



NRG Texas Power LLC
Limestone Generating Station, Units 1 & 2

Hazard Potential Classification Assessment of CCR Surface Impoundments

Prepared by



55 East Monroe Street
Chicago, IL 60603-5780 USA
312-269-2000
www.sargentlundy.com

S&L Project No. 12661-053

Rev. 0
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1 PURPOSE

Pursuant to 40 CFR 257.73(a)(2), this document provides the initial hazard potential classification assessment for the coal combustion residual (CCR) surface impoundments at NRG Texas Power LLC's (NRG) Limestone Generating Station. The following existing CCR surface impoundments are considered herein:

- Unit 019 E Pond,
- Unit 003 Secondary E Pond,
- Unit ST-18, and
- Unit 002 Storm Water Pond.

For reference, Exhibit 1 is provided showing the Station's location and property boundary on a reproduction of the United States Geological Survey's (USGS) National Map. Exhibit 2 is provided to show the locations of these CCR surface impoundments relative to other plant facilities and geologic features. Exhibits 1 and 2 are included at the end of this document.

NRG has evaluated the CCR landfill stormwater run-off pond (002) and determined that the subject surface impoundment does not meet the definition of a CCR surface impoundment based on EPA guidance. This determination is based on:

1. the fact that the CCR landfill stormwater run-off pond (002) is not designed primarily to hold an accumulation of CCR and liquid
2. the primary function of the landfill stormwater run-off pond (002) is not storage or disposal of CCR.

For the aforementioned reasons, NRG will no longer manage the CCR landfill stormwater run-off pond (002) as a CCR surface impoundment after October 17, 2016.

2 BASIS FOR HAZARD POTENTIAL CLASSIFICATIONS

This assessment considered hypothetical dike breaches at any dike of four non-incised CCR surface impoundments regardless of potential causes and/or apparent dike stability. Each impoundment was considered independently from the other impoundments and, at the time of the hypothetical failure, to be filled with liquid.

2.1 POTENTIAL FOR LOSS OF HUMAN LIFE

The following items were considered in regards to the potential for loss of human life of the general public should a hypothetical failure or mis-operation occur at the any of the non-incised CCR surface impoundments:

- Absence of nearby residences, businesses, and public buildings,
- Absence of nearby campgrounds and public spaces,
- Absence of public railroads, and
- Proximity to public roads and/or highways, and their elevations relative to the impoundments and flow path of impoundment materials.

Based on the preceding observations, the loss of human life in areas accessible to the general public is not probable should a hypothetical failure or mis-operation occur at any of the non-incised CCR surface impoundments.

The following items were also considered with regards to the potential for loss of human life of Station personnel should a hypothetical failure or mis-operation occur at the any of the non-incised CCR surface impoundments:

- Frequency of Station personnel activity around the site,
- Proximity of impoundments to frequently occupied areas of the Station,
- Proximity to Station railroads and plant access roads and the frequency with which they are used, and
- Relative elevations between the impoundments and adjacent Station areas.

Unit ST-18 and Unit 002 Storm Water Pond are situated in areas of the Station where a hypothetical failure or mis-operation of their dikes would not direct flow towards occupied areas of the Station. Therefore, it was concluded that there is no probable loss of life of Station personnel should a hypothetical failure or mis-operation occur at these two impoundments.

Unit 019 E Pond and Unit 003 Secondary E Pond are located in relatively close proximity to the frequently occupied Equipment Maintenance Area and associated parking lot (see Exhibit 2). As such, the surrounding topography and relative elevations of the impoundment dikes and nearby drainage swales were reviewed. Only the northern and eastern sides of Unit 019 E Pond are diked; the southern and western sides are incised into the surrounding topography. Should a hypothetical failure occur along the northern or eastern dikes of Unit 019 E Pond, the adjacent swales should have enough depth and capacity to prevent flow from inundating the Equipment Maintenance Area. Similar to Unit 019 E Pond, there exists a relatively large storm water drainage swale between Unit 003 Secondary E Pond and the Equipment Maintenance Area. Flow, as a result of a hypothetical failure of the western or northern dikes of Unit 003 Secondary E Pond, should be principally contained to the adjacent swales.

