Fifth Semi-Annual VRP Progress Report

IMTT Savannah North Terminal
Savannah, Chatham County, Georgia
VRP #1440101197

IMTT Epic LLC

GHD | 3075 Breckinridge Boulevard Suite 470 Duluth Georgia 30096

089400 | Report No 7 | June 1, 2018

Fifth Semi-Annual VRP Progress Report

IMTT Savannah North Terminal

Savannah, Chatham County, Georgia

VRP #1440101197

I certify that I am a qualified groundwater scientist who has received a baccalaureate or postgraduate degree in the natural sciences or engineering, and have sufficient training and experience in groundwater hydrology and related fields, as demonstrated by state registration and completion of accredited university courses, that enable me to make sound professional judgments regarding groundwater monitoring and contaminant fate and transport. I further certify that this report was prepared by me or by a subordinate working under my direction.

John A. DiZinno, PE

Printed Name (Professional Engineer)

GEORGIA REGISTERED PE031928 PROFESSIONAL ENGINEER JOHN A. DIZINNO

Signature (Professional Engineer)

5/31/2018

Table of Contents

Figure Index

Table Index

Appendix Index

1. Introduction

On behalf of IMTT Epic LLC, GHD has prepared this semi-annual progress report pursuant to the approved Voluntary Remediation Program (VRP) application for the IMTT Savannah North Terminal located at 7 Foundation Drive, Savannah, Georgia (Site). A vicinity map for the Site is included as Figure 1. An aerial photograph of the Site obtained in 2016 is included as Figure 2. A layout of the Site in its current configuration is shown on Figure 3.

1.1 Background

The IMTT Savannah North Terminal has been utilized for petroleum refining and storage activities since the early 1900s. Mexican Petroleum first developed the property as a petroleum refinery in 1929. The property was later acquired by American Oil Company (and later Amoco), which continued petroleum operations. In 1993, the property was acquired by CITGO Asphalt Refining (CITGO), and began asphalt refining operations until acquisition by NuStar Asphalt Refining, LLC in 2008. Asphalt refining operations were temporarily halted in 2012. The property was acquired by Axeon Specialty Products (Axeon) in 2014 and thereafter by Epic Midstream LLC (Epic) in December 2015. In January 2018, Epic changes its name to IMTT Epic LLC. The Site has historically been used as a bulk storage and distribution facility for petroleum products. The refinery portion of the Site was demolished during the first quarter of 2016.

In 1989, light non-aqueous phase liquid (LNAPL) was discovered at the Site and a subsequent investigation by Amoco concluded that detected LNAPL was the result of the “gradual accumulation of residual oil over several decades.” Subsurface investigations and LNAPL recovery operations have been conducted in various capacities since the discovery of the LNAPL. Through subsurface investigations, the LNAPL present at the Site has been determined to be petroleum hydrocarbon-based material.

In 1996, Horizontal Subsurface Systems, Inc. installed a 20-foot (ft) deep and approximately 1,500 ft long polyethylene (HDPE) polywall at the Site along the Savannah River. The polywall was positioned at the downgradient edge of the Site to prevent the migration of LNAPL to the Savannah River. Portions of the polywall were exposed through excavation by Axeon in June and July of 2015. Upon inspection, the exposed sections of the polywall did not show any signs of delamination, degradation, or deterioration. The installation of the polywall has proved to be a success and an effective method of providing containment for the LNAPL plume.

On August 8, 2015, a VRP application or Voluntary Investigation and Remediation Plan (VIRP) was submitted by Axeon to the Georgia Environmental Protection Division (GAEPD) for the Site. Following submittal of the VIRP, Terracon, on behalf of Axeon, performed additional investigation at the Site and the results were summarized in a Site Investigation Summary Report (SISR) submitted to Georgia EPD on September 15, 2015. Additionally, Langan Engineering and Environmental Services (Langan) evaluated the LNAPL at the Site and identified potential LNAPL recovery approaches for implementation at the Site that were described in a Technical Memorandum to Axeon that was submitted to Georgia EPD on October 29, 2015. The SISR and Langan Technical Memorandum were submitted to supplement the August 2015 VIRP.

In correspondence dated November 24, 2015, the Georgia EPD stated that the Site had been approved for participation in the VRP with comments and was assigned VRP #1440101197. Epic purchased the Site from Axeon on December 22, 2015 and on January 14, 2016 Epic submitted a revised VRP application and checklist to reflect the ownership change from Axeon to Epic. On December 13, 2017, IMTT submitted a revised VRP application and checklist to change the responsible part name to IMTT Epic LLC, effective January 1, 2018.

The existing monitoring well network at the Site as identified by GHD consists of 61 wells installed during previous environmental investigations that are shown on Figure 3. Historically, as many as 27 of these monitoring wells have contained LNAPL, with 26 wells containing measurable LNAPL during the reporting period.

1.2 Report Overview

This report summarizes the findings from the following activities that were performed at the Site during the reporting period of November 3, 2017 through April 27, 2018:

- Quarterly groundwater monitoring and LNAPL measuring performed in February and May 2018.
- Continuation of long-term LNAPL recovery for monitoring wells AW-9, AW-11, AW-49, AW-56, and AW-82.
- Initiation and/or completion of long-term LNAPL recovery and transmissivity evaluations for monitoring wells AW-12, AW-22, AW-68, and AW-74.
- Initiation of the initial intermittent LNAPL recovery event for monitoring wells AW-10 and AW-54.

2. Activities Completed During Reporting Period

2.1 Quarterly LNAPL Monitoring

2.1.1 February 2018 Gauging Event

Depth to water measurements were obtained on February 6, 2018 for 60 existing on-Site monitoring wells that were located and accessible during the event. The measurements were obtained using a Solinst oil/water interface probe and are summarized in Table 1. Groundwater elevations were determined based on the depth to groundwater measurements compared to surveyed top of casing elevations and adjusted for the measured in-well LNAPL thickness, where required. A groundwater potentiometric elevation and contour map based on the February 6, 2018 groundwater elevation data is shown on Figure 4 and indicates that the groundwater flow direction is generally to the east towards the Savannah River; which is consistent with historical observations.

LNAPL was measured in 24 of 60 gauged wells during the February 2018 event as summarized in Table 1 with observed thicknesses varying between a sheen (less than 0.01 feet) and 9.86 feet. Figure 5 presents isopleths depicting the measured in-well LNAPL thicknesses for this event which are generally consistent with observations from recent events. No indication of the presence of LNAPL was observed on the river side of the polywall with the exception of an LNAPL sheen in AW-62 and POD-1.

2.1.2 May 2018 Gauging Event

Depth to water measurements were obtained on May 3, 2018 for 60 existing on-Site monitoring wells that were located and accessible during the event. The measurements were obtained using a Solinst oil/water interface probe and are summarized in Table 1. Groundwater elevations were determined based on the depth to groundwater measurements compared to surveyed top of casing elevations and adjusted for the measured in-well LNAPL thickness, where required. A groundwater potentiometric elevation and contour map based on the May 3, 2018 groundwater elevation data is shown on Figure 6 and indicates that the groundwater flow direction is generally to the east towards the Savannah River; which is consistent with historical observations.

LNAPL was measured in 23 of 60 gauged wells during the May 2018 event as summarized in Table 1 with observed thicknesses varying between 0.02 and 9.44 feet. Figure 7 presents isopleths depicting the measured in-well LNAPL thicknesses for this event which are generally consistent with observations from recent events. No LNAPL was observed on the river side of the polywall, during the May 2018 event.

2.1.3 LNAPL Extent

Figure 8 depicts the inferred areal extent of LNAPL in the subsurface based on observations of in-well LNAPL accumulations. Included on the figures are the historical maximum extent, the inferred extent in 2009, and the inferred extent based on the February and May 2018 measurements. Historically, LNAPL has been detected in monitoring wells across the majority of the Site with an inferred extent of over 35 acres. Measurements obtained in 2009 suggested an areal extent of 18 acres. The measurements from May 2018 indicated an extent of approximately 15.3 acres. Based on these observations, there has been over a 15% reduction in the areal extent since 2009 and an overall reduction of LNAPL extent of over 57%.

Table 4 presents a summary of the reported historical maximum in-well LNAPL thickness and the maximum in-well LNAPL thickness observed in those wells since 2017. For wells which have been undergoing skimmer operations since 2017, the maximum in-well thickness was determined during periods where skimming operations were halted or interrupted due to equipment maintenance. The average reduction is approximately 58% with 17 of the 31 wells exhibiting a reduction of greater than 50% and 10 of those wells exhibiting a reduction of greater than 95%.

These observations suggest that the LNAPL plume is stable and in a declining condition that supports the conclusion that the LNAPL at the Site is immobile and not likely to migrate nor is it expected to be recoverable to a large extent.

2.2 LNAPL Skimming and Transmissivity Evaluation

As described in the *Fourth Semi-Annual VRP Progress Report*, GHD completed a series of short-duration LNAPL skimming evaluations at numerous on-Site monitoring wells to identify wells with potential LNAPL transmissivity (Tn) values indicative of the presence of recoverable/mobile LNAPL. Data from these short duration tests were provided in previous Progress Reports and were used to determine which wells should be further evaluated for long-term transmissivity values. Methodologies used for the short and long-term evaluations are described in the *Corrective Action Plan and Conceptual Site Model* for the Site, dated May 2018.

The wells identified for additional evaluation include AW-9, AW-11, AW-12, AW-49, AW-56, AW-68, AW-54, AW-56, AW-68, AW-74, and AW-82. During the reporting period, GHD continued implementation of long-duration skimming tests in these wells to further evaluate the potential for LNAPL to migrate or to be recovered feasibly.

2.2.1 LNAPL Recovery

As described in the *Second Semi-Annual VRP Progress Report*, GHD determined that several wells at the Site that had been evaluated over a short duration required further evaluation to accurately estimate the LNAPL transmissivity/recoverability for those areas of the Site. During this reporting period, longer-durations tests at several wells were initiated, continued, and/or completed to evaluate the LNAPL recovery at these wells. Skimming operations at several of these wells are currently on-going. The results and observations of the completed and ongoing evaluations are discussed in Section 2.2.4. A summary of the LNAPL recovery for each well with active LNAPL recovery during the reporting period is presented in Table 2. Please note that the summary table below only include LNAPL removal totals from the ongoing long-term skimming tests and the first intermittent skimming tests underway for AW-10 and AW-54.

The skimmer refill/discharge rates were set to maintain a minimal in-well LNAPL thickness in each well (Note: The skimmers are effective at reducing in-well LNAPL thicknesses to approximately 0.2 feet). Skimmer system operation and the volume of recovered LNAPL was monitored weekly throughout the duration of each test. Long-term and intermittent LNAPL recovery from the wells with active LNAPL recovery during the reporting period as of April 27, 2018 are as follows:

Well ID	LNAPL Recovered During Test (gallons)	Test/Recovery Duration (days)	Current Status
AW-9	1,453	489	Ongoing Long-Term skimming
AW-10	222	165	Intermittent skimming underway
AW-11	942	399	Ongoing Long-Term skimming
AW-12	81	62	Skimming evaluation completed
AW-22	19	70	Skimming evaluation completed
AW-49	2,198	495	Ongoing Long-Term skimming
AW-54	133	124	Intermittent skimming underway
AW-56	1,204	400	Ongoing Long-Term skimming
AW-68	211	114	Skimming evaluation completed
AW-82	954	411	Ongoing Long-Term skimming

2.2.2 LNAPL Transmissivity Evaluation Approach

Data collected weekly from the skimmer systems was used to develop trends in LNAPL transmissivity and recoverability. Calculations for these parameters are based on equations and methodologies given in ASTM E2856-13 (Standard). The values for each of these parameters are recorded for each well in the data tables included in Appendix A.

Recoverability is the volumetric recovery of LNAPL over a set time interval and is calculated with the following equation:

$$Q_n = \frac{V_n}{\Delta t}$$

Where:

Q_n = LNAPL recovery rate or recoverability (ft^3/day)

V_n = Incremental volumetric recovery (ft^3)

Δt = Skimmer system uptime over the O&M interval (day)

Intervals were set between O&M events and values were calculated weekly to observe trends in recoverability. Initial recoverability at each of the wells evaluated was very high, as the LNAPL present within the well casing/screen, annular space, and area immediately surrounding the wells was extracted. The long-term transmissivity and recoverability was determined based on the data collected after this initial removal of in-well and nearby LNAPL and once the skimmer was recovering LNAPL at a rate in equilibrium with the volume of LNAPL entering the well. The LNAPL recovery at each well would be expected to display a decreasing trend as the hydraulically recoverable proportion of LNAPL within the radius of influence was removed.

Transmissivity is determined using the following equation[1]:

$$T_n = \frac{Q_n * \ln\left(\frac{R_{oi}}{r_w}\right)}{2\pi * s_n}$$

Where:

T_n = LNAPL transmissivity (ft^2/day)

R_{oi} = Radius of influence (ft)

r_w = Radius of the well (ft)

s_n = LNAPL drawdown (ft)

Since the radius of influence is not known for each well and the well radii vary, the Standard indicates that an assumed value of $\ln\left(\frac{R_{oi}}{r_w}\right) = 4.6$ may be used with minimal error.

The LNAPL drawdown (s_n) is established based on the density of the LNAPL and the LNAPL thickness in the well prior to skimming operations. The maximum theoretical drawdown assumes complete removal of all in-well LNAPL and is calculated according to the following equation[2]:

$$s_n = b_n(1 - \rho_r)$$

Where:

b_n = Initial in-well LNAPL thickness (ft)

ρ_r = LNAPL specific gravity (unitless)

[1] ASTM E2856-13: Equation 16

[2] ASTM E2856-13: Equation 17

Tidal and seasonal variability in the groundwater table is very high at the Site. In order to account for changes in LNAPL thicknesses over time as a result of the groundwater table changes, an average LNAPL thickness for each well was determined using data collected during the quarterly monitoring events since March 2016. Data from events during which skimming evaluations were being conducted were removed from the thickness data averaging. The averaged data was used to develop equilibrium LNAPL thicknesses for each well, which were then used to calculate the averaged maximum theoretical drawdown in each well. This value is given on the equilibrium row of each well's data table in Appendix A.

During the evaluations, variabilities in LNAPL and groundwater elevations were observed. Instantaneous measurements of LNAPL and groundwater interface levels in the wells collected during O&M events in comparison to the averaged equilibrium groundwater elevation resulted in fluctuating LNAPL drawdown values. ASTM E2856-13 recommends modeling tidal and seasonal groundwater fluctuations using transducer data and correcting interface depths using an algorithm. However, since LNAPL thickness was consistently observed to be less than approximately 0.3 feet during normal skimmer operations, the maximum theoretical LNAPL drawdown value was used in lieu of calculated instantaneous drawdown in all calculations.

Specific gravity of the LNAPL in several wells was determined through laboratory analysis. For all other wells, the specific gravity used for the analysis was 0.854 which is the average specific gravity of the analytical LNAPL data, excluding AW-13, which contains a significantly more viscous and denser LNAPL.

The ITRC Technical/Regulatory Guidance document *Evaluating LNAPL Remedial Technologies for Achieving Project Goals*, dated December 2009, suggests that hydraulic recovery of LNAPL is technically practicable when transmissivity values exceed the de minimis criteria range of 0.1 to 0.8 ft^2/day. When the LNAPL transmissivity is within or below this range, LNAPL is not considered mobile enough for hydraulic recovery (i.e. skimming) to be technically practicable.

2.2.3 Graphical Depiction of Evaluation Results

Data from long-term skimming evaluations was used to develop several graphs to visually depict the skimming results and, if appropriate, depict long-term data trends. The data and applicable graphs for each well are included in Appendix A:

- The first graph for each well presents a depiction of the cumulative LNAPL recovery volume (gallons) and the weekly LNAPL recovery rate over time (gallons/day) during the long-term evaluation period. The cumulative volume of LNAPL recovery should become asymptotic with time. Typically, as the volume of LNAPL recovered from a well increases over time, the LNAPL recovery rate will decrease (i.e. LNAPL volumetric recovery decline). This is due to the removal of the recoverable/mobile portion of LNAPL from the subsurface in the vicinity of the well.
- The second graph for each well presents an analysis of the LNAPL volumetric recoverability (Q_n) over time. Once stabilization of LNAPL recovery is reached (i.e., the in-well LNAPL has been drawn down and the skimmer is operating continuously during the observation interval), plotting the LNAPL recoverability versus the cumulative LNAPL volume recovered can be used to determine an estimate of the total volume of recoverable LNAPL from the well. When a clear trend is identified based on the data collected, the value of the estimated recoverable volume is shown on the graph.

- The third graph for each well presents an analysis of the weekly LNAPL transmissivity (T_n) values compared to total volumetric recovery and, where appropriate, a T_n decline curve. The plot presents the estimated LNAPL T_n values following stabilization of LNAPL recovery rates as compared to the ITRC de minimis criteria of 0.1 and 0.8 ft^2/day.

2.2.4 LNAPL Recovery Summary and Observations

AW-9 Observations and Skimming Results

Long-term LNAPL skimming has been underway at monitoring well AW-9 since September 2016. The long-term test was temporarily halted on March 22, 2018 as a result of an equipment malfunction. The following are based on the observations to date for AW-9:

- As of March 22, 2018, a total of approximately 1,503 gallons of LNAPL had been removed from this well since the initiation of LNAPL recovery, with 1,453 gallons of LNAPL recovered since initiation of long-term skimming.
- LNAPL recovery rates have decreased over time as expected indicating that the volume of recoverable LNAPL at AW-9 has been reduced.
- LNAPL Tn values have decreased over time with the majority of the estimated LNAPL Tn values within the ITRC de minimis criteria range of 0.1 to 0.8 ft^2/day. The long-term stabilized LNAPL Tn value is currently estimated to be 0.46 ft^2/day; however, recent observations have been between 0.2 and 0.3 ft^2/day. These values are expected to continue to decline in the future as the volume of recoverable LNAPL decreases.
- Based on the decreasing recovery and transmissivity rates for LNAPL at this location, an estimated 600 to 1,000 gallons of recoverable LNAPL remains in order for the transmissivity at this location to drop below the target value of 0.1 ft^2/day, when continued LNAPL recovery will be determined not to be technically practicable.

Based on the above, continued long-term LNAPL skimming until the de minimis transmissivity criteria of 0.1 ft^2/day or asymptotic recovery rates are achieved is the most appropriate remedy for this well location. Weekly monitoring of the well and skimmer system will continue and if appropriate due to declining LNAPL recovery rates/Tn values, LNAPL skimming will be halted and the skimmer relocated to another well at the Site. After the conclusion of the long-term skimming at this well, additional skimming will occur at this well following a 2 to 3 month recovery period.

AW-10 Observations and Skimming Results

Long-term LNAPL skimming was conducted at monitoring well AW-10 between January 19, 2017 and April 27, 2017 to determine the LNAPL Tn at this well. The first intermittent LNAPL skimming event for AW-10, as proposed in the CAP, was initiated on March 7, 2018, and is on-going. The following are based on the observations to date for AW-10:

- The current LNAPL recovery since LNAPL skimming began at this well is approximately 324 gallons. As of April 27, 2018, a total of approximately 62 gallons of LNAPL had been removed from this well since the beginning of the first intermittent skimming event on March 7, 2018, with an additional 101 and 161 gallons having been recovered during the previously conducted short-term and long-term skimming tests, respectively.

- LNAPL recovery rates have decreased over time as expected indicating that the volume of recoverable LNAPL at AW-10 has been reduced. Further, LNAPL recovery rates approached asymptotic rates of less than 1 gallon per day after the initial 2 to 3 weeks of skimmer operation during both the long-term skimming evaluation and the first intermittent skimming event.
- LNAPL Tn values have decreased over time with the majority of the estimated LNAPL Tn values within or below the ITRC de minimis criteria range of 0.1 to 0.8 ft^2/day. The long-term stabilized LNAPL Tn value is currently estimated to be 0.13 ft^2/day and is expected to continue to decline in the future as the volume of recoverable LNAPL decreases.
- The first intermittent skimming event for AW-10 has recovered approximately 61 gallons of LNAPL, while the prior long-term test recovered approximately 160 gallons. Based on the decreasing recovery and transmissivity rates for LNAPL at this location, the first intermittent skimming event will be concluded in the near future, and at least one additional intermittent event will likely be performed after a recovery period.

Based on the above observations, the first intermittent skimming event will be halted at monitoring well AW-10 in June 2018. The very low and diminishing LNAPL recovery rates/Tn values, as well as the asymptotic LNAPL recovery rates suggest that long-term LNAPL recovery is not technically practicable at this time. LNAPL skimming has been effective at removing the in-well LNAPL and the recoverable volume of LNAPL in and near the well; however, continued skimming would provide additional LNAPL recovery at de minimis rates. A second intermittent skimming event at AW-10 is anticipated to begin in October 2018.

AW-11 Observations and Skimming Results

Long-term LNAPL skimming has been underway at monitoring well AW-11 since January 2017. The following are based on the observations to date for AW-11:

- As of April 27, 2018, a total of approximately 1,061 gallons of LNAPL had been removed from this well since initiation of LNAPL recovery, with 942 gallons of LNAPL recovered since initiation of long-term skimming.
- LNAPL recovery rates have generally decreased over time and appear to be approaching asymptotic rates of approximately 1 gallon per day. Similarly, transmissivity rates have steadily declined throughout the skimming evaluation and have been approaching the de minimis transmissivity value of 0.1 ft^2/day. The transmissivity and recovery rate are anticipated to further to decrease with continued LNAPL skimming at AW-11.
- The average long-term stabilized transmissivity value at AW-11 is estimated to be 0.35 ft^2/day; however, recent measurements have been much lower and close to 0.1 ft^2/day. Based on the decreasing recovery and transmissivity rates for LNAPL at this location, an estimated 20 to 50 gallons of recoverable LNAPL remains in order for the transmissivity at this location to drop below the target value of 0.1 ft^2/day, when continued LNAPL recovery will be determined not to be technically practicable.
- The measured in-well LNAPL thickness at the start of the long-term skimming test was approximately 3.5 feet but based on the observations to date, following the initial removal of LNAPL from in and near the well, the LNAPL recovery rate decreased significantly. Additionally, during the long-term testing, the skimming system was shut down once due inclement weather. The in-well LNAPL thickness returned to approximately 2.5 feet; however, upon restart, the

LNAPL recovery rates quickly diminished and returned to less than 0.25 feet. This observation is consistent with ITRC guidance and science-based approaches for evaluating LNAPL recoverability that conclude that in-well LNAPL thicknesses are not indicative of LNAPL recoverability and often return to thicknesses consistent with observations prior to implementation of remedial efforts.

Based on the above, continued long-term LNAPL skimming until the de minimis transmissivity criteria of 0.1 ft^2/day or asymptotic recovery rates are achieved is the most appropriate remedy for this well location. Weekly monitoring of the well and skimmer system will continue and if appropriate due to declining LNAPL recovery rates/Tn values, LNAPL skimming will be halted and the skimmer relocated to another well at the Site. It is anticipated that the de minimis transmissivity criteria will be met in 2018. After the conclusion of the long-term skimming at this well, additional skimming will occur at this well following a 2 to 3 month recovery period.

AW-12 Observations and Skimming Results

LNAPL skimming was conducted at monitoring well AW-12 between December 6, 2017 and February 22, 2018 to complete a long-term skimming test that would allow for the determination of the LNAPL Tn at this well. The following are based on the observations for AW-12:

- The current LNAPL recovery since LNAPL skimming began at this well is approximately 112 gallons. A total of approximately 81 gallons of LNAPL was removed from this well during the 13-week long-term test. The initial drawdown of this well was monitored periodically over the course of the first several hours of skimmer operation. In-well LNAPL thickness was reduced from 5.87 feet to 0.28 feet within the first 5 hours of operation and recovery during this time totaled approximately 17 gallons.
- In-well LNAPL thickness was maintained below 0.25 feet for the duration of the test, with the exception of periods when the system was off due to a full tank or system malfunction. In-well LNAPL thickness did not rebound beyond 0.72 feet during the times that the system was down.
- The system was shut down to conclude the test on February 22, 2018 and had an in-well LNAPL thickness of 0.02 feet. Rebound of LNAPL in the well was 0.19 feet as of approximately 6 days following the test conclusion.
- After the removal of LNAPL during the five hours immediately following system startup, the average LNAPL transmissivity was 0.08 ft^2/day and the average LNAPL recovery rate was approximately 1.0 gal/day during system operation.

Based on the above, LNAPL skimming was effective at removing the limited quantity of in-well and local LNAPL. The long-term LNAPL Tn for this well appears to be approximately at the lower bound of the de minimis criteria set forth by ITRC and continuous skimming or more aggressive methods of LNAPL recovery at this location do not appear to be warranted. Due to the high initial LNAPL recovery at this well, intermittent short-term skimming events are planned for this location. An initial intermittent skimming event at AW-12 is planned for 2018.

AW-22 Observations and Skimming Results

LNAPL skimming was conducted at monitoring well AW-22 between September 21, 2017 and November 30, 2017 to complete a long-term skimming test that would allow for the determination of the LNAPL Tn at this well. The following are based on the observations for AW-22:

- The current LNAPL recovery since LNAPL skimming began at this well is approximately 314 gallons. A total of approximately 19 gallons of LNAPL was removed from this well during the 10-week long-term test completed in November 2017. The initial drawdown of this well was monitored approximately 15 hours after the skimmer system was first started. In-well LNAPL thickness was reduced from 3.76 feet to 0.06 feet within the first 15 hours of operation and recovery during this time totaled approximately 2.3 gallons, which is approximately the volume of LNAPL expected to be located within the well casing/screen and annular space.
- In-well LNAPL thickness was maintained below 0.25 feet for the duration of the test, with the exception of one instance where the system was off for approximately 6 days, after which LNAPL thickness recovered to 0.51 feet.
- After the removal of LNAPL during the 15 hours immediately following system startup, the average LNAPL transmissivity was 0.07 ft^2/day and did not exceed an averaged 0.11 ft^2/day in any week of the test following the initial system start-up. The average LNAPL recovery rate was approximately 0.27 gal/day during system operation after the initial 15 hours of operation.

Based on the above, LNAPL skimming was effective at removing the limited quantity of in-well and local LNAPL. The long-term LNAPL Tn for this well appears to be approximately at the lower bound of the de minimis criteria set forth by ITRC and continuous skimming or more aggressive methods of LNAPL recovery at this location do not appear to be warranted. Due to the high initial LNAPL recovery at this well, intermittent short-term skimming events are planned for this location. An initial intermittent skimming event at AW-22 is planned for 2018.

AW-49 Observations and Skimming Results

Long-term LNAPL skimming has been underway at monitoring well AW-49 since September 2016. The following are based on the observations to date for AW-49:

- As of April 27, 2018, a total of approximately 2,244 gallons of LNAPL had been removed from this well since initiation of LNAPL recovery, with 2,198 gallons of LNAPL recovered since initiation of long-term skimming.
- LNAPL recovery rates have decreased over time and appear to be approaching asymptotic rates of approximately 1 to 2 gallons per day as expected indicating that the volume of recoverable LNAPL at AW-49 has been reduced.
- LNAPL Tn values have decreased over time with the majority of the estimated LNAPL Tn values within the ITRC de minimis criteria range of 0.1 to 0.8 ft^2/day. The stabilized LNAPL Tn value is currently estimated to be 0.47 ft^2/day; however, recent observations have been near 0.2 ft^2/day. These values are expected to continue to decline in the future as the volume of recoverable LNAPL decreases.
- Based on the decreasing recovery and transmissivity rates for LNAPL at this location, an estimated 150 to 350 gallons of recoverable LNAPL remains in order for the transmissivity at

this location to drop below the target value of 0.1 ft^2/day, when continued LNAPL recovery will be determined not to be technically practicable.

