that are consistent with the typical design of Quonset huts. Both elements of AR 4 are clad in corrugated metal siding and are covered by semi-circular corrugated metal roofs that extend to grade, supported by arched steel frames. The Quonset huts feature sliding corrugated metal doors hung from the front and rear elevations. Both structures are rusted and damaged, each missing the western door panel along its front elevation (**Figure 10.3-10.7**). The southeastern element of the resources is the larger of the two structures that comprise AR 4. The rear elevation of the larger of the two structures could only be seen through the opening along the front elevation, and appears to feature two wall openings; however, it is not clear if these openings are aspects of the original design or a result of deterioration (see **Figure 10.4**). A small square vent featuring metal slats is located along the top extent of the entryway to the larger Quonset hut. No other wall openings are visible on either structure.

Current Condition

AR 4 is in poor condition and shows signs of damage, disuse, and neglect.

NRHP Recommendation

AR 4 was evaluated for National Register eligibility using the three NRHP criteria identified in this research. AR 4 is recommended not eligible for listing on the NRHP due to a lack of historic and architectural significance. Under Criterion A, AR 4 is not associated with any historically significant events or patterns that have affected the region, state, or nation. AR 4 is recommended not eligible under Criterion B because it cannot be linked to any person or persons who are historically significant to the region, state, or nation. Under Criterion C, the resource is not eligible because the structures are not the work of a master builder or craftsperson. Also, the resource does not embody distinguishing characteristics that would make it a unique example of its architectural type. No further work is recommended.

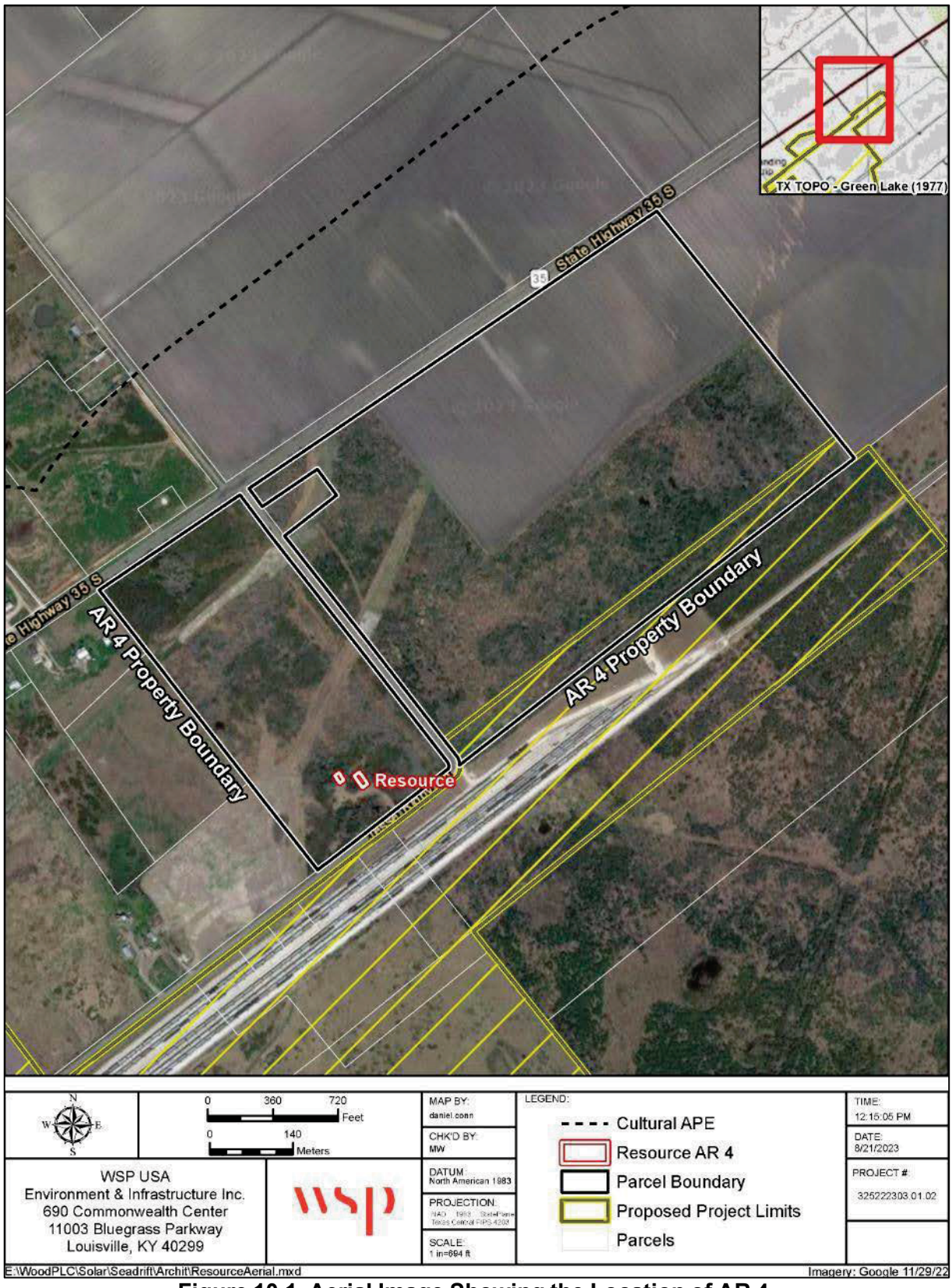

Figure 10.1. Aerial Image Showing the Location of AR 4.

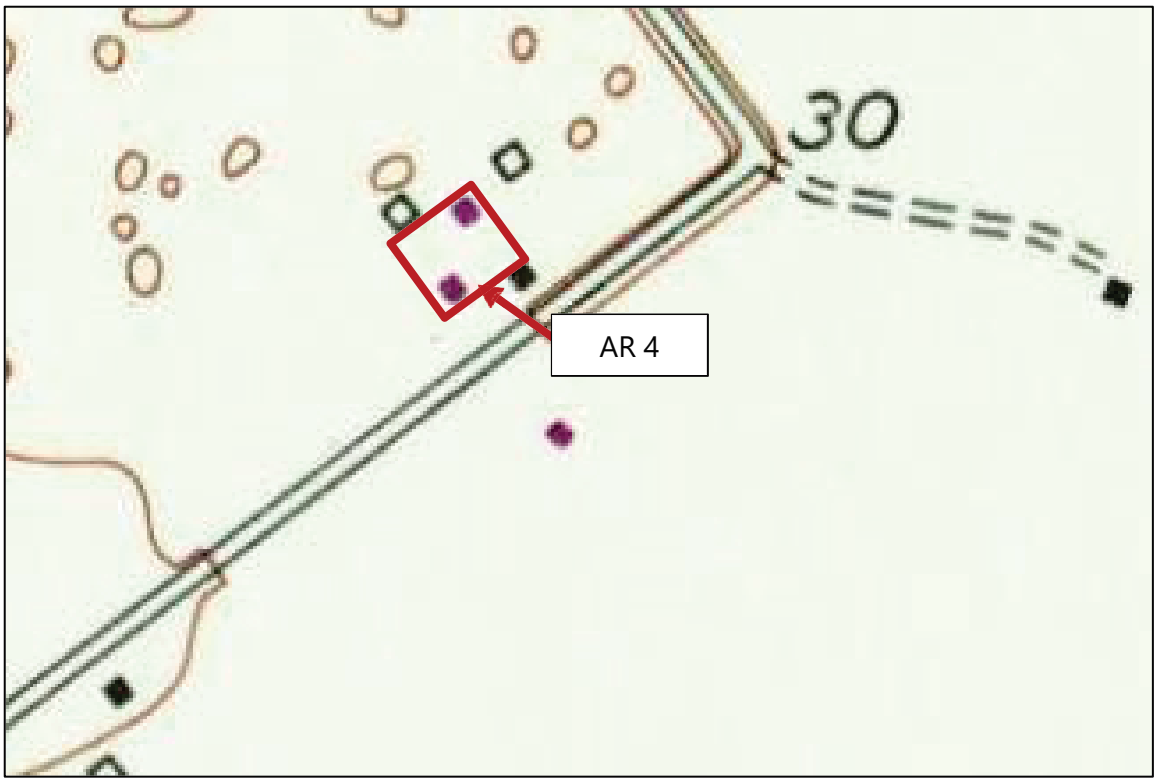

Figure 10.2. Location of AR 4 on the 1973 Green Lake USGS Topographic Map.

Figure 10.3. View of Southeast and Northeast Elevations of Larger Structure, facing West.

Figure 10.4. View of Southeast Elevation of Larger Structure, facing Northwest.

Figure 10.5. View of Southeast and Southwest Elevations of Larger Structure, facing Northeast.

Figure 10.6. View of Southeast and Southwest Elevations of Smaller Structure, facing Northeast.

Figure 10.7. View of Southeast Elevation of Smaller Structure, facing Northwest.

11.0 AR 5: 11525 TX- 35

AR 5 is a northwest facing, one-story, single-family, Ranch located at 11525 TX- 35 Port Lavaca, Calhoun County, Texas (**Table 11.1; Figure 11.1**). The building is bound on the north by TX-35, and all other elevations by agricultural fields. The building sits on level terrain covered by an overgrown lawn and dotted with deciduous trees. Most of the lot is overgrown with thick patches of foliage littered with trash and degraded storage drums and tanks. The property is accessed via an overgrown gravel driveway, which extends northwest from TX-35 west of the main house and curves around the rear elevation to connect back to TX-35 northeast of AR 5.

According to the Calhoun County, TX PVA, AR 5 is currently owned by Carl E Kimbriel. The PVA lists a date of construction for AR 5 as 1959 and lists 1,934 sq. ft as the total living area of the main house. AR 5 is illustrated as early as 1981 on historical aerial images and appears in its current location on the 1953 Green Lake topographic map (**Figure 11.2**). The presence of the house on the 1953 Green Lake topographic map, the earliest available, suggests that AR 5 was constructed by 1953, contrary to the information listed in the PVA. AR 5 is associated with one outbuilding (**Figure 11.3**). The outbuilding first appears on the 1973 Green Lake Topographic map, indicating the outbuilding was constructed between 1952-1973. Historic aerial images and topographic maps also reveal that a covered stable and barn were built at the same time as the main house. The barn was razed between 2014 and 2016; the stable was dilapidated and inaccessible at the time of this survey.

Table 11.1 Summary of AR 5

Address	11525 TX- 35 (28.53193, -96.78092)
County	Calhoun County
Date of Construction	c. 1953
Square Footage (Living Area)	1,934 sq. ft.
Acreage	1.00
Owner	Carl E Kimbriel
Architectural Type	Ranch
Integrity	AR 5 is in poor condition, appears to be abandoned, and displays significant damage.
NRHP Recommendation	AR 5 is not eligible for the NRHP due to loss of integrity and lack of architectural and historic significance.

Building Description

AR 5 is a northwest facing, one-story, single-family, Ranch which is covered by a cross-gable, asphalt shingle roof and displays extreme signs of neglect and deterioration. AR 5 appears to be abandoned (**Figure 11.4**). Along the northwest elevation, the roofline features two cross-gable roofs alongside a central shed roof, presumably covering a porch which is obscured from view by vegetation. The house is clad in a combination of painted brick, stone veneer, and brick veneer AR 5 features aluminum, sliding and double-hung windows. The main entrance of the house not visible from the public right-of-way. An interior brick chimney is located centrally along the northwest slope of the side-gable (principal) roof. A second and potential third entrance are located along the southeast (rear) elevation but are partially obscured from view. The secondary

entrance is located along the central block of the house and is covered by a deteriorated shed roof supported by painted wood posts. There is one outbuilding associated with AR 5, a wood barn that sits at the southwest corner of the property (see **Figure 11.3**). Many partial or full elevations were not accessible from the public right-of-way, and historic images of the property varied in quality and completeness, limiting the assessment of wall openings and stylistic elements.

The northwest (main) elevation is significantly obscured from the public right-of-way by vegetation overgrowth. Historic images of the house and modern aerial images reveal that the façade is comprised of three sections: a central block covered by a side-gable roof; a southwestern section beneath a cross-gable roof; and northeastern section beneath a small cross-gable projection extending from the principal roofline, which covers a garage. Both cross-gable sections feature a single, double-hung aluminum window. A shed roof extending from the principal roofline of the central section likely comprises a porch, however, wall openings along this portion could not be seen from the public right-of-way. The southwestern cross-gable projection features a solid metal door along its northwestern elevation and beneath the shed roof of the presumed porch. No additional entryways, wall openings, or stylistic elements were visible along this elevation.

The southwest elevation was obscured from view by significant vegetation overgrowth, but historic images of the home and partial views of the wall openings reveal at least three wall openings. From north to south, the elevation contains one wood, double-hung window, a small aluminum, fixed window, and another aluminum, double-hung window (**Figure 11.5**).

The southeast (rear) elevation was only partially visible, due to vegetation overgrowth, and the southwest half of the house could not be assessed from any angle along this elevation. Along the visible portion, a secondary entrance was located beneath a badly degraded porch featuring a shed roof extending from the principal roof line and supported by two wood posts. The entryway features a metal frame storm door inset with four lights and an additional exterior door which could not be assessed from outside of the property. To the west of the secondary entrance is a small sliding, aluminum window and an aluminum, double-hung window, and a garage door partially obscured from view (**Figure 11.6-11.7**).

The northeast elevation was not visible from the public right-of-way preventing the assessment of features or wall openings. Historic images of the home suggest that there are at least two wall openings along this elevation with either sliding or fixed sash operations.

Associated Outbuildings

AR 5 has one associated building: an agricultural storage building covered by a side-gable, asphalt shingle roof. The building is clad in wood board siding that displays peeling red paint and is accessed via openings along the northeast and southwest elevations. The roof shows signs of damage along the southeast elevation and vegetation overgrowth obscures most of the structure from the public right-of-way (**Figure 11.8**).

Current Condition

AR 5 is in poor condition and appears abandoned. The visible stylistic elements of the resource appear to be original to the house; however, extensive structural damage and neglect has resulted in diminished integrity.

NRHP Recommendation

AR 5 was evaluated for National Register eligibility using the three NRHP criteria identified in this research. AR 5 is recommended not eligible for listing in the National Register because it lacks

architectural significance and integrity. Under Criterion A, AR 5 lacks historic significance because there is no evidence that suggests that any events of historic significance to the region, state, or nation occurred in or around the property. Under Criterion B, AR 5 lacks historic significance and cannot be associated with any person or persons of historic significance that may have used, designed, or constructed the house. Under Criterion C, AR 5 lacks architectural significance and material integrity. It is not the work of a master builder or craftsperson and has no elements that make it a unique example of its architectural type. Furthermore, the building is in poor condition and displays significant structural damage and neglect, resulting in diminished integrity. No further work is recommended.

The outbuilding is not individually eligible for the NRHP and does not contribute to the overall eligibility of AR 5.

Figure 11.1. Aerial Image Showing the Location of AR 5 with its Outbuilding.

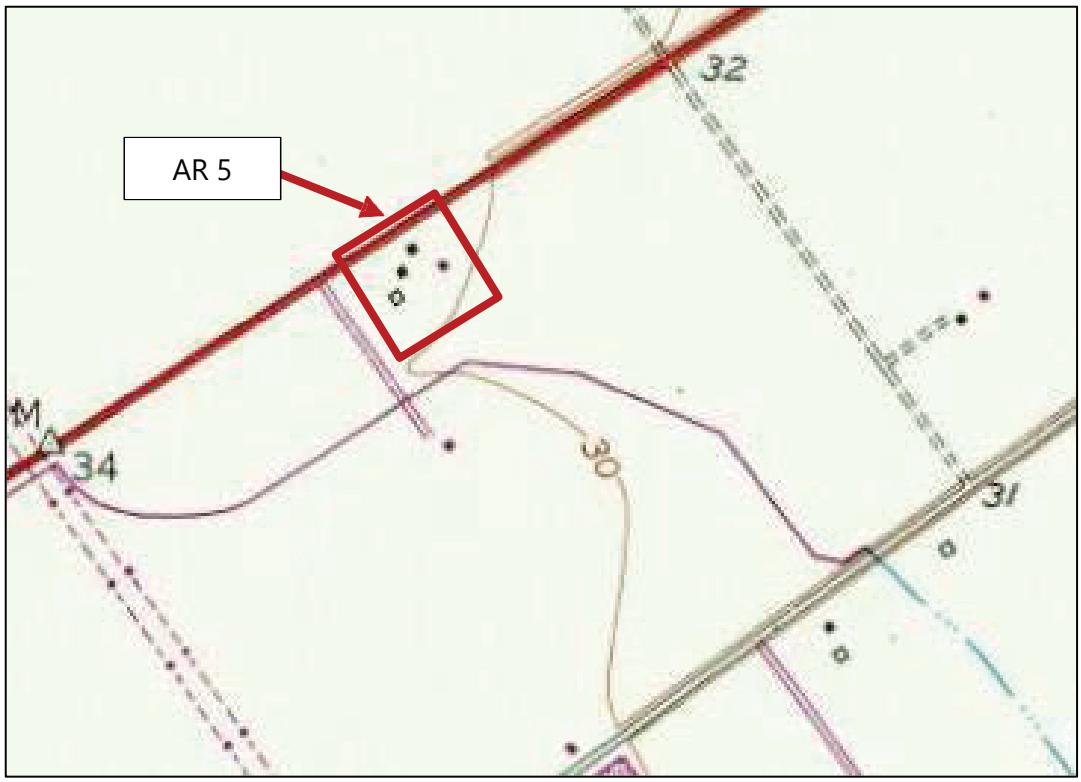

Figure 11.2. Location of AR 5 on the 1969 Port Lavaca USGS Topographic Map.

Figure 11.3. View of AR 5 and Outbuilding, facing South; Note Vegetation Overgrowth.

Figure 11.4. View of the Northwest (Main) Elevation of AR 5, facing South; Note the Significant Overgrowth of Vegetation.