The Station rail spur, located immediately to the south of and downhill from Unit 003 Secondary E Pond, is rarely used and locked with a gate across the tracks on its eastern connection. Given the very low frequency use, there is no probable loss of life of Station personnel due to a hypothetical failure of Unit 003 Secondary E Pond's southern dike.

Station areas east of Unit 003 Secondary E Pond are rarely occupied, and, therefore, there is no probable loss of life of Station personnel due to a hypothetical failure of Unit 003's eastern dike.

Based on the preceding observations, it has been concluded that there is no probable loss of life of Station personnel should a hypothetical failure or mis-operation occur at any of the four non-incised CCR surface impoundments.

2.2 POTENTIAL FOR ECONOMIC & ENVIRONMENTAL LOSSES

The following items were considered when evaluating the risks of economic and environmental losses should a hypothetical failure or mis-operation occur at any of the non-incised CCR surface impoundments:

- Potential disruption of or damage to nearby power distribution poles,
- Potential disruption of or damage to nearby rail lines,
- Potential of environmental impact to Lynn Creek, Lambs Creek, and Lake Limestone, and
- Proximity of impoundments to NRG's property line and probable extent of impacted areas.

Lightly loaded wooden electrical distribution poles for powering station facilities are located along the southern dike of Unit 002 Storm Water Pond, and one pole is located near the southeast corner of Unit 003 Secondary E Pond. A hypothetical failure of these noted dikes could potentially disrupt or damage these adjacent power distribution poles; however, any disruption or damage would be considered low economic loss.

Additionally, a Station rail spur, previously noted, is located south of and downhill from Unit 003 Secondary E Pond. As previously mentioned, the rail spur is rarely used by Station operations. Since this rail line is not a significant Station facility, nor used by other entities beyond the Station, any disruption or damage would be considered low economic loss.

Other potential economic losses considered include the potential disruption and/or damage to the Station's sewage treatment facility located adjacent to and west of Unit ST-18, the gas well located adjacent to and west of Unit 003 Secondary E Pond, the Equipment Maintenance Area adjacent to and north of Unit 019 E Pond. Since these facilities are not critical infrastructure, any disruption or damage would be considered low economic loss.

With regards to potential environmental losses, the potential impact of a hypothetical failure on Lynn Creek, which runs east to west through the Station property before discharging into Lambs Creek and then Lake Limestone, was considered. A hypothetical failure of Unit 002 Storm Water Pond or Unit ST-18 will flow downhill and into Lynn Creek. The environmental impact from such a release is anticipated to be lessened as a result of the dense vegetation along the bottom of and banks of Lynn Creek. The dense vegetation will help to contain the CCR and sediments released from a hypothetical failure and hinder solid constituents from transporting further downstream to Lambs Creek and Lake Limestone.

Lynn Creek discharges into Lambs Creek approximately 2 miles downstream of Unit 002 Storm Water Pond and travels approximately another mile before discharging into Lake Limestone. According to the Texas Commission of Environmental Quality (TCEQ), Lynn Creek and Lambs Creek are unclassified receiving waters and have minimal aquatic life use. Thus, environmental losses as a result of a hypothetical release of CCR into Lynn Creek or Lambs Creek are anticipated to be low.

Lake Limestone is classified by the TCEQ for primary contact recreation, public water supply, and high aquatic life use. Considering the significant distance from the CCR surface impoundments to Lake

Limestone and the dense vegetation along Lambs Creek and Lynn Creek, it is anticipated that a hypothetical release of CCR will be principally contained to these two creeks; a *de minimis* amount of CCR may be discharged into Lake Limestone. Moreover, by examination of the Station's property boundaries, and accounting for additional property owned by NRG between the Station and Lake Limestone, NRG owns almost the entire combined lengths of Lynn Creek and Lambs Creek downstream of the impoundments. Therefore, a hypothetical release of CCR is anticipated to be principally contained to NRG's property.