Based on the above, continued long-term LNAPL skimming until the de minimis transmissivity criteria of 0.1 ft^2/day or asymptotic recovery rates are achieved is the most appropriate remedy for this well location. Weekly monitoring of the well and skimmer system will continue and if appropriate due to declining LNAPL recovery rates/Tn values, LNAPL skimming will be halted and the skimmer relocated to another well at the Site. After the conclusion of the long-term skimming at this well, additional skimming will occur at this well following a 2 to 3 month recovery period.

AW-54 Observations and Skimming Results

Long-term LNAPL skimming testing was conducted at monitoring well AW-54 between June 20, 2017 and August 22, 2017 to determine the LNAPL Tn at this well. The first intermittent LNAPL skimming event for AW-54, as proposed in the CAP, was initiated on March 7, 2018, and is on-going. The following are based on the observations to date for AW-54:

- The current LNAPL recovery since LNAPL skimming began at this well is approximately 333 gallons. As of April 27, 2018, a total of approximately 13.5 gallons of LNAPL had been removed from AW-54 during the first intermittent skimming event which began on March 7, 2018. An estimated 200 gallons were removed during the initial 4-week short-term skimming evaluation and an estimated 120 gallons were removed during the 9-week long-term evaluation.
- Initial LNAPL recovery at this location is very high, due to the high in-well LNAPL thickness (approximately 10 feet); however, a significant decline in LNAPL recovery was observed during the long-term skimming evaluation and the first intermittent skimming event. LNAPL recovery decreased to zero after the first few weeks of skimmer operation.
- Based on the decreasing recovery and transmissivity rates for LNAPL at this location, the first intermittent skimming event will be concluded in the near future, and at least one additional event will occur after a recovery period.
- Following the conclusion of the long-term skimming evaluation on August 22, 2017, in-well LNAPL thickness recovery in this well was slow, but returned to historical levels by the start of the initial intermittent skimming event.

Based on the above observations, the first intermittent skimming event will be halted at monitoring well AW-54 in June 2018. The very low and diminishing LNAPL recovery rates/Tn values, as well as the asymptotic LNAPL recovery rates suggest that further LNAPL recovery via long-term skimming is not technically practicable. LNAPL skimming has been effective at removing the in-well LNAPL and recoverable volume of LNAPL; however, continued skimming would provide additional LNAPL recovery at de minimis rates. A second intermittent skimming event at AW-54 is planned to start in October 2018.

AW-56 Observations and Skimming Results

LNAPL skimming has been underway at monitoring well AW-56 since February 2017. The following are based on the observations to date for AW-56:

- As of April 27, 2018, a total of approximately 1,336 gallons of LNAPL had been removed from this well since initiation of LNAPL recovery, with 1,204 gallons of LNAPL recovered since initiation of long-term skimming.

- LNAPL recovery rates have decreased slightly over time indicating that the volume of recoverable LNAPL at AW-56 has been slowly reduced; however, asymptotic recovery rates have not yet been observed.
- LNAPL Tn values have decreased over time with the majority of the estimated LNAPL Tn values within the ITRC de minimis criteria range of 0.1 to 0.8 ft^2/day. The stabilized LNAPL Tn value is currently estimated to be 0.36 ft^2/day and is expected to continue to decline in the future as the volume of recoverable LNAPL decreases.
- Based on the decreasing recovery and transmissivity rates for LNAPL at this location, an estimated 800 to 900 gallons of recoverable LNAPL remains in order for the transmissivity at this location to drop below the target value of 0.1 ft^2/day, when continued LNAPL recovery will be determined not to be technically practicable.
- The measured in-well LNAPL thickness at the start of the long-term skimming test was approximately 5.5 feet, but following the initial removal of LNAPL from in and near the well, the LNAPL recovery rate decreased significantly. Additionally, during the long-term testing, the skimming system has been shut down or malfunctioned several times. The in-well LNAPL thickness returned to approximately 5 feet during these system down times; however, upon restart, the LNAPL recovery rates quickly diminished and returned to prior levels. This observation is consistent with ITRC guidance and science-based approaches for evaluating LNAPL recoverability that conclude that in-well LNAPL thicknesses are not indicative of LNAPL recoverability and often return to thicknesses consistent with observations prior to implementation of remedial efforts.

Based on the above, continued long-term LNAPL skimming until the de minimis transmissivity criteria of 0.1 ft^2/day or asymptotic recovery rates are achieved is the most appropriate remedy for this well location. Weekly monitoring of the well and skimmer system will continue and if appropriate due to declining LNAPL recovery rates/Tn values, LNAPL skimming will be halted and the skimmer relocated to another well at the Site. After the conclusion of the long-term skimming at this well, additional skimming will occur at this well following a 2 to 3 month recovery period.

AW-68 Observations and Skimming Results

LNAPL skimming was conducted at monitoring well AW-68 between November 30, 2017 and March 8, 2018 to complete a long-term skimming test that would allow for the determination of the LNAPL Tn at this well. The following are based on the observations for AW-68:

- The current LNAPL recovery since LNAPL skimming began at this well is approximately 224 gallons. A total of approximately 211 gallons of LNAPL was removed from this well during the 13-week long-term test duration. The initial drawdown of this well was monitored periodically over the course of the first several hours of skimmer operation. In-well LNAPL thickness was reduced from 6.34 feet to 0.38 feet within the first 6 hours of operation and recovery during this time totaled approximately 16 gallons.
- In-well LNAPL thickness was maintained below 0.41 feet for the duration of the test, with the exception of one instance where the air supply to the system was shut off at the time of the O&M event and the LNAPL thickness had recovered to 1.17 feet.
- LNAPL recovery was significant during the initial three weeks of the long-term evaluation, with approximately 170 gallons, or 80% or the total recovered, being extracted from the well during

this period. During this initial period, the LNAPL recovery rate was approximately 6.1 gal/day; however, that average rate dropped to approximately 0.68 gal/day after the initial 3 weeks of the evaluation.

- After the removal of LNAPL during the initial three weeks of the test, the average LNAPL transmissivity was 0.12 ft^2/day, with most weekly transmissivity values being below the de minimis criteria of 0.1 ft^2/day.
- The long-term skimming evaluation was concluded on March 7, 2018 and the in-well LNAPL thickness was 0.29 feet. LNAPL thickness in this well had recovered to only 0.49 feet by May 3, 2018, significantly below the pre-skimming average of 6.27 feet. This supports the assertion that LNAPL mobility and recoverability in this area has been significantly reduced.

Based on the above, LNAPL skimming was effective at removing the limited quantity of in-well and local LNAPL. The long-term LNAPL Tn for this well appears to be approximately at or below the lower bound of the de minimis criteria set forth by ITRC and continuous skimming or more aggressive methods of LNAPL recovery at this location do not appear to be warranted. Due to the high initial LNAPL recovery at this well, intermittent short-term skimming events are planned for this location. An initial intermittent skimming event at AW-68 is planned for 2018, but may be delayed if in-well LNAPL thickness has not sufficiently recovered by that time.

AW-82 Observations and Skimming Results

LNAPL skimming has been underway at monitoring well AW-82 since April 2017. The following are based on the observations to date for AW-82:

- As of April 27, 2018, a total of approximately 1,224 gallons of LNAPL had been removed from this well since initiation of LNAPL recovery, with 954 gallons of LNAPL recovered since initiation of long-term skimming.
- LNAPL recovery rates have decreased slightly over time indicating that the volume of recoverable LNAPL at AW-82 has been slowly reduced; however, asymptotic recovery rates have not yet been observed.
- LNAPL Tn values have decreased over time with the majority of the estimated LNAPL Tn values within the ITRC de minimis criteria range of 0.1 to 0.8 ft^2/day. The stabilized long-term LNAPL Tn value is currently estimated to be 0.55 ft^2/day and is expected to continue to decline in the future as the volume of recoverable LNAPL decreases.
- Based on the decreasing recovery and transmissivity rates for LNAPL at this location, an estimated 200 to 300 gallons of recoverable LNAPL remains in order for the transmissivity at this location to drop below the target value of 0.1 ft^2/day, when continued LNAPL recovery will be determined not to be technically practicable.
- The measured in-well LNAPL thickness at the start of the long-term skimming test was approximately 3 feet, but following the initial removal of LNAPL from in and near the well, the LNAPL recovery rate decreased significantly. Additionally, during the long-term testing, the skimming system was shut down once due inclement weather. The in-well LNAPL thickness returned to approximately 2 feet; however, upon restart, the LNAPL recovery rates quickly diminished and returned to prior levels. This observation is consistent with ITRC guidance and science-based approaches for evaluating LNAPL recoverability that conclude that in-well

LNAPL thicknesses are not indicative of LNAPL recoverability and often return to thicknesses consistent with observations prior to implementation of remedial efforts.

Based on the above, continued long-term LNAPL skimming until the de minimis transmissivity criteria of 0.1 ft^2/day or asymptotic recovery rates are achieved is the most appropriate remedy for this well location. Weekly monitoring of the well and skimmer system will continue and if appropriate due to declining LNAPL recovery rates/Tn values, LNAPL skimming will be halted and the skimmer relocated to another well at the Site. After the conclusion of the long-term skimming at this well, additional skimming will occur at this well following a 2 to 3 month recovery period.

3. Remedial Activities

Remedial activities proposed for the Site were submitted in the *Corrective Action Plan and Conceptual Site Model* submitted in May 2018. The corrective actions include the following:

- Continue long-term LNAPL recovery using skimmers at well locations AW-9, AW-11, AW-49, AW-56, and AW-82 until LNAPL transmissivities decrease to de minimis values.
- Perform 1 to 2-month duration intermittent LNAPL recovery from select wells using skimmers to remove LNAPL. The wells included are: AW-5, AW-10, AW-12, AW-22, AW-54, AW-65, and AW-68. Recovery duration will be limited as these wells typically have a large initial LNAPL recovery rate that quickly diminishes to the de minimis value or to zero.
- Continue monitoring of monitoring wells AW-62 and POD-1 on the river side of the polywall and use absorbent socks to remove residual LNAPL.
- Continue quarterly monitoring of all accessible Site monitoring wells to monitor the extent of the LNAPL plume, to verify LNAPL migration is not occurring, and to monitor the integrity of the polywall barrier.
- Implement land use restrictions to prevent exposure to Site contaminants.

3.1 Remedial Progress Update

As discussed above, LNAPL skimming wells was separated into two groups, a long-term continuous skimming wells and short-term intermittent skimming wells.

3.1.1 Intermittent Skimming

As described in the CAP, monitoring wells AW-5, AW-10, AW-12, AW-22, AW-54, AW-65, and AW-68 were identified as candidate wells for intermittent LNAPL skimming due to high in-well LNAPL thicknesses and unsustainable long-term LNAPL recovery rates. During the reporting period, intermittent skimming was initiated at AW-10 and AW-54 in March 2018 and will be concluded in June 2018. As of April 27, 2018, the initial intermittent skimming events at AW-10 and AW-54 have recovered 60 and 13.5 gallons of LNAPL, respectively. Observations from the intermittent skimming events underway at these wells are summarized in Section 2.2.4.

Included below is a tentative schedule for the intermittent skimming events to be performed at the Site.

Well ID	1st Skimming Event	2nd Skimming Event	3rd Skimming Event
AW-5	August – October 2018	February – April 2019	*
AW-10	March – June 2018	October – December 2018	*
AW-12	June – August 2018	December 2018 – February 2019	*
AW-22	June – August 2018	December 2018 – February 2019	*
AW-54	March – June 2018	October – December 2018	*
AW-65	October – December 2018	April – June 2019	*
AW-68	August – October 2018	February – April 2019	*

*-LNAPL skimming recovery from the initial two skimming events will be evaluated to determine if a third skimming event is warranted at any or all of the locations

3.1.2 Long-Term Skimming

As described in the CAP, monitoring wells AW-9, AW-11, AW-49, AW-56, and AW-82 were identified as candidate wells for long-term LNAPL skimming due to sustainable LNAPL recovery rates. Skimming was continued on these wells during the reporting period and the observations are summarized in Section 2.2.4. As described in the CAP, an estimation of the completion date and remaining volume of LNAPL to be removed at each well can be made using the data obtained from the long-term skimming evaluations. Decreasing trends in the stabilized LNAPL recovery rate at each candidate well were used to determine an approximate operational time remaining and volume of mobile LNAPL to be removed in order for the transmissivity of the well to decrease to the 0.1 ft^2/day de minimis criteria. The estimated completion dates and remaining LNAPL volume to be removed for each of the long-term skimming wells are given below:

Well ID	Estimated Date for Long-Term Skimming Completion	Total LNAPL Removal as of April 27, 2018 (gallons)	Approximate Volume of Remaining LNAPL to be Removed (gallons)
AW-9	July 2019	1,503	600 to 1,000
AW-11	June 2018	1,061	20 to 50
AW-49	March 2019	2,244	150 to 350
AW-56	September 2019	1,336	800 to 900
AW-82	January 2019	1,224	200 to 300

These completion dates are approximate, are based on the skimming data collected to date, and are likely to change with time as LNAPL recovery rates often fluctuate. As additional mobile LNAPL is removed, the recovery in the wells will likely become asymptotic, which would extend the estimated completion dates. Further, the end dates indicated assume consistent operation of the LNAPL skimmer systems at each of the wells. Delays due to system maintenance, malfunction, or other factors, such as weather, may increase the estimated time to completion.

LNAPL removal data will continue to be collected during weekly O&M visits to the Site, and the above projections may be altered as additional data becomes available. The above estimated dates and volumes of LNAPL remaining are inferred based on projecting the existing data trends and should not be viewed as remedial end points. Updated projections will be provided in future Semi-Annual VRP Progress Reports.

3.1.3 Polywall Barrier Monitoring

No LNAPL has been detected in any of the wells installed on the river side of the polywall since at least 2009, with the exception of AW-62 and POD-1. AW-62 and POD-1 have been monitored weekly since October 2016, and have contained no more than 0.04 feet of LNAPL since that time. This suggests that the majority of the LNAPL mass has been adequately contained by the polywall barrier and that only residual LNAPL remains on the river side of the polywall barrier.

A sheen of LNAPL has been measured in AW-62 intermittently during this reporting period. Absorbent socks have been placed within AW-62 (and POD-1 as a precautionary measure) to recover the residual LNAPL, and have been replaced as needed. GHD will continue to monitor AW-62 and POD-1 which are on the river side of the polywall for the presence of LNAPL. Additionally, all monitoring wells located on the river side of the polywall will continue to be monitored on a quarterly basis to ensure that the integrity of the polywall is maintained and off-Site LNAPL migration is not occurring.

3.1.4 Quarterly LNAPL Gauging

Quarterly monitoring was completed in February and May 2018 as described in Section 2.1 and the following has been observed:

- No additional sources of LNAPL have been introduced
- No off-Site migration of LNAPL is occurring
- The integrity of the polywall barrier is maintained
- LNAPL migration has not presented an increased risk to human or environmental health

GHD will continue to visit the Site on a quarterly basis to complete measurements of groundwater elevations and in-well LNAPL thickness. The measured LNAPL thicknesses will be reviewed and any wells requiring addition or removal from the LNAPL skimming and transmissivity program will be identified. The quarterly LNAPL gauging information will be utilized to update the CSM to reflect the current extent and in-well thickness trends at the Site.

3.2 Remedial Costs Update

As discussed in the *Corrective Action Report and Conceptual Site Model*, an assessment of the cost of current and future LNAPL removal on a per-gallon basis was performed for each of the wells which underwent LNAPL recoverability and transmissivity evaluations.

The estimated cost of operation of the systems was determined based on an assumed weekly O&M visit for the seven skimmer systems at the Site, project management time, an assumed equipment repair and upkeep cost, and LNAPL disposal costs. The average stabilized recovery rate and operational cost of the systems were used to determine the estimated long term cost of LNAPL

recovery at each well on a per-gallon basis. It should be noted that this value is based on the stabilized recovery rate following initial extraction of LNAPL from the well and unit costs would be expected to increase as LNAPL removal continues and the recovery rate decreases.

A summary of the cost analysis is given in the tables below.

Estimated LNAPL Recovery Cost at the Candidate Wells

A summary of the cost per gallon of LNAPL removed for the five wells identified as candidates for long-term continuous skimming is given below:

Well ID	Estimated Average Unit Cost to Date ($/gallon)	Estimated Current Unit Cost ($/gallon)	Estimated Unit Cost at Transmissivity Endpoint ($/gallon)
AW-9	$13	$14	$68
AW-11	$15	$41	$80
AW-49	$9	$15	$78
AW-56	$12	$14	$49
AW-82	$13	$20	$93

Estimated LNAPL Recovery Cost at the Intermittent Skimming Wells

The following table presents a summary of the estimated volumes of recoverable LNAPL and the associated unit cost for three iterations of intermittent skimming at select wells that have demonstrated reasonable LNAPL recovery for a very short duration before recovery decreases substantially or ceases all together. The estimated volume of LNAPL recovered during each iteration is anticipated to be less than the preceding:

Well ID	1st 2-Month Duration Event		2nd 2-Month Duration Event		3rd 2-Month Duration Event	
	Estimated LNAPL Recovery (gallons)	Unit Cost of Removal ($/gallon)	Estimated LNAPL Recovery (gallons)	Unit Cost of Removal ($/gallon)	Estimated LNAPL Recovery (gallons)	Unit Cost of Removal ($/gallon)
AW-5	60	$40	40	$60	20	$120
AW-10	80	$30	50	$48	25	$96
AW-12	80	$30	50	$48	25	$96
AW-22	40	$60	20	$120	10	$240
AW-54	50	$48	30	$80	15	$160
AW-65	50	$48	30	$80	15	$160
AW-68	150	$16	100	$24	50	$48

Updates to the Cost Analysis

The cost analysis for all wells will be updated in each subsequent Semi-Annual VRP Progress Report to reflect the observed decline in LNAPL recovery. If changes in the LNAPL recovery rates significantly differ from the projected trends, then technically practicable LNAPL recovery may or may not be warranted at any of the above wells, and the skimming schedule may be altered to add, remove, or extend skimming operations.

3.3 Progress Towards Achieving Remedial Endpoints

Proposed remedial endpoints for the ongoing LNAPL recovery were provided in the CAP. A summary of the progress towards achieving these endpoints will be provided in each subsequent Semi-Annual VRP Progress Report.

3.4 Conceptual Site Model

A preliminary CSM was submitted as a part of the VIRP. The CSM was updated in the *Corrective Action Plan and Conceptual Site Model* for the Site, dated May 2018, based on information derived from investigations conducted by GHD, review of previous investigative work at the Site, and based on the on-going LNAPL recovery evaluations. The CSM will be updated as needed based on observations from the Site.

3.5 Future Actions Required

At the conclusion of LNAPL skimming operations, groundwater sampling of select Site wells is proposed in order to assess for the presence of dissolved phase contaminants in groundwater at the Site. Prior sampling events at the Site have shown elevated concentrations of select contaminants in Site groundwater. However, as the LNAPL source of the contaminants has not been fully addressed, assessment of dissolved groundwater impacts is not warranted at this time, and will be evaluated at a later date.

4. Commitment to Future Requirements

IMTT affirms its commitment to the following future requirements:

- Progress Reports – June 1st and December 1st through 2020
- March 31, 2021 – submit CSR upon completion of remedial activities proposed herein

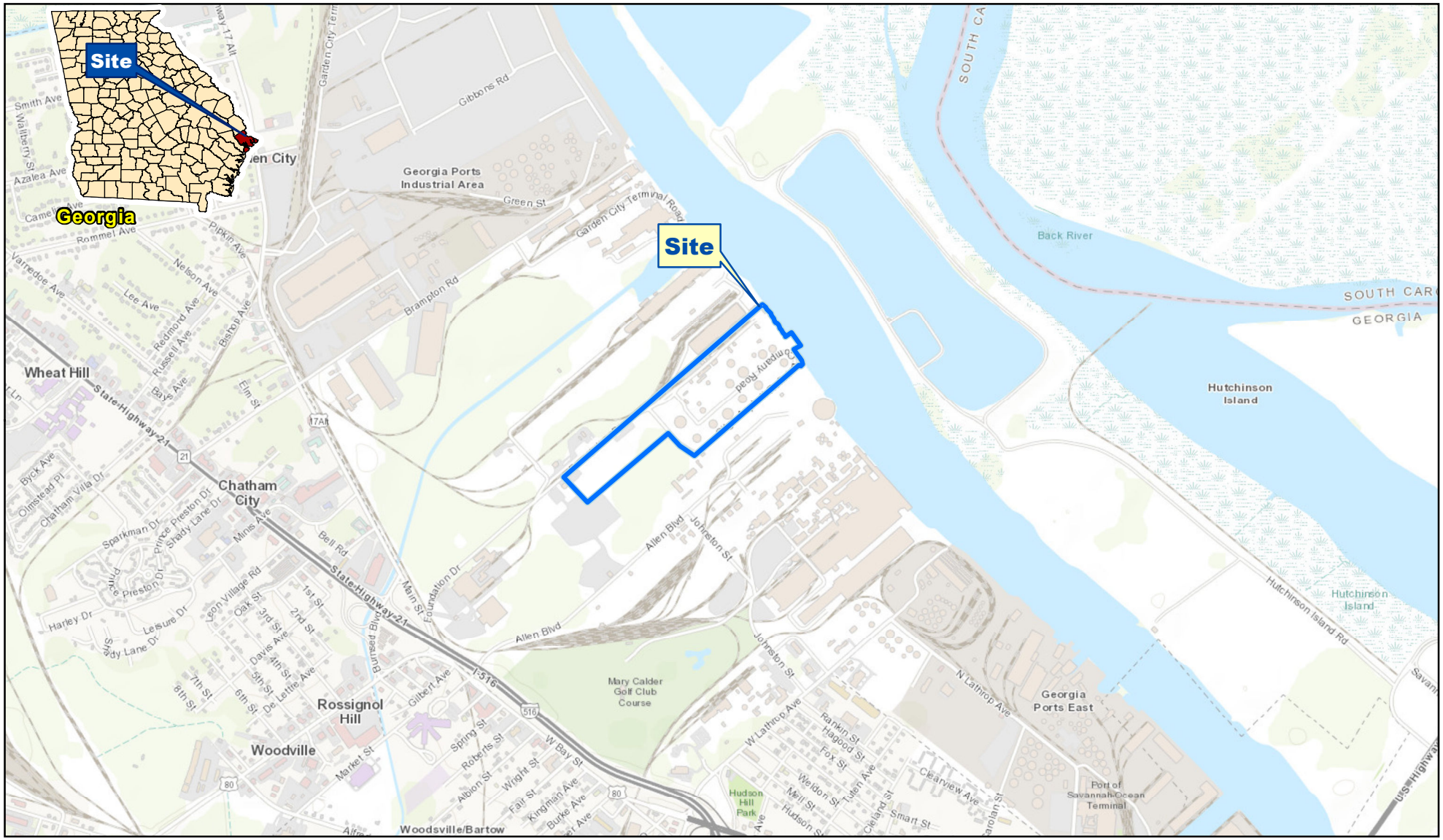
5. Project Schedule

The anticipated milestone schedule for the May 1, 2018 to November 1, 2018 reporting period is provided in Table 3.

6. Engineering Labor Hours

Appendix B includes the summary of labor hours incurred by this project from November 1, 2017 to April 30, 2018

Figures



Source: ESRI World Topographic Map.

0 1,000 2,000
Feet

Coordinate System:
NAD 1983 UTM Zone 17N

IMTT SAVANNAH NORTH TERMINAL
7 FOUNDATION DRIVE, SAVANNAH, GEORGIA

089400-00
May 11, 2018

VICINITY MAP

FIGURE 1

GIS File: I:\GIS\GIS\Projects\89000s\89400\89400-00(004)PR\89400-00(004)PR-BR001.mxd

Source: Aerial Photograph provided by Epic Midstream, LLC on March 17, 2016.