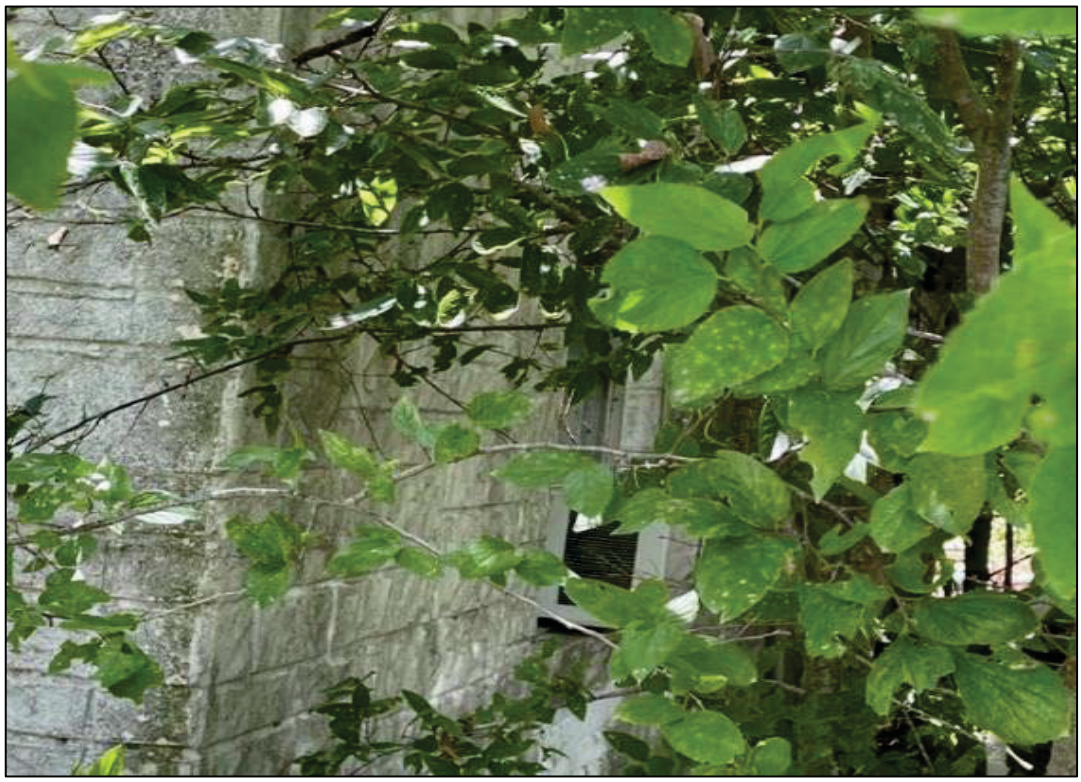

Figure 11.5. View of the Southwest Elevation of AR 5, facing South.

Figure 11.6. View of Southeast (Rear) Elevation of Cross-gable Section, facing North.

Figure 11.7. View of Southeast (Rear) Elevation of Central Block, facing Northwest.

Figure 11.8. View of Northwest and Northeast Elevations of Outbuilding, facing South.

12.0 AR 6: 10622 TX-35

AR 6 is a southeast facing, one-story, single-family, Transitional Ranch located at 10622 TX-35, Port Lavaca, Calhoun County, Texas (**Table 12.1; Figure 12.1**). The building is located in a rural area and is bound on the east by residential buildings, on the south by TX-35, on the west by Garza Road, and on the north by agricultural fields. The building sits on flat, grassy terrain surrounded by several deciduous trees. The property is accessed via two unimproved driveways, which extend northwest from TX-35.

According to the Calhoun County, TX PVA, AR 6 is currently owned by Richard Clyde Able. The PVA records 1951 as the date of construction for AR 6, with 1.63 acres listed as the acreage and 2,220 sq. ft. listed as the living area. AR 6 is illustrated on the 1953 Green Lake topographic map, corroborating the 1951 construction date listed in the PVA record (**Figure 12.2**). AR 6 is associated with two outbuildings: a vehicle shed and a storage building. A 1981 aerial image of the property shows that the two outbuildings were not present at this time, indicating that the two outbuildings are under 50 years old and are not associated with the original construction of the residence.

Table 12.1. Summary of AR 6

Address	10622 TX-35 (28.5396391, -96.7683991)
County	Calhoun County
Date of Construction	1951
Square Footage (Living Area)	Approximately 2,220 sq. ft.
Acreage	Approximately 1.63 acres
Owner	Richard Clyde Able
Architectural Type	Transitional Ranch
Integrity	AR 6 is in good condition.
NRHP Recommendation	AR 6 is not eligible for the NRHP due to loss of material integrity and lack of architectural and historic significance.

Building Description

AR 6 is a southeast facing, one-story, single-family, Transitional Ranch with a side gable, asphalt shingle roof and a front gable wing extending from the southeast elevation. The house is clad in horizontal replacement vinyl siding with contrasting vertical wood siding in upper gable ends, and features vinyl, double-hung replacement windows. The southeast (main) elevation features a partial-width porch covered by a shed, standing seam metal roof supported by wood posts with a wood deck and railing. The raised foundation is covered by a wood lattice on the southeast and northeast elevations. The northwest (rear) elevation was not accessible from the public right-of-way, which prevented any determination regarding the presence of wall openings or other distinguishing characteristics along this elevation.

The southeast (main) elevation features four wall openings. Underneath the shed roof porch, there are two pairs of double-hung vinyl windows, one of which contains a window air conditioning unit. The main entryway is situated underneath the porch roof and consists of a paneled wood door covered by a metal storm door with an inset lite. On the front gable wing of the southeast elevation, there is a pair of double-hung, two-over-two vinyl windows (**Figure 12.3-12.4**).

The southwest elevation features two wall openings: a sliding glass side door and a double-hung window containing a window air conditioning unit (**Figure 12.5**).

The northwest (rear) elevation was not visible from the public right-of-way preventing the assessment of features or wall openings.

The northeast elevation features three window openings that are partially covered by particle board, two of which contain window air conditioning units (**Figure 12.6**).

Associated Outbuildings
AR 6 is associated with two non-historic outbuildings: a metal storage building, and a vehicle shed. The storage building is on a concrete slab foundation with a low-pitch front gable standing seam metal roof and is clad in vertical standing seam metal siding (**Figure 12.7-12.9**). The southeast (main) elevation of the storage building contains a metal overhead garage door and a solid metal door. The vehicle shed is topped with a corrugated metal shed roof supported by a wood frame (**Figure 12.10**). The vehicle shed is open to the exterior aside from corrugated metal siding on the northwest (rear) elevation.

Current Condition
AR 6 is in good condition but has undergone moderate alteration, including the replacement of siding, windows, and roofing material. Additionally, the northeast elevation contains multiple wall openings that are covered by particle board, making condition assessment of these windows difficult.

NRHP Recommendation
AR 6 was evaluated for National Register eligibility using the three NRHP criteria identified in this research. AR 6 is recommended not eligible for listing on the NRHP due to loss of material integrity and a lack of historic and architectural significance. Under Criterion A, AR 6 is not associated with any historically significant events or patterns that have affected the region, state, or nation. AR 6 is recommended not eligible under Criterion B because it cannot be linked to any person or persons who are historically significant to the region, state, or nation. Under Criterion C, the building does not embody distinguishing characteristics that would make it a unique example of its architectural type, and it is not the work of a master builder or craftsperson. Additionally, the house has undergone alteration, including the replacement of exterior wall materials, roofing material, and windows, which has diminished its material integrity. No further work is recommended.

Figure 12.1. Aerial Image Showing the Location of AR 6.

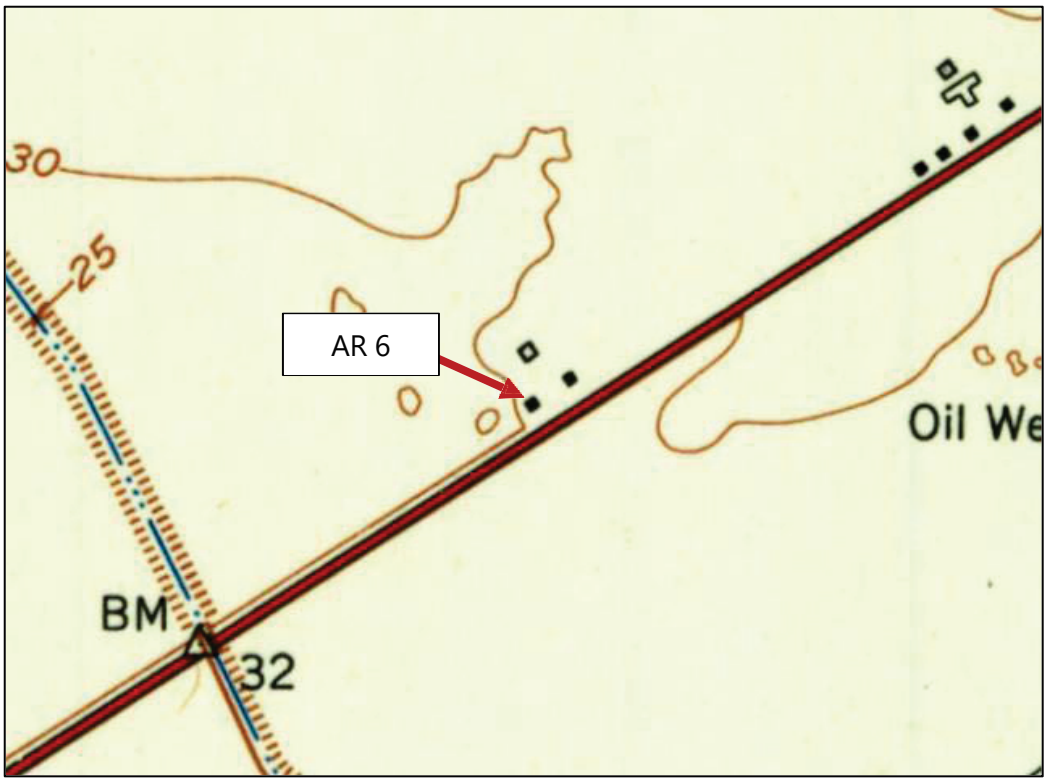

Figure 12.2. Location of AR 6 on the 1953 Green Lake USGS Topographic Map.

Figure 12.3. View of the Southeast (Main) Elevation of AR 6, facing Northwest.

Figure 12.4. View of the Southeast (Main) Elevation of AR 6, facing Northwest.

Figure 12.5. View of the Southwest Elevation of AR 6, facing Southwest.

Figure 12.6. View of the Northeast Elevation of AR 6, facing Northeast.

Figure 12.7. View of AR 6 and an Outbuilding, facing North.

Figure 12.8. View of the East and North Elevations of Storage Building Associated with AR 6, facing West.

Figure 12.9. View of the East and North Elevations of Storage Building Associated with AR 6, facing West.

Figure 12.10. View of the East and North Elevations of Vehicle Shed Associated with AR 6, facing West.

13.0 AR 7: 10548 TX-35

AR 7 is a southeast facing residential outbuilding located at 10548 TX-35, Port Lavaca, Calhoun County, Texas (**Table 13.1; Figure 13.1**). The outbuilding is bound on the southeast by TX-35, on the northwest by homestead land and associated non-historic structures, on the southwest by the main residential building on the lot, and on the northeast by non-historic residential properties. The building sits on level, grassy terrain that is covered by slightly overgrown trees and shrubbery. The side and rear boundaries of the lot are lined with thick patches of foliage and the property is accessed via gravel driveway, which extends northwest from TX-35 to the southeast elevation of AR 7.

According to the Calhoun County, TX PVA, AR 7 is currently owned by Esiquiel Saenz. The PVA records a construction date of 1965 and a square footage of 288 for the outbuilding. AR 7 is illustrated as early as 1981 on historical aerial images but does not appear on the 1953 or 1973 Green Lake topographic maps (**Figure 13.2**). The 1981 historic aerial image, the earliest available, shows AR 7 in its current location and configuration as well as the original main house associated with the outbuilding, which is no longer extant. The PVA and historic aerials indicate that the new main house on the property is modern construction and was built in 2014. AR 7 does not appear on any USGS topographic map, indicating the structure was not symbolized by the USGS in association with the original main house on the property. These maps suggest that AR 7 was constructed prior to 1981, corroborating the 1965 construction date listed on the PVA. It is likely the garage was associated with the construction of the original house but does not appear on topographic maps due to its dimensions or character.

Table 13.1. Summary of AR 7

Address	10548 TX-35 (28.540018, -96.767896)
County	Calhoun County
Date of Construction	1965
Square Footage	288.00 sq. ft.
Acreage	1.00
Owner	Esiquiel Saenz
Architectural Type	Residential Outbuilding
Integrity	AR 7 is in poor condition and displays signs of deterioration.
NRHP Recommendation	AR 7 is not eligible for the NRHP due to lack of architectural and historic significance.

Building Description

AR 7 is a southeast facing residential outbuilding covered by a front gable, corrugated metal roof and clad in corrugated metal siding (**Figure 13.3**). AR 7 features one wall opening visible from the public right-of-way: a multi-panel, metal overhead garage door along the southeast (main) elevation. The southwest and northeast elevations have no wall openings, and the northwest (rear) elevation is not visible from the public right-of-way (**Figure 13.4-13.5**). Although not visible, there are no indications of wall openings along the rear elevation from the right-of-way or in modern aerial images of the structure.

Current Condition

AR 7 is in poor condition and displays signs of damage and neglect including extensive corrosion.

NRHP Recommendation

AR 7 was evaluated for National Register eligibility using the three NRHP criteria identified in this research. AR 7 is recommended not eligible for listing on the NRHP due to lack of historic and architectural significance. Under Criterion A, AR 7 is not associated with any historically significant events or patterns that have affected the region, state, or nation. AR 7 is recommended not eligible under Criterion B because it cannot be linked to any person or persons who are historically significant to the region, state, or nation. Under Criterion C, the resource is not eligible because the structure is not the work of a master builder or craftsperson. Also, the building does not embody distinguishing characteristics that would make it a unique example of its architectural type. No further work is recommended.

Figure 13.1. Aerial Image Showing the Location of AR 7.

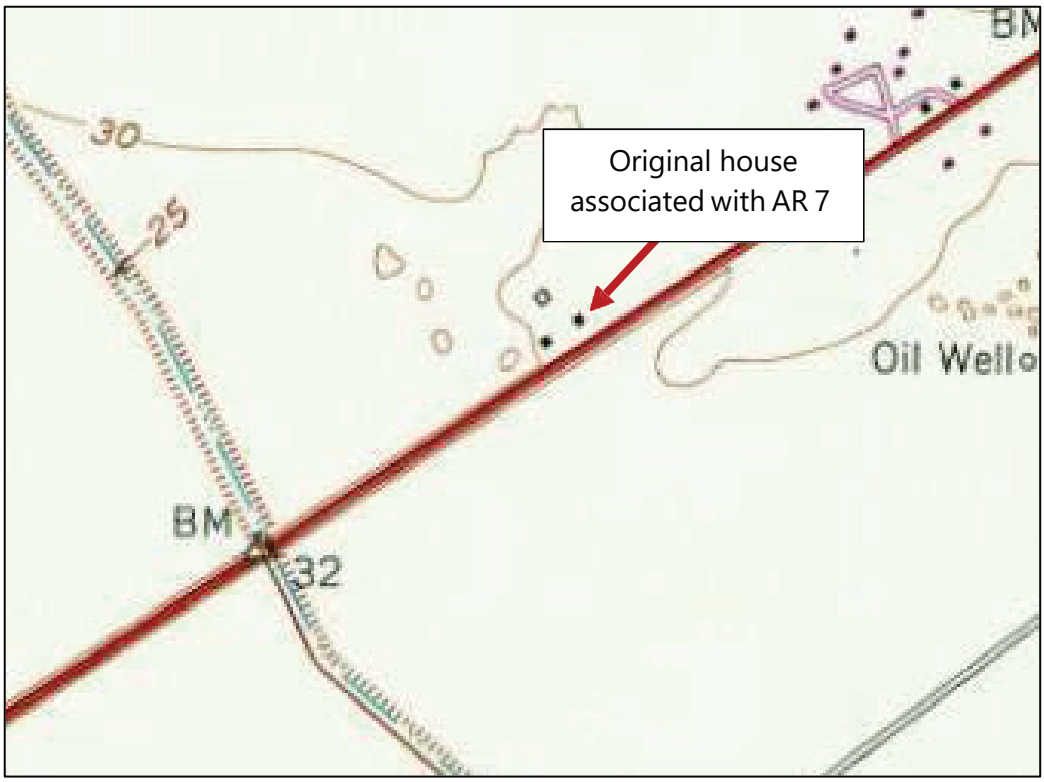

Figure 13.2. Location of Original House Associated with AR 7 on the 1973 Green Lake USGS Topographic Map.

Figure 13.3. View of Southeast (Main) and Southwest Elevations of AR 7, facing North; Note Associated Modern Residence.

Figure 13.4. View of the Southeast (Main) and Northeast Elevations of AR 7, facing East.

Figure 13.5. View of Southeast and Northeast Elevations of AR 7, facing West.

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14.0 AR 8: 10237 TX-35

AR 8 is a northwest facing, one-story, single-family, Ranch residence located at 10237TX-35, Port Lavaca, Calhoun County, Texas (**Table 14.1; Figure 14.1**). The building is located in a rural area and is bound on the north by TX-35, on the east by residential buildings and agricultural fields, on the south and west by agricultural fields. The building sits on flat, grassy terrain surrounded by several deciduous trees. The property is accessed via a dirt driveway that extends southeast from TX-35.

According to the Calhoun County, TX PVA, AR 8 is currently owned by Moreman Community Gin Association. The PVA lists 1955 as the date of construction for AR 8, 1 acre listed as the acreage, and 1,813.20 sq. ft. listed as the living area. AR 8 is not depicted on the 1953 Green Lake topographic map, but it is visible on the 1973 Green Lake topographic map, corroborating the PVA construction date of 1955 (**Figure 14.2**). AR 8 is not associated with any outbuildings.

Table 14.1. Summary of AR 8

Address	10237TX-35 (28.5418226, -96.7626179)
County	Calhoun County
Date of Construction	1955
Square Footage (Living Area)	Approximately 1,813.20 sq. ft.
Acreage	Approximately 1 acre
Owner	Moreman Community Gin Association
Architectural Type	Ranch
Integrity	AR 8 is in good condition.
NRHP Recommendation	AR 8 is not eligible for the NRHP due to loss of material integrity and lack of architectural and historic significance.

Building Description

AR 8 is a northwest facing, one-story, single-family, Ranch residence on a concrete foundation, with a side gable, standing seam metal roof and a front gable wing off of the southeast (rear) elevation. The house is clad in replacement vinyl siding and features metal double-hung windows. The rear wing is clad in vertical wood board. The northwest (main) elevation features a partial-width porch covered by an extension of the side gable roof supported by wood posts on a concrete slab.

The northwest (main) elevation contains five wall openings. East of the partial-width porch, the northwest elevation contains a double-hung window containing a window air conditioning unit. The window is set within a portion of the exterior wall clad in vertical wood board, which appears to have infilled a garage door opening. Underneath the partial width porch, there is a set of three two-over-two, double-hung windows containing one air conditioning unit with decorative shutters on either end. The entrance is a six-panel wood door that is accessed from the porch. West of the porch is a double-hung window and a pair of two-over-two, double-hung windows containing a window air conditioning unit with a single decorative shutter (**Figure 14.3-14.4**).