Upon close examination of the Station's storm water swales, it was concluded that Unit 019 E Pond and Unit 003 Secondary E Pond also have the potential of impacting Lynn Creek should a hypothetical failure occur and the storm water run-off control valves remain open. The storm water run-off control valves are manually operated and release storm water run-off collected within the swale to Lynn Creek if the run-off is visually confirmed to be free of oils and other contaminants. If the run-off control valves were shut prior to a hypothetical failure of Unit 019 E Pond and Unit 003 Secondary E Pond, the resulting flow would be collected within the Station's storm water swales without impacting Lynn Creek. However, for this hazard potential classification assessment, it is assumed the storm water run-off control valves are open at the time of a hypothetical failure to fully assess all potential impacts. Following the same logical reasoning as was used for Unit 002 Storm Water Pond and Unit ST-18, the environmental losses on Lynn Creek from a hypothetical failure of Unit 019 E Pond and Unit 003 Secondary E Pond are anticipated to be low and principally contained to NRG's property.

As a result of the preceding observations, a hypothetical failure or mis-operation of any of the four non-incised CCR surface impoundments is considered to cause low economic and/or environmental losses.

2.3 SUMMARY OF HAZARD POTENTIAL CLASSIFICATION ASSESSMENTS

A hypothetical failure or mis-operation of any of the four non-incised CCR surface impoundments results in no probable loss of human life and low economic and/or environmental losses that are principally contained within NRG's property.

3 CONCLUSIONS

A "low" hazard potential classification has been assigned to all four non-incised CCR surface impoundments at Limestone Generating Station in accordance with 40 CFR 257(a)(2).

4 CERTIFICATION

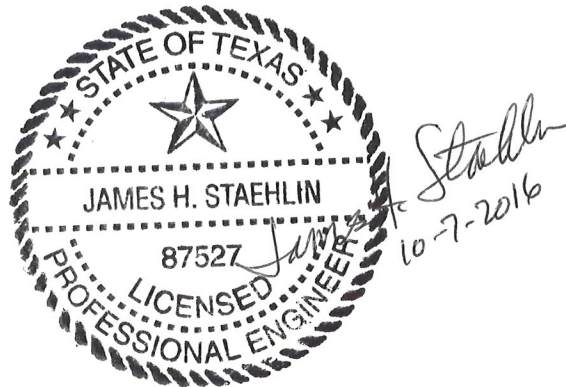
This initial hazard potential classification assessment meets the requirements of 40 CFR 257.73(a)(2).

I certify that this document was prepared by me or under my supervision and that I am a registered professional engineer under the laws of the State of Texas.