0 1,000 2,000
Feet

Coordinate System:
NAD 1983 UTM Zone 15N

N

GHD

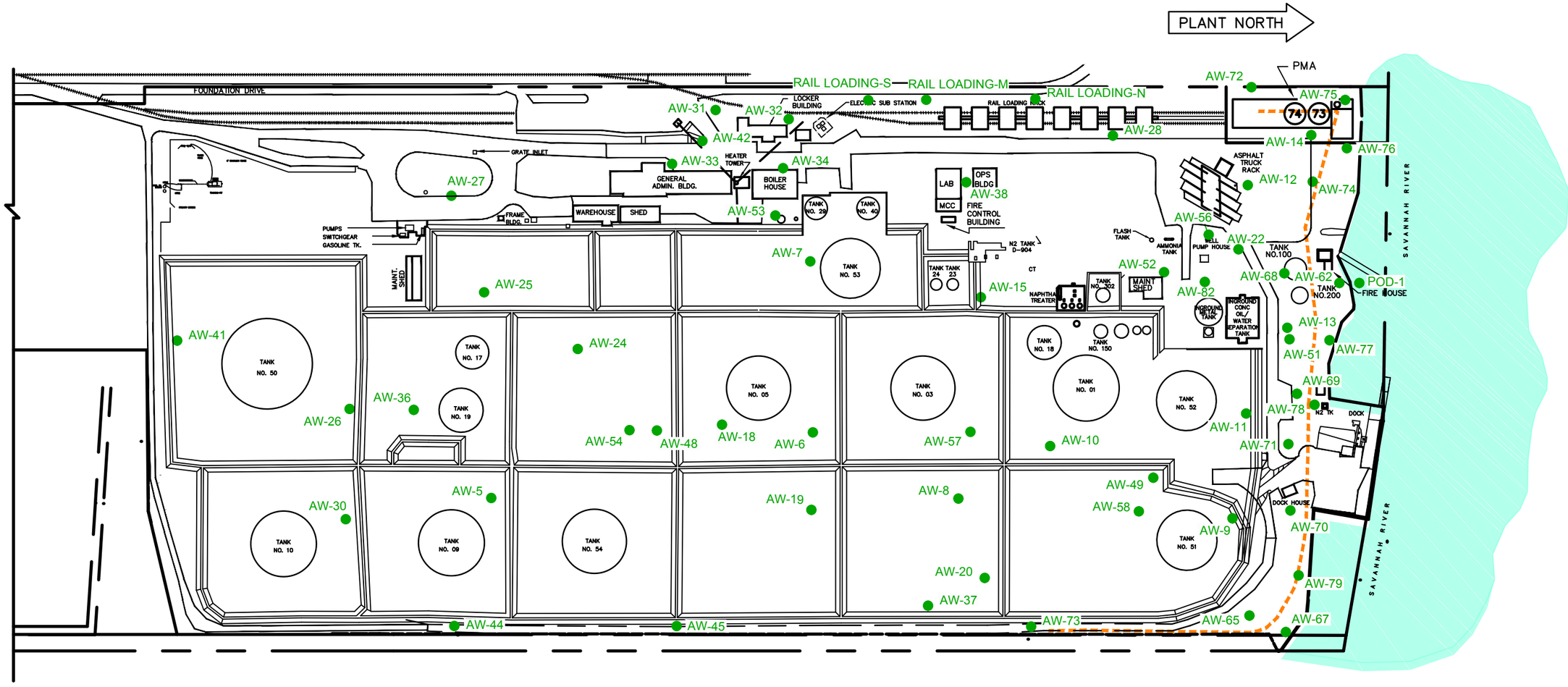
IMTT SAVANNAH NORTH TERMIAL
7 FOUNDATION DRIVE, SAVANNAH, GEORGIA

089400-00
May 11, 2018

2016 AERIAL PHOTOGRAPH

FIGURE 2

GIS File: I:\GIS\GIS\Projects\89000s\89400\89400-00(004)PR\89400-00(004)PR-BR002.mxd



LEGEND

PROPERTY LINE AND BOUNDARY

POLYWALL BARRIER

AW-52 WELL LOCATION

0 100 200ft

GHD

IMTT SAVANNAH NORTH TERMINAL
7 FOUNDATION DRIVE, SAVANNAH, GEORGIA
FIFTH SEMI-ANNUAL VRP PROGRESS REPORT

089400-2018

May 29, 2018

SITE PLAN

FIGURE 3

CAD File: P:\drawings\89000s\89400\89400-REPORT\89400-2018(007)\89400-2018(007)GN\089400-2018(007)GN-WA009.DWG

PLANT NORTH

FOUNDATION DRIVE

RAIL LOADING-M

RAIL LOADING-S

RAIL LOADING-N

PMA

AW-72 (1.84)
AW-75 (NS)
AW-14 (4.70)
AW-76 (NS)
AW-74 (2.43)
AW-12 * (-0.04)
AW-62 (NS)
AW-68 (2.08)
POD-1 (NS)
AW-13 (3.48)
AW-77 (NS)
AW-51 (2.22)
AW-69 (2.01)
AW-78 (NS)
AW-11 (1.79)
AW-71 (1.74)
AW-70 (1.58)
AW-79 (NS)
AW-28 (6.07)
AW-56 (0.68)
AW-22 (2.59)
AW-82
AW-52 (2.35)
AW-15 (4.67)
AW-38 (7.51)
AW-7 (4.67)
AW-53 (3.77) *
AW-34 (6.09)
AW-33 (7.9)
AW-31 (7.75)
AW-42 (7.75)
AW-32 (4.39) *
AW-27 (7.67)
AW-25 (7.93)
AW-24 (7.11)
AW-41 (5.99)
AW-26 (7.64)
AW-36 (7.84)
AW-18 (6.19)
AW-54 * (4.08)
AW-48 * (5.15)
AW-6 (3.06)
AW-57 (2.87)
AW-10 (2.22)
AW-5 (9.08)
AW-30 (7.86)
AW-19 (3.09)
AW-8 (2.91)
AW-49 (2.24)
AW-58 (NS)
AW-9 (2.10)
AW-20 (3.39)
AW-37 (3.01)
AW-44 (3.54)
AW-45 (3.03)
AW-73 (2.44)
AW-65 (1.39)
AW-67 (0.87)

SAVANNAH RIVER

LEGEND

- PROPERTY LINE AND BOUNDARY
- POLYWALL BARRIER
- AW-52 (8.01) — WELL LOCATION
- GROUNDWATER ELEVATION (FT AMSL)
- 8 — GROUNDWATER ELEVATION CONTOUR (FT AMSL)
- GROUNDWATER FLOW DIRECTION
- NS — NOT SURVEYED
- NM — NOT MEASURED
- * — MEASURED ELEVATION NOT USED TO DEVELOP CONTOURS

0 100 200ft

GHD

IMTT SAVANNAH NORTH TERMINAL
7 FOUNDATION DRIVE, SAVANNAH, CHATHAM COUNTY, GEORGIA
FIFTH SEMI-ANNUAL VRP PROGRESS REPORT

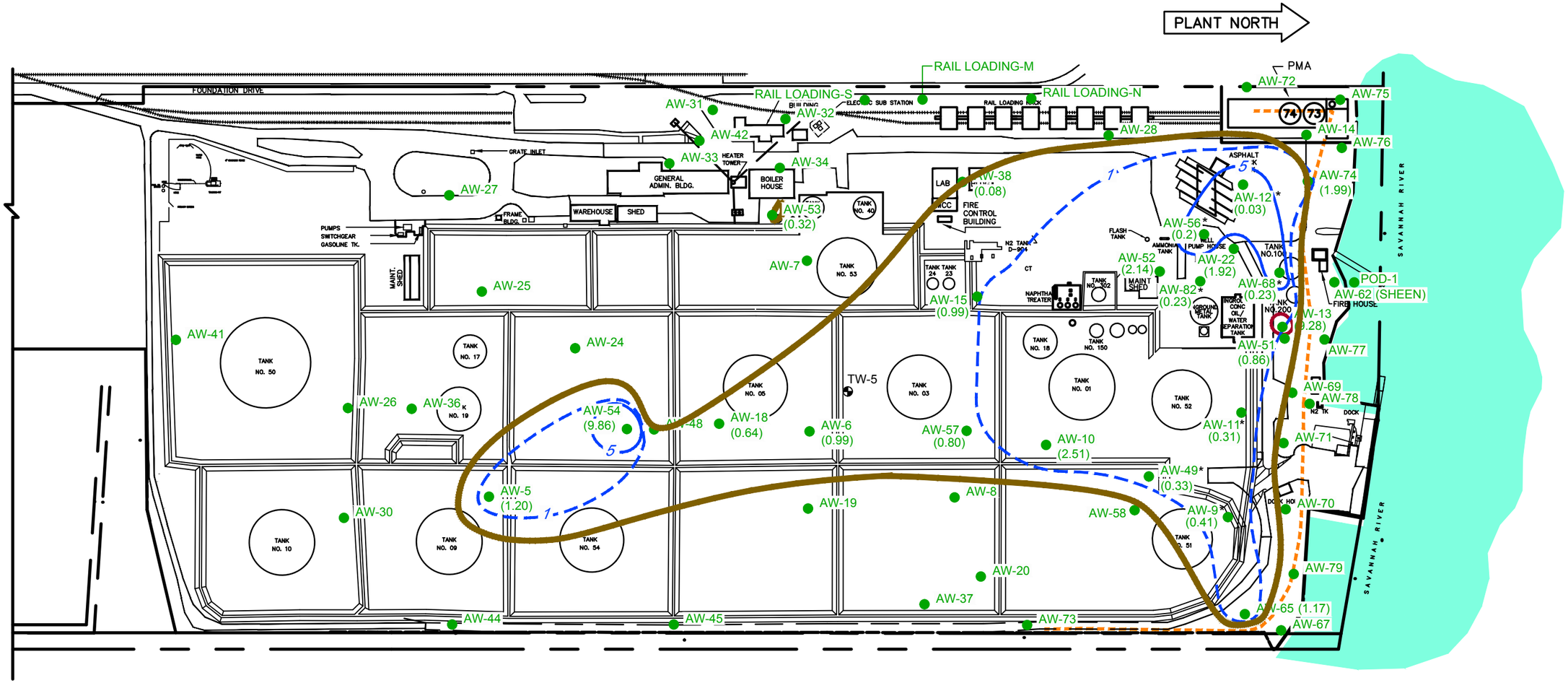
FEBRUARY 2018 GROUNDWATER ELEVATION CONTOUR MAP

089400-2018

May 29, 2018

FIGURE 4

CAD File: P:\drawings\89000s\89400\89400-REPORT\89400-2018(007)\89400-2018(007)GN\089400-2018(007)GN-WA010.DWG



LEGEND

- PROPERTY LINE AND BOUNDARY
- POLYWALL BARRIER
- AW-52 WELL LOCATION
- TW-5 DIRECT PUSH BORING LOCATION
- (2.55) LNAPL THICKNESS (FEET)
- 1' LNAPL THICKNESS ISOPLETH (FEET)
- HEAVIER LNAPL
- * WELL UNDERGOING SKIMMING OPERATION
- FEBRUARY 2018 INFERRED EXTENT OF LNAPL

0 100 200ft

GHD

IMTT SAVANNAH NORTH TERMINAL
7 FOUNDATION DRIVE, SAVANNAH, CHATHAM COUNTY, GEORGIA
FIFTH SEMI-ANNUAL VRP PROGRESS REPORT

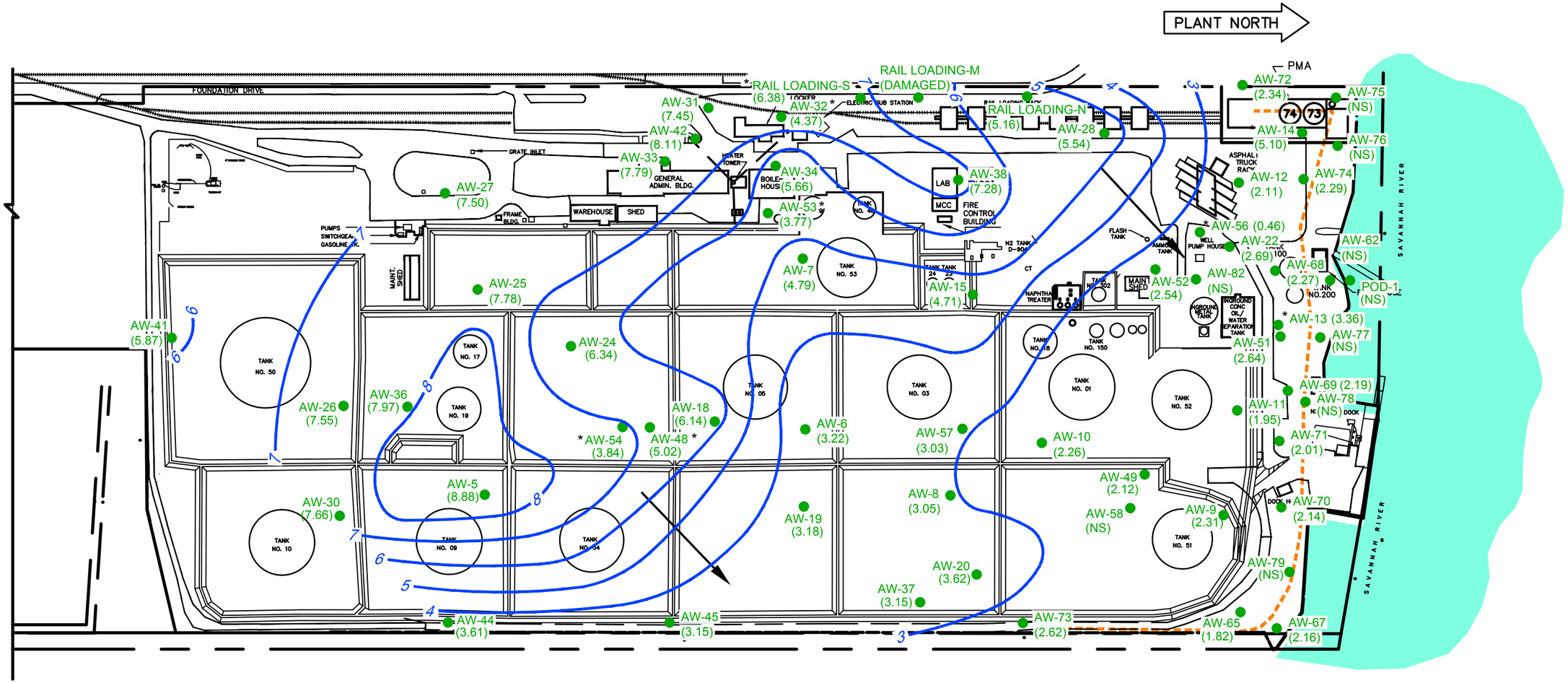
089400-2018

May 29, 2018

FEBRUARY 2018 LNAPL ISOCONTOUR MAP

FIGURE 5

CAD File: P:\drawings\89000s\89400\89400-REPORT\89400-2018(007)\89400-2018(007)GN\089400-2018(007)GN-WA011.DWG



LEGEND

- POLYWALL BARRIER
- AW-52 (2.54) — WELL LOCATION; GROUNDWATER ELEVATION (FT AMSL)
- 8 — GROUNDWATER ELEVATION CONTOUR (FT AMSL)
- GROUNDWATER FLOW DIRECTION
- NS — NOT SURVEYED
- * — MEASURED ELEVATION NOT USED TO DEVELOP CONTOURS

0 100 200ft

IMTT SAVANNAH NORTH TERMINAL
7 FOUNDATION DRIVE, SAVANNAH, CHATHAM COUNTY, GEORGIA
FIFTH SEMI-ANNUAL VRP PROGRESS REPORT

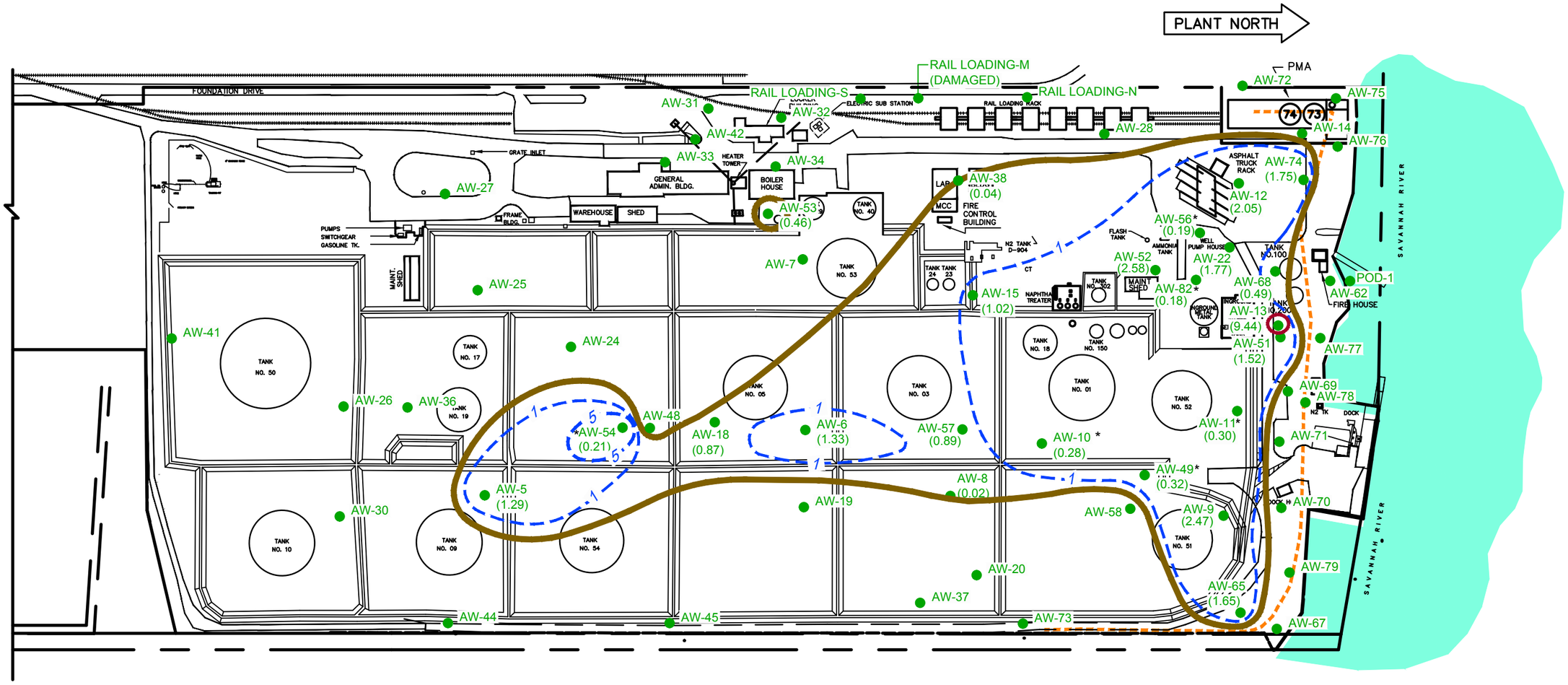
MAY 2018 GROUNDWATER ELEVATION CONTOUR MAP

089400-2018

May 29, 2018

FIGURE 6

CAD File: P:\drawings\89000s\89400\89400-REPORT\89400-2018(007)\89400-2018(007)GN\089400-2018(007)GN-WA007.DWG



LEGEND

- POLYWALL BARRIER
- AW-52 (2.58) — WELL LOCATION; LNAPL THICKNESS (FEET)
- 1 — LNAPL THICKNESS ISOPLETH (FEET)
- HEAVIER LNAPL
- * — WELL UNDERGOING SKIMMING OPERATION
- MAY 2018 INFERRED EXTENT OF LNAPL

0 100 200ft

GHD

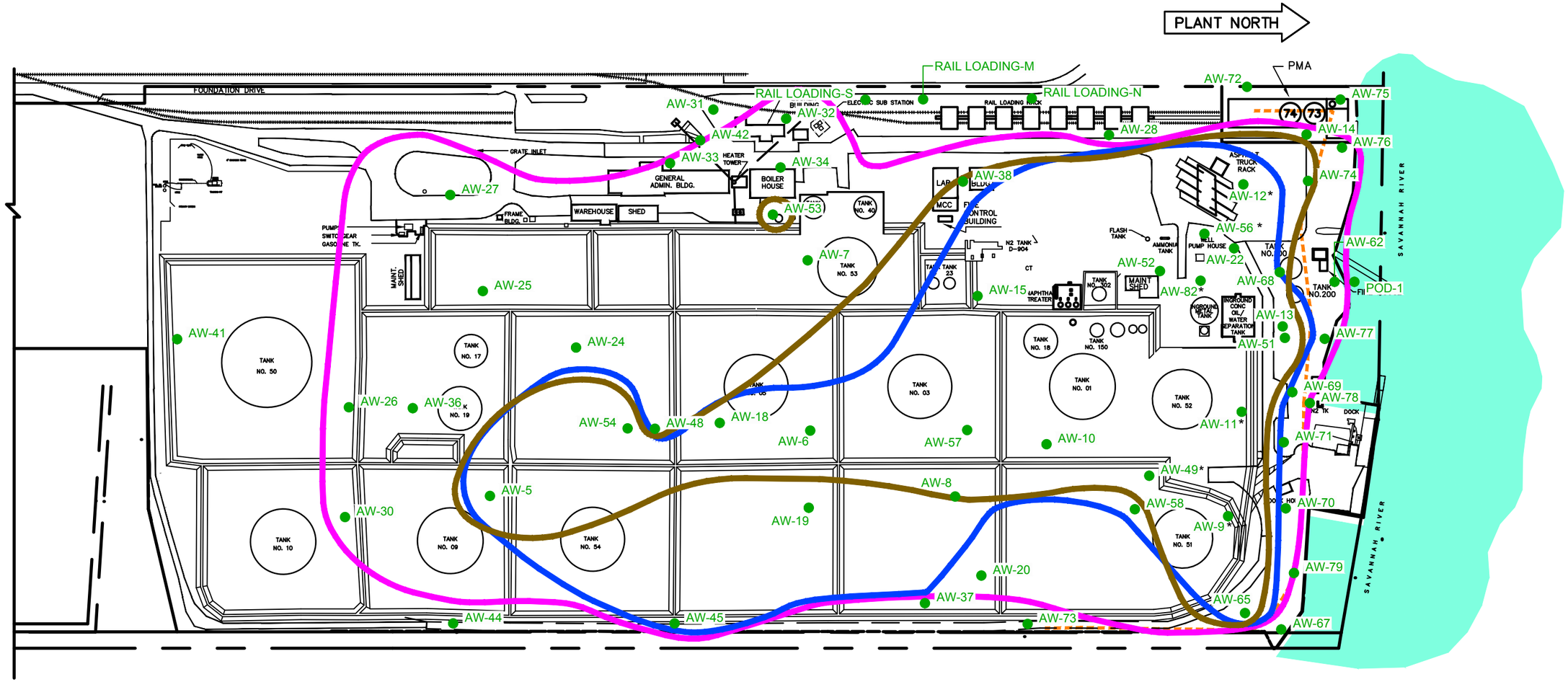
IMTT SAVANNAH NORTH TERMINAL
7 FOUNDATION DRIVE, SAVANNAH, CHATHAM COUNTY, GEORGIA
FIFTH SEMI-ANNUAL VRP PROGRESS REPORT

089400-2018
May 29, 2018

MAY 2018 LNAPL ISOCONTOUR MAP

FIGURE 7

CAD File: P:\drawings\89000s\89400\89400-REPORT\89400-2018(007)\89400-2018(007)GN\089400-2018(007)GN-WA008.DWG



LEGEND

- POLYWALL BARRIER
- AW-52 ● WELL LOCATION
- MAXIMUM INFERRED EXTENT OF LNAPL
- MARCH 2009 INFERRED EXTENT OF LNAPL
- MAY 2018 INFERRED EXTENT OF LNAPL

AREAS	
MAXIMUM INFERRED EXTENT OF LNAPL	1,554,313 SQ. FT.
MARCH 2009 INFERRED EXTENT OF LNAPL	781,492 SQ. FT.
MAY 2018 INFERRED EXTENT OF LNAPL	665,627 SQ. FT.

0 100 200ft

IMTT SAVANNAH NORTH TERMINAL
7 FOUNDATION DRIVE, SAVANNAH, CHATHAM COUNTY, GEORGIA
FIFTH SEMI-ANNUAL VRP PROGRESS REPORT

089400-2018

May 29, 2018

INFERRED EXTENT OF LNAPL

FIGURE 8

CAD File: P:\drawings\89000s\89400\89400-REPORT\89400-2018(007)\89400-2018(007)GN\089400-2018(007)GN-WA006.DWG

Tables

Table 1

Groundwater Elevation and LNAPL Thickness Data - March 2016 to Current
IMTT Epic LLC
Savannah, Georgia
VRP #1440101197

Location ID	Measurement Date	Depth to LNAPL (ft btoc)	Depth to Water (ft btoc)	Groundwater Elevation (ft AMSL)	LNAPL Thickness (ft)
AW-5	3/1/2016	6.56	7.75	9.31	1.19
	5/1/2016	6.42	7.61	9.45	1.19
	9/21/2016	5.50	8.05	10.17	2.55
	11/15/2016	6.72	8.32	9.09	1.60
	2/14/2017	5.35	6.42	10.53	1.07
	5/2/2017	7.23	7.62	8.75	0.39
	8/8/2017	5.11	6.81	10.68	1.70
	11/1/2017	6.61	7.81	9.25	1.20
	2/6/2018	6.78	7.98	9.08	1.20
	5/3/2018	6.97	8.26	8.88	1.29
AW-6	3/1/2016	8.20	9.43	3.19	1.23
	5/1/2016	8.06	9.58	3.29	1.52
	9/22/2016	7.46	9.37	3.83	1.91
	11/15/2016	7.25	9.54	3.99	2.29
	2/14/2017	7.91	9.53	3.42	1.62
	5/2/2017	8.36	9.64	3.02	1.28
	8/8/2017	7.70	7.81	3.85	0.11
	11/1/2017	7.90	9.31	3.46	1.41
	2/6/2018	8.37	9.36	3.06	0.99
	5/3/2018	8.16	9.49	3.22	1.33
AW-7	3/1/2016	--	7.93	4.61	--
	5/1/2016	--	7.78	4.76	--
	9/22/2016	--	7.22	5.32	--
	11/15/2016	--	6.38	6.16	--
	2/14/2017	Not Measured			
	5/2/2017	--	8.11	4.43	--
	8/8/2017	--	6.86	5.68	--
	11/1/2017	--	7.64	4.90	--
	2/6/2018	--	7.87	4.67	--
	5/3/2018	--	7.75	4.79	--
AW-8	3/1/2016	--	12.70	2.98	--
	5/1/2016	12.54	12.70	3.12	0.16
	9/22/2016	12.20	12.25	3.47	0.05
	11/15/2016	11.80	11.82	3.88	0.02
	2/14/2017	12.36	12.40	3.31	0.04
	5/2/2017	12.99	13.01	2.69	0.02
	8/8/2017	11.88	11.93	3.79	0.05
	11/1/2017	12.41	12.43	3.27	0.02
	2/6/2018	--	12.77	2.91	--
	5/3/2018	12.63	12.65	3.05	0.02
AW-9	3/1/2016	10.89	14.82	2.04	3.93
	5/1/2016	10.77	14.62	2.17	3.85
	9/22/2016	11.15	11.40	2.31	0.25
	11/15/2016	10.31	13.20	2.77	2.89
	2/14/2017	10.92	11.24	2.53	0.32
	5/2/2017	11.74	11.85	1.74	0.11
	8/8/2017	10.35	10.45	3.14	0.10
	11/1/2017	11.18	11.30	2.30	0.12
	2/6/2018	11.34	11.75	2.10	0.41
	5/3/2018	10.83	13.30	2.31	2.47

Table 1

Groundwater Elevation and LNAPL Thickness Data - March 2016 to Current
IMTT Epic LLC
Savannah, Georgia
VRP #1440101197

Location ID	Measurement Date	Depth to LNAPL (ft btoc)	Depth to Water (ft btoc)	Groundwater Elevation (ft AMSL)	LNAPL Thickness (ft)
AW-10	3/1/2016	11.10	14.72	2.27	3.62
	5/1/2016	10.73	14.82	2.57	4.09
	9/22/2016	10.44	15.33	2.75	4.89
	11/15/2016	9.40	14.12	3.82	4.73
	2/14/2017	11.31	11.56	2.55	0.25
	5/2/2017	11.73	13.08	1.97	1.35
	8/8/2017	9.90	13.79	3.43	3.89
	11/1/2017	10.84	14.75	2.49	3.91
	2/6/2018	11.31	13.82	2.22	2.51
	5/3/2018	11.60	11.88	2.26	0.28
AW-11	3/1/2016	11.20	14.79	1.92	3.59
	5/1/2016	10.86	14.92	2.19	4.06
	9/22/2016	10.77	14.17	2.37	3.40
	11/15/2016	10.18	12.68	3.10	2.50
	2/14/2017	11.26	11.49	2.35	0.23
	5/2/2017	12.25	13.39	1.22	1.14
	8/8/2017	10.61	10.81	3.00	0.20
	11/1/2017	11.46	11.61	2.16	0.15
	2/6/2018	11.80	12.11	1.79	0.31
	5/3/2018	11.65	11.95	1.95	0.30
AW-12	3/1/2016	9.25	12.65	2.30	3.40
	5/1/2016	8.96	15.77	2.01	6.81
	9/21/2016	5.47	16.20	4.82	10.73
	11/15/2016	8.70	10.99	3.04	2.29
	2/14/2017	9.46	14.09	1.88	4.63
	5/2/2017	9.50	15.15	1.67	5.65
	8/8/2017	8.40	17.04	2.25	8.64
	11/1/2017	9.06	16.61	1.78	7.55
	2/6/2018	12.17	12.20	-0.04	0.03
	5/3/2018	9.68	11.73	2.11	2.05
AW-13	3/1/2016	10.40	17.70	2.99	7.30
	5/1/2016	9.95	18.64	3.56	8.69
	9/22/2016	10.20	16.45	3.11	6.25
	11/15/2016	9.11	14.15	4.10	5.04
	2/14/2017	9.66	17.22	3.75	7.56
	5/2/2017	10.67	18.28	2.75	7.61
	8/8/2017	9.01	19.15	4.62	10.14
	11/1/2017	9.92	19.04	3.62	9.12
	2/6/2018	10.08	19.36	3.48	9.28
	5/3/2018	10.21	19.65	3.36	9.44
AW-14	3/1/2016	--	8.52	4.99	--
	5/1/2016	Not Measured			
	9/22/2016	--	8.05	5.46	--
	11/15/2016	--	7.46	6.05	--
	2/14/2017	--	8.66	4.85	--
	5/2/2017	--	8.19	5.32	--
	8/8/2017	--	8.09	5.42	--
	11/1/2017	--	8.45	5.06	--
	2/6/2018	--	8.81	4.70	--
	5/3/2018	--	8.41	5.10	--