The northeast elevation features a double-hung widow containing a window air conditioning unit (**Figure 14.5**).

The southeast (rear) elevation contains three wall openings. On the main portion of the house, there is a pair of two-over-two, double-hung windows and a double-hung widow containing a window air conditioning unit. On the front gable wing, there is a wood door (**Figure 14.6**).

The southwest elevation contains three wall openings. On the main portion of the house, there are two two-over-two, double-hung windows, with one containing a window air conditioning unit. On the wing, there is a double-hung window (**Figure 14.6**).

Current Condition
AR 8 is in good condition but has undergone moderate alteration, including the replacement of siding and roofing material.

NRHP Recommendation
AR 8 was evaluated for National Register eligibility using the three NRHP criteria identified in this research. AR 8 is recommended not eligible for listing on the NRHP due to loss of material integrity and a lack of historic and architectural significance. Under Criterion A, AR 8 is not associated with any historically significant events or patterns that have affected the region, state, or nation. AR 8 is recommended not eligible under Criterion B because it cannot be linked to any person or persons who are historically significant to the region, state, or nation. Under Criterion C, the building does not embody distinguishing characteristics that would make it a unique example of its architectural type, and it is not the work of a master builder or craftsperson. Additionally, the house has undergone alteration, including the replacement of exterior wall materials, roofing material, and windows, that has diminished its material integrity. No further work is recommended.

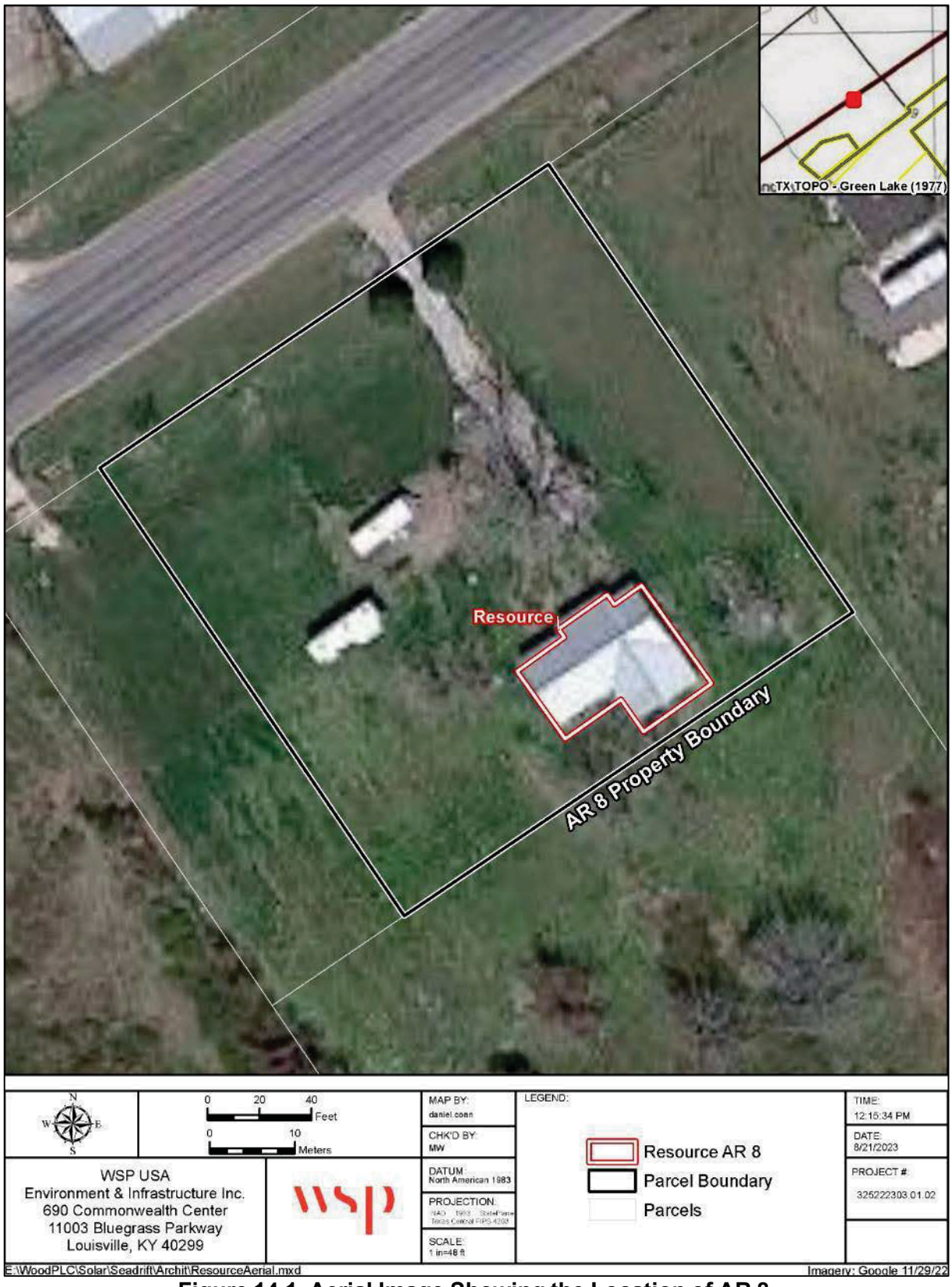

Figure 14.1. Aerial Image Showing the Location of AR 8.

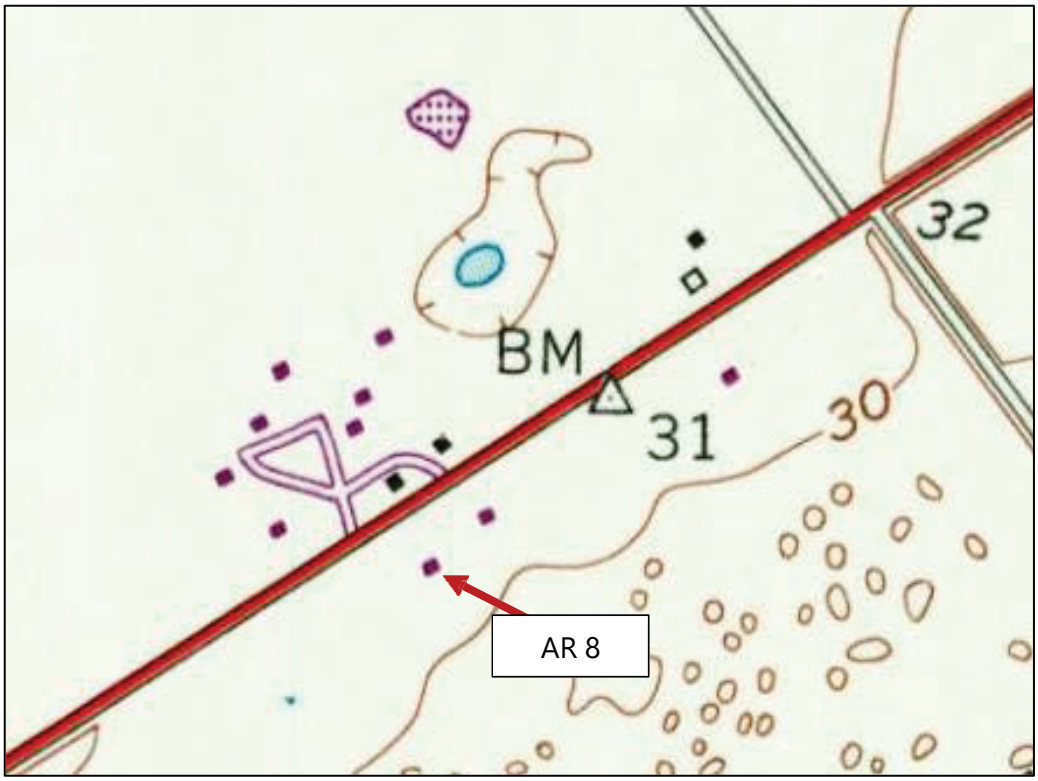

Figure 14.2. Location of AR 8 on the 1973 Green Lake USGS Topographic Map.

Figure 14.3. View of the Northwest (Main) Elevation of AR 8, facing Southeast.

Figure 14.4. View of the Northwest (Main) Elevation of AR 8, facing Southeast.

Figure 14.5. View of the Northwest (Main) and Northeast Elevations of AR 8, facing South.

Figure 14.6. View of the Southeast and Southwest Elevations of AR 8, facing North.

15.0 AR 9: 10211 TX-35

AR 9 is a northwest facing, one-story, Mid-20th Century Vernacular building located at 10211 TX-35, Port Lavaca, Calhoun County, Texas (**Table 15.1; Figure 15.1**). The building is located in a rural area and is bound on the north by TX-35, and on the east, south, and west by agricultural fields and a few residential and agricultural buildings. The building sits on flat, grassy terrain. AR 9 sits on a lot shared by a modern residential building and several outbuildings. The property is accessed via a dirt driveway that extends southeast from TX-35.

According to the Calhoun County, TX PVA, AR 9 is currently owned by Jimmy Miller. The PVA records 1969 as the date of construction for AR 9, with 2.6 acres listed as the residential acreage and 3.9 acres listed as pasture. The PVA also lists 630 sq. ft. as the living area with a 560 sq. ft. attached garage. AR 9 is not depicted on the 1953 Green Lake topographic map, but it is visible on the 1973 Green Lake topographic map. These maps corroborate the PVA construction date of 1969 (**Figure 15.2**). AR 9 is presently associated with a non-historic main residence constructed between 2004-2008. Various outbuildings are extant surrounding the non-historic main residence which were constructed post-2010. The non-historic main residence and its associated outbuildings are under 50 years old and are not associated with the original construction of AR 9.

Table 15.1. Summary of AR 9

Address	10211 TX-393 (28.5422996, -96.7623054)
County	Calhoun County
Date of Construction	1969
Square Footage	Approximately 630 sq. ft.
Acreage	6.5 acres (residential and pasture)
Owner	Jimmy Miller
Architectural Type	Mid-20th Century Vernacular
Integrity	AR 9 is in fair condition.
NRHP Recommendation	AR 9 is not eligible for the NRHP due to loss of material integrity and lack of architectural and historic significance.

Building Description

AR 9 is a Mid-20th Century Vernacular northwest facing brick and concrete block building topped with a low-pitched hipped asphalt shingle roof. Exterior wall openings include metal and wood double-hung and fixed windows, and wood doors. The southeast (rear) elevation was not visible from the public right-of-way, which prevented any determination regarding the presence of additional wall openings or other distinguishing characteristics along this elevation.

The northwest (main) elevation of AR 9 is symmetrical in plan, containing large, single-lite fixed windows on either side of the six-paneled wood door (**Figure 15.3**).

The northeast elevation contains two double-hung, metal windows and a single-lite fixed window. There is also evidence of a previous wall opening on the northeast elevation, which has been covered by a patch of standing seam metal siding (**Figure 15.4**).

The southeast (rear) elevation was not accessible from the public right-of-way, which prevented any determination regarding the presence or character of additional wall openings along this elevation.

The southwest elevation contains a wall mounted HVAC unit, two double-hung windows, and a garage door opening with wood double doors (**Figure 15.5**).

Current Condition
AR 9 is in poor condition, with signs of exterior deterioration including weathered and peeling paint on the exterior brick and concrete block and missing and deteriorated wood fascia. Alterations to the building include the infill of wall openings, including the standing seam metal infill on the east elevation and the infill material at various window surrounds.

NRHP Recommendation
AR 9 was evaluated for National Register eligibility using the three NRHP criteria identified in this research. AR 9 is recommended not eligible for listing on the NRHP due to a loss of material integrity and lack of historic and architectural significance. Under Criterion A, AR 9 is recommended as not eligible because it has no association with any historic events or pattern of events significant to the region, state, or nation. Under Criterion B, AR 9 is recommended as not eligible because no links were found between the building and person or persons with cultural or historic significance. Under Criterion C, the building is recommended as not eligible because it has no elements that make it a unique example of a twentieth century building. In addition, the building lacks integrity because materials have been altered over time, such as the infill of various wall openings. Because the building is recommended as not eligible, no further work is required.

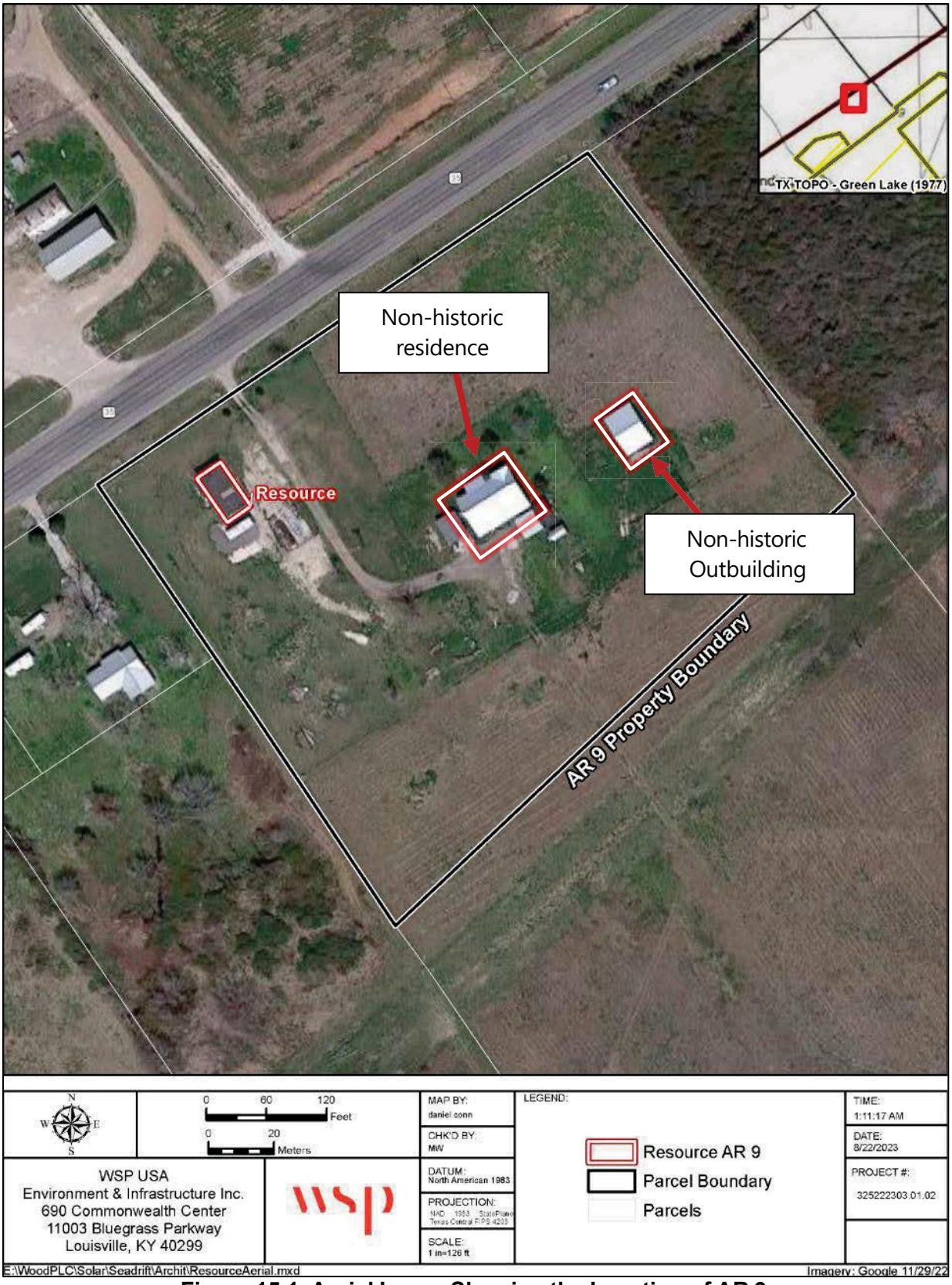

Figure 15.1. Aerial Image Showing the Location of AR 9.

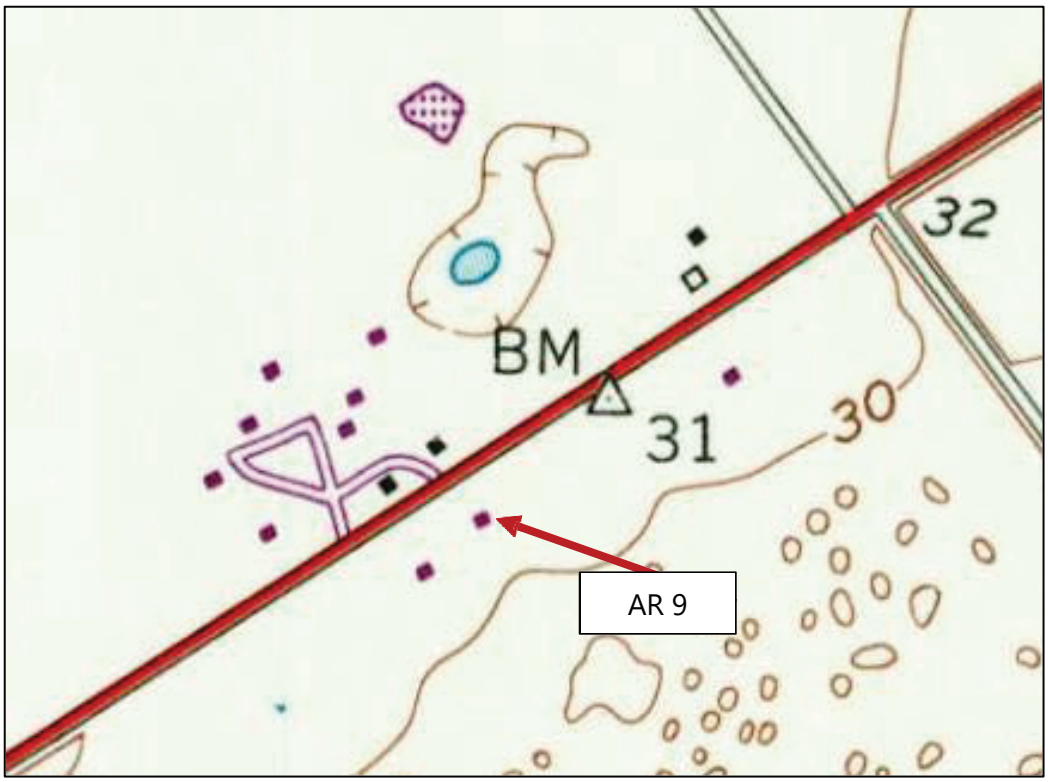

Figure 15.2. Location of AR 9 on the 1973 Green Lake USGS Quadrangle Topographic Map.

Figure 15.3. View of the Northwest (Main) Elevation of AR 9, facing Southeast.