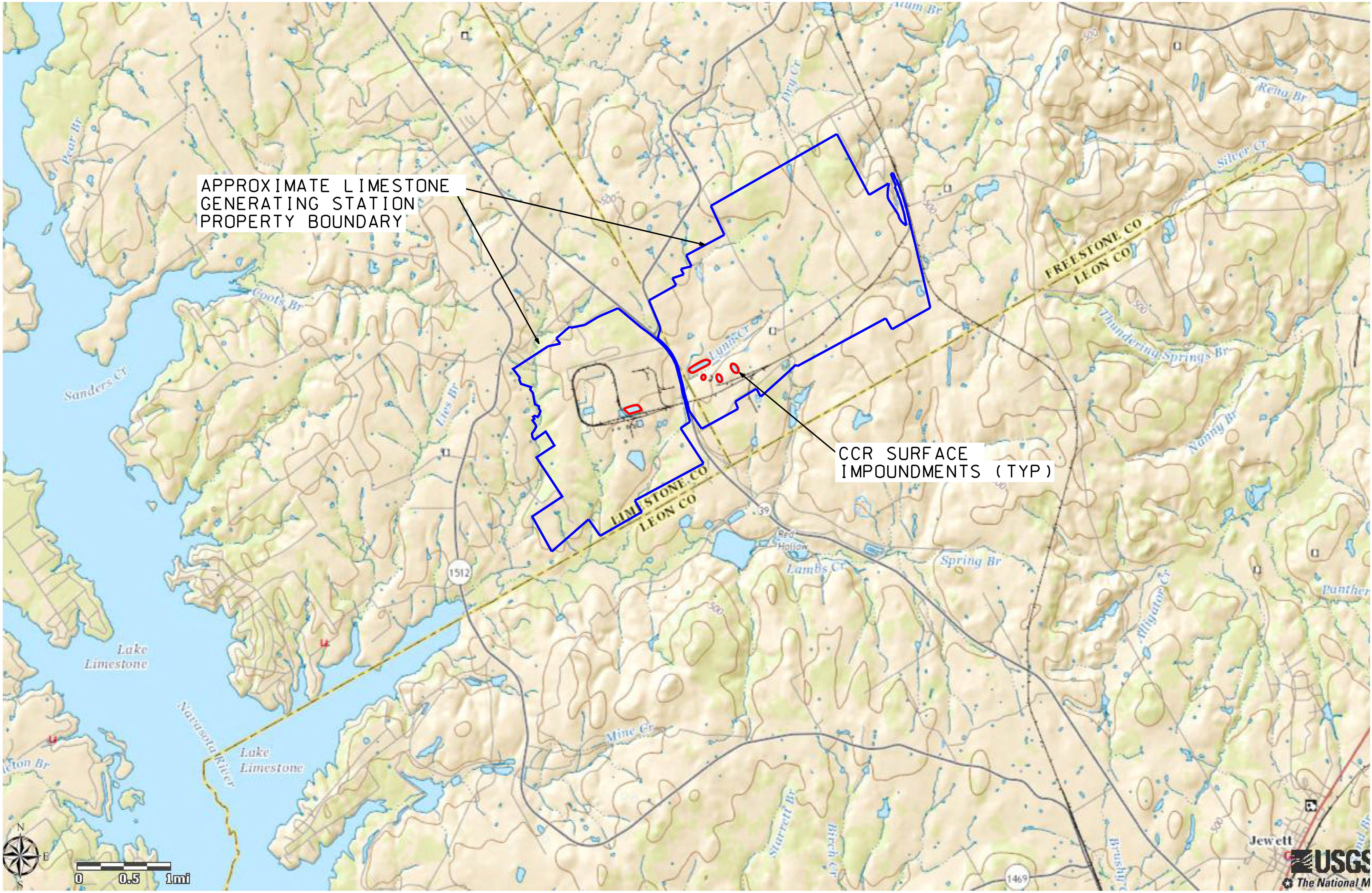
This document is released for use under the authority of James H. Staehlin, Texas PE # 87527 on October 7, 2016. Sargent & Lundy LLC Texas Registered Engineering Firm # F-2202.

Certified by: JAMES H. STAEHLIN Date: 10-7-2016

Seal:



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 Form: GDC-0401-01-06 - ANSI (Imperial) MicroStation Border - Size E - 34 x 44
 Revision --, Revision Date: XX-XX-XXXX