Table 1

Groundwater Elevation and LNAPL Thickness Data - March 2016 to Current
IMTT Epic LLC
Savannah, Georgia
VRP #1440101197

Location ID	Measurement Date	Depth to LNAPL (ft btoc)	Depth to Water (ft btoc)	Groundwater Elevation (ft AMSL)	LNAPL Thickness (ft)
AW-15	3/1/2016	10.65	10.75	4.72	0.10
	5/1/2016	9.40	9.66	5.94	0.26
	9/22/2016	9.25	10.31	5.98	1.06
	11/15/2016	9.48	10.46	5.76	0.98
	2/14/2017	9.91	11.12	5.29	1.21
	5/2/2017	10.75	11.94	4.46	1.19
	8/8/2017	9.30	10.26	5.94	0.96
	11/1/2017	10.18	11.26	5.04	1.08
	2/6/2018	10.57	11.56	4.67	0.99
	5/3/2018	10.50	11.52	4.73	1.02
AW-18	3/1/2016	7.06	8.60	5.64	1.54
	5/1/2016	7.00	8.75	5.66	1.75
	9/22/2016	6.70	9.45	5.82	2.75
	11/15/2016	6.29	7.74	6.42	1.45
	2/14/2017	6.09	7.31	6.65	1.22
	5/2/2017	6.95	7.80	5.85	0.85
	8/8/2017	6.16	6.40	6.72	0.24
	11/1/2017	6.87	8.52	5.81	1.65
	2/6/2018	6.64	7.28	6.19	0.64
	5/3/2018	6.65	7.52	6.14	0.87
AW-19	3/1/2016	12.40	12.45	3.09	0.05
	5/1/2016	--	12.26	3.24	--
	9/22/2016	11.97	11.99	3.53	0.02
	11/15/2016	--	11.60	3.90	--
	2/14/2017	--	12.11	3.39	--
	5/2/2017	--	12.50	3.00	--
	8/8/2017	--	11.51	3.99	--
	11/1/2017	--	12.13	3.37	--
	2/6/2018	--	12.41	3.09	--
	5/3/2018	--	12.32	3.18	--
AW-20	3/1/2016	--	12.20	3.47	--
	5/1/2016	--	12.06	3.61	--
	9/22/2016	--	11.16	4.51	--
	11/15/2016	--	11.04	4.63	--
	2/14/2017	--	11.80	3.87	--
	5/2/2017	--	12.58	3.09	--
	8/8/2017	--	9.96	5.71	--
	11/1/2017	--	11.35	4.32	--
	2/6/2018	--	12.28	3.39	--
	5/3/2018	--	12.05	3.62	--
AW-22	3/1/2016	12.65	17.72	1.74	5.07
	5/1/2016	12.75	16.42	1.84	3.67
	9/21/2016	11.20	15.75	3.27	4.55
	11/15/2016	11.93	11.95	3.20	0.02
	2/14/2017	11.62	14.00	3.16	2.38
	5/2/2017	12.18	14.55	2.60	2.37
	8/8/2017	11.08	14.30	3.58	3.22
	11/1/2017	12.58	12.65	2.54	0.07
	2/6/2018	12.26	14.18	2.59	1.92
	5/3/2018	12.18	13.95	2.69	1.77

Table 1

Groundwater Elevation and LNAPL Thickness Data - March 2016 to Current
IMTT Epic LLC
Savannah, Georgia
VRP #1440101197

Location ID	Measurement Date	Depth to LNAPL (ft btoc)	Depth to Water (ft btoc)	Groundwater Elevation (ft AMSL)	LNAPL Thickness (ft)
AW-24	3/1/2016	--	5.10	6.26	--
	5/1/2016	--	5.04	6.32	--
	9/22/2016	--	4.67	6.69	--
	11/15/2016	--	5.16	6.20	--
	2/14/2017	--	4.56	6.80	--
	5/2/2017	--	5.34	6.02	--
	8/8/2017	--	3.34	8.02	--
	11/1/2017	--	4.94	6.42	--
	2/6/2018	--	4.25	7.11	--
	5/3/2018	--	5.02	6.34	--
AW-25	3/1/2016	--	5.92	7.58	--
	5/1/2016	--	5.78	7.72	--
	9/22/2016	--	5.29	8.21	--
	11/15/2016	--	5.74	7.76	--
	2/14/2017	--	5.41	8.09	--
	5/2/2017	--	6.24	7.26	--
	8/8/2017	--	4.27	9.23	--
	11/1/2017	--	5.90	7.60	--
	2/6/2018	--	5.57	7.93	--
	5/3/2018	--	5.72	7.78	--
AW-26	3/1/2016	--	4.52	7.95	--
	5/1/2016	--	4.54	7.93	--
	9/22/2016	--	4.64	7.83	--
	11/15/2016	--	4.91	7.56	--
	2/14/2017	--	4.46	8.01	--
	5/2/2017	--	5.23	7.24	--
	8/8/2017	--	3.66	8.81	--
	11/1/2017	--	5.00	7.47	--
	2/6/2018	--	4.83	7.64	--
	5/3/2018	--	4.92	7.55	--
AW-27	3/1/2016	--	6.28	7.24	--
	5/1/2016	--	6.13	7.39	--
	9/22/2016	--	5.57	7.95	--
	11/15/2016	--	6.04	7.48	--
	2/14/2017	--	5.82	7.70	--
	5/2/2017	--	6.43	7.09	--
	8/8/2017	--	4.73	8.79	--
	11/1/2017	--	5.71	7.81	--
	2/6/2018	--	5.85	7.67	--
	5/3/2018	--	6.02	7.50	--
AW-28	3/1/2016	--	5.15	6.03	--
	5/1/2016	--	5.19	5.99	--
	9/22/2016	--	4.60	6.58	--
	11/15/2016	--	5.13	6.05	--
	2/14/2017	--	5.40	5.78	--
	5/2/2017	--	5.80	5.38	--
	8/8/2017	--	3.19	7.99	--
	11/1/2017	--	4.87	6.31	--
	2/6/2018	--	5.11	6.07	--
	5/3/2018	--	5.64	5.54	--

Table 1

Groundwater Elevation and LNAPL Thickness Data - March 2016 to Current
IMTT Epic LLC
Savannah, Georgia
VRP #1440101197

Location ID	Measurement Date	Depth to LNAPL (ft btoc)	Depth to Water (ft btoc)	Groundwater Elevation (ft AMSL)	LNAPL Thickness (ft)
AW-30	3/1/2016	--	5.35	8.05	--
	5/1/2016	--	5.31	8.09	--
	9/22/2016	--	5.39	8.01	--
	11/15/2016	--	5.59	7.81	--
	2/14/2017	--	5.29	8.11	--
	5/2/2017	--	5.95	7.45	--
	8/8/2017	--	4.47	8.93	--
	11/1/2017	--	5.73	7.67	--
	2/6/2018	--	5.54	7.86	--
	5/3/2018	--	5.74	7.66	--
AW-31	3/1/2016	--	2.72	7.58	--
	5/1/2016	--	2.60	7.70	--
	9/22/2016	--	2.10	8.20	--
	11/15/2016	--	1.80	8.50	--
	2/14/2017	--	2.40	7.90	--
	5/2/2017	--	2.76	7.54	--
	8/8/2017	--	1.21	9.09	--
	11/1/2017	--	2.22	8.08	--
	2/6/2018	--	2.55	7.75	--
	5/3/2018	--	2.85	7.45	--
AW-32	3/1/2016	--	10.40	3.99	--
	5/1/2016	--	9.60	4.79	--
	9/22/2016	--	9.37	5.02	--
	11/15/2016	--	9.70	4.69	--
	2/14/2017	9.49	9.49	4.90	Sheen
	5/2/2017	9.91	10.04	4.46	0.13
	8/8/2017	--	7.68	6.71	--
	11/1/2017	--	9.46	4.93	--
	2/6/2018	--	10.00	4.39	--
	5/3/2018	--	10.02	4.37	--
AW-33	3/1/2016	--	5.43	7.65	--
	5/1/2016	--	5.35	7.73	--
	9/22/2016	--	4.92	8.16	--
	11/15/2016	--	5.39	7.69	--
	2/14/2017	--	5.32	7.76	--
	5/2/2017	--	6.79	6.29	--
	8/8/2017	--	4.00	9.08	--
	11/1/2017	--	5.26	7.82	--
	2/6/2018	--	5.18	7.90	--
	5/3/2018	--	5.29	7.79	--
AW-34	3/1/2016	--	7.57	5.70	--
	5/1/2016	--	7.36	5.91	--
	9/22/2016	--	6.40	6.87	--
	11/15/2016	--	7.11	6.16	--
	2/14/2017	--	7.36	5.91	--
	5/2/2017	--	8.04	5.23	--
	8/8/2017	--	5.50	7.77	--
	11/1/2017	--	6.60	6.67	--
	2/6/2018	--	7.18	6.09	--
	5/3/2018	--	7.61	5.66	--

Table 1

Groundwater Elevation and LNAPL Thickness Data - March 2016 to Current
IMTT Epic LLC
Savannah, Georgia
VRP #1440101197

Location ID	Measurement Date	Depth to LNAPL (ft btoc)	Depth to Water (ft btoc)	Groundwater Elevation (ft AMSL)	LNAPL Thickness (ft)
AW-36	3/1/2016	--	5.47	8.18	--
	5/1/2016	--	5.42	8.23	--
	9/22/2016	--	5.23	8.42	--
	11/15/2016	--	5.82	7.83	--
	2/14/2017	--	5.17	8.48	--
	5/2/2017	--	6.22	7.43	--
	8/8/2017	--	4.06	9.59	--
	11/1/2017	--	5.79	7.86	--
	2/6/2018	--	5.81	7.84	--
	5/3/2018	--	5.68	7.97	--
AW-37	3/1/2016	--	11.37	2.96	--
	5/1/2016	--	11.24	3.09	--
	9/22/2016	--	10.95	3.38	--
	11/15/2016	--	10.49	3.84	--
	2/14/2017	--	10.98	3.35	--
	5/2/2017	--	11.53	2.80	--
	8/8/2017	--	10.40	3.93	--
	11/1/2017	--	11.06	3.27	--
	2/6/2018	--	11.32	3.01	--
	5/3/2018	--	11.18	3.15	--
AW-38	3/1/2016	--	4.45	7.58	--
	5/1/2016	Not Measured			
	9/22/2016	3.80	3.82	8.23	0.02
	11/15/2016	4.17	4.18	7.86	0.01
	2/14/2017	4.48	4.49	7.55	0.01
	5/2/2017	5.11	5.12	6.92	0.01
	8/8/2017	3.37	3.52	8.64	0.15
	11/1/2017	--	4.06	7.97	--
	2/6/2018	4.51	4.59	7.51	0.08
	5/3/2018	4.74	4.78	7.28	0.04
AW-41	3/1/2016	--	9.15	6.00	--
	5/1/2016	--	9.71	5.44	--
	9/22/2016	--	9.15	6.00	--
	11/15/2016	--	9.47	5.68	--
	2/14/2017	--	8.97	6.18	--
	5/2/2017	--	9.50	5.65	--
	8/8/2017	--	8.04	7.11	--
	11/1/2017	--	9.15	6.00	--
	2/6/2018	--	9.16	5.99	--
	5/3/2018	--	9.28	5.87	--
AW-42	3/1/2016	Not Measured			
	5/1/2016	1.69	1.70	7.74	0.01
	9/22/2016	--	1.23	8.20	--
	11/15/2016	--	1.93	7.50	--
	2/14/2017	--	1.50	7.93	--
	5/2/2017	--	2.11	7.32	--
	8/8/2017	--	0.00	9.43	--
	11/1/2017	--	1.36	8.07	--
	2/6/2018	--	1.68	7.75	--
	5/3/2018	--	1.32	8.11	--

Table 1

Groundwater Elevation and LNAPL Thickness Data - March 2016 to Current
IMTT Epic LLC
Savannah, Georgia
VRP #1440101197

Location ID	Measurement Date	Depth to LNAPL (ft btoc)	Depth to Water (ft btoc)	Groundwater Elevation (ft AMSL)	LNAPL Thickness (ft)
AW-44	3/1/2016	--	10.03	3.38	--
	5/1/2016	--	10.00	3.41	--
	9/22/2016	--	9.65	3.76	--
	11/15/2016	--	9.39	4.02	--
	2/14/2017	--	9.55	3.86	--
	5/2/2017	--	10.11	3.30	--
	8/8/2017	--	9.25	4.16	--
	11/1/2017	--	9.84	3.57	--
	2/6/2018	--	9.87	3.54	--
	5/3/2018	--	9.80	3.61	--
AW-45	3/1/2016	--	12.14	2.99	--
	5/1/2016	--	12.12	3.01	--
	9/22/2016	--	11.78	3.35	--
	11/15/2016	--	11.51	3.62	--
	2/14/2017	--	11.88	3.25	--
	5/2/2017	--	12.22	2.91	--
	8/8/2017	--	11.22	3.91	--
	11/1/2017	--	11.79	3.34	--
	2/6/2018	--	12.10	3.03	--
	5/3/2018	--	11.98	3.15	--
AW-48	3/1/2016	--	6.82	4.31	--
	5/1/2016	--	6.10	5.03	--
	9/22/2016	--	5.58	5.55	--
	11/15/2016	--	5.49	5.64	--
	2/14/2017	--	5.72	5.41	--
	5/2/2017	--	6.39	4.74	--
	8/8/2017	--	4.82	6.31	--
	11/1/2017	--	5.72	5.41	--
	2/6/2018	--	5.98	5.15	--
	5/3/2018	--	6.11	5.02	--
AW-49	3/1/2016	13.10	15.94	1.99	2.84
	5/1/2016	12.73	16.76	2.18	4.03
	9/22/2016	13.22	13.47	2.24	0.25
	11/15/2016	13.00	13.19	2.47	0.19
	2/14/2017	12.99	13.21	2.48	0.22
	5/2/2017	13.69	13.96	1.77	0.27
	8/8/2017	12.24	12.45	3.23	0.21
	11/1/2017	13.20	13.50	2.26	0.30
	2/6/2018	13.21	13.54	2.24	0.33
	5/3/2018	13.33	13.65	2.12	0.32
AW-51	3/1/2016	10.48	11.41	2.16	0.93
	5/1/2016	9.90	10.62	2.76	0.72
	9/22/2016	10.35	11.67	2.24	1.32
	11/15/2016	9.41	9.62	3.31	0.21
	2/14/2017	9.84	10.17	2.87	0.33
	5/2/2017	10.85	11.34	1.84	0.49
	8/8/2017	9.21	9.98	3.45	0.77
	11/1/2017	10.31	11.12	2.34	0.81
	2/6/2018	10.43	11.29	2.22	0.86
	5/3/2018	9.93	11.45	2.64	1.52

Table 1

Groundwater Elevation and LNAPL Thickness Data - March 2016 to Current
IMTT Epic LLC
Savannah, Georgia
VRP #1440101197

Location ID	Measurement Date	Depth to LNAPL (ft btoc)	Depth to Water (ft btoc)	Groundwater Elevation (ft AMSL)	LNAPL Thickness (ft)
AW-52	3/1/2016	12.80	15.69	2.52	2.89
	5/1/2016	12.47	15.56	2.82	3.09
	9/22/2016	12.40	15.52	2.88	3.12
	11/15/2016	11.68	15.00	3.58	3.32
	2/14/2017	Not Measured			
	5/2/2017	13.39	16.42	1.91	3.03
	8/8/2017	11.72	14.84	3.56	3.12
	11/1/2017	12.68	15.32	2.67	2.64
	2/6/2018	13.08	15.22	2.35	2.14
	5/3/2018	12.82	15.40	2.54	2.58
AW-53	3/1/2016	6.62	6.92	3.67	0.30
	5/1/2016	6.51	6.76	3.78	0.25
	9/22/2016	6.06	6.28	4.24	0.22
	11/15/2016	5.88	6.36	4.38	0.48
	2/14/2017	6.39	6.60	3.91	0.21
	5/2/2017	6.77	7.34	3.48	0.57
	8/8/2017	5.50	5.72	4.80	0.22
	11/1/2017	6.25	6.44	4.05	0.19
	2/6/2018	6.51	6.83	3.77	0.32
	5/3/2018	6.49	6.95	3.77	0.46
AW-54	3/1/2016	5.95	14.88	3.41	8.93
	5/1/2016	5.83	15.81	3.37	9.98
	9/22/2016	5.51	9.60	4.55	4.09
	11/15/2016	5.08	15.84	4.01	10.76
	2/14/2017	5.05	15.62	4.07	10.57
	5/2/2017	5.48	19.23	3.17	13.75
	8/8/2017	6.12	6.32	4.51	0.20
	11/1/2017	5.54	12.78	4.06	7.24
	2/6/2018	5.14	15.00	4.08	9.86
	5/3/2018	6.79	7.00	3.84	0.21
AW-56	3/1/2016	9.32	14.05	2.64	4.73
	5/1/2016	8.48	14.55	3.28	6.07
	9/22/2016	9.39	15.09	2.43	5.70
	11/15/2016	7.88	13.39	3.97	5.51
	2/14/2017	8.63	13.85	3.26	5.22
	5/2/2017	11.15	11.45	1.46	0.30
	8/8/2017	11.04	11.25	1.58	0.21
	11/1/2017	12.31	14.05	0.09	1.74
	2/6/2018	11.94	12.14	0.68	0.20
	5/3/2018	12.16	12.35	0.46	0.19
AW-57	3/1/2016	Not Measured			
	5/1/2016	8.64	10.23	3.27	1.59
	9/22/2016	8.45	9.27	3.57	0.82
	11/15/2016	7.96	9.77	3.92	1.81
	2/14/2017	8.89	9.09	3.22	0.20
	5/2/2017	9.33	9.74	2.75	0.41
	8/8/2017	8.12	8.22	4.01	0.10
	11/1/2017	8.68	9.34	3.37	0.66
	2/6/2018	9.16	9.96	2.87	0.80
	5/3/2018	8.98	9.87	3.03	0.89

Table 1

Groundwater Elevation and LNAPL Thickness Data - March 2016 to Current
IMTT Epic LLC
Savannah, Georgia
VRP #1440101197

Location ID	Measurement Date	Depth to LNAPL (ft btoc)	Depth to Water (ft btoc)	Groundwater Elevation (ft AMSL)	LNAPL Thickness (ft)
AW-58	3/1/2016	--	8.61	NS	--
	5/1/2016	--	8.51	NS	--
	9/22/2016	--	8.15	NS	--
	11/15/2016	--	7.44	NS	--
	2/14/2017	--	6.04	NS	--
	5/2/2017	--	8.91	NS	--
	8/8/2017	--	7.45	NS	--
	11/1/2017	--	8.39	NS	--
	2/6/2018	--	5.56	NS	--
	5/3/2018	--	8.43	NS	--
AW-62	3/1/2016	--	9.24	NS	--
	5/1/2016	--	10.60	NS	--
	9/22/2016	9.60	9.60	NS	Sheen
	11/15/2016	9.42	9.42	NS	Sheen
	2/14/2017	4.92	4.92	NS	Sheen
	5/2/2017	10.92	10.92	NS	Sheen
	8/8/2017	--	5.40	NS	--
	11/1/2017	--	9.24	NS	Sheen
	2/6/2018	--	7.75	NS	Sheen
	5/3/2018	--	6.31	NS	--
AW-65	3/1/2016	11.45	13.20	1.56	1.75
	5/1/2016	11.53	13.51	1.45	1.98
	9/22/2016	10.75	12.41	2.27	1.66
	11/15/2016	10.41	12.62	2.53	2.21
	2/14/2017	11.01	12.13	2.09	1.12
	5/2/2017	11.78	13.82	1.19	2.04
	8/8/2017	9.30	11.50	3.64	2.20
	11/1/2017	10.57	12.12	2.47	1.55
	2/6/2018	11.70	12.87	1.39	1.17
	5/3/2018	11.20	12.85	1.82	1.65
AW-67	3/1/2016	--	12.33	-1.01	--
	5/1/2016	--	13.37	-2.05	--
	9/22/2016	--	8.85	2.47	--
	11/15/2016	--	12.33	-1.01	--
	2/14/2017	--	6.10	5.22	--
	5/2/2017	--	11.09	0.23	--
	8/8/2017	--	7.89	3.43	--
	11/1/2017	--	10.55	0.77	--
	2/6/2018	--	10.45	0.87	--
	5/3/2018	--	9.16	2.16	--
AW-68	3/1/2016	11.75	15.11	1.56	3.36
	5/1/2016	10.48	13.90	2.82	3.42
	9/22/2016	11.66	16.90	1.37	5.24
	11/15/2016	10.88	18.10	1.87	7.22
	2/14/2017	9.89	17.90	2.74	8.01
	5/2/2017	11.19	18.46	1.55	7.27
	8/8/2017	9.56	16.91	3.17	7.35
	11/1/2017	11.02	19.24	1.58	8.22
	2/6/2018	11.69	11.92	2.08	0.23
	5/3/2018	11.46	11.95	2.27	0.49

Table 1

Groundwater Elevation and LNAPL Thickness Data - March 2016 to Current
IMTT Epic LLC
Savannah, Georgia
VRP #1440101197

Location ID	Measurement Date	Depth to LNAPL (ft btoc)	Depth to Water (ft btoc)	Groundwater Elevation (ft AMSL)	LNAPL Thickness (ft)
AW-69	3/1/2016	Not Measured			
	5/1/2016	--	6.90	2.54	--
	9/22/2016	--	4.50	4.94	--
	11/15/2016	--	7.36	2.08	--
	2/14/2017	--	6.39	3.05	--
	5/2/2017	--	7.40	2.04	--
	8/8/2017	--	5.45	3.99	--
	11/1/2017	--	6.62	2.82	--
	2/6/2018	--	7.43	2.01	--
	5/3/2018	--	7.25	2.19	--
AW-70	3/1/2016	--	11.18	1.07	--
	5/1/2016	--	11.11	1.14	--
	9/22/2016	--	9.57	2.68	--
	11/15/2016	--	10.44	1.81	--
	2/14/2017	--	10.06	2.19	--
	5/2/2017	--	10.85	1.40	--
	8/8/2017	--	8.87	3.38	--
	11/1/2017	--	10.52	1.73	--
	2/6/2018	--	10.67	1.58	--
	5/3/2018	--	10.11	2.14	--
AW-71	3/1/2016	--	11.05	2.24	--
	5/1/2016	--	10.79	2.50	--
	9/22/2016	--	10.53	2.76	--
	11/15/2016	--	10.22	3.07	--
	2/14/2017	--	10.91	2.38	--
	5/2/2017	--	11.46	1.83	--
	8/8/2017	--	9.75	3.54	--
	11/1/2017	--	10.64	2.65	--
	2/6/2018	--	11.55	1.74	--
	5/3/2018	--	11.28	2.01	--
AW-72	3/1/2016	--	8.78	1.34	--
	5/1/2016	--	7.25	2.87	--
	9/22/2016	--	8.85	1.27	--
	11/15/2016	--	6.57	3.55	--
	2/14/2017	--	7.67	2.45	--
	5/2/2017	--	9.76	0.36	--
	8/8/2017	--	7.28	2.84	--
	11/1/2017	--	9.26	0.86	--
	2/6/2018	--	8.28	1.84	--
	5/3/2018	--	7.78	2.34	--
AW-73	3/1/2016	Not Measured			
	5/1/2016	Not Measured			
	9/22/2016	Not Measured			
	11/15/2016	--	8.67	3.37	--
	2/14/2017	--	9.26	2.78	--
	5/2/2017	--	9.68	2.36	--
	8/8/2017	Not Measured			
	11/1/2017	--	9.02	3.02	--
	2/6/2018	--	9.60	2.44	--
	5/3/2018	--	9.42	2.62	--

Table 1

Groundwater Elevation and LNAPL Thickness Data - March 2016 to Current
IMTT Epic LLC
Savannah, Georgia
VRP #1440101197

Location ID	Measurement Date	Depth to LNAPL (ft btoc)	Depth to Water (ft btoc)	Groundwater Elevation (ft AMSL)	LNAPL Thickness (ft)
AW-74	3/1/2016	9.27	10.99	0.44	1.72
	5/1/2016	6.78	7.96	3.01	1.18
	9/22/2016	9.53	13.71	-0.18	4.18
	11/15/2016	6.46	7.05	3.41	0.59
	2/14/2017	7.11	10.21	2.40	3.10
	5/2/2017	10.11	13.90	-0.70	3.79
	8/8/2017	6.52	9.55	3.00	3.03
	11/1/2017	10.32	10.51	-0.39	0.19
	2/6/2018	7.24	9.23	2.43	1.99
	5/3/2018	7.41	9.16	2.29	1.75
AW-75	3/1/2016	--	11.04	NS	--
	5/1/2016	--	6.57	NS	--
	9/22/2016	--	11.74	NS	--
	11/15/2016	--	6.40	NS	--
	2/14/2017	--	7.35	NS	--
	5/2/2017	--	12.36	NS	--
	8/8/2017	--	7.56	NS	--
	11/1/2017	--	11.59	NS	--
	2/6/2018	--	8.10	NS	--
	5/3/2018	--	7.58	NS	--
AW-76	3/1/2016	--	13.61	NS	--
	5/1/2016	--	14.07	NS	--
	9/22/2016	--	12.41	NS	--
	11/15/2016	--	13.86	NS	--
	2/14/2017	--	7.34	NS	--
	5/2/2017	--	13.00	NS	--
	8/8/2017	--	7.49	NS	--
	11/1/2017	--	12.81	NS	--
	2/6/2018	--	8.14	NS	--
	5/3/2018	--	7.46	NS	--
AW-77	3/1/2016	--	7.91	NS	--
	5/1/2016	--	9.59	NS	--
	9/22/2016	--	9.59	NS	--
	11/15/2016	--	9.18	NS	--
	2/14/2017	--	4.43	NS	--
	5/2/2017	--	9.71	NS	--
	8/8/2017	--	5.25	NS	--
	11/1/2017	--	9.22	NS	--
	2/6/2018	--	6.92	NS	--
	5/3/2018	--	5.98	NS	--
AW-78	3/1/2016	--	6.91	NS	--
	5/1/2016	--	6.77	NS	--
	9/22/2016	--	6.36	NS	--
	11/15/2016	--	6.42	NS	--
	2/14/2017	--	6.13	NS	--
	5/2/2017	--	7.42	NS	--
	8/8/2017	--	5.25	NS	--
	11/1/2017	--	6.37	NS	--
	2/6/2018	--	7.15	NS	--
	5/3/2018	--	6.80	NS	--