Figure 15.4. View of the Northwest (Main) and Northeast Elevations of AR 9, facing South.

Figure 15.5. View of the Northwest (Main) and Southwest Elevations of AR 9, facing East.

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16.0 AR 10: 10254 TX-35 (MOREMAN COMMUNITY COTTON GIN)

AR 10 is a southeast facing, Mid-20th Century Cotton Gin Facility located at 10254 TX-35 in Port Lavaca, Calhoun County, Texas (**Table 16.1; Figure 16.1**). The complex is bound on the southeast by TX-35, on the northwest and northeast by fallow agricultural fields, and on the southwest by residential buildings. AR 10 sits on level terrain covered by a large gravel lot and dotted with small areas of grass or vegetation encroaching from the surrounding areas. Four gravel driveways extend from TX-35 to evenly spaced access points along the southeast elevation of the gravel lot.

According to the Calhoun County, TX PVA, AR 10 is currently owned by Moreman Community Gin Association and sits on a parcel totaling 21.3 acres (**Table 16.1**). The PVA lists a construction date of 1954 for buildings that are over 50 years of age on the property, and three additional buildings and structures listed are approaching historic age. AR 10 first appears on the 1981 historic aerial image, the earliest available. The 1953 Green Lake USGS Topographic Map, the earliest available, shows a facility in the general location and alignment of AR 10 (**Figure 16.2**). These maps corroborate the date of construction listed in the PVA; however, along with archival research, they indicate that extant historic structures were built as part of a pre-existing complex dating to 1934 (Hinder, Rinaldi-Williams, et al. 2023). Historic aerial images indicate that the complex was modified via the removal and construction of structures to achieve its current state as recently as 2018-2020.

Table 16.1. Summary of AR 10

Address	10254 TX-35 (38.384847, -85.431712)
County	Calhoun County
Date of Construction	1954
Square Footage (Living Area)	Approximately 1,087.2 sq. ft.
Acreage	21.3 acres
Owner	Moreman Community Gin Association
Architectural Type	Mid-20th Century Cotton Gin Facility
Integrity	AR 10 is in good condition though it has undergone moderate alteration.
NRHP Recommendation	AR 10 is recommended not eligible for listing in the NRHP due to diminished integrity.

Building Description

AR 10 is a southeast facing, Mid-20th Century Cotton Gin Facility which includes a combination of historic and non-historic processing, administration, and remnant structures (**Figure 16.3**). Of seven buildings on the property, three are historic and, along with additional remnants of the original gin complex constitute AR 10. The historic age buildings that comprise AR 10 are generally utilitarian in appearance with few or no stylistic elements. The buildings have generally continued to serve their historic functions and are representative of many basic elements of historic cotton gins in Calhoun County (**Table 16.2**).

Table 16.2. Overview of AR 10 Historic Buildings and Structures

Building/Structure	Current Use	Historic Use	Year Built
Office	Commercial	Commercial	1954
Storage Building (Quonset)	Storage	Storage	1954
Tank	Chemical Storage	Unknown	1969
Tank	Chemical Storage	Unknown	1969
Foundation Remnants	NA	NA	By 1981

Two historic age buildings were identified as extant elements of the modern complex: the gin office building and an agricultural storage building. The office building is consistent with the rest of the facility in its overall utilitarian design. The building is one-story, covered by a low-pitched, standing metal seam roof, and clad in corrugated metal siding. Wall openings include two casement and one double-hung, aluminum windows along the west elevation; three double-hung, aluminum windows along the south elevation; and an overhead garage door, an entrance covered by a flat roof, and a fixed, aluminum picture window (**Figures 16.4-16.5**). The agricultural storage building is a Quonset hut located along the northwest extent of the facility. The structure is clad in corrugated metal siding and is covered by a semi-circular corrugated metal roof that extends to grade, supported by arched steel frames. The Quonset hut features a pair of sliding corrugated metal doors hung from the front and rear elevations and two square vents along the remaining elevations. The vents display signs of damage (**Figures 16.6-16.8**). In addition to the principal historic-aged buildings, several structures including building foundations and storage tanks that exist across the property are representative of the materials and location of elements constructed during earlier phases of facility development and are interspersed among the new construction, creating a layered resource (**Figures 16.9-16.12**).

Current Condition

AR 10 is in fair condition though it has undergone significant alteration in the form of new construction, modification of extant structures, and removal of historic and non-historic structures and buildings.

NRHP Recommendation

AR 10 was evaluated for National Register eligibility using the three NRHP criteria identified in this research. AR 10 was closely considered for listing in the NRHP at the local level under Criterion A for a significant association with the Moreman Community Association Cotton Gin and the local cotton ginning industry of Port Lavaca. The original Moreman Community Association Cotton Gin is recognized as one of the earliest gins in the area surrounding Port Lavaca. Early cotton gins and the cotton ginning industry served as community centers and nodes of economic development at Port Lavaca, Seadrift, and other nearby communities beginning at the start of the 20th century. The Moreman Community Association Cotton Gin constructed its original gin complex in 1934 and continued to update the facility through the later decades of the 20th century. The gin continues to operate providing economic and industrial opportunity to local populations, specifically local cotton farmers. While AR 10 retains integrity of location, setting, feeling, and association, it severely lacks integrity of design, materials, and workmanship. AR 10 does not retain extant buildings from the original 1934 construction of the gin and, of the approximately 10 existing structures, only two buildings and two tanks are of historic age. The two historic age buildings are an office and Quonset hut, neither of which currently embody the character defining features of the historic-age facility.

Under Criterion B, the resource lacks significance, as it cannot be linked to anyone of historic relevance in the region, state, or nation. Under Criterion C, the resource is not eligible due to a lack of architectural significance. The facility does not embody distinguishing characteristics that

make it a unique example of its architectural type and these types of structures are common across the region, state, and nation. The facility has been significantly modified, but remaining historic age buildings retain overall integrity of location, design, setting, feeling, and association. In summary, AR 10 is recommended as not eligible for listing in the NRHP. No further work is recommended.

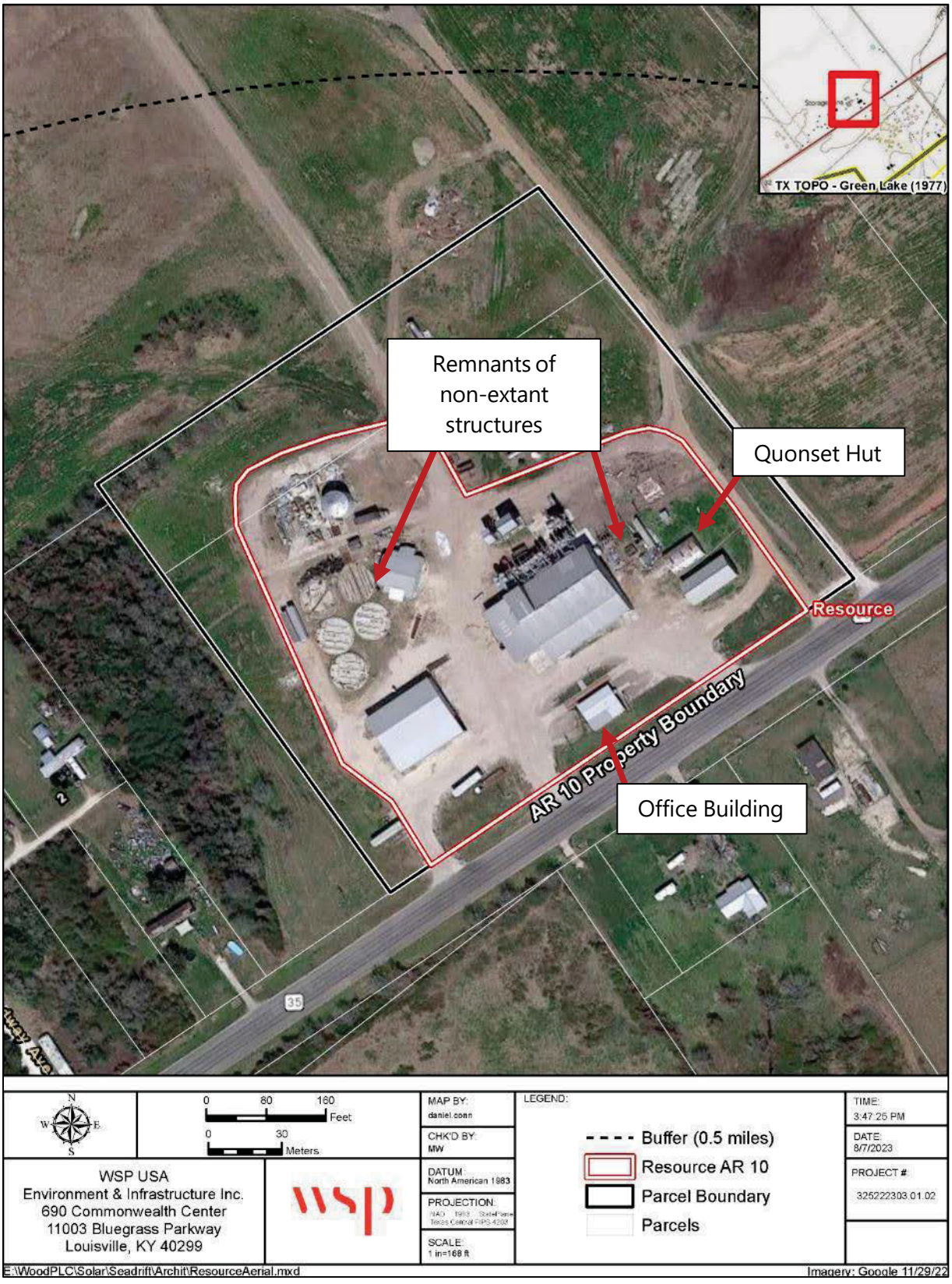

Figure 16.1. Aerial Image Showing the Location of AR 10.

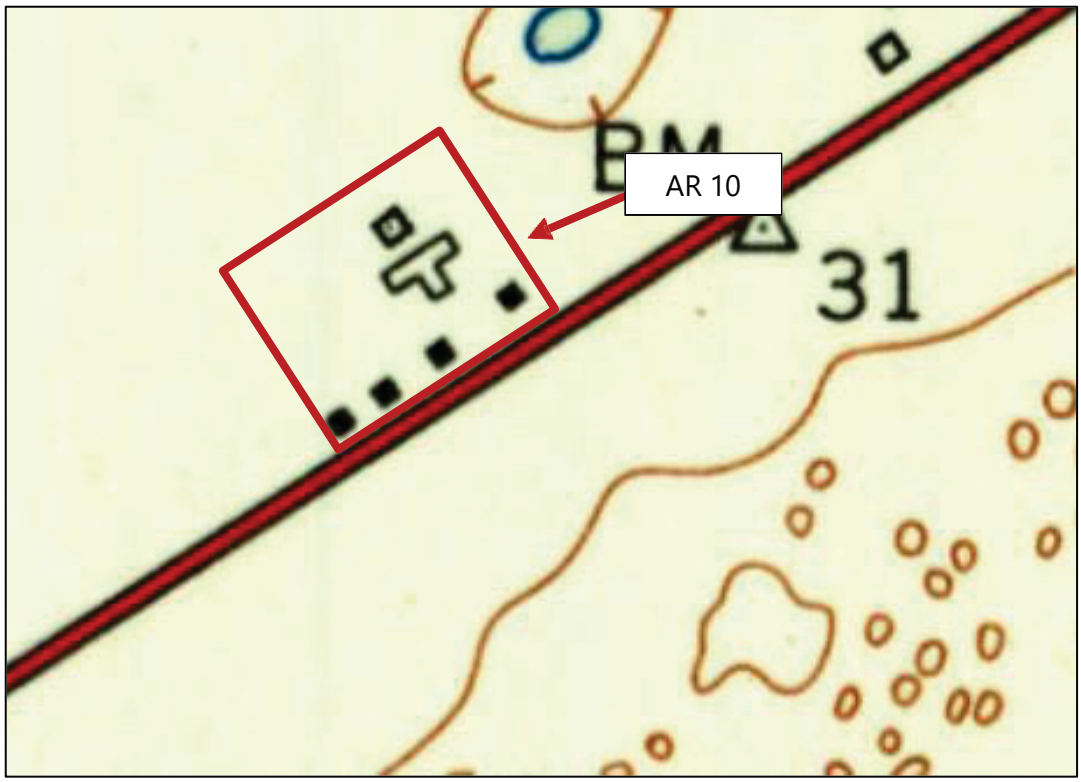

Figure 16.2. Location of AR 10 on the 1953 Green Lake USGS Topographic Map.

Figure 16.3. Overview of AR 10, facing Northwest.

Figure 16.4. View of South and East (Main) Elevations of Office Building, facing Northwest.

Figure 16.5. View of the South Elevation of Office Building, facing North.

Figure 16.6. View of West Elevations of Quonset Hut and Nearby Barn, facing East.

Figure 16.7. View East and South Elevations of Quonset Hut, facing Northwest.

Figure 16.8. View North Elevation of Quonset Hut, facing South.

Figure 16.9. View of Earlier Complex Remnants, facing Southwest.

Figure 16.10. View of Grain Bin Approaching Historic Age, facing West.

Figure 16.11. View of Grain Bin Foundations, facing South.

Figure 16.12. View of Processing Machinery, facing West; Note the Cotton Littered around the Ground Outside of the Ginning Building.

17.0 CONCLUSIONS AND RECOMMENDATIONS

On July 11-13, 2023, at the request of X-energy, WSP architectural historians conducted an aboveground cultural resource eligibility and effects survey for the proposed Project Long Mott in Calhoun County, Texas. The purpose of the survey was to identify aboveground historic resources over 50 years of age located within the APE; to evaluate these resources relative to their eligibility for listing in the NRHP; and to assess the potential direct and indirect visual effects of the proposed undertaking upon these resources.

The APE for aboveground cultural historic resource survey was determined in consultation with X-energy and the THC, the Texas SHPO. The project area is in the vicinity of the Dow Seadrift Operations Property, encompassing the northeast corner of the existing facility and adjacent Dow-owned land to the northeast, near the intersection of State Highways 185 and 35 in Calhoun County, Texas. The APE for cultural historic resources includes an additional 0.5-mile buffer radiating out from the proposed project limits to account for impacts to aboveground historic architectural resources that are adjacent to the project area.

A total of ten resources over 50 years old—including four residential buildings, two outbuildings, one utility site, two operating industrial or agricultural facilities, and one defunct industrial facility—were identified within the APE (**Table 17.1**). Of the ten resources, a total of seven were previously surveyed by Sara McLaughlin, Sandy Shannon, Amy E. Dase, Mitch Ford, Adrienne Vaughan, and Campbell (among others) of Stantec in 2021-2022 (Hinder, Rinaldi-Williams, et al. 2023) as part of a county-wide historic resources survey. All seven of these previously surveyed resources were recommended as not eligible for listing in the NRHP by McLaughlin et al.

Of the ten resources newly surveyed and revisited in this study, WSP Environment and Infrastructure recommends none as eligible for listing in the NRHP due to lack of historic and architectural significance and/or loss of integrity. Based on these findings, WSP recommends that there would be **No Historic Properties Affected** by the proposed undertaking.

Table 17.1. NRHP Recommendations and Determinations of Effect

Resource Number	Style/Form	NRHP Recommendation	Determination of Effect
AR 1	Mid-20th Century Industrial Complex	Not eligible	No Historic Properties Affected
AR 2	Industrial Ruins	Not eligible	No Historic Properties Affected
AR 3	20th Century Utility Structures	Not eligible	No Historic Properties Affected
AR 4	20th Century Agricultural Outbuildings	Not eligible	No Historic Properties Affected
AR 5	Ranch	Not eligible	No Historic Properties Affected
AR 6	Transitional Ranch	Not eligible	No Historic Properties Affected
AR 7	20th Century Residential Outbuilding	Not eligible	No Historic Properties Affected
AR 8	Ranch	Not eligible	No Historic Properties Affected
AR 9	20th Century Vernacular	Not eligible	No Historic Properties Affected
AR 10	Mid-20th Century Cotton Gin Facility	Not eligible	No Historic Properties Affected

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VI-C

X Energy, LLC, "Phase I Intensive Archaeological Survey for Project Long Mott - Negative Finding Report Service Receipt Inspection Report," Revision 2, March 26, 2025 (unrestricted; public)

Phase I Intensive Archaeological Survey for Project Long Mott – Negative Finding Report Service Receipt Inspection Report

Document ID Number	:	**008728 Configuration**
Classification	:	**Quality Documentation**
Revision	:	**2**
Security Classification	:	**Unrestricted**
Status	:	**Approved**
Date Created	:	3/26/2025
Project	:	**Long Mott Generating Station**

E-SIGNATURES

Document Approval Signees

Action	Designation	Name	Signature	Date
Preparer	Licensing Project Manager	Jessa Hultgren	Signed by: Jessa Hultgren 173092D997244BC...	March 28, 2025 | 11:13 AM ED
Approver	Licensing Manager	Milton Gorden	Signed by: Milton Gorden 32B3ED0F7B5D419...	March 28, 2025 | 11:14 AM ED

CONFIGURATION CONTROL/DOCUMENT CHANGE HISTORY

Document Change History

Rev.	Date	Preparer	Page/Section Revised	Description
1	3/19/25	Jessa Hultgren	All	Document Creation
2	3/26/2025	Jessa Hultgren	All	Changed Security Classification from Proprietary to Unrestricted. Attached is a letter from S&L stating the following: "Sargent & Lundy, LLC (S&L) understands that X Energy, LLC (XE) would like to include the reports listed below as part of the Long Mott Energy, LLC (LME) Construction Permit application to the U.S. Nuclear Regulatory Commission (NRC)… Our confidential/proprietary statement on the transmittal of those documents requires written permission for release of same. This email serves as our permission for those reports."

SERVICE RECEIPT INSPECTION REPORT

Provide title, number and revision of contractor document and corresponding title, number and revision assigned by X-energy from Teamcenter.

Company	Document Title	Document Number	Rev.
X-energy	**Phase I Intensive Archaeological Survey for Project Long Mott – Negative Finding Report**	008728	2
Supplier	**Phase I Intensive Archaeological Survey for the Proposed Project Long Mott, Calhoun County, Texas – Negative Finding Report**	WSP-XES-08	1

Disposition	
☒	Accepted
☐	Rejected (Deliverable must re-submitted after comments are incorporated.)

If deliverable is rejected, rationale for disposition

This record provides evidence that the deliverable was reviewed in accordance with QAP 7.1.

The Responsible Engineer's signature above confirms that contract requirements including Quality Assurance requirements are satisfied as documented in Question #1 of the Owner Acceptance (OAR) form (QAP-7.1-F03) and that appropriate technical reviews have been completed as documented in Questions #2 through #17 of the OAR form in accordance with QAP 7.1.