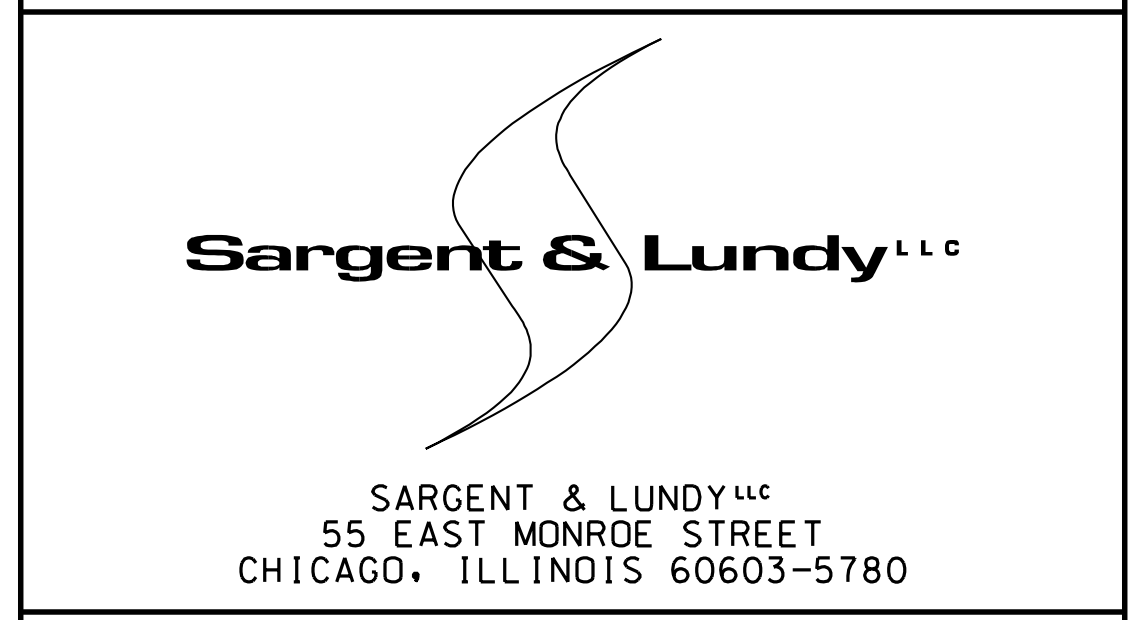
HOLD INFORMATION	
NO.	DESCRIPTION

RELEASE INFORMATION		
REV.	DATE	DESCRIPTION
0	10/7/2016	FOR USE

ISSUE PURPOSE: USE
 SPECIFICATION: ---
 PROJECT NO.: 12661-053

CAD FILE NAME: LIMESTONE HAZARD-EXHBT 1.DGN
 PREPARED BY: J. FIFAREK
 REVIEWED BY: D. NIELSON
 APPROVED BY: --

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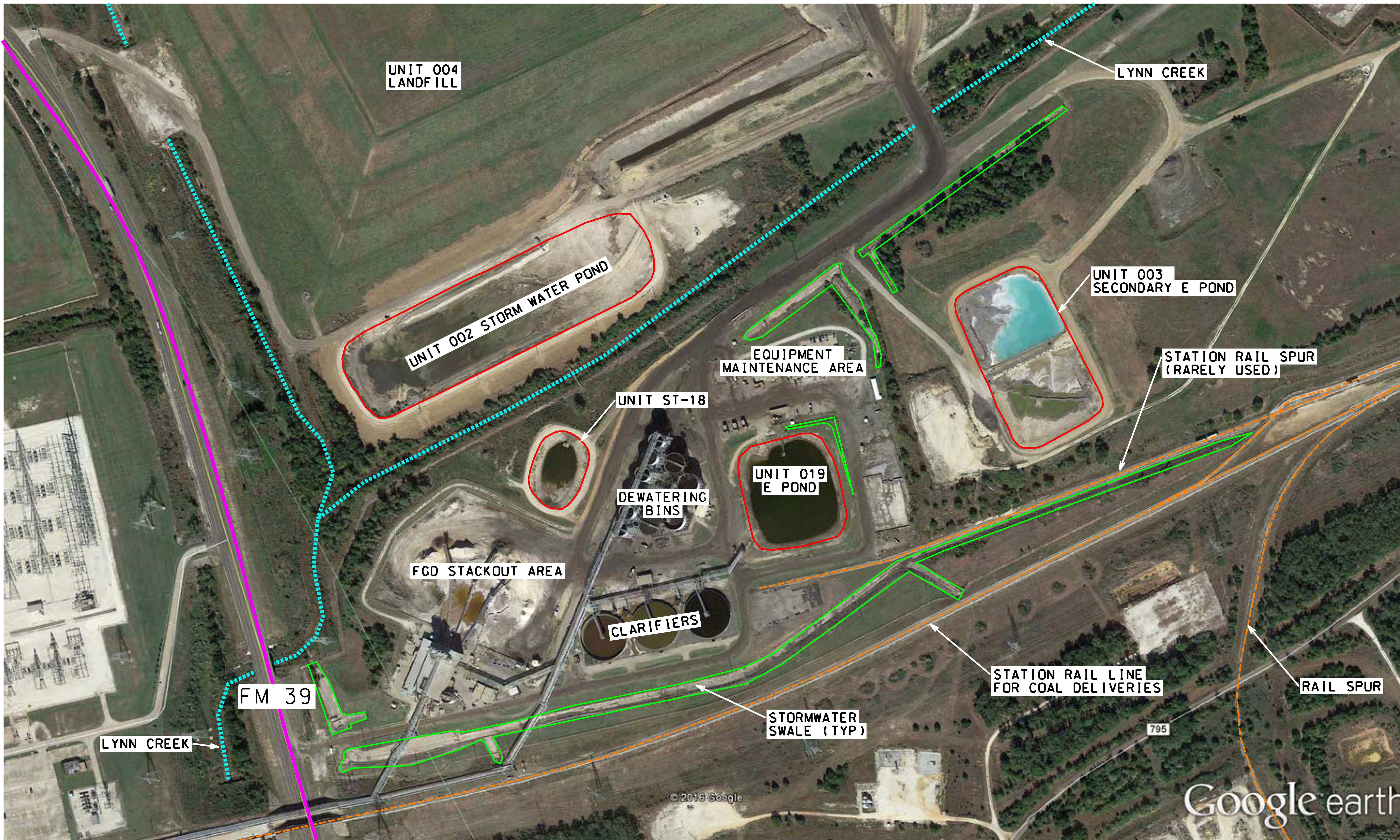
PROJECT
 LIMESTONE
 GENERATING STATION
 NRG TEXAS POWER LLC

NOTES	
1.	BACKGROUND IMAGE SHOWN ON THIS DRAWING WAS OBTAINED FROM THE USGS NATIONAL MAP VIEWER ON 5/24/2016.

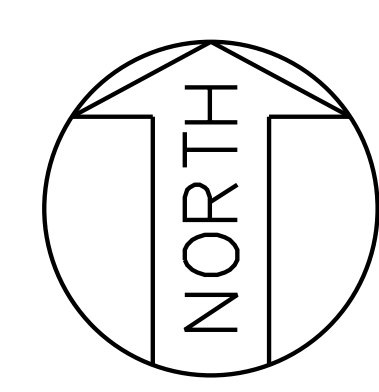
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CCR SURFACE IMPOUNDMENT LOCATIONS	
DRAWING NUMBER	REVISION
EXHIBIT 1	0
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 Form: 000-0401-01-06 - ANSI (Imperial) MicroStation Border - Size E - 34 x 44
 Revision: --, Revision Date: XX-XX-XXXX



NOT TO SCALE



LEGEND	
	APPROX. EXTENT OF CCR SURFACE IMPOUNDMENT
	CREEK
	STATION RAILROAD
	STORMWATER SWALE
	PUBLIC ROAD

NOTES	
1.	AERIAL IMAGE, DATED 10/30/2014, SHOWN ON THIS DRAWING WAS OBTAINED USING GOOGLE EARTH PRO V6.2.

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PROJECT NO.: 12661-053		
CAD FILE NAME: LIMESTONE HAZARD-EXHBT 2.DGN		
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 PROJECT LIMESTONE GENERATING STATION NRG TEXAS POWER LLC		
DRAWING TITLE		
AERIAL VIEW OF CCR SURFACE IMPOUNDMENTS & ANCILLARY FEATURES		
DRAWING NUMBER		REVISION
EXHIBIT 2		0
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