Table 1

Groundwater Elevation and LNAPL Thickness Data - March 2016 to Current
IMTT Epic LLC
Savannah, Georgia
VRP #1440101197

Location ID	Measurement Date	Depth to LNAPL (ft btoc)	Depth to Water (ft btoc)	Groundwater Elevation (ft AMSL)	LNAPL Thickness (ft)
AW-79	3/1/2016	--	10.95	NS	--
	5/1/2016	--	11.03	NS	--
	9/22/2016	--	5.07	NS	--
	11/15/2016	--	10.73	NS	--
	2/14/2017	--	5.55	NS	--
	5/2/2017	--	7.29	NS	--
	8/8/2017	--	4.82	NS	--
	11/1/2017	--	9.55	NS	--
	2/6/2018	--	6.50	NS	--
	5/3/2018	--	5.18	NS	--
AW-82	3/1/2016	9.95	12.84	NS	2.89
	5/1/2016	9.65	12.63	NS	2.98
	9/22/2016	9.54	12.62	NS	3.08
	11/15/2016	8.97	11.84	NS	2.87
	2/14/2017	9.77	12.35	NS	2.58
	5/2/2017	11.10	11.41	NS	0.31
	8/8/2017	9.60	9.72	NS	0.12
	11/1/2017	10.11	11.72	NS	1.61
	2/6/2018	10.85	11.08	NS	0.23
	5/3/2018	10.70	10.88	NS	0.18
RAIL LOADING - N	3/1/2016	--	7.31	5.30	--
	5/1/2016	--	7.25	5.36	--
	9/22/2016	--	6.42	6.19	--
	11/15/2016	--	7.29	5.32	--
	2/14/2017	--	7.22	5.39	--
	5/2/2017	--	8.02	4.59	--
	8/8/2017	--	4.58	8.03	--
	11/1/2017	--	6.53	6.08	--
	2/6/2018	--	7.00	5.61	--
	5/3/2018	--	7.45	5.16	--
RAIL LOADING - S	3/1/2016	--	6.22	6.08	--
	5/1/2016	--	6.10	6.20	--
	9/22/2016	--	5.28	7.02	--
	11/15/2016	--	6.10	6.20	--
	2/14/2017	--	5.91	6.39	--
	5/2/2017	--	6.63	5.67	--
	8/8/2017	--	3.42	8.88	--
	11/1/2017	--	5.48	6.82	--
	2/6/2018	--	9.01	3.29	--
	5/3/2018	--	5.92	6.38	--
RAIL LOADING - M	3/1/2016	Damaged Casing			
	5/1/2016	Damaged Casing			
	9/22/2016	Damaged Casing			
	11/15/2016	Damaged Casing			
	2/14/2017	Damaged Casing			
	5/2/2017	Damaged Casing			
	8/8/2017	Damaged Casing			
	11/1/2017	Damaged Casing			
	2/6/2018	Damaged Casing			
	5/3/2018	Damaged Casing			

Table 1

Groundwater Elevation and LNAPL Thickness Data - March 2016 to Current
IMTT Epic LLC
Savannah, Georgia
VRP #1440101197

Location ID	Measurement Date	Depth to LNAPL (ft btoc)	Depth to Water (ft btoc)	Groundwater Elevation (ft AMSL)	LNAPL Thickness (ft)
POD - 1	3/1/2016	--	11.60	NS	--
	5/1/2016	--	12.04	NS	--
	9/22/2016	--	10.35	NS	--
	11/15/2016	--	11.43	NS	--
	2/14/2017	--	4.65	NS	--
	5/2/2017	--	10.77	NS	--
	8/8/2017	--	4.45	NS	--
	11/1/2017	--	9.31	NS	Sheen
	2/6/2018	--	9.31	NS	Sheen
	5/3/2018	--	5.82	NS	--

Notes:

Dash (--) indicates not applicable

NS = Not Surveyed

ft btoc = feet below top of casing

ft AMSL = feet above mean sea level

Table 2
LNAPL Removal Summary
IMTT Epic LLC
Savannah, Georgia
VRP #1440101197

Well ID	Measurement Date	Measured In-Well LNAPL Thickness (feet)	LNAPL Removed Between Measurements (gallons)	Cumulative Total LNAPL Removal (gallons)	Comments
AW-9	Short-term Skimming Test			49.3	
	9/14/2016	3.93	--	49.3	Installed LNAPL Skimmer
	9/21/2016	0.35	31.7	81.0	
	9/28/2016	0.26	20.3	101.3	
	10/5/2016	0.23	19.0	120.3	LNAPL skimmer shutdown due to Hurricane Matthew
	10/13/2016	4.06	0.0	120.3	LNAPL skimmer restarted
	10/20/2016	0.11	97.0	217.3	LNAPL skimmer shutdown due to nearly full tank
	10/28/2016	3.40	0.0	217.3	LNAPL skimmer restarted
	11/4/2016	3.45	2.0	219.3	
	11/15/2016	2.89	0.0	219.3	Batteries dead, system restarted
	11/22/2016	0.27	4.5	223.8	
	11/29/2016	0.34	26.5	250.3	
	12/5/2016	2.83	2.0	252.3	Batteries dead, system restarted
	12/7/2016	0.20	46.6	298.9	
	12/14/2016	0.95	14.0	312.9	Batteries dead, system restarted
	12/21/2016	0.33	21.7	334.6	
	12/27/2016	0.28	16.7	351.3	
	1/4/2017	0.08	53.4	404.6	
	1/9/2017	0.24	24.8	429.4	
	1/19/2017	0.12	39.0	468.4	
	1/26/2017	0.28	30.0	498.4	Estimated
	1/31/2017	0.18	24.6	523.0	
	2/7/2017	0.23	25.4	548.4	
	2/13/2017	0.30	22.0	570.4	
	2/14/2017	0.32	4.2	574.6	
	2/23/2017	0.27	34.1	608.7	
	3/3/2017	2.20	2.5	611.2	
	3/7/2017	2.37	16.7	627.8	
	3/10/2017	0.51	20.8	648.7	
	3/16/2017	2.55	8.8	657.5	Batteries dead, system restarted
	3/23/2017	1.07	55.0	712.5	Batteries dead, system restarted
	3/31/2017	0.22	15.0	727.5	Estimated
	4/3/2017	0.24	11.2	738.7	
	4/13/2017	0.18	30.4	769.1	
	4/18/2017	0.16	13.9	783.0	
	4/27/2017	0.11	25.1	808.1	
	5/2/2017	0.11	9.5	817.6	
	5/10/2017	0.11	27.0	844.6	
	5/17/2017	0.10	15.0	859.6	
	5/26/2017	0.08	28.5	888.1	
	6/1/2017	0.25	14.5	902.6	
	6/8/2017	0.20	10.5	913.1	
	6/15/2017	0.16	10.1	923.2	
	6/20/2017	0.17	7.4	930.6	
	6/22/2017	0.18	7.0	937.6	
	6/26/2017	0.15	6.0	943.6	
	6/30/2017	0.21	4.2	947.8	
	7/7/2017	0.13	12.0	959.8	
	7/12/2017	0.16	11.8	971.6	
	7/19/2017	0.19	9.2	980.8	
	7/26/2017	0.04	22.2	1003.0	
	8/2/217	0.23	6.8	1009.8	
	8/9/2017	0.07	13.2	1023.0	
	8/17/2017	0.22	18.0	1041.0	
	8/22/2017	0.18	11.8	1052.8	
	8/30/2017	0.08	51.7	1104.5	
	9/6/2017	0.10	5.5	1110.0	Shutdown due to Hurricane Irma
	9/21/2017	3.43	0.0	1110.0	LNAPL skimmer restarted
	9/22/2017	0.20	5.0	1115.0	
	9/29/2017	0.24	7.6	1122.6	
	10/6/2017	0.21	3.9	1126.5	
	10/12/2017	0.61	5.0	1131.5	Estimated
	10/19/2017	0.23	6.0	1137.5	
	11/2/2017	0.23	16.0	1153.5	
	11/8/2017	0.24	4.5	1158.0	
	11/15/2017	0.22	10.5	1168.5	
	11/22/2017	0.27	9.0	1177.5	
	11/30/2017	2.15	7.0	1184.5	Estimated
	12/6/2017	0.23	20.0	1204.5	
	12/13/2017	0.19	10.0	1214.5	
	12/21/2017	0.20	25.0	1239.5	
	12/28/2017	0.24	17.0	1256.5	
	1/5/2018	0.28	24.9	1281.4	
	1/12/2018	0.29	29.1	1310.5	
	1/19/2018	0.25	18.0	1328.5	
	1/26/2018	0.31	28.0	1356.5	
	2/1/2018	0.29	24.0	1380.5	
	2/7/2018	0.37	22.0	1402.5	
	2/15/2018	0.22	25.0	1427.5	
	2/22/2018	0.26	21.0	1448.5	
	2/28/2018	0.21	11.0	1459.5	
	3/8/2018	0.36	21.0	1480.5	
	3/15/2018	0.20	14.0	1494.5	
	3/22/2018	1.50	8.0	1502.5	System off due to malfunction
	3/29/2018	2.42	0.0	**1502.5**	System off due to malfunction
	LNAPL Skimming Underway				

Table 2
LNAPL Removal Summary
IMTT Epic LLC
Savannah, Georgia
VRP #1440101197

Well ID	Measurement Date	Measured In-Well LNAPL Thickness (feet)	LNAPL Removed Between Measurements (gallons)	Cumulative Total LNAPL Removal (gallons)	Comments
	Short-term Skimming Test			45.3	
	9/14/2016	3.65	--	45.3	Installed LNAPL Skimmer
	9/21/2016	0.29	134.4	179.7	
	9/28/2016	0.23	70.8	250.5	
	10/5/2016	0.13	55.5	306.0	LNAPL skimmer shutdown due to Hurricane Matthew
	10/13/2016	4.73	0.0	306.0	LNAPL skimmer restarted
	10/20/2016	3.16	267.0	573.0	LNAPL skimmer shutdown due to full tank
	10/28/2016	3.25	0.0	573.0	LNAPL skimmer restarted
	11/4/2016	0.32	134.0	707.0	
	11/15/2016	0.19	222.0	929.0	LNAPL skimmer shutdown due to full tank
	11/22/2016	1.30	65.0	994.0	LNAPL skimmer restarted
	11/29/2016	1.38	50.0	1044.0	LNAPL skimmer shutdown due to full tank
	12/7/2016	0.53	0.0	1044.0	LNAPL skimmer shutdown due to full tank
	12/14/2016	0.65	0.0	1044.0	LNAPL skimmer shutdown due to full tank
	12/21/2016	1.37	0.0	1044.0	LNAPL skimmer restarted
	12/27/2016	0.37	29.7	1073.7	
	1/4/2017	0.21	38.8	1112.5	
	1/9/2017	0.27	15.9	1128.4	
	1/19/2017	2.03	15.7	1144.1	
	1/20/2017	1.38	5.4	1149.5	System off upon arrival
	1/23/2017	1.01	0.0	1149.5	System off upon arrival
	1/26/2017	0.30	20.0	1169.5	Estimated
	1/31/2017	0.25	21.7	1191.2	
	2/7/2017	0.13	21.5	1212.7	
	2/13/2017	0.31	27.0	1239.7	
	2/14/2017	0.22	1.7	1241.4	
	2/23/2017	0.21	28.4	1269.8	
	3/3/2017	1.88	11.6	1281.4	
	3/7/2017	0.26	21.7	1303.1	
	3/10/2017	0.31	9.4	1312.5	
	3/16/2017	1.14	16.0	1328.5	Batteries unseated, system restarted
	3/23/2017	0.76	2.2	1330.7	
	3/31/2017	0.31	13.0	1343.7	Estimated
	4/3/2017	0.28	6.0	1349.7	
	4/13/2017	0.26	22.5	1372.2	
	4/18/2017	0.40	11.7	1383.9	
	4/27/2017	0.35	16.3	1400.2	
	5/2/2017	0.27	9.5	1409.7	
	5/10/2017	0.28	19.7	1429.4	
	5/17/2017	0.23	20.3	1449.7	
	5/26/2017	0.17	22.0	1471.7	
	6/1/2017	0.24	12.0	1483.7	
	6/8/2017	0.13	5.3	1489.0	
	6/15/2017	0.28	9.3	1498.3	
	6/20/2017	0.22	9.4	1507.7	
AW-49	6/22/2017	0.28	4.0	1511.7	
	6/26/2017	0.26	5.0	1516.7	
	6/30/2017	0.28	1.8	1518.5	
	7/7/2017	0.25	7.3	1525.7	
	7/12/2017	0.26	12.0	1537.7	
	7/19/2017	0.23	11.0	1548.7	
	7/26/2017	0.18	14.0	1562.7	
	8/2/217	0.23	41.0	1603.7	
	8/9/2017	0.24	38.0	1641.7	
	8/17/2017	0.24	33.9	1675.6	
	8/22/2017	0.20	35.5	1711.1	
	8/30/2017	0.22	48.9	1760.0	
	9/6/2017	0.25	34.6	1794.6	Shutdown due to Hurricane Irma
	9/21/2017	2.33	0.0	1794.6	LNAPL skimmer restarted
	9/22/2017	0.25	22.0	1816.6	
	9/29/2017	0.28	83.3	1899.9	
	10/6/2017	1.60	1.1	1901.0	System off upon arrival
	10/12/2017	0.31	20.0	1921.0	Estimated
	10/19/2017	0.20	46.4	1967.4	
	11/2/2017	0.28	45.3	2012.7	
	11/8/2017	0.13	5.0	2017.7	
	11/15/2017	0.82	0.0	2017.7	System malfunction
	11/22/2017	1.37	0.0	2017.7	System malfunction
	11/30/2017	0.21	15.0	2032.7	Estimated
	12/6/2017	0.16	4.0	2036.7	System malfunction
	12/13/2017	0.69	5.0	2041.7	System malfunction
	12/21/2017	0.16	36.0	2077.7	
	12/28/2017	0.96	15.0	2092.7	
	1/5/2018	0.60	0.0	2092.7	
	1/12/2018	0.25	17.0	2109.7	
	1/19/2018	0.21	13.0	2122.7	
	1/26/2018	0.28	11.0	2133.7	
	2/1/2018	0.03	5.0	2138.7	
	2/7/2018	0.32	25.0	2163.7	
	2/15/2018	0.06	12.0	2175.7	
	2/22/2018	0.21	11.0	2186.7	
	2/28/2018	0.06	10.0	2196.7	
	3/8/2018	0.30	4.0	2200.7	
	3/15/2018	1.51	1.0	2201.7	System off due to malfunction
	3/22/2018	1.55	2.0	2203.7	
	3/29/2018	0.17	8.0	2211.7	
	4/6/2018	0.22	8.0	2219.7	
	4/12/2018	0.27	8.0	2227.7	
	4/18/2018	0.27	8.0	2235.7	
	4/27/2018	0.24	8.0	**2243.7**	
	LNAPL Skimming Underway				

Table 2
LNAPL Removal Summary
IMTT Epic LLC
Savannah, Georgia
VRP #1440101197

Well ID	Measurement Date	Measured In-Well LNAPL Thickness (feet)	LNAPL Removed Between Measurements (gallons)	Cumulative Total LNAPL Removal (gallons)	Comments
AW-11	Short-term Skimming Test			119.4	
	1/19/2017	3.89	--	119.4	Installed LNAPL Skimmer
	1/20/2017	0.32	11.3	130.7	
	1/26/2017	0.32	20.0	150.7	Estimated
	1/31/2017	0.29	16.3	167.0	
	2/7/2017	0.29	95.9	262.9	
	2/13/2017	0.46	15.6	278.5	
	2/14/2017	0.23	2.5	281.0	
	2/23/2017	0.35	12.5	293.5	
	3/3/2017	0.13	10.5	304.0	
	3/7/2017	0.30	4.3	308.3	
	3/10/2017	0.32	10.6	318.8	
	3/16/2017	0.23	6.2	325.0	
	3/23/2017	0.23	72.0	397.0	
	3/31/2017	1.32	10.2	407.2	Estimated
	4/3/2017	0.04	157.5	564.7	
	4/13/2017	0.25	13.3	578.0	
	4/18/2017	0.26	9.1	587.1	
	4/27/2017	0.34	10.9	598.0	
	5/2/2017	1.14	8.3	606.3	
	5/10/2017	0.29	13.7	620.0	
	5/17/2017	0.23	12.0	632.0	
	5/26/2017	0.19	14.7	646.7	
	6/1/2017	0.30	5.3	652.0	
	6/8/2017	0.17	8.1	660.1	
	6/15/2017	0.13	9.3	669.4	
	6/20/2017	0.25	4.6	674.0	
	6/22/2017	0.16	27.2	701.2	
	6/26/2017	0.03	13.9	715.1	
	6/30/2017	0.22	10.0	725.1	
	7/7/2017	0.21	13.0	738.1	
	7/12/2017	0.21	10.0	748.1	
	7/19/2017	0.27	12.0	760.1	
	7/26/2017	0.18	9.7	769.8	
	8/2/217	0.27	7.3	777.1	
	8/9/2017	0.14	15.0	792.1	
	8/17/2017	0.23	13.0	805.1	
	8/22/2017	0.27	13.5	818.6	
	8/30/2017	0.10	19.5	838.1	
	9/6/2017	0.26	15.0	853.1	Shutdown due to Hurricane Irma
	9/21/2017	2.24	0.0	853.1	LNAPL skimmer restarted
	9/22/2017	0.21	3.0	856.1	
	9/29/2017	0.17	16.2	872.3	
	10/6/2017	0.97	0.0	872.3	System off upon arrival
	10/12/2017	0.16	12.0	884.3	Estimated
	10/19/2017	1.22	6.8	891.1	System off upon arrival
	11/2/2017	0.24	26.9	918.0	
	11/8/2017	0.22	6.2	924.2	
	11/15/2017	0.19	6.8	931.0	
	11/22/2017	0.27	9.0	940.0	
	11/30/2017	0.25	10.0	950.0	Estimated
	12/6/2017	0.22	4.0	954.0	
	12/13/2017	0.23	6.0	960.0	
	12/21/2017	0.13	6.0	966.0	
	12/28/2017	0.25	6.6	972.6	
	1/5/2018	0.23	5.4	978.0	
	1/12/2018	0.21	6.0	984.0	
	1/19/2018	0.28	7.2	991.2	
	1/26/2018	0.25	3.8	995.0	
	2/1/2018	0.28	4.0	999.0	
	2/7/2018	0.32	6.0	1005.0	
	2/15/2018	0.24	5.0	1010.0	
	2/22/2018	0.22	5.0	1015.0	
	2/28/2018	0.23	3.0	1018.0	
	3/8/2018	0.32	4.0	1022.0	
	3/15/2018	0.24	8.0	1030.0	
	3/22/2018	0.18	6.0	1036.0	
	3/29/2018	0.33	6.6	1042.6	
	4/6/2018	0.31	4.4	1047.0	
	4/12/2018	0.23	3.3	1050.3	
	4/18/2018	0.24	7.7	1058.0	
	4/27/2018	0.22	3.2	**1061.2**	
	LNAPL Skimming Underway				

Table 2
LNAPL Removal Summary
IMTT Epic LLC
Savannah, Georgia
VRP #1440101197

Well ID	Measurement Date	Measured In-Well LNAPL Thickness (feet)	LNAPL Removed Between Measurements (gallons)	Cumulative Total LNAPL Removal (gallons)	Comments
	Short-term Skimming Test			131.3	
	2/23/2017	5.05	--	131.3	Installed LNAPL Skimmer
	2/23/2017	0.35	40.5	171.8	Tank initially contained ~30 gallons of diesel
	3/3/2017	0.28	33.9	205.7	
	3/7/2017	4.75	15.0	220.7	Estimated due to tank failure
	3/10/2017	3.56	11.5	232.2	
	3/16/2017	5.04	6.2	238.4	
	3/23/2017	1.84	33.5	271.9	Drum full, switched to 275-gal tank
	3/31/2017	0.25	8.2	280.1	Estimated
	4/3/2017	0.18	13.0	293.1	
	4/13/2017	0.15	33.8	326.9	
	4/18/2017	3.00	13.7	340.6	
	4/27/2017	3.25	11.0	351.6	
	5/2/2017	0.22	24.3	375.9	
	5/10/2017	0.46	24.0	399.9	
	5/17/2017	0.45	29.0	428.9	
	5/26/2017	0.03	36.0	464.9	
	6/1/2017	0.28	19.0	483.9	
	6/8/2017	1.73	8.5	492.4	
	6/15/2017	0.21	33.5	525.9	
	6/20/2017	0.24	15.0	540.9	
	6/22/2017	0.14	7.0	547.9	
	6/26/2017	0.05	14.0	561.9	
	6/30/2017	0.09	19.0	580.9	
	7/7/2017	0.19	23.0	603.9	
	7/12/2017	0.09	24.6	628.5	
	7/19/2017	0.17	41.4	669.9	
	7/26/2017	0.13	17.3	687.2	
	8/2/217	6.20	3.0	690.2	Pump off on arrival, solenoid not cycling
	8/9/2017	0.11	32.0	722.2	
	8/17/2017	0.12	30.0	752.2	
	8/22/2017	0.18	20.5	772.7	
	8/30/2017	0.17	24.5	797.2	
AW-56	9/6/2017	5.27	11.0	808.2	Shutdown due to Hurricane Irma
	9/21/2017	5.70	0.0	808.2	LNAPL skimmer restarted
	9/22/2017	0.24	7.0	815.2	
	9/29/2017	0.19	27.5	842.7	
	10/6/2017	0.20	17.1	859.8	
	10/12/2017	5.55	10.0	869.8	System off upon arrival
	10/19/2017	4.90	6.5	876.3	System off upon arrival
	11/2/2017	0.06	53.5	929.8	System off upon arrival
	11/8/2017	0.29	18.0	947.8	
	11/15/2017	4.47	4.0	951.8	System off upon arrival
	11/22/2017	0.15	26.0	977.8	
	11/30/2017	0.22	15.0	992.8	Estimated
	12/6/2017	3.67	10.4	1003.2	
	12/13/2017	0.22	25.3	1028.5	
	12/21/2017	0.10	25.0	1053.5	
	12/28/2017	0.25	20.0	1073.5	
	1/5/2018	0.08	26.0	1099.5	
	1/12/2018	0.23	14.0	1113.5	
	1/19/2018	0.18	23.0	1136.5	
	1/26/2018	0.68	24.0	1160.5	
	2/1/2018	0.09	10.0	1170.5	
	2/7/2018	0.32	12.0	1182.5	
	2/15/2018	0.21	18.0	1200.5	
	2/22/2018	0.18	20.0	1220.5	
	2/28/2018	0.21	14.0	1234.5	
	3/8/2018	4.52	8.0	1242.5	
	3/15/2018	3.56	0.0	1242.5	System off due to malfunction
	3/22/2018	4.15	0.0	1242.5	
	3/29/2018	0.32	21.0	1263.5	
	4/6/2018	0.24	21.0	1284.5	
	4/12/2018	0.22	13.5	1298.0	
	4/18/2018	0.12	20.9	1318.9	
	4/27/2018	0.65	16.7	**1335.6**	
	LNAPL Skimming Underway				

Table 2
LNAPL Removal Summary
IMTT Epic LLC
Savannah, Georgia
VRP #1440101197

Well ID	Measurement Date	Measured In-Well LNAPL Thickness (feet)	LNAPL Removed Between Measurements (gallons)	Cumulative Total LNAPL Removal (gallons)	Comments
AW-82	Short-term Skimming Test			269.8	
	4/27/2017	3.05	--	269.8	Installed LNAPL Skimmer
	5/2/2017	0.15	119.0	388.8	
	5/10/2017	1.41	75.0	463.8	
	5/17/2017	0.16	52.0	515.8	
	5/26/2017	0.19	60.0	575.8	
	6/1/2017	0.19	21.0	596.8	
	6/8/2017	0.14	25.0	621.8	
	6/15/2017	0.17	15.9	637.7	
	6/22/2017	0.15	25.0	662.7	
	6/26/2017	0.15	13.1	675.8	
	6/30/2017	0.89	53.5	729.3	
	7/7/2017	0.90	9.5	738.8	
	7/12/2017	0.08	17.8	756.6	
	7/19/2017	0.09	10.2	766.8	
	7/26/2017	0.02	43.9	810.7	
	8/2/217	0.21	8.1	818.8	
	8/9/2017	0.15	3.0	821.8	
	8/17/2017	0.03	2.0	823.8	
	8/22/2017	0.10	9.0	832.8	
	8/30/2017	0.14	5.7	838.5	
	9/6/2017	0.14	5.3	843.8	Shutdown due to Hurricane Irma
	9/21/2017	2.02	0.0	843.8	LNAPL skimmer restarted
	9/22/2017	0.06	12.3	856.1	
	9/29/2017	0.16	10.4	866.5	
	10/6/2017	1.31	23.7	890.2	System off upon arrival
	10/12/2017	0.17	10.0	900.2	Estimated
	10/19/2017	0.12	2.1	902.3	
	11/2/2017	0.24	9.2	911.5	System off upon arrival
	11/8/2017	0.23	0.0	911.5	
	11/15/2017	0.63	0.0	911.5	System malfunction
	11/22/2017	0.26	10.0	921.5	
	11/30/2017	0.27	10.0	931.5	Estimated
	12/6/2017	0.25	9.8	941.3	
	12/13/2017	1.96	6.8	948.1	
	12/21/2017	1.86	12.4	960.5	
	12/28/2017	0.23	7.8	968.3	
	1/5/2018	0.24	0.0	968.3	
	1/12/2018	0.22	35.5	1003.8	
	1/19/2018	0.25	5.5	1009.3	
	1/26/2018	0.06	11.2	1020.5	
	2/1/2018	0.24	6.2	1026.7	
	2/7/2018	0.30	14.0	1040.7	
	2/15/2018	0.41	31.0	1071.7	
	2/22/2018	1.76	31.0	1102.7	tank full, system off
	2/28/2018	2.32	0.0	1102.7	
	3/8/2018	0.22	14.0	1116.7	
	3/15/2018	0.21	14.0	1130.7	
	3/22/2018	0.21	17.0	1147.7	
	3/29/2018	0.18	14.0	1161.7	
	4/6/2018	0.25	13.0	1174.7	
	4/12/2018	0.26	14.0	1188.7	
	4/18/2018	0.25	23.0	1211.7	
	4/27/2018	0.24	12.0	**1223.7**	
	LNAPL Skimming Underway				
AW-18	Short-term Skimming Test			7.4	
	6/19/2017	1.71	--	7.4	Installed LNAPL Skimmer
	6/20/2017	0.30	4.0	11.4	
	6/22/2017	0.31	0.0	11.4	
	6/26/2017	0.35	0.0	11.4	
	6/30/2017	0.18	0.0	11.4	
	7/7/2017	0.14	0.0	11.4	
	7/12/2017	0.17	0.0	11.4	
	7/19/2017	0.22	0.0	11.4	
	7/26/2017	0.22	0.0	11.4	
	8/2/2017	0.13	0.0	**11.4**	
	LNAPL Skimming Concluded				
AW-6	Short-term Skimming Test			4.0	
	8/2/217	2.17	--	4.0	Installed LNAPL Skimmer
	8/9/2017	0.11	1.0	5.0	
	8/17/2017	0.10	0.0	5.0	
	8/22/2017	0.16	0.0	5.0	
	8/30/2017	0.09	0.0	5.0	
	9/6/2017	0.21	0.0	**5.0**	Shutdown due to Hurricane Irma
	LNAPL Skimming Concluded				