If a document is rejected, all non-conformances shall be documented in a non-conformance report (XEFORM-0059).

From: Pressburger, Maury A
To: Milton Gorden; Jessa Hultgren
Cc: Jannetty, Sandra J; Boswell, Greg
Subject: SL-XEN-2025-078 - Authorization to release reports
Date: Wednesday, March 26, 2025 9:59:47 AM

Milton,

Sargent & Lundy, LLC (S&L) understands that X Energy, LLC (XE) would like to include the reports listed below as part of the Long Mott Energy, LLC (LME) Construction Permit application to the U.S. Nuclear Regulatory Commission (NRC).

- Transmittal No. SL-XEN-2024-192; Phase I Intensive Archaeological Survey for the Proposed Long Mott Project, Calhoun County, Texas – Negative Finding Report; WSPDC#: WSP-XES-08; Rev. 1; Dated 19-Feb-2024
- Transmittal No. SL-XEN-2024-193; Cultural Historic Survey for the Proposed Project Long Mott, Calhoun County, Texas; WSPDC#: WSP-XES-07; Rev. 3; Dated 10-Jan-2024

Our confidential/proprietary statement on the transmittal of those documents requires written permission for release of same. This email serves as our permission for those reports.

Very Best Regards,

Maury

Maury Pressburger
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ISSUE SUMMARY AND APPROVAL PAGE

Project No. A13766.119
Transmittal No. SL-XEN-2024-192
November 7, 2024

X-energy LLC
Phase I Intensive Archaeological Survey for the Proposed Long Mott Project, Calhoun County, Texas – Negative Finding Report

This Phase I Intensive Archaeological Survey for the Proposed Long Mott Project, Calhoun County, Texas – Negative Finding Report at the Union Carbide Corporation (UCC) Seadrift Operations site (the Dow Chemical Corporation [Dow] Facility) in Seadrift, Texas has been reviewed for compliance with applicable technical and contractual documents and is approved for use.

The report was prepared by WSP USA Environment and Infrastructure, Inc. (WSP) under WSP project number 325223319.

Document No.	Rev.	Purpose	Date	Sections Affected
TC#: 008728 WSPDC#: WSP-XES-08	1	Final Report	02/19/2024	All

Reviewed by

Julianna Crumlish
Senior Environmental Associate

Approved by

Greg Boswell
Consultant I

Phase I Intensive Archaeological Survey for the Proposed Project Long Mott, Calhoun County, Texas – Negative Finding Report

Final Report

WSP Project No.: 325223319
WSP Cultural Report of Investigations No.: 2023-046
WSPDC - XES-08
TC#: 008728

Prepared for:

X-Energy

February 19, 2024

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Phase I Intensive Archaeological Survey for the Proposed Project Long Mott, Calhoun County, Texas – Negative Finding Report

Final Report

Prepared for:
X-Energy

WSP Project No.: 325223319
WSP Cultural Report of Investigations No.: 2023-046
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Prepared by:

WSP Environment & Infrastructure Solutions

John A. Hunter, MA, RPA
Principal Investigator

Authored by:
John A. Hunter MA, RPA, and Clay Cantrell

February 2024

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MANAGEMENT SUMMARY

From July 10 to 19, 2023, WSP USA Environment & Infrastructure, Inc. (WSP) conducted a Phase I intensive archaeological survey of 930.6 acres in support of the Environmental Report (ER) for the proposed Project Long Mott in Calhoun County, TX. The survey was conducted under contract with X-Energy to facilitate compliance with Section 106 of the National Historic Preservation Act and the Antiquities Code of Texas (Natural Resources Code, Title 9, Chapter 191, Subchapter A). Per the provisions of the Texas Cultural Resources Code, Title 9, Chapter 191, WSP initiated a review of the Scope of Work (SOW) with the Texas Historical Commission (THC) on May 12, 2023, with the concurrence of the proposed SOW from the THC on June 7, 2023 (THC Tracking No. 202308205).

This report details the 930.6-acre portion (1.45 square miles or 376.6 hectares) portion of the Long Mott Project that has not been previously submitted for consultation. The 617.4-acre portion (0.96 square miles or 249.85 hectares) of the project (Hunter and Cantrell 2023) was consulted on previously (submitted on August 1, 2023, THC Tracking No. 202312012) by the Department of Energy (DOE) in support of the Environmental Report (ER) for the Xe-100 Dow Seadrift Site in Calhoun County, Texas.

The APE consists of portions of agricultural fields containing unharvested and harvested corn, disturbances from extant infrastructure (plant facilities, paved areas, and holding ponds), as well as portions of open scrub growth, railroad tracks, and a portion of a railyard. The ground surface visibility varied across the APE and as such the Phase I intensive survey was completed over the entire APE using a combination of systematic shovel test probe excavation (STPs) coupled with pedestrian survey.

A total of 179 STPs were excavated across the APE. None of the excavated STPs contained cultural material. Additionally, no evidence of deeply buried cultural deposits suggesting buried A-horizons or cultural artifacts were identified in any of the excavations. As a result of the intensive archaeological survey, no archaeological sites or cultural materials were identified. WSP recommends that the proposed project will have no effect on historic properties and that no additional archaeological work is required within the APE.

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1 INTRODUCTION

1.1 Overview

X-Energy contracted with WSP USA Environment & Infrastructure, Inc. (WSP) to conduct a Phase I intensive archaeological survey in support of the Environmental Report (ER) for the proposed Project Long Mott in Calhoun County, Texas (**Figures 1.1 – 1.3**). The survey was conducted under contract with X-Energy to facilitate compliance with Section 106 of the National Historic Preservation Act and the Antiquities Code of Texas (Natural Resources Code, Title 9, Chapter 191, Subchapter A). Per the provisions of the Texas Cultural Resources Code, Title 9, Chapter 191, WSP initiated a review of the Scope of Work (SOW) with the Texas Historical Commission (THC) on May 12, 2023, with the concurrence of the proposed SOW from the THC on June 7, 2023 (THC Tracking No. 202308205). The purpose of the survey was to determine if any archaeological resources would be impacted by the proposed undertaking.

The archaeological survey was completed between July 10 to 19, 2023. John A. Hunter, MA, RPA served as the project principal investigator for the project. He was assisted in the field by archaeologists Patrick Cantrell, Steve Lucas, Nickolas Brown, and Gideon Hoekstra. Report graphics were produced by Daniel Conn.

Figure 1.1. Project Location in Calhoun County, Texas.

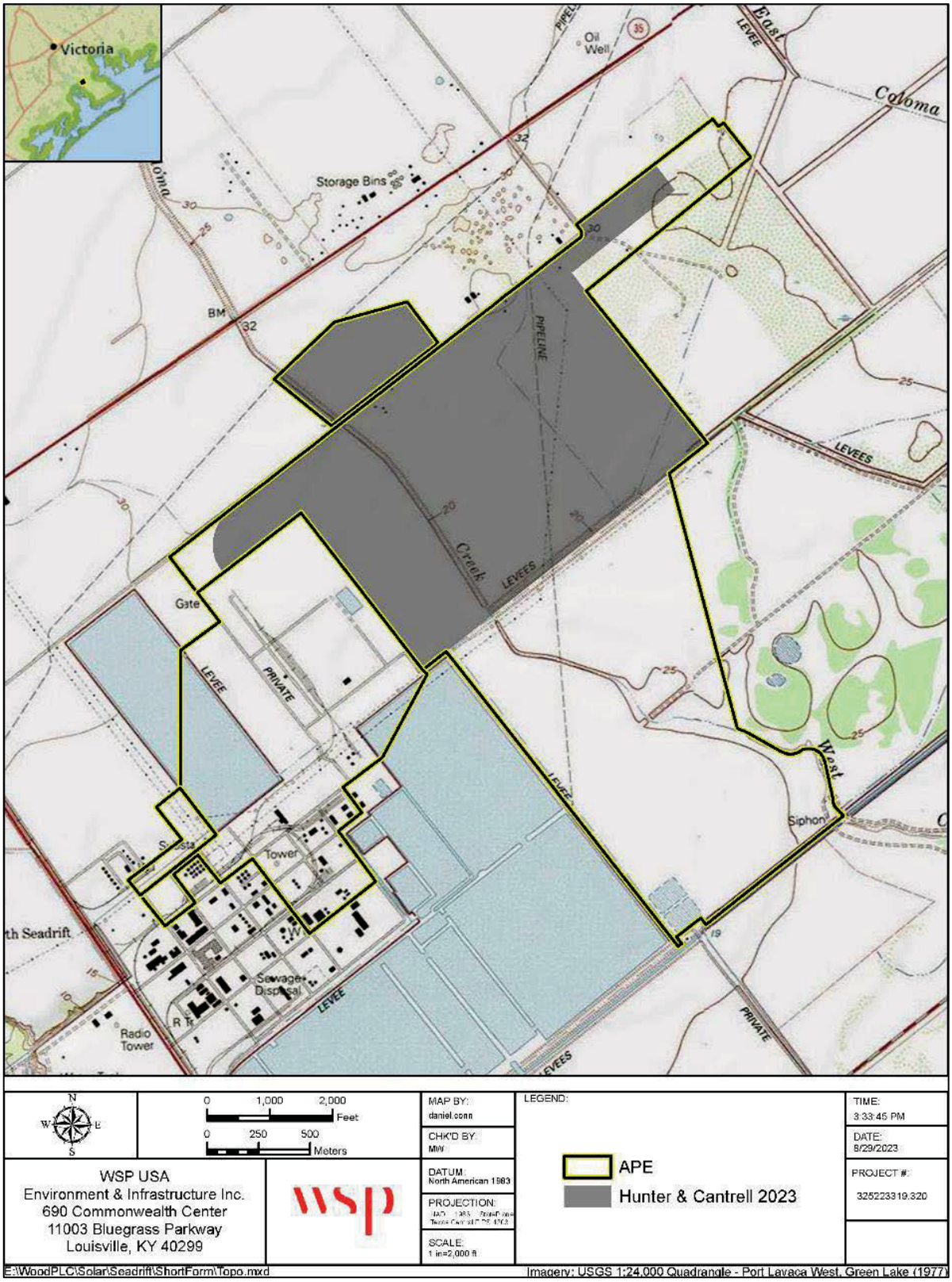

Figure 1.2. The APE Shown on the 1977 Port Lavaca West and Green Lake 7.5-minute Quadrangles.

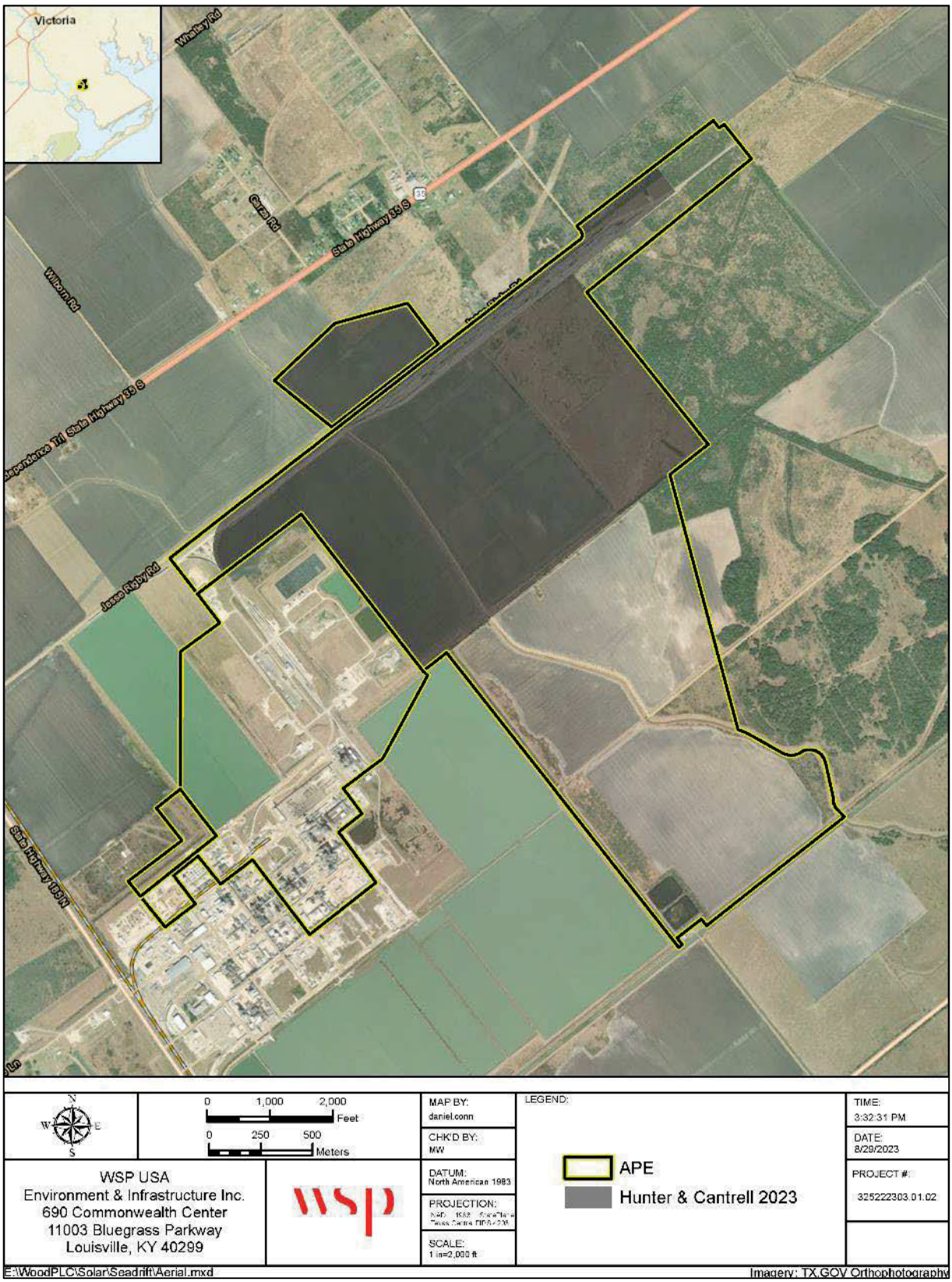

Figure 1.3. The APE Shown on a Current Aerial Photograph.

1.2 Intensive Archaeological Survey Summary

From July 10 to 19, 2023, WSP conducted a Phase I intensive archaeological survey for the proposed Project Long Mott in Calhoun County, Texas. This report details the 930.6-acre portion (1.45 square miles or 376.6 hectares) portion of the Long Mott project that has not been previously submitted for consultation. The 617.4-acre portion (0.96 square miles or 249.85 hectares) of the project (Hunter and Cantrell 2023) was consulted on previously (submitted on August 1, 2023, THC Tracking No. 202312012) by the DOE in support of the ER for the Xe-100 Dow Seadrift Site in Calhoun County, Texas.

The APE consists of portions of agricultural fields containing unharvested and harvested corn, disturbances from extant infrastructure (plant facilities, paved areas, and holding ponds), as well as portions of open scrub growth, railroad tracks, and a portion of a railyard. The ground surface visibility varied across the APE and as such the Phase I intensive survey was completed over the entire APE using a combination of systematic shovel test probe excavation (STPs) coupled with pedestrian survey.

Prior to fieldwork, a desktop geomorphological assessment of the APE was conducted. Two broad soil associations are mapped within the survey area: Dacosta-Contee Complex with 0 to 1 percent slopes and Laewest clay with 0 to 1 percent slopes (USDA/NRCS 2023). Overall, the defined soil horizons, coupled with the project location along a relatively straight portion of a low-level waterway (West Coloma Creek) and relatively flat topographic landform, suggest the area is unlikely to contain deeply buried archaeological deposits. The A-Bt upper soil horizon suggests a fairly stable landform allowing for pedogenesis, not one subjected to frequent, large depositional events such as flooding. While the occurrence of the Bt-horizon deposits does not preclude cultural materials, the shallow nature of these deposits suggests any buried cultural deposits can be reached during shovel test excavations.

A total of 176 STPs were excavated within the APE. None of the excavated STPs contained cultural material. Additionally, no evidence of deeply buried cultural deposits suggesting buried A-horizons or cultural artifacts were identified in any of the excavations. As a result of the intensive archaeological survey, no archaeological sites or cultural materials were identified. WSP recommends that the proposed project will have no effect on historic properties and that no additional archaeological work is required within the APE.

2 ENVIRONMENTAL SETTING

2.1 Physiography, Geology, and Soils

The project area falls within the Coastal Plains physiographic region. This Coastal Plain is an extension of the Coastal Plain region lining the Atlantic Ocean in the eastern United States (Bureau of Economic Geology 1996). More specially, the APE is located within the Northern Humid Gulf Coastal Prairies (**Figure 2-1**). This physiographic region is characterized by its association with the ocean and wind and rain associated with the ocean. This region contains shallow bays, estuaries, salt marshes, dunes, and tidal flats (TSHA 2023).

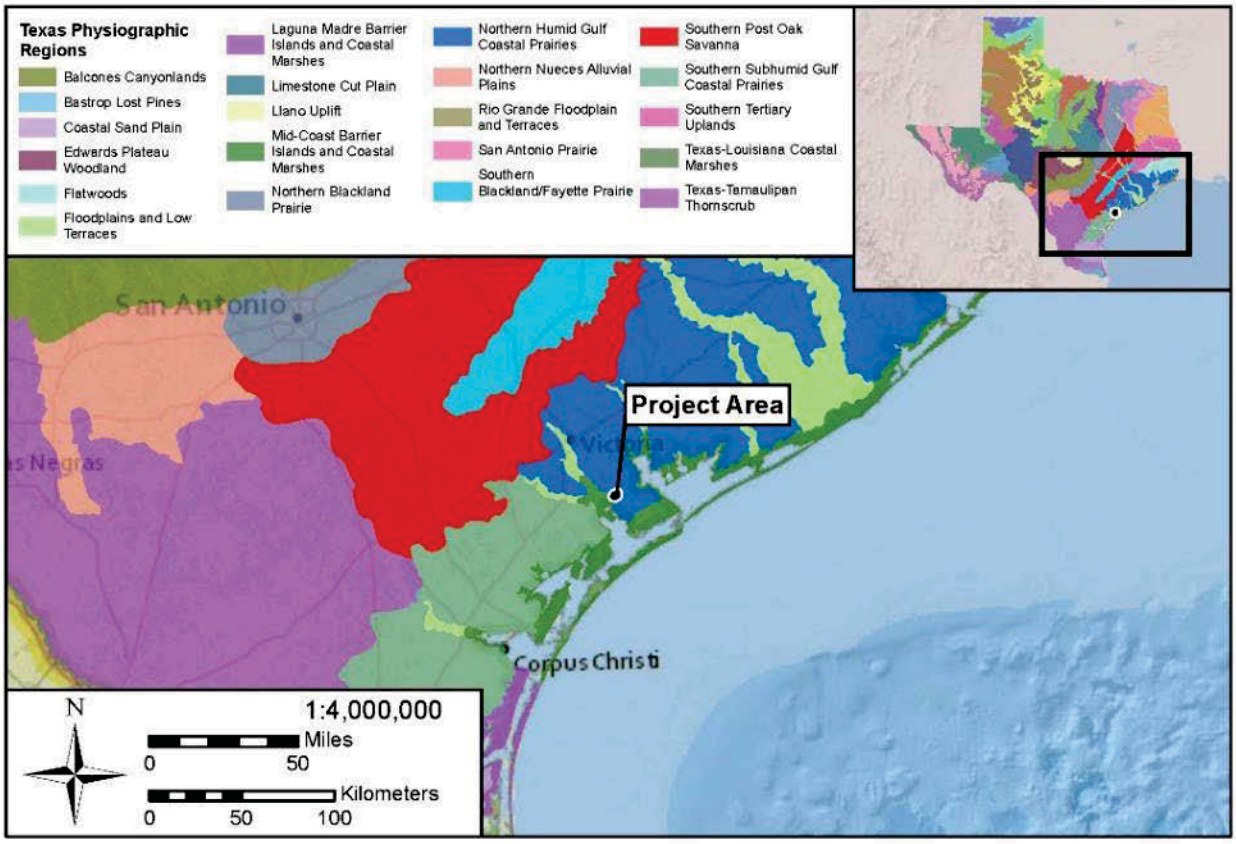

Figure 2.1. A Physiographic Map of Texas Showing the Project Area Location.