Table 2
LNAPL Removal Summary
IMTT Epic LLC
Savannah, Georgia
VRP #1440101197

Well ID	Measurement Date	Measured In-Well LNAPL Thickness (feet)	LNAPL Removed Between Measurements (gallons)	Cumulative Total LNAPL Removal (gallons)	Comments
AW-74	8/30/2017	1.83	--	--	Installed LNAPL Skimmer
	8/30/2017	0.26	2.3	2.3	
	9/6/2017	0.21	2.7	5.0	Shutdown due to Hurricane Irma
	9/21/2017	0.05	0.0	5.0	LNAPL skimmer restarted
	9/22/2017	0.07	0.0	5.0	
	9/29/2017	0.04	0.0	5.0	Tank full (water), system off
	10/6/2017	0.01	0.0	5.0	Tank full (water), system off
	10/12/2017	0.07	0.0	5.0	
	10/19/2017	0.03	0.0	5.0	
	11/2/2017	0.16	2.0	7.0	Tank full (water), system off
	11/8/2017	0.46	0.0	7.0	Tank full (water), system off
	11/15/2017	0.79	0.0	7.0	Tank full (water), system off
	11/22/2017	0.72	0.0	7.0	Tank full (water), system off
	11/30/2017	1.04	0.0	**7.0**	Tank full (water), system off
	LNAPL Skimming Completed				
AW-22	Short-term Skimming Test			256.0	
	9/21/2017	3.76	--	256.0	Installed LNAPL Skimmer
	9/22/2017	0.06	2.3	258.3	
	9/29/2017	0.03	3.5	261.8	
	10/6/2017	0.09	1.5	263.3	
	10/12/2017	0.18	2.0	265.3	Estimated
	10/19/2017	0.12	0.5	265.8	
	11/2/2017	0.10	4.5	270.3	
	11/8/2017	0.22	0.0	270.3	
	11/15/2017	0.51	0.0	270.3	Batteries dead, system restarted
	11/22/2017	0.20	3.0	273.3	
	11/30/2017	0.19	2.0	**275.3**	Estimated
	LNAPL Skimming Completed				
AW-12	Short-term Skimming Test			30.5	
	11/30/2017	6.54	--	30.5	Installed LNAPL Skimmer
	12/6/2017	0.28	17.0	47.5	
	12/13/2017	0.15	4.0	51.5	
	12/21/2017	0.15	7.0	58.5	
	12/28/2017	0.23	2.0	60.5	
	1/5/2018	0.10	0.0	60.5	
	1/12/2018	0.52	23.0	83.5	
	1/19/2018	0.17	7.0	90.5	
	1/26/2018	0.72	0.0	90.5	tank full of water
	2/1/2018	0.22	0.0	90.5	
	2/7/2018	0.03	6.0	96.5	
	2/15/2018	0.16	1.0	97.5	
	2/22/2018	0.02	14.0	111.5	tank full of water
	2/28/2018	0.19	0.0	**111.5**	
	LNAPL Skimming Concluded				
AW-68	Short-term Skimming Test			13.2	
	11/30/2017	6.34	--	13.2	Installed LNAPL Skimmer
	12/6/2017	0.38	16.0	29.2	
	12/13/2017	0.25	26.0	55.2	
	12/21/2017	0.02	40.0	95.2	
	12/28/2017	0.07	87.0	182.2	
	1/5/2018	0.02	8.0	190.2	
	1/12/2018	0.06	0.0	190.2	
	1/19/2018	0.35	0.0	190.2	
	1/26/2018	1.17	3.0	193.2	
	2/1/2018	0.20	0.0	193.2	
	2/7/2018	0.40	1.0	194.2	
	2/15/2018	0.07	27.0	221.2	
	2/22/2018	0.31	0.0	221.2	
	2/28/2018	0.19	3.0	**224.2**	
	LNAPL Skimming Concluded				

Table 2
LNAPL Removal Summary
IMTT Epic LLC
Savannah, Georgia
VRP #1440101197

Well ID	Measurement Date	Measured In-Well LNAPL Thickness (feet)	LNAPL Removed Between Measurements (gallons)	Cumulative Total LNAPL Removal (gallons)	Comments
AW-10	Short-term Skimming Test			101.4	
	1/9/2017	4.12	--	101.4	Installed LNAPL Skimmer
	1/20/2017	0.01	60.8	162.2	
	1/23/2017	0.68	0.0	162.2	LNAPL skimmer shutdown due to full tank
	1/26/2017	0.18	5.0	167.2	Estimated
	1/31/2017	0.21	36.5	203.7	
	2/7/2017	0.08	10.1	213.8	
	2/13/2017	0.40	2.9	216.6	
	2/14/2017	0.25	0.0	216.6	
	2/23/2017	0.25	7.5	224.1	
	3/3/2017	0.31	2.5	226.6	
	3/7/2017	0.29	5.0	231.6	
	3/10/2017	0.43	2.6	234.2	
	3/16/2017	0.26	6.1	240.3	
	3/23/2017	0.32	0.0	240.3	
	3/31/2017	0.34	6.0	246.3	Estimated
	4/3/2017	0.20	1.8	248.1	
	4/13/2017	0.15	7.2	255.3	
	4/18/2017	0.18	2.7	258.0	
	4/27/2017	0.16	4.3	262.3	LNAPL Skimmer removed for relocation
	3/7/2018	3.21	0.0	262.3	First intermittent skimming event initiated
	3/7/2018	0.83	5.5	267.8	
	3/8/2018	0.36	1.5	269.3	
	3/15/2018	1.60	2.0	271.3	
	3/22/2018	0.63	37.0	308.3	
	3/29/2018	0.24	6.0	314.3	
	4/6/2018	0.31	1.0	315.3	
	4/12/2018	0.24	1.3	316.6	
	4/18/2018	0.22	4.7	321.3	
	4/27/2018	0.30	2.5	**323.8**	
	LNAPL Skimming Underway				
AW-54	Short-term Skimming Test			200.0	
	6/20/2017	10.42	--	200.0	Installed LNAPL Skimmer
	6/20/2017	7.40	6.0	206.0	
	6/22/2017	8.52	12.0	218.0	
	6/26/2017	10.60	0.0	218.0	Skimmer inlet clogged on arrival
	6/30/2017	5.75	60.5	278.5	
	7/7/2017	--	0.0	278.5	Well area flooded
	7/12/2017	0.25	34.0	312.5	
	7/19/2017	0.23	0.0	312.5	
	7/26/2017	0.42	2.5	315.0	
	8/2/2017	0.31	1.5	316.5	
	8/9/2017	0.20	2.0	318.5	
	8/17/2017	0.27	1.0	319.5	
	8/22/2017	0.17	0.0	319.5	Skimming test concluded
	3/7/2018	10.15	0.0	319.5	First intermittent skimming event initiated
	3/7/2018	5.46	5.0	324.5	
	3/8/2018	0.11	6.5	331.0	
	3/15/2018	0.21	0.0	331.0	
	3/22/2018	0.16	2.0	333.0	
	3/29/2018	0.34	0.0	333.0	
	4/6/2018	0.16	0.0	333.0	
	4/12/2018	0.54	0.0	333.0	
	4/18/2018	0.20	0.0	333.0	
	4/27/2018	0.16	0.0	**333.0**	
	LNAPL Skimming Underway				

Notes:

1. Long-term skimming was initiated in AW-9 and AW-49 on September 14, 2016.
2. Long-term skimming was initiated in AW-11 on January 19, 2017.
3. Long-term skimming was initiated in AW-10 on January 19, 2017 and halted on April 27, 2017.
4. Long-term skimming was initiated in AW-56 on February 23, 2017.
5. Long-term skimming was initiated in AW-82 on April 27, 2017.
6. Long-term skimming was initiated in AW-18 on June 19, 2017 and halted on August 2, 2017.
7. Long-term skimming was initiated in AW-54 on June 20, 2017 and halted on August 22, 2017.
8. Long-term skimming was initiated in AW-6 on August 2, 2017 and halted on September 6, 2017.
9. Long-term skimming was initiated in AW-74 on August 30, 2017 and halted on November 30, 2017.
10. Long-term skimming was initiated in AW-22 on September 21, 2017 and halted on November 30, 2017.
11. Long-term skimming was initiated in AW-12 and AW-68 on November 30, 2017.
12. Long-term skimming in AW-12 was halted on February 22, 2018.
13. Long-term skimming was initiated in AW-10 and AW-54 on March 7, 2018.
14. Includes observations through April 27, 2018.

Table 3

Milestone Schedule
June 1, 2018 to December 1, 2018
IMTT Epic LLC
Savannah, Georgia
VRP #1440101197

Milestone	Timeline
Quarterly Groundwater Monitoring	August and November 2018
Continued Long-Duration and Intermittent LNAPL Skimming Program	Ongoing
Weekly Observation and Residual LNAPL Recovery on the River Side of the Polywall	Ongoing
Submittal of Semi-Annual Progress Report	December 1, 2018

Table 4

Summary of Observed Reduction in In-Well LNAPL Thicknesses
IMTT Epic LLC
Savannah, Georgia
VRP #1440101197

Well ID	Historical Maximum In-Well LNAPL Thickness	Maximum In-Well LNAPL Thickness Since 2017	% Reduction
AW-5	3.32	1.70	49%
AW-6	4.25	2.17	49%
AW-8	3.84	0.05	99%
AW-9	7.69	3.43	55%
AW-10	7.86	4.12	48%
AW-11	5.52	3.89	30%
AW-12	10.73	8.64	19%
AW-13	12.50	10.14	19%
AW-15	3.84	1.21	68%
AW-18	5.16	1.71	67%
AW-19	1.24	--	100%
AW-22	13.05	3.76	71%
AW-30	0.59	--	100%
AW-32	10.61	0.13	99%
AW-34	1.28	--	100%
AW-38	11.68	0.15	99%
AW-42	0.01	--	100%
AW-45	2.40	--	100%
AW-49	4.28	2.33	46%
AW-51	10.21	1.52	85%
AW-52	4.99	3.12	37%
AW-53	0.62	0.57	8%
AW-54	14.02	13.75	2%
AW-55	3.68	--	100%
AW-56	6.30	6.20	2%
AW-57	3.35	0.89	73%
AW-62	8.04	0.04	100%
AW-65	4.85	2.20	55%
AW-68	8.22	8.22	0%
AW-74	4.42	3.79	14%
AW-82	3.08	3.05	1%
		Average	58%

Appendices

Appendix A
LNAPL Transmissivity Evaluation Summary Tables & Charges

Appendix A

AW-9 LNAPL Skimming Test Results
IMTT Savannah North Terminal
Savannah, Georgia

Well ID	Measurement Date & Time	Time Between Measurement Events (days)	Time elapsed since start (days)	Actual Skimmer Run-Time Between Measurement Events (days)	Cumulative Run Time (days)	Total Volume of LNAPL Recovered (gallons)	Volume of LNAPL Recovered During Measurement Interval (gallons)	RUNNING Total Volume of LNAPL Recovered (gallons)	Depth to LNAPL (feet btoc)	Depth to Water (feet btoc)	In-Well LNAPL Thickness (feet)	LNAPL Drawdown (feet)	Maximum Theoretical Unconfined LNAPL Drawdown (feet)	LNAPL Drawdown Used in Transmissivity Estimate[a] (feet)	Average LNAPL Recovery Rate for Interval (gal/day)	Average LNAPL Recovery Rate for Interval (ft^3/day)	Estimated LNAPL Transmissivity for Interval (ft^2/day)	Overall Average LNAPL Transmissivity[b] (ft^2/day)
AW-9 Short term test	Equilibrium	--			--	--	--		10.83	14.72	3.89	--	0.57	--	--	--	--	
	6/8/2016 14:00	--			--	--	--		10.68	14.55	3.87	--		--	--	--	--	
	6/9/2016 17:35	1.15		1.15	1.15	8.55	8.55	8.55	9.60	12.00	2.40	-1.23		0.57	7.4	0.99	1.3	
	6/10/2016 7:00	0.56		0.56	1.71	9.60	1.05	9.60	9.60	12.50	2.90	-1.23		0.57	1.9	0.25	0.3	
	6/13/2016 11:00	2.96		2.96	4.88	21.34	11.74	21.34	10.27	12.60	2.33	-0.56		0.57	4.0	0.53	0.7	
	6/22/2016 16:30	9.23		9.23	14.10	49.25	27.91	49.25	10.40	12.20	1.80	-0.43		0.57	3.0	0.40	0.5	
	6/27/2016 14:27	4.91		4.91	19.02	49.25	0.00	49.25	10.06	14.51	4.45	-0.77		0.57	0.0	0	0	0.6
	9/14/2016 13:10	--		--		--	--		10.05	13.98	3.93	--			--	--	--	
	9/14/2016 16:50	0.15		0.15	0.15	9.00	9.0	58.3	10.65	12.35	1.70	-0.18		0.57	58.9	7.87	10.1	
	9/15/2016 8:05	0.64	0.00	0.64	0.64	14.70	5.7	64.0	10.35	10.51	0.16	-0.48		0.57	9.0	1.20	1.5	
	9/15/2016 8:55	0.03	0.03	0.03	0.67	14.90	0.2	64.2	10.31	10.51	0.20	-0.52		0.57	5.8	0.77	1.0	
	9/15/2016 11:50	0.12	0.16	0.12	0.79	15.30	0.4	64.6	10.26	10.50	0.24	-0.57		0.57	3.3	0.44	0.6	
	9/21/2016 11:52	6.00	6.16	6.69	7.48	31.80	16.5	81.1	10.75	11.10	0.35	-0.08		0.57	2.5	0.33	0.4	
	9/22/2016 9:45	0.91	7.07	0.90	8.39	33.10	1.3	82.4	11.15	11.40	0.25	0.32		0.32	1.4	0.19	0.4	
	9/28/2016 8:15	5.94	13.01	5.94	14.33	52.10	19.0	101.4	10.46	10.72	0.26	-0.37		0.57	3.2	0.43	0.5	
	10/5/2016 14:15	7.25	20.26	6.32	20.65	71.10	19.0	120.4	10.19	10.42	0.23	-0.64		0.57	3.0	0.40	0.5	
	END OF TEST INTERVAL - SHUTDOWN DUE TO HURRICANE																	
	10/13/2016 13:50	7.98	28.24	0.00	20.65	0.00	0.0	120.4	8.83	12.89	4.06	--			--	--	--	
	10/20/2016 12:35	6.95	35.19	6.95	27.60	97.00	97.0	217.4	9.53	9.64	0.11	-1.30		0.57	6.5	0.87	1.1	
	END OF TEST INTERVAL - SHUTDOWN DUE TO FULL TANK																	
	10/28/2016 11:24	--	43.14	--	--	--	--	217.4	9.33	12.73	3.40	--			--	--	--	
	11/4/2016 11:45	7.01	50.15	0.70	0.70	2.00	2.0	219.4	9.85	13.30	3.45	-0.98		0.57	2.9	0.38	0.5	
	END OF TEST INTERVAL - DUE TO EQUIPMENT MALFUNCTION																	
	11/15/2016 16:42	--	61.36	--	--	--	--	219.4	10.31	13.20	2.89	--			--	--	--	
	11/22/2016 12:07	6.81	68.17	1.70	1.70	4.50	4.5	223.9	11.27	11.54	0.27	0.44		0.57	2.6	0.35	0.5	
	11/29/2016 15:10	7.13	75.30	7.13	8.83	31.00	26.5	250.4	11.10	11.44	0.34	0.27		0.57	3.7	0.50	0.6	
	END OF TEST INTERVAL - DUE TO EQUIPMENT MALFUNCTION																	
	12/5/2016 12:30	5.89	81.18	--	--	--	2.0	252.4	10.38	13.21	2.83	--			--	--	--	
	12/7/2016 13:10	2.03	83.21	2.01	2.01	48.6	46.6	299.0	10.74	10.94	0.20	-0.09		0.57	14.0	1.87	2.4	
	12/14/2016 9:38	6.85	90.06	6.14	8.15	62.60	14.0	313.0	10.65	11.60	0.95	-0.18		0.57	2.3	0.30	0.4	
	12/21/2016 9:10	6.98	97.05	6.98	15.13	84.28	21.7	334.6	11.02	11.35	0.33	0.19		0.57	3.1	0.42	0.5	
	12/27/2016 12:25	6.14	103.18	6.14	21.26	100.95	16.7	351.3	10.86	11.14	0.28	0.03		0.57	2.7	0.36	0.5	
	1/4/2017 12:50	8.02	111.20	8.02	29.28	154.30	53.4	404.7	11.21	11.29	0.08	0.38		0.57	6.7	0.89	1.1	
	1/9/2017 11:28	4.94	116.14	4.94	34.22	179.10	24.8	429.5	11.26	11.50	0.24	0.43		0.57	5.0	0.67	0.9	
	1/19/2017 13:58	10.10	126.25	9.80	44.02	218.10	39.0	468.5	11.24	11.36	0.12	0.41		0.57	4.0	0.53	0.7	
	1/26/2017 13:09	6.97	133.21	6.97	50.99	248.10	30.0	498.5	10.84	11.12	0.28	0.01		0.57	4.3	0.58	0.7	
	1/31/2017 12:45	4.98	138.19	4.98	55.97	272.70	24.6	523.1	10.82	11.00	0.18	-0.01		0.57	4.9	0.66	0.8	
	2/7/2017 12:49	7.00	145.20	7.00	62.98	298.10	25.4	548.5	11.27	11.50	0.23	0.44		0.57	3.6	0.48	0.6	
	2/13/2017 14:36	6.07	151.27	6.07	69.05	320.07	22.0	570.4	11.20	11.50	0.30	0.37		0.57	3.6	0.48	0.6	
	2/14/2017 14:19	0.99	152.26	0.99	70.04	324.27	4.2	574.6	10.92	11.24	0.32	0.09		0.57	4.3	0.57	0.7	
	2/23/2017 11:15	8.87	161.13	8.69	78.73	358.39	34.1	608.7	10.99	11.26	0.27	0.16		0.57	3.9	0.52	0.7	
	3/3/2017 10:20	7.96	169.09	2.55	81.28	360.85	2.5	611.2	11.43	13.63	2.20	0.60		0.57	1.0	0.13	0.2	
	3/7/2017 13:36	4.14	173.23	0.58	81.86	377.53	16.7	627.9	11.26	13.63	2.37	0.43		0.57	4.0	0.54	0.7	
	3/10/2017 10:25	2.87	176.10	2.70	84.55	398.37	20.8	648.7	11.11	11.62	0.51	0.28		0.57	7.7	1.03	1.3	
	3/16/2017 11:15	6.03	182.13	0.60	85.16	407.17	8.8	657.5	11.35	13.90	2.55	0.52		0.57	1.5	0.19	0.3	
	3/23/2017 10:41	6.98	189.11	6.42	91.58	462.17	55.0	712.5	11.18	12.25	1.07	0.35		0.57	8.6	1.15	1.5	
	3/31/2017 8:32	7.91	197.02	7.91	99.49	477.17	15.0	727.5	11.57	11.79	0.22	0.74		0.57	1.9	0.25	0.3	

Appendix A

AW-9 LNAPL Skimming Test Results
IMTT Savannah North Terminal
Savannah, Georgia

Well ID	Measurement Date & Time	Time Between Measurement Events (days)	Time elapsed since start (days)	Actual Skimmer Run-Time Between Measurement Events (days)	Cumulative Run Time (days)	Total Volume of LNAPL Recovered (gallons)	Volume of LNAPL Recovered During Measurement Interval (gallons)	RUNNING Total Volume of LNAPL Recovered (gallons)	Depth to LNAPL (feet btoc)	Depth to Water (feet btoc)	In-Well LNAPL Thickness (feet)	LNAPL Drawdown (feet)	Maximum Theoretical Unconfined LNAPL Drawdown (feet)	LNAPL Drawdown Used in Transmissivity Estimate[a] (feet)	Average LNAPL Recovery Rate for Interval (gal/day)	Average LNAPL Recovery Rate for Interval (ft^3/day)	Estimated LNAPL Transmissivity for Interval (ft^2/day)	Overall Average LNAPL Transmissivity[b] (ft^2/day)
AW-9 Long term test	4/3/2017 10:00	3.06	200.08	3.06	102.55	488.37	11.2	738.7	11.55	11.79	0.24	0.72		0.57	3.7	0.49	0.6	
	4/13/2017 11:46	10.07	210.15	9.77	112.32	518.77	30.4	769.1	11.14	11.32	0.18	0.31		0.57	3.1	0.42	0.5	
	4/18/2017 11:41	5.00	215.15	5.00	117.32	532.67	13.9	783.0	11.65	11.81	0.16	0.82		0.57	2.8	0.37	0.5	
	4/27/2017 10:55	8.97	224.12	8.97	126.28	557.77	25.1	808.1	11.09	11.20	0.11	0.26		0.57	2.8	0.37	0.5	
	5/2/2017 12:39	5.07	229.19	5.07	131.36	567.27	9.5	817.6	11.74	11.85	0.11	0.91		0.57	1.9	0.25	0.3	
	5/10/2017 10:40	7.92	237.11	7.60	138.96	594.27	27.0	844.6	11.49	11.60	0.11	0.66		0.57	3.6	0.47	0.6	
	5/17/2017 7:39	6.87	243.98	6.87	145.83	609.27	15.0	859.6	11.80	11.90	0.10	0.97		0.57	2.2	0.29	0.4	
	5/26/2017 10:49	9.13	253.11	9.13	154.96	637.77	28.5	888.1	11.42	11.50	0.08	0.59		0.57	3.1	0.42	0.5	
	6/1/2017 7:55	5.88	258.99	5.88	160.84	652.27	14.5	902.6	11.33	11.58	0.25	0.50		0.57	2.5	0.33	0.4	
	6/8/2017 11:50	7.16	266.16	7.16	168.01	662.77	10.5	913.1	10.86	11.06	0.20	0.03		0.57	1.5	0.20	0.3	
	6/15/2017 11:03	6.97	273.12	6.69	174.69	672.87	10.1	923.2	11.60	11.76	0.16	0.77		0.57	1.5	0.20	0.3	
	6/20/2017 9:48	4.95	278.07	4.95	179.64	680.27	7.4	930.6	11.34	11.51	0.17	0.51		0.57	1.5	0.20	0.3	
	6/22/2017 10:10	2.02	280.09	2.04	181.68	687.27	7.0	937.6	11.09	11.27	0.18	0.26		0.57	3.4	0.46	0.6	
	6/26/2017 11:51	4.07	284.16	4.03	185.71	693.27	6.0	943.6	--	--	0.15	--		0.57	1.5	0.20	0.3	
	6/30/2017 11:38	3.99	288.15	3.99	189.70	697.47	4.2	947.8	11.34	11.55	0.21	0.51		0.57	1.1	0.14	0.2	
	7/7/2017 8:09	6.85	295.00	6.85	196.55	709.47	12.0	959.8	11.03	11.16	0.13	0.20		0.57	1.8	0.23	0.3	
	7/12/2017 14:15	5.25	300.26	5.25	201.81	721.27	11.8	971.6	10.85	11.01	0.16	0.02		0.57	2.2	0.30	0.4	
	7/19/2017 11:14	6.87	307.13	6.60	208.41	730.47	9.2	980.8	11.10	11.29	0.19	0.27		0.57	1.4	0.19	0.2	
	7/26/2017 10:55	6.99	314.12	6.99	215.39	752.67	22.2	1003.0	10.90	10.94	0.04	0.07		0.57	3.2	0.42	0.5	
	8/2/2017 11:48	7.04	321.15	7.04	222.43	759.47	6.8	1009.8	10.57	10.80	0.23	-0.26		0.57	1.0	0.13	0.2	
	8/9/2017 9:51	6.92	328.07	6.92	229.35	772.67	13.2	1023.0	10.65	10.72	0.07	-0.18		0.57	1.9	0.26	0.3	
	8/17/2017 8:33	7.95	336.02	7.95	237.29	790.67	18.0	1041.0	10.26	10.48	0.22	-0.57		0.57	2.3	0.30	0.4	
	8/22/2017 12:50	5.18	341.20	4.87	242.16	802.47	11.8	1052.8	10.20	10.38	0.18	-0.63		0.57	2.4	0.32	0.4	
	8/30/2017 17:13	8.18	349.38	8.18	250.34	854.17	51.7	1104.5	10.27	10.35	0.08	-0.56		0.57	6.3	0.84	1.1	
	9/6/2017 13:35	6.85	356.23	6.85	257.19	859.67	5.5	1110.0	10.36	10.46	0.10	-0.47		0.57	0.8	0.11	0.1	0.5
	END OF TEST INTERVAL - SHUTDOWN DUE TO HURRICANE																	
	9/21/2017 15:37	--	371.31	--	--	--	--	1110.0	9.16	12.59	3.43	--			--	--	--	
	9/22/2017 7:57	0.68	371.99	0.68	257.87	5.00	5.0	1115.0	10.27	10.47	0.20	-0.56		0.57	7.3	0.98	1.3	
	9/29/2017 13:52	7.25	379.24	7.24	265.12	12.60	7.6	1122.6	10.31	10.55	0.24	-0.52		0.57	1.0	0.14	0.2	
	10/6/2017 13:49	7.00	386.24	6.99	272.11	16.50	3.9	1126.5	9.95	10.16	0.21	-0.88		0.57	0.6	0.07	0.1	
	10/12/2017 11:24	5.90	392.14	5.90	278.00	21.50	5.0	1131.5	10.36	10.97	0.61	-0.47		0.57	0.8	0.11	0.1	
	10/19/2017 12:10	7.03	399.17	7.03	285.03	27.50	6.0	1137.5	9.81	10.04	0.23	-1.02		0.57	0.9	0.11	0.1	
	11/2/2017 8:59	13.87	413.04	13.87	298.90	43.50	16.0	1153.5	10.81	11.04	0.23	-0.02		0.57	1.2	0.15	0.2	
	11/8/2017 12:15	6.14	419.17	6.18	305.08	48.00	4.5	1158.0	10.78	11.02	0.24	-0.05		0.57	0.7	0.10	0.1	
	11/15/2017 11:34	6.97	426.15	6.97	312.05	58.50	10.5	1168.5	10.65	10.87	0.22	-0.18		0.57	1.5	0.20	0.3	
	11/22/2017 10:23	6.95	433.10	6.95	319.00	67.50	9.0	1177.5	11.18	11.45	0.27	0.35		0.57	1.3	0.17	0.2	
	11/30/2017 11:09	8.03	441.13	4.74	323.74	74.50	7.0	1184.5	10.85	13.00	2.15	0.02		0.57	1.5	0.20	0.3	
	12/6/2017 12:01	6.04	447.16	6.03	329.77	94.50	20.0	1204.5	10.69	10.92	0.23	-0.14		0.57	3.3	0.44	0.6	
	12/13/2017 10:48	6.95	454.11	6.94	336.72	104.50	10.0	1214.5	11.41	11.60	0.19	0.58		0.57	1.4	0.19	0.2	
	12/21/2017 13:14	8.10	462.21	8.10	344.82	129.50	25.0	1239.5	11.10	11.30	0.20	0.27		0.57	3.1	0.41	0.5	
	12/28/2017 14:11	7.04	469.25	7.04	351.85	146.50	17.0	1256.5	11.41	11.65	0.24	0.58		0.57	2.4	0.32	0.4	

Appendix A

AW-9 LNAPL Skimming Test Results
IMTT Savannah North Terminal
Savannah, Georgia

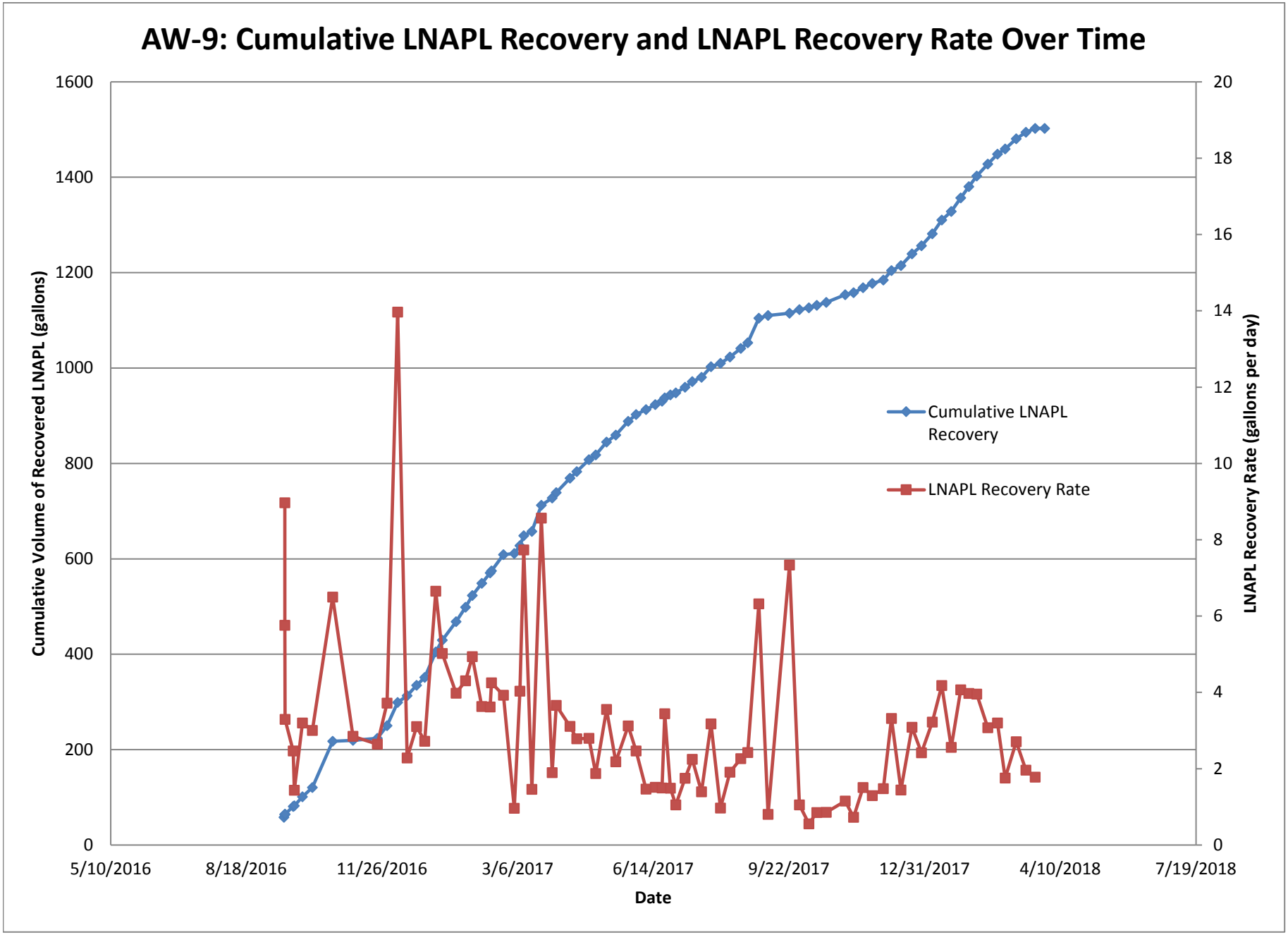
Well ID	Measurement Date & Time	Time Between Measurement Events (days)	Time elapsed since start (days)	Actual Skimmer Run-Time Between Measurement Events (days)	Cumulative Run Time (days)	Total Volume of LNAPL Recovered (gallons)	Volume of LNAPL Recovered During Measurement Interval (gallons)	RUNNING Total Volume of LNAPL Recovered (gallons)	Depth to LNAPL (feet btoc)	Depth to Water (feet btoc)	In-Well LNAPL Thickness (feet)	LNAPL Drawdown (feet)	Maximum Theoretical Unconfined LNAPL Drawdown (feet)	LNAPL Drawdown Used in Transmissivity Estimate[a] (feet)	Average LNAPL Recovery Rate for Interval (gal/day)	Average LNAPL Recovery Rate for Interval (ft^3/day)	Estimated LNAPL Transmissivity for Interval (ft^2/day)	Overall Average LNAPL Transmissivity[b] (ft^2/day)
	1/5/2018 14:23	8.01	477.26	7.73	359.58	171.40	24.9	1281.4	11.03	11.31	0.28	0.20		0.57	3.2	0.43	0.6	
	1/12/2018 14:11	6.99	484.25	6.96	366.54	200.50	29.1	1310.5	11.52	11.81	0.29	0.69		0.57	4.2	0.56	0.7	
	1/19/2018 14:15	7.00	491.26	7.04	373.58	218.50	18.0	1328.5	11.23	11.48	0.25	0.40		0.57	2.6	0.34	0.4	
	1/26/2018 11:32	6.89	498.14	6.89	380.47	246.50	28.0	1356.5	11.94	12.25	0.31	1.11		0.57	4.1	0.54	0.7	
	2/1/2018 12:41	6.05	504.19	6.04	386.51	270.50	24.0	1380.5	10.08	10.37	0.29	-0.75		0.57	4.0	0.53	0.7	
	2/7/2018 8:48	5.84	510.03	5.56	392.08	292.50	22.0	1402.5	11.67	12.04	0.37	0.84		0.57	4.0	0.53	0.7	
	2/15/2018 12:08	8.14	518.17	8.13	400.21	317.50	25.0	1427.5	11.11	11.33	0.22	0.28		0.57	3.1	0.41	0.5	
	2/22/2018 14:19	7.09	525.26	6.57	406.78	338.50	21.0	1448.5	11.18	11.44	0.26	0.35		0.57	3.2	0.43	0.5	
	2/28/2018 8:10	5.74	531.00	6.26	413.04	349.50	11.0	1459.5	10.83	11.04	0.21	0.00		0.57	1.8	0.23	0.3	
	3/8/2018 9:16	8.05	539.05	7.77	420.80	370.50	21.0	1480.5	11.41	11.77	0.36	0.58		0.57	2.7	0.36	0.5	
	3/15/2018 13:45	7.19	546.24	7.14	427.95	384.50	14.0	1494.5	11.39	11.59	0.20	0.56		0.57	2.0	0.26	0.3	
	3/22/2018 11:12	6.89	553.13	4.50	432.45	392.50	8.0	1502.5	11.60	13.10	1.50	0.77		0.57	1.8	0.24	0.3	
	3/29/2018 11:05	7.00	560.13	0.00	432.45	392.50	0.0	1502.5	10.59	13.01	2.42	-0.24		0.57	--	--	--	0.46

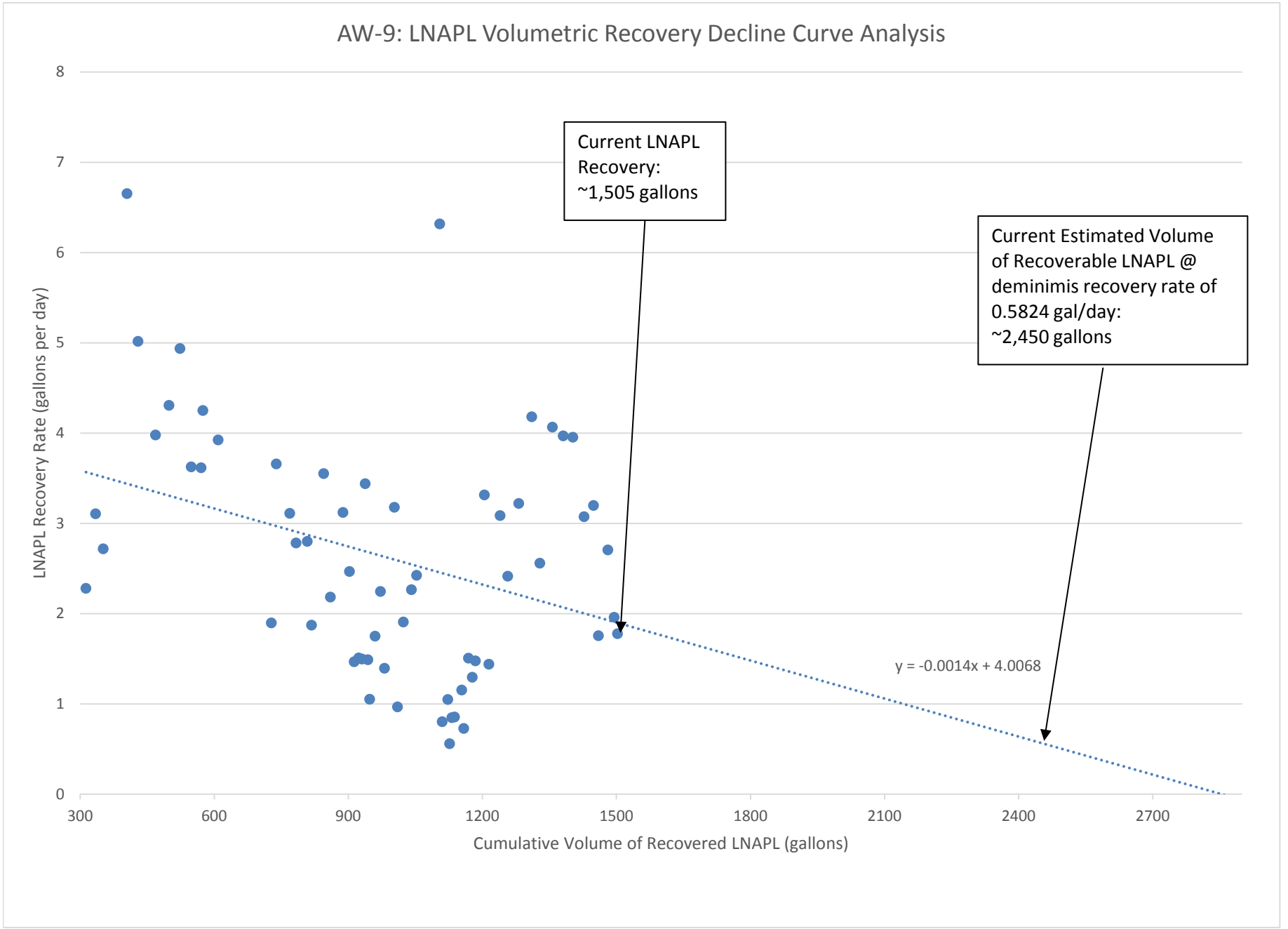
Assumed LNAPL specific gravity = 0.854

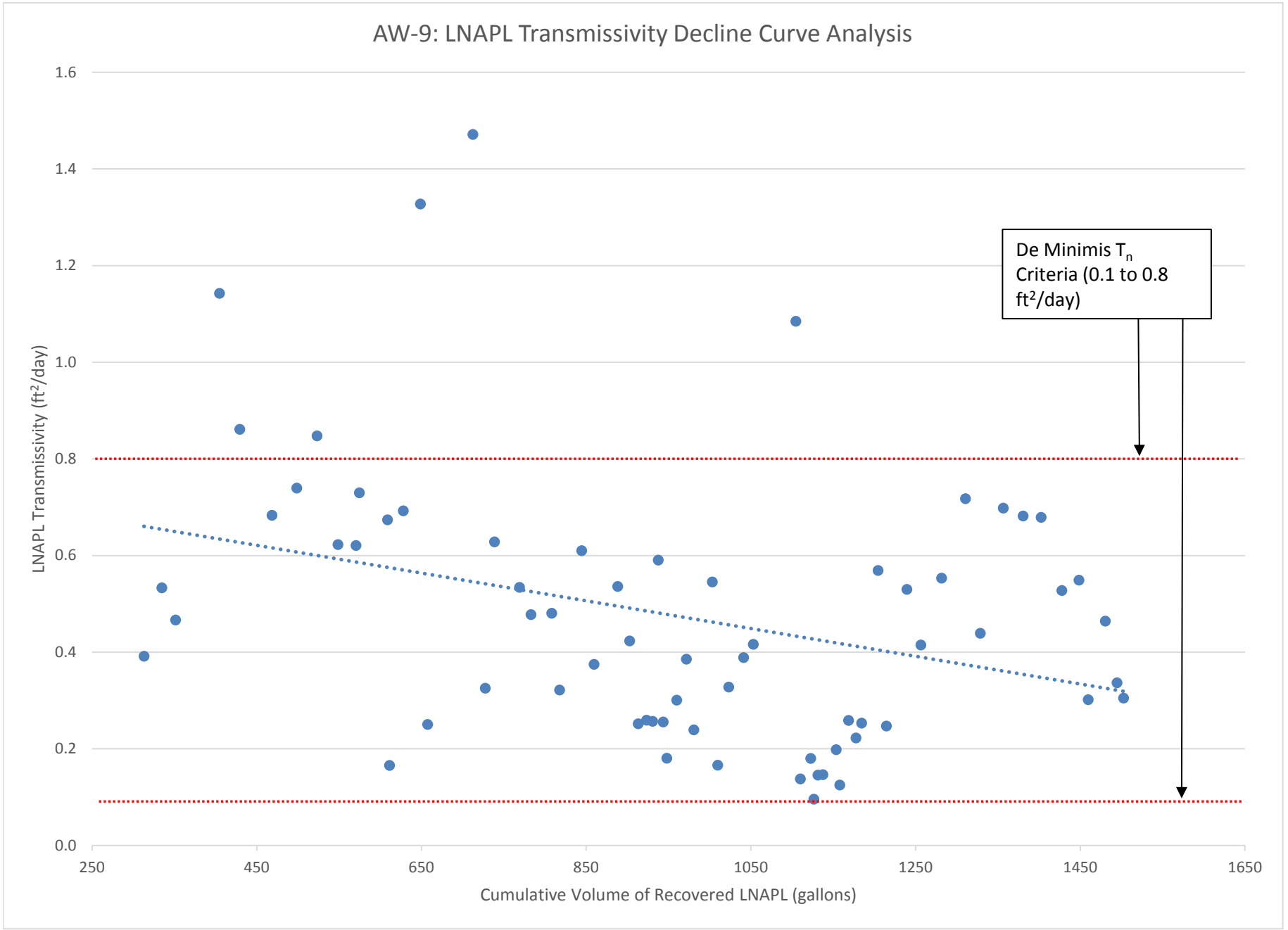
All calculations performed pursuant to the methodology detailed in ASTM E2856-13

[a]The maximum theoretical drawdown is used for each interval calculation where the measured drawdown is negative or where it exceeds the theoretical maximum.

[b]Represents the geometric mean of the stabilized recovery rates/LNAPL transmissivity estimates (i.e., excludes initial elevated values that would not represent potential long-term recovery rates).


AW-9: Cumulative LNAPL Recovery and LNAPL Recovery Rate Over Time
Cumulative Volume of Recovered LNAPL (gallons)
LNAPL Recovery Rate (gallons per day)
Date
Cumulative LNAPL Recovery
LNAPL Recovery Rate
0
200
400
600
800
1000
1200
1400
1600
0
2
4
6
8
10
12
14
16
18
20
5/10/2016
8/18/2016
11/26/2016
3/6/2017
6/14/2017
9/22/2017
12/31/2017
4/10/2018
7/19/2018


AW-9: LNAPL Volumetric Recovery Decline Curve Analysis
LNAPL Recovery Rate (gallons per day)
Cumulative Volume of Recovered LNAPL (gallons)
Current LNAPL Recovery: ~1,505 gallons
Current Estimated Volume of Recoverable LNAPL @ deminimis recovery rate of 0.5824 gal/day: ~2,450 gallons
y = -0.0014x + 4.0068
0
1
2
3
4
5
6
7
8
300
600
900
1200
1500
1800
2100
2400
2700


AW-9: LNAPL Transmissivity Decline Curve Analysis
LNAPL Transmissivity (ft²/day)
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
250
450
650
850
1050
1250
1450
1650
Cumulative Volume of Recovered LNAPL (gallons)
De Minimis Tn Criteria (0.1 to 0.8 ft²/day)

Appendix A

AW-10 LNAPL Skimming Test Results
IMTT Savannah North Terminal
Savannah, Georgia

Well ID	Measurement Date & Time	Time Between Measurement Events (days)	Actual Skimmer Run-Time Between Measurement Events (days)	Cumulative Run Time (days)	Total Volume of LNAPL Recovered (gallons)	Volume of LNAPL Recovered During Measurement Interval (gallons)	RUNNING Total Volume of LNAPL Recovered (gallons)	Depth to LNAPL (feet btoc)	Depth to Water (feet btoc)	In-Well LNAPL Thickness (feet)	LNAPL Drawdown (feet)	Maximum Theoretical Unconfined LNAPL Drawdown (feet)	LNAPL Drawdown Used in Transmissivity Estimate[a] (feet)	Average LNAPL Recovery Rate for Interval (gal/day)	Average LNAPL Recovery Rate for Interval (ft^3/day)	Estimated LNAPL Transmissivity for Interval (ft^2/day)	Overall Average LNAPL Transmissivity[b] (ft^2/day)
	Equilibrium	--		--	--	--		10.42	14.75	4.33	--	0.63	--	--	--	--	
AW-10 Short term test	6/28/2016 8:39	--		--	--	--		9.72	14.80	5.08	--		--	--	--	--	
	6/28/2016 13:50	0.22	0.21	0.21	5.8	5.8	5.8	--	--	--	--		0.63	27.7	3.70	4.3	
	7/1/2016 9:25	2.82	2.82	3.03	16.8	11.0	16.8	10.29	11.06	0.77	-0.13		0.63	3.9	0.52	0.6	
	7/7/2016 13:25	6.17	6.17	9.19	40.2	23.4	40.2	10.72	10.92	0.20	0.30		0.63	3.8	0.51	0.6	
	7/11/2016 13:06	3.99	2.21	11.40	50.5	10.3	50.5	10.92	12.35	1.43	0.50		0.63	4.6	0.62	0.7	
	7/12/2016 9:35	0.85	0.68	12.08	54.3	3.8	54.3	10.87	12.55	1.68	0.45		0.63	5.6	0.74	0.9	
	7/12/2016 12:50	0.14	0.14	12.22	55.2	1.0	55.2	10.95	12.61	1.66	0.53		0.63	7.2	0.97	1.1	
	7/19/2016 12:45	7.00	6.96	19.17	69.2	14.0	69.2	10.51	14.15	3.64	0.09		0.63	2.0	0.27	0.3	
	7/21/2016 13:00	2.01	1.34	20.52	75.9	6.7	75.9	10.46	14.31	3.85	0.04		0.63	5.0	0.67	0.8	
	7/27/2016 13:00	6.00	5.21	25.72	101.4	25.5	101.4	10.52	13.93	3.41	0.10		0.63	4.9	0.65	0.8	0.8
AW-10 Long term test	1/19/2017 14:23	--	--		--	--	101.4	11.07	15.19	4.12	--			--	--	--	
	1/20/2017 10:25	0.83	0.63	0.63	60.8	60.8	162.2	11.94	11.95	0.01	1.52		0.63	97.0	12.97	15.1	
	1/23/2017 14:52	3.19	3.19	3.81	60.8	0.0	162.2	11.26	11.94	0.68	0.84		0.63	0.0	0.00	0.0	
	1/26/2017 12:40	2.91	2.91	6.72	65.8	5.0	167.2	10.87	11.05	0.18	0.45		0.63	1.7	0.23	0.3	
	1/31/2017 12:40	5.00	4.99	11.71	102.3	36.5	203.7	11.02	11.23	0.21	0.60		0.63	7.3	0.98	1.1	
	2/7/2017 12:28	6.99	6.99	18.70	112.4	10.1	213.7	11.19	11.27	0.08	0.77		0.63	1.4	0.19	0.2	
	2/13/2017 14:50	6.10	6.10	24.80	115.2	2.9	216.6	11.51	11.91	0.40	1.09		0.63	0.5	0.06	0.1	
	2/14/2017 14:30	0.99	0.99	25.78	115.2	0.0	216.6	11.31	11.56	0.25	0.89		0.63	0.0	0.00	0.0	
	2/23/2017 10:43	8.84	8.62	34.41	122.7	7.5	224.1	11.30	11.55	0.25	0.88		0.63	0.9	0.12	0.1	
	3/3/2017 9:50	7.96	7.96	42.37	125.2	2.5	226.6	12.09	12.40	0.31	1.67		0.63	0.3	0.04	0.0	
	3/7/2017 13:10	4.14	4.14	46.51	130.2	5.0	231.6	11.90	12.19	0.29	1.48		0.63	1.2	0.16	0.2	
	3/10/2017 10:02	2.87	2.87	49.38	132.8	2.6	234.2	11.35	11.78	0.43	0.93		0.63	0.9	0.12	0.1	
	3/16/2017 10:56	6.04	6.03	55.41	138.9	6.1	240.3	12.24	12.50	0.26	1.82		0.63	1.0	0.14	0.2	
	3/23/2017 10:23	6.98	6.98	62.39	138.9	0.0	240.3	11.91	12.23	0.32	1.49		0.63	0.0	0.00	0.0	
	3/31/2017 8:41	7.93	7.67	70.06	144.9	6.0	246.3	11.85	12.19	0.34	1.43		0.63	0.8	0.10	0.1	
	4/3/2017 10:10	3.06	3.06	73.12	146.7	1.8	248.1	11.88	12.08	0.20	1.46		0.63	0.6	0.08	0.1	
	4/13/2017 11:28	10.05	10.05	83.17	153.9	7.2	255.3	11.80	11.95	0.15	1.38		0.63	0.7	0.10	0.1	
	4/18/2017 11:04	4.98	4.98	88.16	156.6	2.7	258.0	12.11	12.29	0.18	1.69		0.63	0.5	0.07	0.1	
	4/27/2017 11:20	9.01	9.01	97.17	160.9	4.3	262.3	10.98	11.14	0.16	0.56		0.63	0.5	0.06	0.1	0.2
							END OF TEST										
First Intermittent Skimming Event	3/7/2018 14:30	--	--		--	--	262.3	10.90	14.11	3.21	--			--	--	--	
	3/7/2018 15:45	0.05	0.05	0.05	5.5	5.5	267.8	11.52	12.35	0.83	1.10		0.63	106.1	14.18	16.5	
	3/8/2018 9:03	0.72	0.62	0.67	7.0	1.5	269.3	11.59	11.95	0.36	1.17		0.63	2.4	0.32	0.4	
	3/15/2018 13:00	7.16	0.74	1.41	9.0	2.0	271.3	11.43	13.03	1.60	1.01		0.63	2.7	0.36	0.4	
	3/22/2018 12:00	6.96	5.08	6.49	46.0	37.0	308.3	12.04	12.67	0.63	1.62		0.63	7.3	0.97	1.1	
	3/29/2018 11:53	7.00	7.00	13.48	52.0	6.0	314.3	11.44	11.68	0.24	1.02		0.63	0.9	0.11	0.1	
	4/6/2018 11:10	7.97	7.97	21.45	53.0	1.0	315.3	11.93	12.24	0.31	1.51		0.63	0.1	0.02	0.0	
	4/12/2018 12:35	6.06	5.93	27.38	54.3	1.3	316.6	11.84	12.08	0.24	1.42		0.63	0.2	0.03	0.0	
	4/18/2018 13:22	6.03	6.03	33.41	59.0	4.7	321.3	11.86	12.08	0.22	1.44		0.63	0.8	0.10	0.1	
	4/27/2018 13:30	9.01	8.80	42.21	61.5	2.5	323.8	11.44	11.74	0.30	1.02		0.63	0.3	0.04	0.0	0.13

Assumed LNAPL specific gravity = 0.854

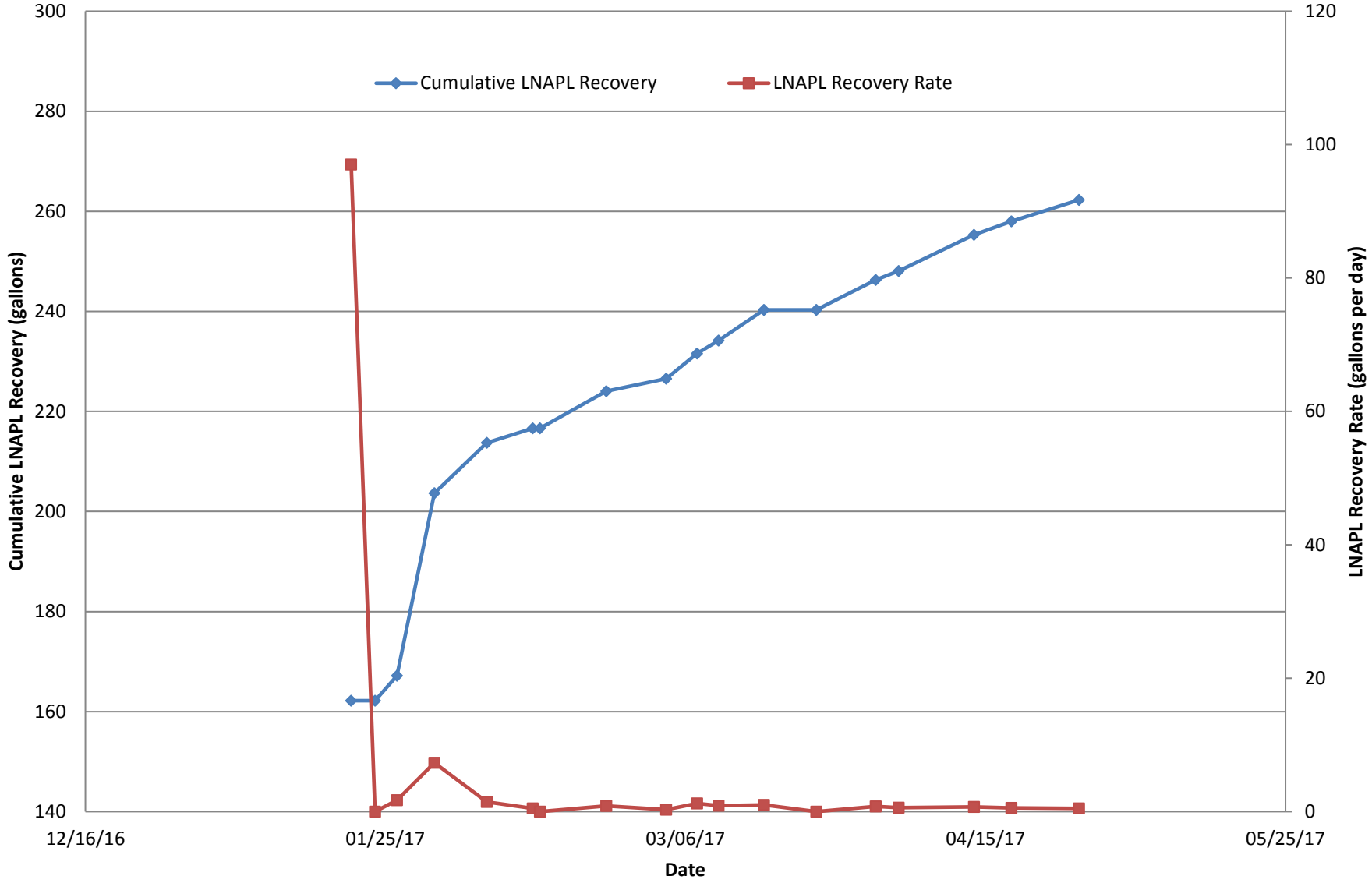
All calculations performed pursuant to the methodology detailed in ASTM E2856-13