Three soil associations, encompassing three soils are defined within the APE: Dacosta – Contee complex 0 – 1 percent slopes (Dc), Edna loam 0 -1 percent slopes (Ed), and Laewest clay 0 – 1 percent slopes (La) (**Figure 2.2**). Common traits attributed to these soil types are summarized below in **Table 2.1**, including texture, soil horizon designation of a typical soil profile, parent material (material from which the soil type has formed), and drainage. Information concerning the soil type was compiled using the information available on the United States Department of Agriculture (USDA), National Resource Conservation Service (NRCS) Web Soil Survey (USDA/NRCS 2023).

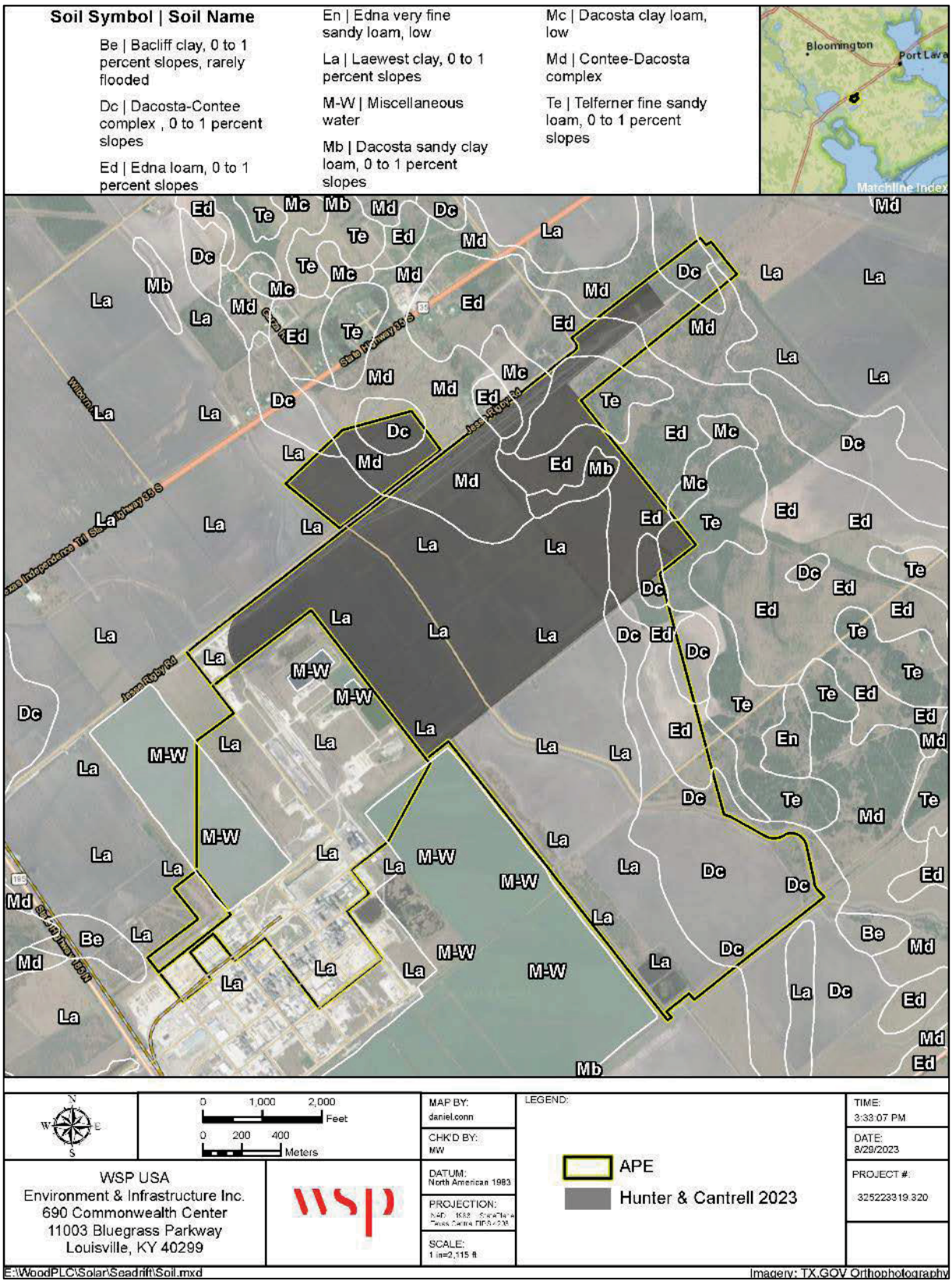

Figure 2.2. Soils Located Within and Surrounding the APE.

Table 2.1. Summary of Soil Types Found within the APE.

Soil Type	Typical Soil Profile	Drainage	Parent Material	Landform	% of APE
Dacosta – Contee complex (Dc)	A - 0 to 9 inches: sandy clay loam Bt1 - 9 to 13 inches: sandy clay loam Bt2 - 13 to 47 inches: clay Btk - 47 to 74 inches: sandy clay 2BCt - 74 to 80 inches: sandy clay loam	Moderately well drained	Clayey fluviomarine deposits	Flats	3.6
Edna loam (Ed)	A - 0 to 9 inches: loam Bt1 - 9 to 38 inches: clay Bt2 - 38 to 50 inches: clay Btk - 50 to 80 inches: sandy clay loam	Poorly drained	Loamy fluviomarine deposits	Flats	12.4
Laewest clay (La)	A - 0 to 17 inches: clay Bss1 - 17 to 40 inches: clay Bss2 - 40 to 59 inches: clay Bkss - 59 to 80 inches: clay	Moderately well drained	Clayey fluviomarine deposits	Flats	60.6

* Soil horizon sequence inferred from national soil series descriptions (USDA/NRCS Web Soil Staff 2023)

2.2 Geoarchaeological Assessment

Before conducting fieldwork, WSP conducted a geomorphological assessment of the APE. Two soil associations are mapped within the survey area: Dacosta-Contee Complex with 0 to 1 percent slopes and Laewest clay with 0 to 1 percent slopes. Overall, the defined soil horizons, coupled with the project location along a relatively straight portion of a low-level waterway (West Coloma Creek) and relatively flat topographic landform, suggest an area is unlikely to contain deeply buried archaeological deposits. The A-Bt upper soil horizon suggests a fairly stable landform allowing for pedogenesis, not one subjected to frequent, large depositional events such as flooding. While the occurrence of the Bt-horizon deposits does not preclude cultural materials, the shallow nature of these deposits suggests any buried cultural deposits can be reached during shovel test excavations.

The notation of slickenslides (ss) in the soil horizon profile speaks to the general environment of the landform. Slickenslides in soil are defined as well-worn (smoothed) sides on soil peds that form in clay soils that have significant amounts of shrinking and swelling. Such traits are often attributed to frequently flooded or poorly drained soils, ones which are heavily inundated, then left to dry causing the shrinking and swelling activity. This suggests that the landform was likely frequently wet or inundated before the construction of the numerous ponds and drainage canals currently present in the area.

2.3 Prehistoric and Historic Environment

The central coast of Texas (the shoreline and coastal plain 40-50 km inland) is unified by the presence of five similar, major bay estuarine systems inside a continuous barrier chain (Ricklis 2004). The coastal plain is composed of sandy clays and clayey sands deposited by major fluvial-

deltaic systems during the Pleistocene interglacials and rises very gradually toward the interior. During the last glacial maximum, the sea level was as much as 100 m lower than today, thus human encampments and activity areas along the coast are deeply submerged. By about 9000 years ago the melted waters formed bays comparable to those presently in existence, and they reached their present elevations by 3000 years ago. The barrier islands probably reached their present form about 2500-2000 years ago. The resource-rich shallow water estuaries were protected from strong wave activity by these islands and were increasingly suitable for exploitation by the aboriginal populations.

Calhoun County is located in the southwestern section of the Gulf Coast Prairie and encompasses a broad flat plain that is broken up by natural rain and inland bays. Elevation in the county ranges from sea level to approximately 55 feet amsl. The average rainfall is approximately 39 inches (Mowery and Bower 1978).

3 CULTURAL AND ARCHAEOLOGICAL BACKGROUND

The history of human activity in Calhoun County and the surrounding region spans thousands of years. The earliest groups to leave a definitive material record of their presence were early Paleoindians who entered the region during the Late Pleistocene glacial epoch, more than 11,000 years ago. Their descendants and the descendants of other Native American groups who migrated to the region lived in the region until the arrival of the first European explorers.

While cultural change is a slow and continual process, archaeologists and other researchers divide the human history of a region into distinct cultural periods. Archaeologists and historians recognize four broadly defined periods, Paleoindian, Archaic, Late Prehistoric, Protohistoric, and Historic. Due to the lack of cultural material identified during the current investigations, the following sections have been abbreviated.

3.1 Prehistoric Context

Previous archaeological research in the project region has defined five distinct time periods that include, Paleoindian: 11,500 BP to 8,800 BP, Archaic: 8,800 BP to 1,200 BP, Late Prehistoric/Protohistoric: 1,200 BP to 500 BP, and Historic: 500 BP to present. The distinction between these periods relies heavily on the different types of subsistence practices utilized and the cultural traits present. However, it should be noted that discussion of the prehistory of Coastal Texas is largely restricted to the Central Texas Coast because the Lower Texas coast is relatively unknown (Ricklis 2004).

3.1.1 Paleoindian

The Paleoindian of Coastal Texas is not discussed by Ricklis (2004) because it is known only from scattered surface finds of diagnostic projectile points. No intact subsurface components have been explored. Because of the significantly lower water levels at the time, the Pleistocene coastline is deeply submerged. The cultural material that is present on land is related to terrestrial riverine environments.

3.1.2 Archaic (7,500 – 950 BP)

Early Archaic (7,500 – 4,200 BP)

Despite the lower and rapidly rising sea levels during the initial part of the Early Archaic period, the period is well represented in Coastal Texas. Ricklis (2004) divides the period into two segments: 7,500-6,800 BP and 5,800-4,200 BP, with a gap of about a millennium when there was little use of the shoreline, perhaps because of rapid rises in the water level that upset the ecology of the shoreline. The earlier portion of the period is represented by several sites in the Nueces Bay area that yielded radiocarbon dates but little cultural material. Surface finds of projectile points, particularly Uvalde-like points, are common. Distinctive edge-flaked shell scrapers/knives have been identified in good context. Estuarine shellfish were exploited, but it remains to be determined whether fishing was a significant part of the economy.

The second portion of the period is much better represented; sites are considerably more numerous, and a comparatively large number of radiocarbon dates have been obtained. Most of the deposits consist of shell middens with very few lithic items present. [[

]][ASI] A variety of saltwater and freshwater fish compose the limited faunal assemblage from the various sites.

Middle Archaic (4,200 – 3,100 BP)
There are virtually no components and dates attributable to this time span despite investigations of earlier and later sites. It is feasible that there was minimal use of the shoreline during this period (Ricklis 2004).

Late Archaic (3,100 – 950 BP)
The Late Archaic began at about the time the sea level stabilized. There are dates from shoreline sites that span this period, and the sites are more numerous and larger, and deposits are thicker and have larger quantities of cultural material and more diverse assemblages (Ricklis 2004). This seems to indicate a larger population and more numerous and more intensive occupations. There is evidence of more concentrated exploitation of estuarine shellfish, in addition to hunting of white-tailed deer. The earlier deposits are marked by the presence of Kent points, and later deposits have Ensor points, and Catan and Matamoros points typify the terminal Archaic at about 950 BP. The shoreline sites show a diverse array of shell tools, perhaps necessitated by the distance from chert sources. The shell middens promoted the preservation of bone tools and non-functional items, which were found at many sites. By 2,000 BP there is evidence of much more intensive fishing, and moderate to high salinity mollusks were found in massive middens at the seaward end of bays. [[
]][ASI] It is possible that the shoreline was occupied during cold weather and interior riverine areas were used during warmer months. Cemeteries are documented for the first time in the area, perhaps as a response to more established territories and increased populations.

3.1.3 Late Prehistoric (950 – 250 BP)
The advent of the Late Prehistoric is marked by the shift to the bow and arrow and the associated subsistence changes, and the period is divided into two segments on the bases of the changes in diagnostic tools and economic patterns (Ricklis 2004). The Initial Late Prehistoric (950-700/650 BP) is indicated by the presence of Scallorn points and by pottery with sandy paste at some locales. The Final Late Prehistoric (700/650-250 BP) is marked by Perdiz and other arrowheads, unifacial end scrapers, thin bifacial knives, small drills, and prismatic blade-core technology and Rockport pottery--ceramics with bowls, jars, and ollas often coated or decorated with asphaltum, incised rims, or notched lips. Fishing became an even more important subsistence source, while shellfish declined in importance. Bison provided the majority of the meat and white-tailed deer was secondary. The Rockport phase parallels the Toyah phase of the interior of the state in many aspects and appears to have adopted the same lithic technology at the same time, perhaps to facilitate the exploitation of bison. The subsistence system seems to continue the practice of occupying the interior lands to hunt during the warm months and movement to the shoreline during the winter but may add group aggregation to the system during the fishing season and dispersal into small camps for gathering plants and hunting (Ricklis 1996).

3.1.4 Protohistoric/Early Historic
In the sixteenth and seventeenth centuries, before the Spanish explorers and mission system impacted the economy of native groups, trade goods appeared in the region. The native groups of this area became culturally extinct in the eighteenth century because of diseases introduced by the Spanish and the movement of people into missions and the adoption of farming livelihoods (Hester 1989).

3.2 Historic Context
Calhoun County is located on the Gulf Coast, between Corpus Christi and Houston. In 1846, the Texas legislature established Calhoun County from portions of Victoria and Jackson Counties

(McCarty 1910). The bodies of water that surround and drain from the county include Espiritu Santo Bay, Lavaca Bay, Matagorda Bay, and the San Antonio and Guadalupe Rivers.

Calhoun County's economy and significance are directly related to its position along the coast. The area is low-lying, flat, and, historically, has been used for cattle grazing. In 1875, a large gulf storm destroyed much of the county seat—Indianola—and its port (McCarty 1910). As a result, a decline in commerce and population occurred, lasting into the twentieth century. In the 1880s, the San Antonio and Mexican Gulf Railway was constructed, which connected the port towns to Victoria to the north and other centers of commerce (McCarty 1910). Its county seat, now, is Port Lavaca, on Lavaca Bay.

Matagorda Island, just south of the county, is mostly comprised of deep shell sand. The area's climate is mild, with an average rainfall of approximately 40 inches; the growing season, likewise, lasts most of the year. Native florae include grasses, coastal scrub, live oak, and sedges, while local fauna includes game birds, deer, jackrabbits, raccoons, and coyotes (Kleiner 1952).

3.3 Archaeological Background Research

Archaeological background research was compiled by reviewing the Texas Archaeological Sites Atlas. This review included the APE and a 1 km (0.6 miles) buffer surrounding the APE. The purpose of the research was to identify previous archaeological surveys and recorded archaeological sites within or near the APE. Reports of prior investigations are reviewed to gain an understanding of the archaeological research in the project area and vicinity. According to the review, no archaeological sites are located within the APE or the 1-km buffer surrounding the APE. No previously conducted surveys are located within the APE; however, two previously conducted archaeological surveys (8400009819 and 8400009824) are located within the 1-km buffer surrounding the APE (**Figure 3.1**). Little information regarding surveys 8400009819 and 8400009824 was available, except that they were conducted in May 2001. No archaeological sites were associated with these surveys within the 1-km buffer surrounding the APE.

3.4 Historic Map Review

The reviewed historic maps included the 1953 USGS Seadrift, Port Lavaca West, Green Lake, and Austwell, Texas 7.5' topographic quadrangles (**Figure 3.2**). [[

]]ASI The areas surrounding these identified historic structures were treated as high-probability areas to contain historic cultural deposits.

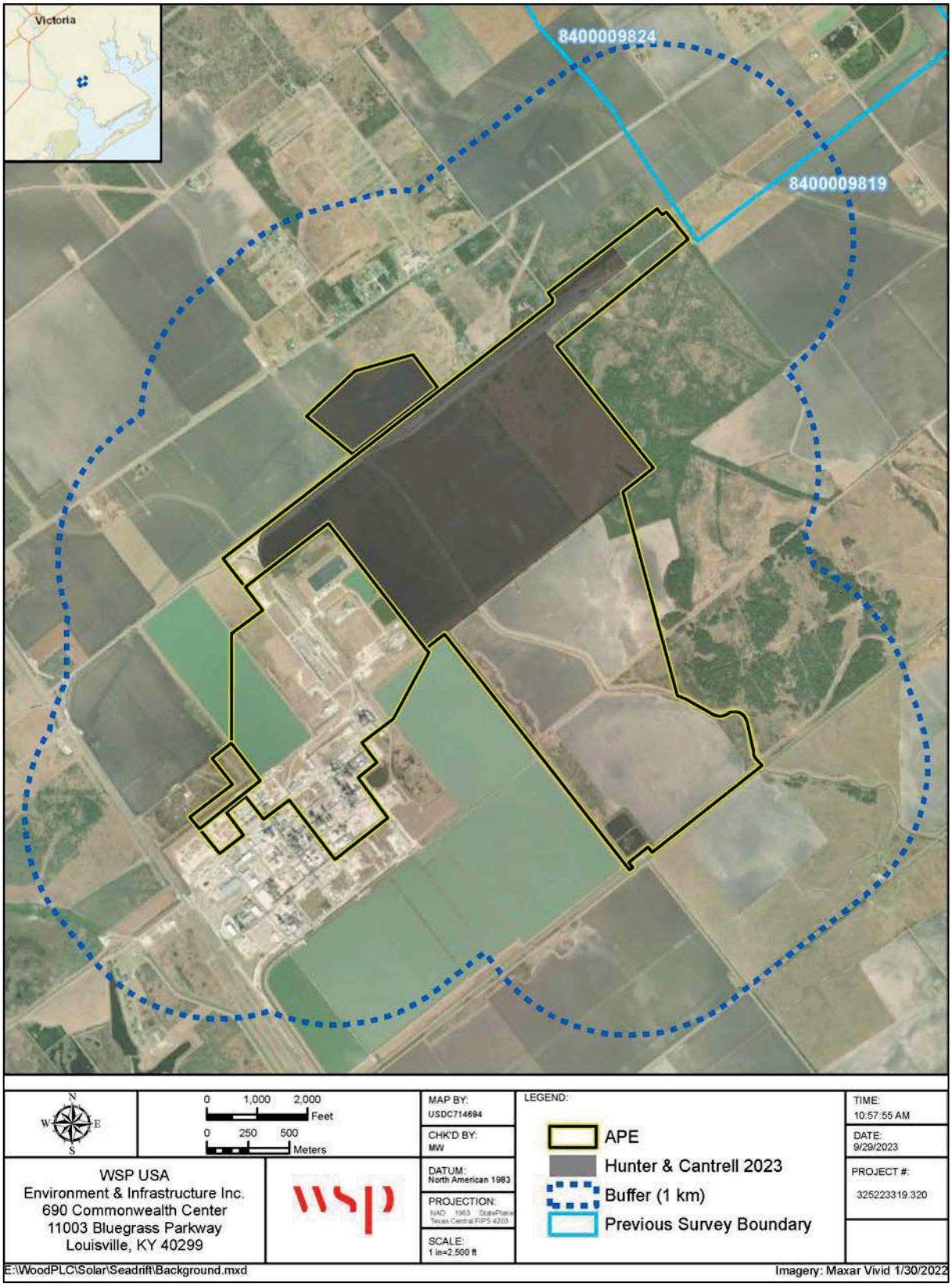

Figure 3.1. Texas Site Atlas Background Data within 1-km of the APE.

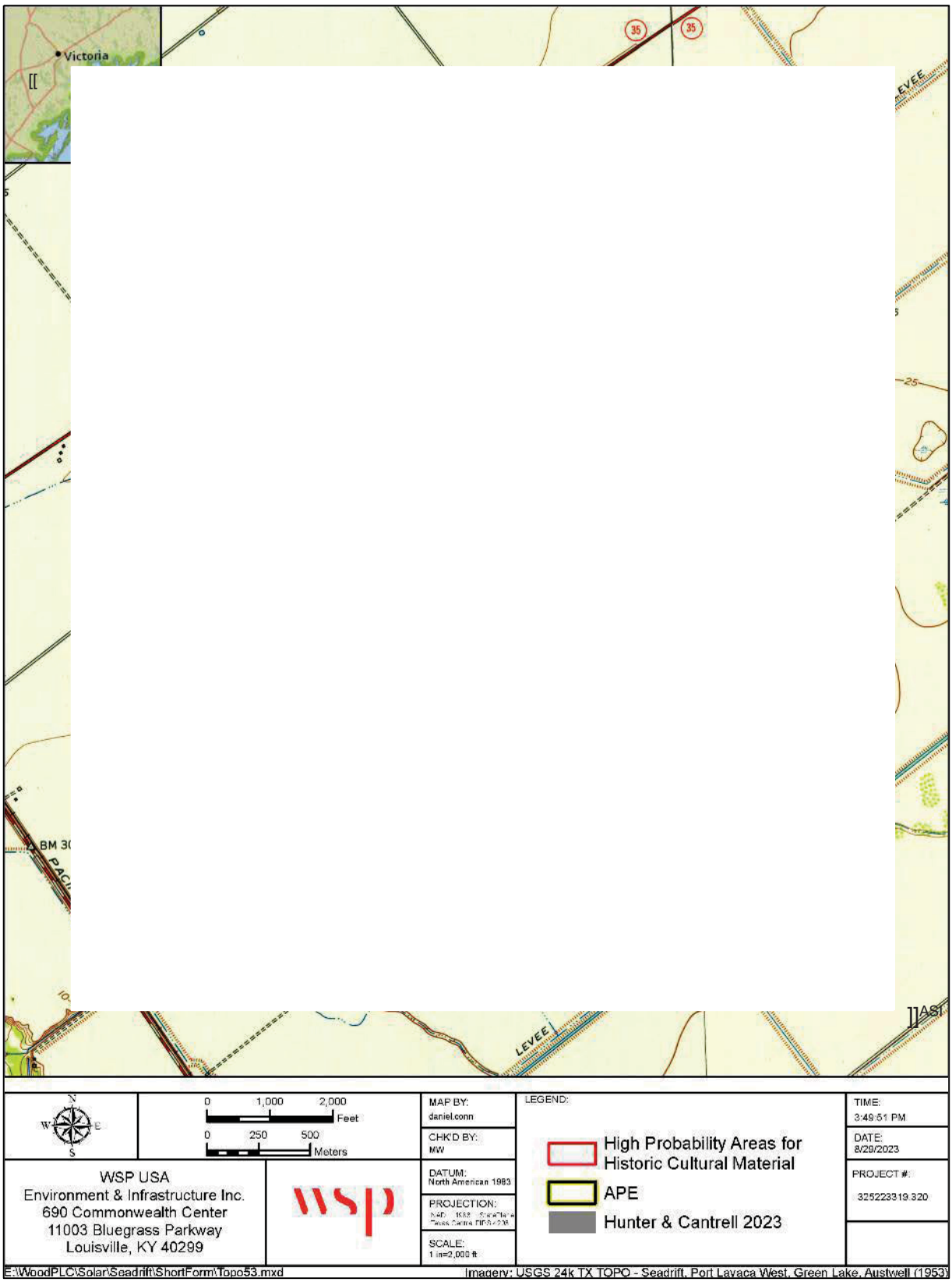

Figure 3.2. APE Shown on the 1953 24k Topographic Quadrangles.

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4 METHODS

Field investigations were conducted according to guidelines established by the Council of Texas Archaeologists Standards and Guidelines Committee Intensive Terrestrial Survey Guidelines (2020). The goals of the project were to:

- Identify the presence of previously unrecorded archaeological sites;
- Identify the presence of any deeply buried cultural deposits; and
- Establish recommendations regarding the potential for sites within the APE to be eligible for listing on the National Register of Historic Places (NRHP), as well as for designation as State Antiquities Landmarks.

The APE consists of portions of agricultural fields containing unharvested and harvested corn, disturbances from extant infrastructure (plant facilities, paved areas, and holding ponds), as well as portions of open scrub growth, railroad tracks, and a portion of a railyard. The ground surface visibility varied across the APE and as such the Phase I intensive survey was completed over the entire APE using a combination of systematic STPs coupled with pedestrian survey. The entire APE was visually inspected (pedestrian survey at 10-meter intervals) for above-ground historic or prehistoric features or other surface areas of cultural interest that may be present in the area.

Shovel tests were offset from ditches, utilities, or other obvious areas of surface disturbance. All STPs were 30 cm in diameter and were excavated at least 10 cm into the sterile subsoil, to bedrock, or a maximum of 90 centimeters below ground surface (cmbs). Soil from the STPs was screened through a 0.25-in hardware cloth. Measurements were recorded using the metric system, and shovel test forms and soil profile information was recorded for each test. Soils were described using the Munsell color chart and appropriate terminology. Photographs were taken of representative soil profiles throughout the APE to document the general conditions within the APE.

Mapping for the project was completed using a hand-held submeter Geographic Positioning System (GPS). Location data was collected for all STPs. Detailed notes were maintained daily regarding methods employed and environmental conditions within the APE. Digital photographs showing general views, survey conditions, and specific areas of interest within the survey area were taken as needed. It should be noted that photography of the entire APE was limited based on the rules and regulations of the Dow Seadrift Operations facility. Photography was not permitted within the APE facing any of the infrastructure of Dow Seadrift Operations facility. As such, every effort was made to adequately document the APE facing away from the facility.

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5 RESULTS

From July 10 to 19, 2023, WSP conducted a Phase I intensive archaeological survey in support of the ER for the Proposed Project Long Mott in Calhoun County, Texas. This report details the 930.6-acre portion (1.45 square miles or 376.6 hectares) portion of the Long Mott project that has not been previously submitted for consultation. The 617.4-acre portion (0.96 square miles or 249.85 hectares) of the project (Hunter and Cantrell 2023) was consulted on previously (submitted on August 1, 2023, THC Tracking No. 202312012) by the DOE in support of the ER for the Xe-100 Dow Seadrift Site in Calhoun County, Texas. As a result of the investigation, no archaeological sites, cultural material, or buried cultural deposits were identified. No additional archaeological work is recommended for the APE.

5.1 APE Survey Results

The APE consists of portions of agricultural fields containing unharvested corn (**Figure 5.1**) as well as portions of open scrub growth (**Figure 5.2**), railroad tracks (**Figure 5.3**), and a portion of a railyard (**Figure 5.4**). Due to photography restrictions associated with the DOW Seadrift facility, disturbance associated with disturbances from extant infrastructure (plant facilities, paved areas, and holding ponds) were not photo documented. The ground surface visibility varied across the APE (**Figures 5.5 – 5.7**) and as such the Phase I intensive survey was completed over the entire APE using a combination of systematic STPs coupled with pedestrian survey.

A total of 176 shovel tests were excavated within the APE (see **Appendix A**), all of which were void of cultural material (**Figure 5.8**). All observed soils within the APE were similar and consisted of very compact 10YR 3/1 silt clay loam Zone I, from the ground surface down to approximately 10 – 25 cmbs, underlain by a 10YR 4/1 clay Zone II, from 10/25 – 50 cmbs (**Figures 5.9 – 5.11**).

Figure 5.1. Overview of APE Showing Corn, Facing Southwest.

Figure 5.2. Overview of the APE Showing Scrub Growth, Facing North.

Figure 5.3. Overview of the APE Showing Railroad Tracks, Facing North.

Figure 5.4. Overview of the APE Showing Railyard, Facing Northeast.

Figure 5.5. Overview of the Ground Surface, Facing West.

Figure 5.6. View of the APE South, Showing Drainage and Utility, Facing Northeast.

Figure 5.7. Access Road in Central APE, Facing North.

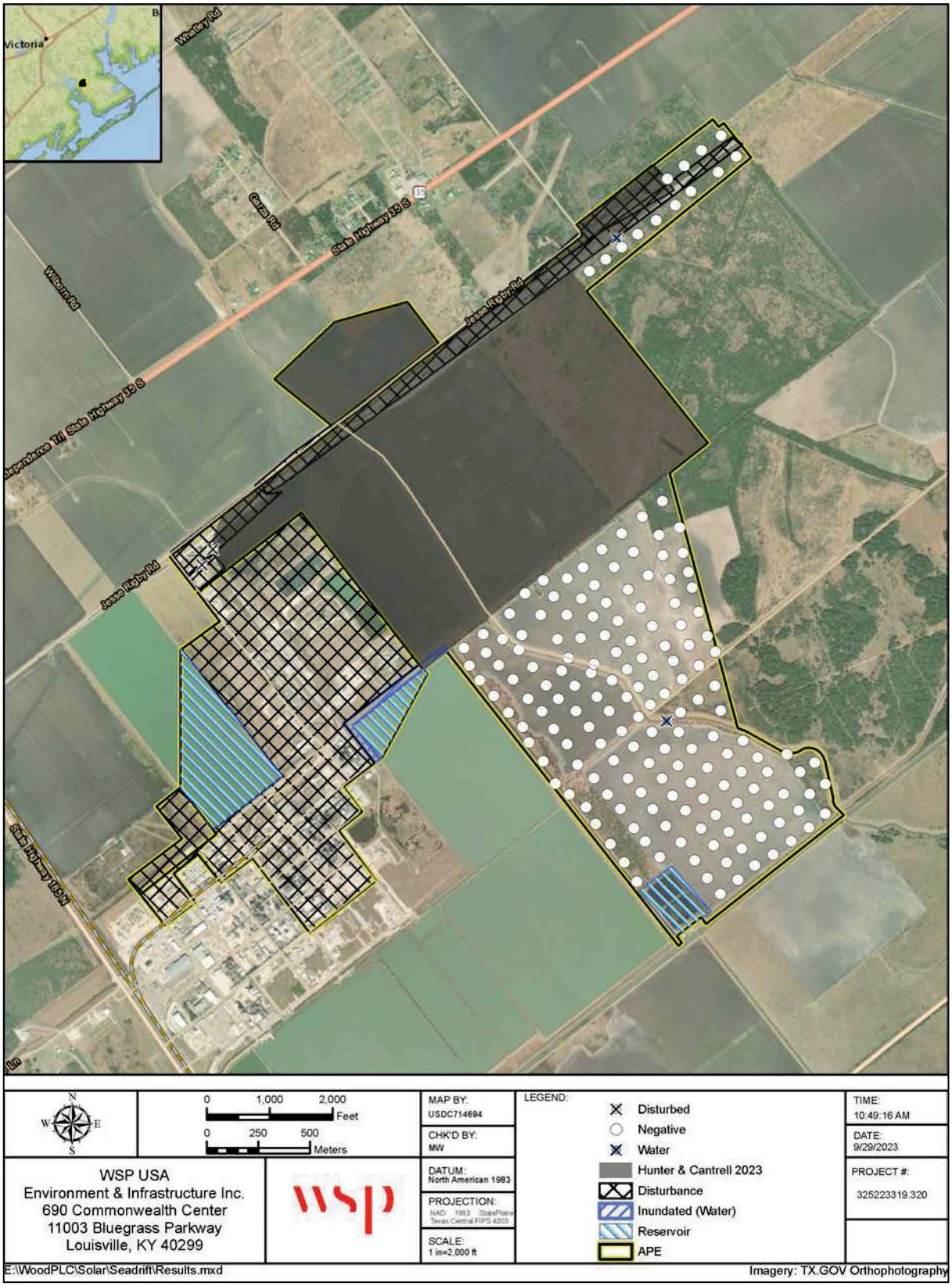

Figure 5.8. Survey Results, Showing STP Locations.

Figure 5.9. Observed Soil Profile.

Figure 5.10. Observed Soil Profile.

Figure 5.11. Observed Soil Profile.

5.2 High Probability Areas

Based on the historic map research (see **Section 3.4**) three locations were determined to be a high probability to contain historic cultural material (see **Figure 3.1**). Field investigations revealed that the construction and subsequent maintenance [[ ]]^{ASI} have severely disturbed the area surrounding all three of the high probably areas within the APE. No historic cultural material was identified in any of these high- probability locations.

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6 SUMMARY AND RECOMMENDATIONS

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7 REFERENCES CITED

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Appendix A

Shovel Test Probe (STP) Log and STP Location Map

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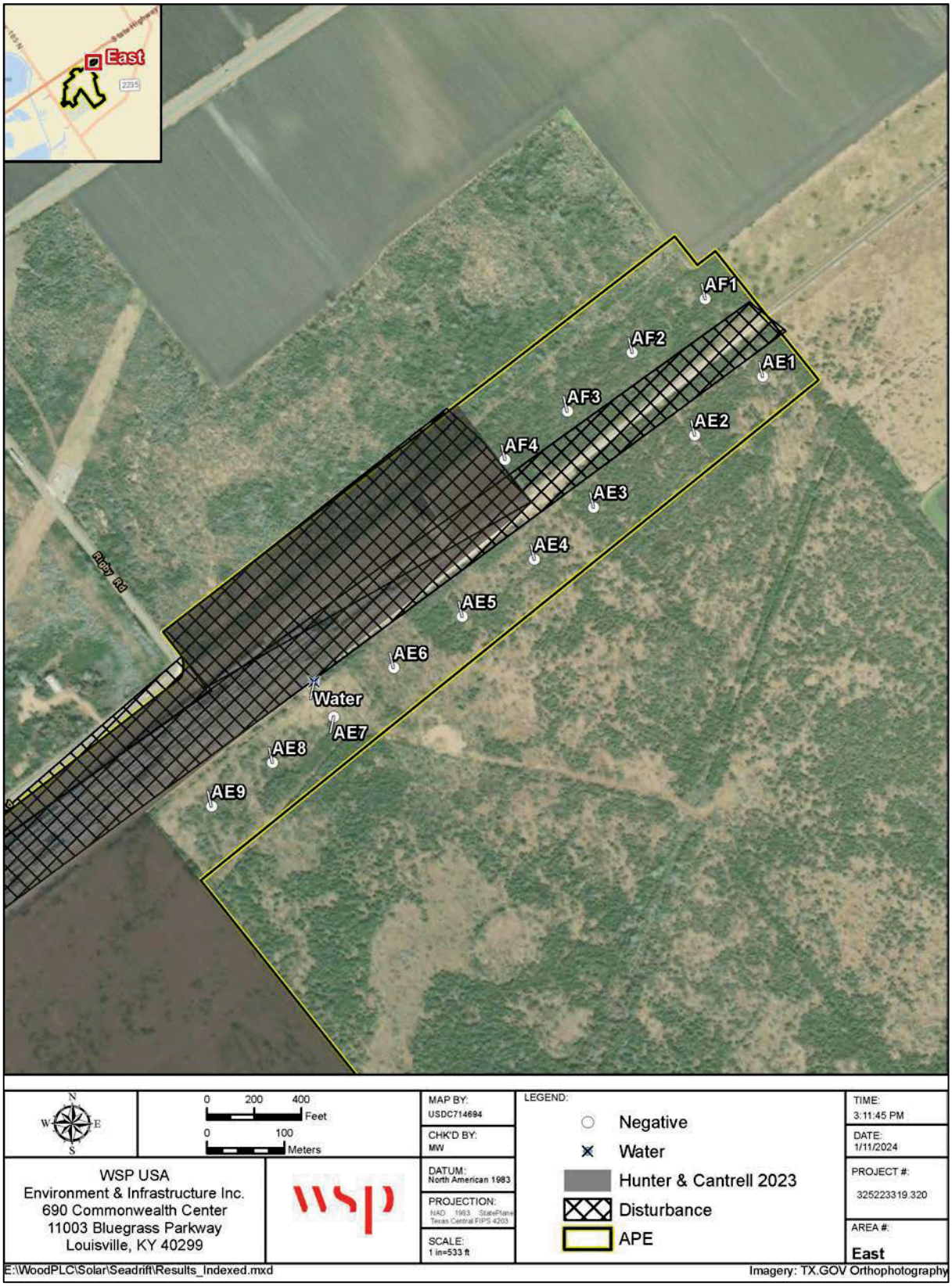
STP #	Total STP Depth (cmbs)	Artifacts (Pos/Neg)	Date	Recorder
L1	40	Negative	7/14/23	PCC/ NB/ GH
L2	40	Negative	7/14/23	PCC/ NB/ GH
L3	40	Negative	7/14/23	PCC/ NB/ GH
L4	40	Negative	7/14/23	PCC/ NB/ GH
L5	40	Negative	7/14/23	PCC/ NB/ GH
L6	40	Negative	7/14/23	PCC/ NB/ GH
L7	40	Negative	7/13/23	PCC/ NB/ GH
L8	40	Negative	7/13/23	PCC/ NB/ GH
L9	40	Negative	7/13/23	PCC/ NB/ GH
M1	35	Negative	7/14/23	PCC/ SWL
M2	30	Negative	7/14/23	PCC/ SWL
M3	30	Negative	7/14/23	PCC/ SWL
M4	25	Negative	7/14/23	PCC/ SWL
M5	25	Negative	7/14/23	PCC/ SWL
M6	25	Negative	7/14/23	PCC/ SWL
M7	30	Negative	7/14/23	PCC/ SWL
M8	30	Negative	7/14/23	PCC/ SWL
N1	31	Negative	7/14/23	PCC/ SWL
N2	34	Negative	7/14/23	PCC/ SWL
N3	32	Negative	7/14/23	PCC/ SWL
O1	30	Negative	7/14/23	PCC/ NB
O2	30	Negative	7/14/23	PCC/ NB
O3	30	Negative	7/14/23	PCC/ NB
O4	30	Negative	7/14/23	PCC/ NB
O5	23	Negative	7/14/23	PCC/ SWL
O6	30	Negative	7/14/23	PCC/ NB
O7	30	Negative	7/14/23	PCC/ NB
O8	30	Negative	7/14/23	PCC/ NB
Q1	25	Negative	7/14/23	PCC/ SWL
Q2	33	Negative	7/14/23	PCC/ SWL
Q3	30	Negative	7/14/23	PCC/ SWL
Y1	30	Negative	7/14/23	PCC/ SWL
Y3	30	Negative	7/14/23	PCC/ SWL
Y4	30	Negative	7/14/23	PCC/ SWL
Y5	30	Negative	7/14/23	PCC/ SWL
Z1	31	Negative	7/15/23	PCC/ SWL
Z2	28	Negative	7/15/23	PCC/ SWL
Z3	23	Negative	7/15/23	PCC/ SWL
Z4	26	Negative	7/15/23	PCC/ SWL
Z5	19	Negative	7/15/23	PCC/ SWL
AA1	30	Negative	7/14/23	PCC/ GH
AA2	30	Negative	7/14/23	PCC/ GH
AA3	30	Negative	7/14/23	PCC/ GH
AA4	30	Negative	7/14/23	PCC/ GH
AA5	30	Negative	7/14/23	PCC/ GH
AA6	30	Negative	7/14/23	PCC/ GH
BB1	30	Negative	7/15/23	PCC/ SWL
BB2	30	Negative	7/15/23	PCC/ SWL
BB3	30	Negative	7/15/23	PCC/ SWL
BB4	30	Negative	7/15/23	PCC/ SWL
BB5	25	Negative	7/15/23	PCC/ SWL
BB6	25	Negative	7/15/23	PCC/ SWL
CC1	26	Negative	7/14/23	PCC
CC2	29	Negative	7/14/23	PCC
CC3	31	Negative	7/14/23	PCC
CC4	30	Negative	7/14/23	PCC
CC5	40	Negative	7/14/23	PCC

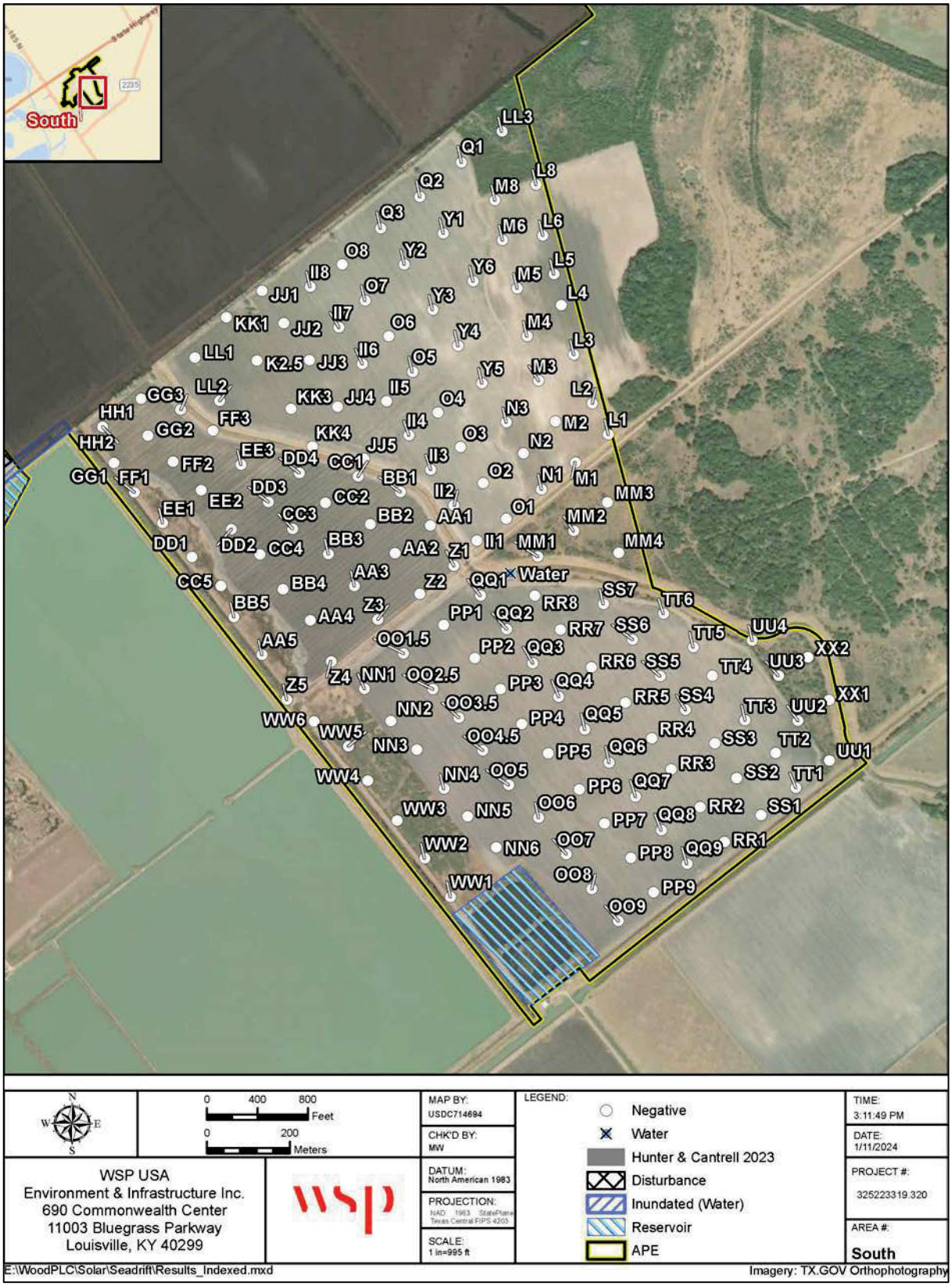
STP #	Total STP Depth (cmbs)	Artifacts (Pos/Neg)	Date	Recorder
CC6	40	Negative	7/14/23	PCC
DD1	25	Negative	7/15/23	PCC/ SWL
DD2	25	Negative	7/15/23	PCC/ SWL
DD3	30	Negative	7/15/23	PCC/ SWL
DD4	25	Negative	7/15/23	PCC/ SWL
DD5	25	Negative	7/15/23	PCC/ SWL
EE1	13	Negative	7/16/23	PCC/ SWL
EE2	27	Negative	7/16/23	PCC/ SWL
EE3	31	Negative	7/16/23	PCC/ SWL
FF1	30	Negative	7/15/23	PCC/ GH
FF2	30	Negative	7/15/23	PCC/ GH
FF3	30	Negative	7/15/23	PCC/ GH
GG1	30	Negative	7/15/23	PCC
GG2	28	Negative	7/15/23	PCC
GG3	27	Negative	7/15/23	PCC
HH1	30	Negative	7/15/23	PCC
HH2	30	Negative	7/15/23	PCC
II1	28	Negative	7/15/23	PCC/ SWL
II2	30	Negative	7/15/23	PCC/ SWL
II3	30	Negative	7/15/23	PCC/ GH
II5	30	Negative	7/15/23	PCC/ GH
II6	30	Negative	7/15/23	PCC/ SWL
II8	38	Negative	7/16/23	PCC/ SWL
JJ1	30	Negative	7/15/23	PCC/ GH
JJ2	25	Negative	7/15/23	PCC/SWL
JJ3	30	Negative	7/15/23	PCC/ GH
JJ4	25	Negative	7/15/23	PCC/ SWL
JJ5	30	Negative	7/15/23	PCC/ GH
KK1	33	Negative	7/15/23	PCC/ NB
KK2	39	Negative	7/15/23	PCC/ NB
KK3	40	Negative	7/15/23	PCC/ NB
KK4	28	Negative	7/15/23	PCC/ NB
LL1	30	Negative	7/15/23	PCC
LL2	30	Negative	7/15/23	PCC
LL3	25	Negative	7/15/23	PCC/ SWL
LL4	30	Negative	7/15/23	PCC/ SWL
LL5	30	Negative	7/15/23	PCC
LL6	30	Negative	7/15/23	PCC
LL7	25	Negative	7/15/23	PCC/ SWL
MM1	30	Negative	7/15/23	PCC/ NB
MM2	30	Negative	7/15/23	PCC/ GH
MM3	20	Negative	7/15/23	PCC/ SWL
MM4	28	Negative	7/15/23	PCC/ SWL
NN1	32	Negative	7/15/23	PCC/ NB
NN2	42	Negative	7/16/23	PCC/ NB
NN3	34	Negative	7/16/23	PCC/ NB
NN4	37	Negative	7/16/23	PCC/ NB
NN5	45	Negative	7/16/23	PCC/ NB
NN6	28	Negative	7/16/23	PCC/ NB
MW1-1	50	Negative	7/13/23	PCC/ SWL
MW1-2	50	Negative	7/13/23	PCC/ SWL
MW1-3	50	Negative	7/13/23	PCC/ SWL
MW1-4	50	Negative	7/13/23	PCC/ SWL
MW1-5	50	Negative	7/13/23	PCC/ SWL
MW1-6	50	Negative	7/13/23	PCC/ SWL
OO1	30	Negative	7/16/23	PCC/ SWL
OO2	30	Negative	7/16/23	PCC/ SWL

STP #	Total STP Depth (cmbs)	Artifacts (Pos/Neg)	Date	Recorder
OO3	30	Negative	7/16/23	PCC/ SWL
OO4	30	Negative	7/16/23	PCC/ SWL
OO5	30	Negative	7/16/23	PCC/ SWL
OO6	30	Negative	7/16/23	PCC/ SWL
OO7	30	Negative	7/16/23	PCC/ SWL
OO8	30	Negative	7/16/23	PCC/ SWL
PP1	40	Negative	7/14/23	PCC/ SWL
PP2	30	Negative	7/14/23	PCC/ SWL
PP3	30	Negative	7/14/23	PCC/ SWL
PP4	30	Negative	7/14/23	GH
PP5	30	Negative	7/14/23	GH
PP6	30	Negative	7/14/23	GH
PP7	30	Negative	7/14/23	GH
PP8	30	Negative	7/14/23	GH
PP9	30	Negative	7/14/23	GH
QQ1	28	Negative	7/16/23	PCC
QQ2	30	Negative	7/16/23	PCC
QQ3	40	Negative	7/16/23	PCC
QQ4	30	Negative	7/16/23	PCC
QQ5	26	Negative	7/16/23	PCC
QQ6	31	Negative	7/16/23	PCC
QQ7	27	Negative	7/16/23	PCC
QQ8	35	Negative	7/16/23	PCC
QQ9	30	Negative	7/16/23	PCC
RR1	48	Negative	7/16/23	PCC/ NB
RR2	33	Negative	7/16/23	PCC/ NB
RR3	32	Negative	7/16/23	PCC/ NB
RR4	35	Negative	7/16/23	PCC/ NB
RR5	39	Negative	7/16/23	PCC/ NB
RR6	51	Negative	7/16/23	PCC/ NB
RR7	35	Negative	7/16/23	PCC/ NB
RR8	35	Negative	7/16/23	PCC/ NB
SS1	30	Negative	7/16/23	GH
SS2	30	Negative	7/16/23	GH
SS3	30	Negative	7/16/23	GH
SS4	30	Negative	7/16/23	GH
SS5	30	Negative	7/16/23	GH
SS6	30	Negative	7/16/23	PCC/ SWL
SS7	30	Negative	7/16/23	GH
TT1	25	Negative	7/16/23	PCC/ SWL
TT2	30	Negative	7/16/23	PCC/ SWL
TT3	30	Negative	7/16/23	PCC/ SWL
TT4	30	Negative	7/16/23	PCC/ SWL
TT5	30	Negative	7/16/23	PCC/ SWL
TT6	30	Negative	7/16/23	PCC/ SWL
UU1	30	Negative	7/16/23	PCC
UU2	26	Negative	7/16/23	PCC
UU3	30	Negative	7/16/23	PCC
UU4	30	Negative	7/16/23	PCC
WW1	25	Negative	7/16/23	PCC/ SWL
WW3	15	Negative	7/16/23	PCC/ SWL
WW4	38	Negative	7/16/23	PCC/ SWL
WW5	25	Negative	7/16/23	PCC/ SWL
WW6	23	Negative	7/16/23	PCC/ SWL
XX1	25	Negative	7/16/23	PCC/ SWL
XX2	30	Negative	7/16/23	PCC
AE8	30	Negative	7/17/23	SWL

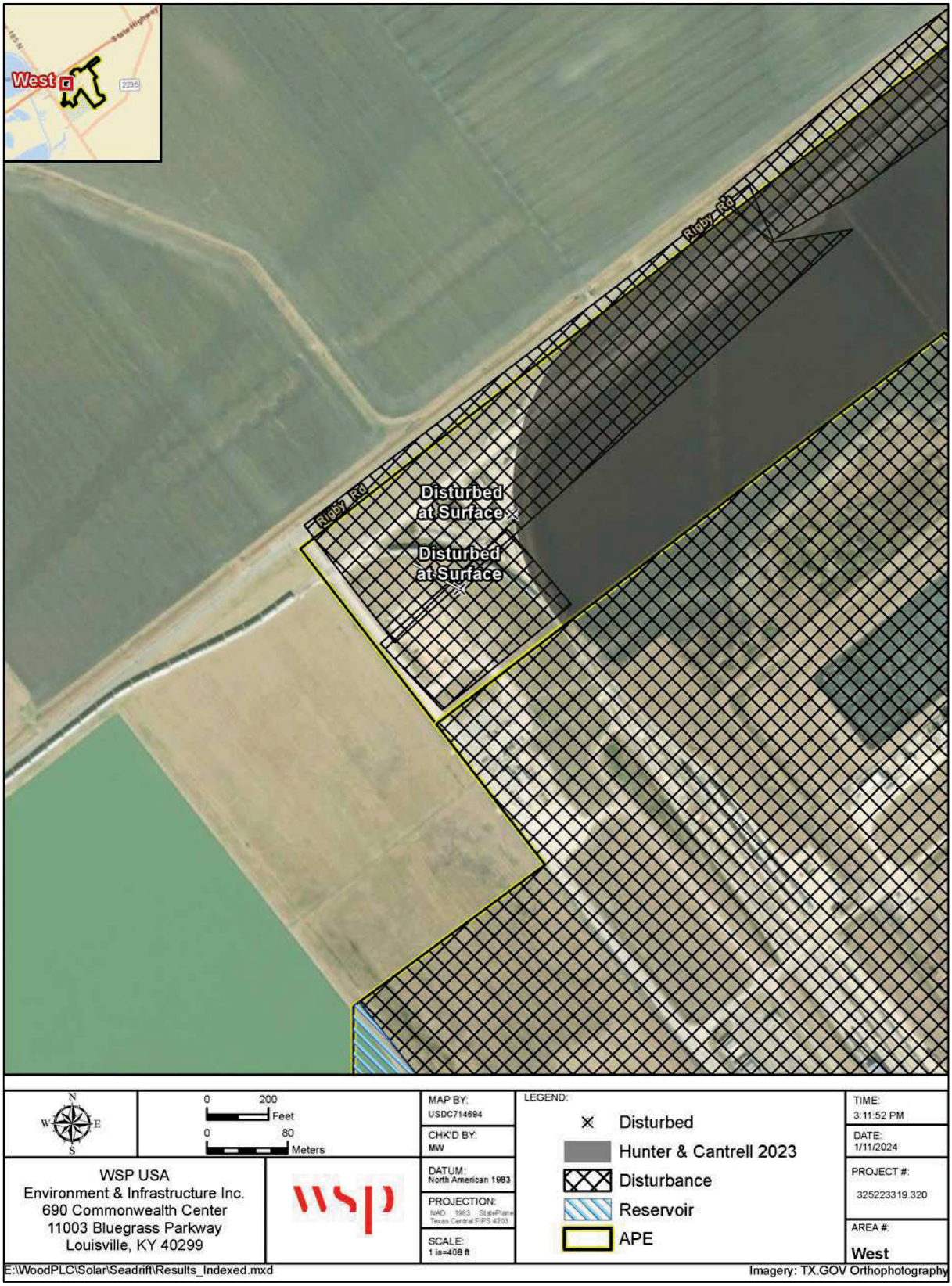
STP #	Total STP Depth (cmbs)	Artifacts (Pos/Neg)	Date	Recorder
AE9	25	Negative	7/17/23	SWL
AF1	26	Negative	7/17/23	PCC/ SWL
AF2	25	Negative	7/17/23	PCC/ SWL
AF3	25	Negative	7/17/23	PCC/ SWL
AF4	28	Negative	7/17/23	PCC/ SWL



STP locations within the APE.



STP locations within the APE.



STP locations within the APE.

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