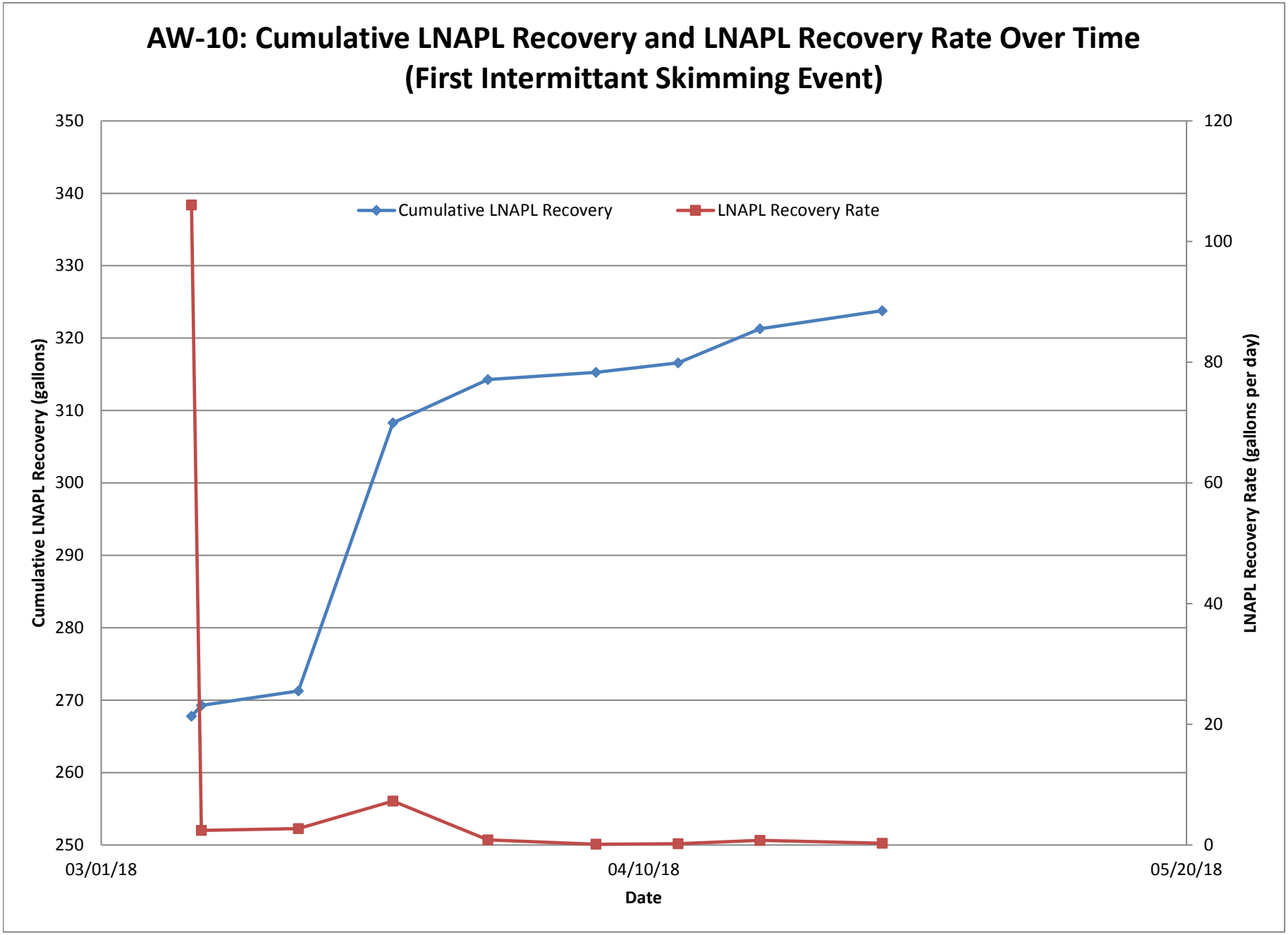
[a]The maximum theoretical drawdown is used for each interval calculation where the measured drawdown is negative or where it exceeds the theoretical maximum.

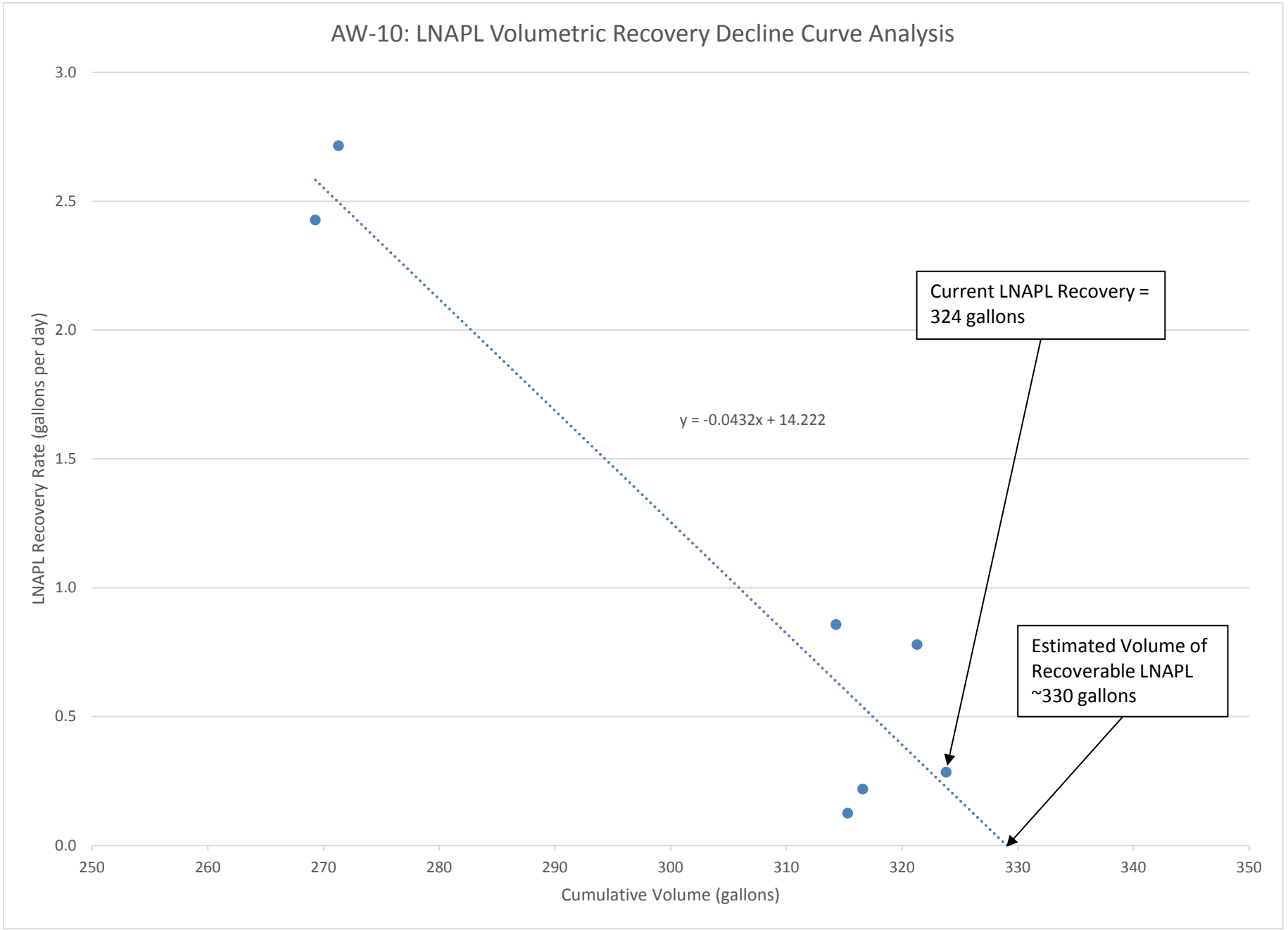
[b]Represents the geometric mean of the stabilized recovery rates/LNAPL transmissivity estimates (i.e., excludes initial elevated values that would not represent potential long-term recovery rates).

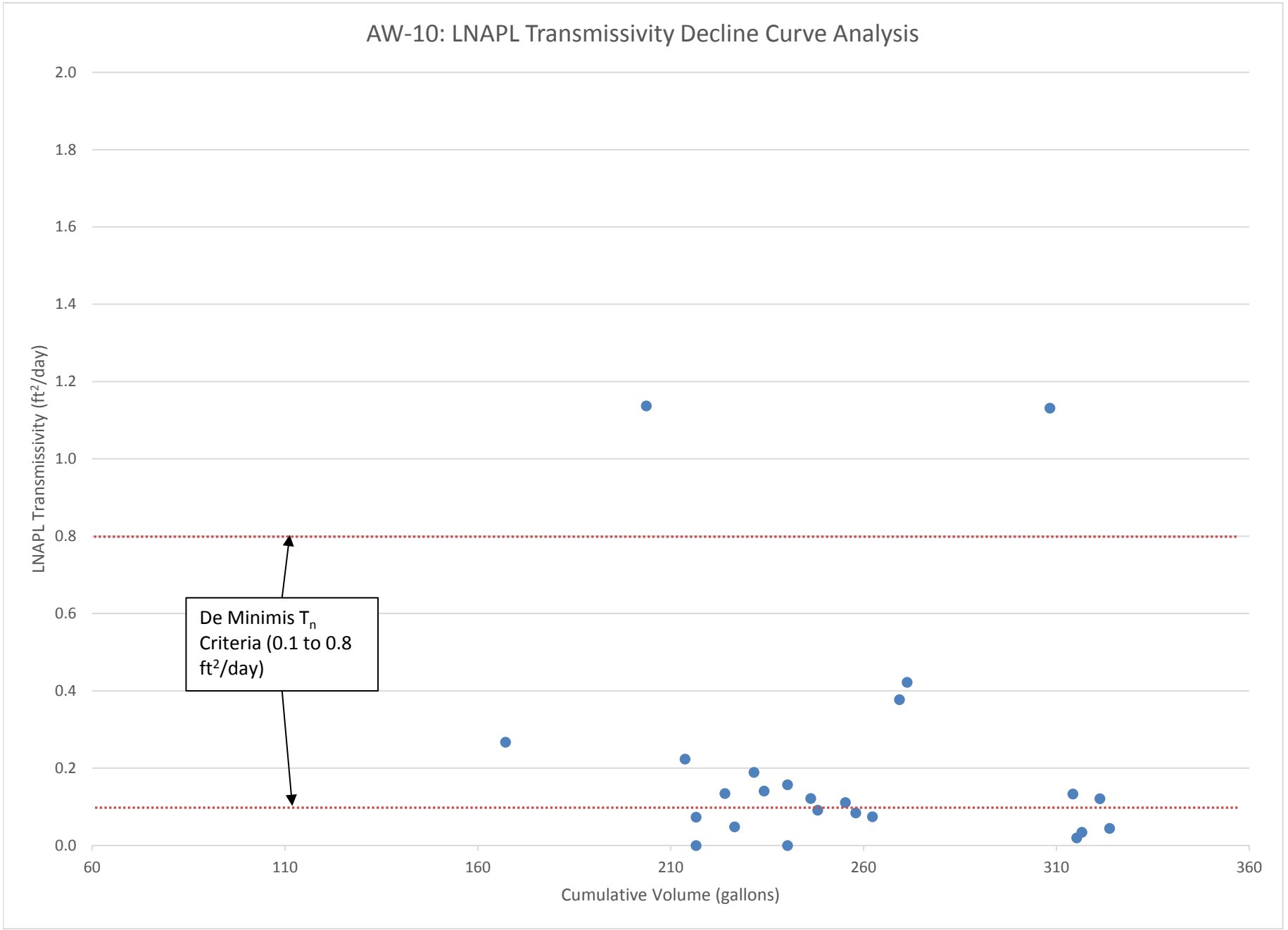
Equilibrium data is an average of quarterly groundwater data collected from March 2016 through Februrary 2018 and excludes data collected during or following skimming operations.

AW-10: Cumulative LNAPL Recovery and LNAPL Recovery Rate Over Time
Long-Term Skimming Evaluation




AW-10: Cumulative LNAPL Recovery and LNAPL Recovery Rate Over Time
(First Intermittant Skimming Event)
Cumulative LNAPL Recovery
LNAPL Recovery Rate
Cumulative LNAPL Recovery (gallons)
LNAPL Recovery Rate (gallons per day)
350
340
330
320
310
300
290
280
270
260
250
120
100
80
60
40
20
0
03/01/18
04/10/18
05/20/18
Date


AW-10: LNAPL Volumetric Recovery Decline Curve Analysis
LNAPL Recovery Rate (gallons per day)
3.0
2.5
2.0
1.5
1.0
0.5
0.0
y = -0.0432x + 14.222
Current LNAPL Recovery = 324 gallons
Estimated Volume of Recoverable LNAPL ~330 gallons
250
260
270
280
290
300
310
320
330
340
350
Cumulative Volume (gallons)


AW-10: LNAPL Transmissivity Decline Curve Analysis
LNAPL Transmissivity (ft²/day)
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
60
110
160
210
260
310
360
Cumulative Volume (gallons)
De Minimis T_n Criteria (0.1 to 0.8 ft²/day)

Appendix A

AW-11 LNAPL Skimming Test Results
IMTT Savannah North Terminal
Savannah, Georgia

Well ID	Measurement Date & Time	Time Between Measurement Events (days)	Actual Skimmer Run-Time Between Measurement Events (days)	Cumulative Run Time (days)	Total Volume of LNAPL Recovered (gallons)	Volume of LNAPL Recovered During Measurement Interval (gallons)	RUNNING Total Volume of LNAPL Recovered (gallons)	Depth to LNAPL (feet btoc)	Depth to Water (feet btoc)	In-Well LNAPL Thickness (feet)	LNAPL Drawdown (feet)	Maximum Theoretical Unconfined LNAPL Drawdown (feet)	LNAPL Drawdown Used in Transmissivity Estimate[a] (feet)	Average LNAPL Recovery Rate for Interval (gal/day)	Average LNAPL Recovery Rate for Interval (ft^3/day)	Estimated LNAPL Transmissivity for Interval (ft^2/day)	Overall Average LNAPL Transmissivity[b] (ft^2/day)
AW-11 Short term test	Equilibrium	--		--	--	--		10.75	14.14	3.39	--	0.49	--	--	--	--	
	6/28/2016 9:45	--		--	--	--		10.21	13.32	3.11	--		--	--	--	--	
	6/28/2016 14:00	0.18	0.18	0.18	6.16	6.16	6.16	--	--	--			0.49	34.8	4.65	6.9	
	7/1/2016 9:40	2.82	2.81	2.99	18.06	11.90	18.06	10.40	12.38	1.98	-0.35		0.49	4.2	0.57	0.8	
	7/7/2016 13:50	6.17	6.17	9.16	41.86	23.80	41.86	10.87	13.23	2.36	0.12		0.49	3.9	0.52	0.8	
	7/11/2016 12:40	3.95	2.28	11.45	52.1	10.3	52.1	11.14	12.98	1.84	0.39		0.49	4.5	0.60	0.9	
	7/12/2016 9:25	0.86	0.65	12.10	58.7	6.6	58.7	11.25	12.65	1.40	0.50		0.49	10.1	1.35	2.0	
	7/12/2016 12:25	0.13	0.13	12.23	59.5	0.8	59.5	11.39	12.70	1.31	0.64		0.49	6.6	0.88	1.3	
	7/19/2016 12:22	7.00	6.80	19.02	91.5	32.0	91.5	11.18	11.97	0.79	0.43		0.49	4.7	0.63	0.9	
	7/27/2016 12:15	5.95	5.85	27.24	119.4	27.9	119.4	11.80	12.00	0.20	1.05		0.49	4.8	0.64	1.0	1.1
	1/19/2017 14:16	--	--		--	--	119.4	11.06	14.95	3.89	--			--	--	--	
	1/20/2017 11:15	0.87	0.62	0.62	11.3	11.3	130.8	11.82	12.14	0.32	1.07		0.49	18.4	2.46	3.7	
	1/26/2017 12:52	6.07	6.07	6.68	31.3	20.0	150.8	11.19	11.51	0.32	0.44		0.49	3.3	0.44	0.7	
	1/31/2017 12:36	4.99	4.97	11.65	47.6	16.3	167.0	11.41	11.70	0.29	0.66		0.49	3.3	0.44	0.7	
	2/7/2017 12:39	7.00	7.00	18.65	143.5	95.9	262.9	11.72	11.90	0.18	0.97		0.49	13.7	1.83	2.7	
	2/13/2017 14:02	6.06	6.06	24.71	159.1	15.6	278.5	11.44	11.90	0.46	0.69		0.49	2.6	0.34	0.5	
	2/14/2017 14:41	1.03	1.03	25.74	161.6	2.5	281.0	11.26	11.49	0.23	0.51		0.49	2.5	0.33	0.5	
	2/23/2017 10:58	8.85	8.85	34.58	174.1	12.5	293.5	11.25	11.60	0.35	0.50		0.49	1.4	0.19	0.3	
	3/3/2017 10:00	7.96	7.86	42.44	184.6	10.5	304.0	12.12	12.25	0.13	1.37		0.49	1.3	0.18	0.3	
	3/7/2017 13:18	4.14	4.14	46.57	188.9	4.3	308.3	11.85	12.15	0.30	1.10		0.49	1.0	0.14	0.2	
	3/10/2017 10:13	2.87	2.87	49.45	199.4	10.6	318.8	11.70	12.02	0.32	0.95		0.49	3.7	0.49	0.7	
	3/16/2017 11:08	6.04	6.00	55.44	205.6	6.2	325.0	12.26	12.49	0.23	1.51		0.49	1.0	0.14	0.2	
	3/23/2017 10:30	6.97	6.97	62.42	277.6	72.0	397.0	12.22	12.45	0.23	1.47		0.49	10.3	1.38	2.1	
	3/31/2017 8:10	7.90	0.33	62.75	287.8	10.2	407.2	11.78	13.10	1.32	1.03		0.49	30.9	4.13	6.2	
	4/3/2017 9:51	3.07	3.07	65.82	445.3	157.5	564.7	12.71	12.75	0.04	1.96		0.49	51.3	6.86	10.2	
	4/13/2017 11:35	10.07	9.81	75.63	458.6	13.3	578.0	11.84	12.09	0.25	1.09		0.49	1.4	0.18	0.3	
	4/18/2017 11:13	4.98	4.98	80.61	467.7	9.1	587.1	11.90	12.16	0.26	1.15		0.49	1.8	0.24	0.4	
	4/27/2017 11:11	9.00	9.00	89.61	478.6	10.9	598.0	11.74	12.08	0.34	0.99		0.49	1.2	0.16	0.2	
	5/2/2017 12:51	5.07	5.07	94.68	486.9	8.3	606.3	12.25	13.39	1.14	1.50		0.49	1.6	0.22	0.3	
	5/10/2017 10:54	7.92	7.65	102.34	500.6	13.7	620.0	12.09	12.38	0.29	1.34		0.49	1.8	0.24	0.4	
	5/17/2017 7:54	6.88	6.88	109.21	512.6	12.0	632.0	12.11	12.34	0.23	1.36		0.49	1.7	0.23	0.3	
	5/26/2017 11:06	9.13	9.13	118.35	527.3	14.7	646.7	12.02	12.21	0.19	1.27		0.49	1.6	0.22	0.3	
	6/1/2017 8:10	5.88	5.83	124.18	532.6	5.3	652.0	11.89	12.19	0.30	1.14		0.49	0.9	0.12	0.2	
	6/8/2017 11:30	7.14	7.14	131.32	540.7	8.1	660.1	11.31	11.48	0.17	0.56		0.49	1.1	0.15	0.2	
	6/15/2017 10:45	6.97	6.70	138.02	550.0	9.3	669.4	11.85	11.98	0.13	1.10		0.49	1.4	0.19	0.3	
	6/20/2017 10:04	4.97	4.97	142.99	554.6	4.6	674.0	11.99	12.24	0.25	1.24		0.49	0.9	0.12	0.2	
	6/22/2017 10:50	2.03	2.03	145.03	581.8	27.2	701.2	11.86	12.02	0.16	1.11		0.49	13.4	1.79	2.7	
	6/26/2017 11:23	4.02	4.02	149.05	595.7	13.9	715.1	12.09	12.12	0.03	1.34		0.49	3.5	0.46	0.7	
	6/30/2017 11:52	4.02	4.02	153.07	605.7	10.0	725.1	11.66	11.88	0.22	0.91		0.49	2.5	0.33	0.5	
	7/7/2017 8:24	6.86	6.86	159.92	618.7	13.0	738.1	11.28	11.49	0.21	0.53		0.49	1.9	0.25	0.4	
	7/12/2017 14:29	5.25	5.25	165.17	628.7	10.0	748.1	11.19	11.40	0.21	0.44		0.49	1.9	0.25	0.4	
	7/19/2017 11:28	6.87	6.60	171.78	640.7	12.0	760.1	11.28	11.55	0.27	0.53		0.49	1.8	0.24	0.4	
	7/26/2017 11:08	6.99	6.99	178.77	650.4	9.7	769.8	11.16	11.34	0.18	0.41		0.49	1.4	0.19	0.3	

Appendix A

AW-11 LNAPL Skimming Test Results
IMTT Savannah North Terminal
Savannah, Georgia

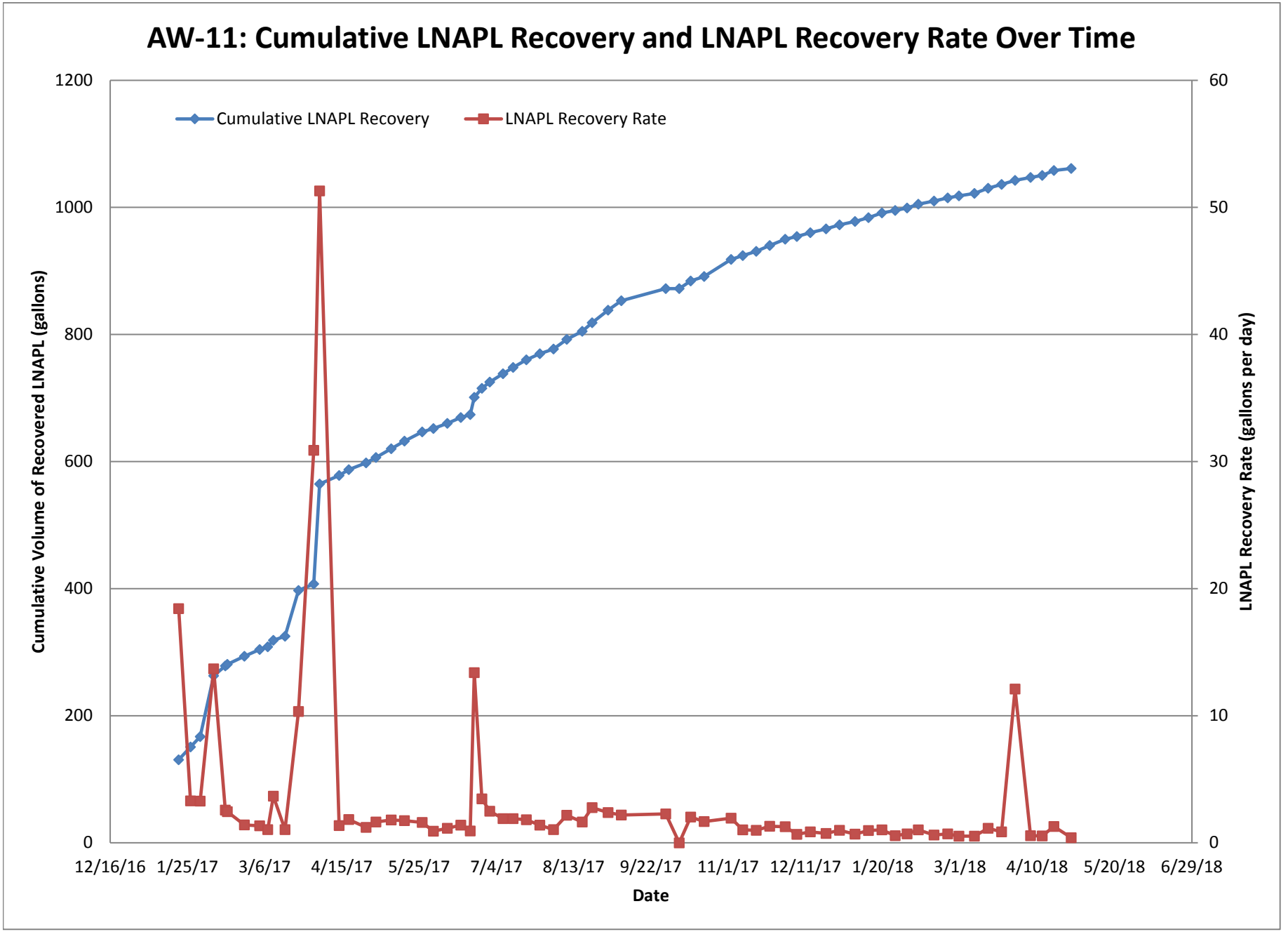
Well ID	Measurement Date & Time	Time Between Measurement Events (days)	Actual Skimmer Run-Time Between Measurement Events (days)	Cumulative Run Time (days)	Total Volume of LNAPL Recovered (gallons)	Volume of LNAPL Recovered During Measurement Interval (gallons)	RUNNING Total Volume of LNAPL Recovered (gallons)	Depth to LNAPL (feet btoc)	Depth to Water (feet btoc)	In-Well LNAPL Thickness (feet)	LNAPL Drawdown (feet)	Maximum Theoretical Unconfined LNAPL Drawdown (feet)	LNAPL Drawdown Used in Transmissivity Estimate[a] (feet)	Average LNAPL Recovery Rate for Interval (gal/day)	Average LNAPL Recovery Rate for Interval (ft^3/day)	Estimated LNAPL Transmissivity for Interval (ft^2/day)	Overall Average LNAPL Transmissivity[b] (ft^2/day)
AW-11 Long term test	8/2/2017 12:00	7.04	7.04	185.80	657.7	7.3	777.1	10.82	11.09	0.27	0.07		0.49	1.0	0.14	0.2	
	8/9/2017 9:42	6.90	6.90	192.71	672.7	15.0	792.1	10.90	11.04	0.14	0.15		0.49	2.2	0.29	0.4	
	8/17/2017 8:46	7.96	7.96	200.67	685.7	13.0	805.1	10.55	10.78	0.23	-0.20		0.49	1.6	0.22	0.3	
	8/22/2017 12:35	5.16	4.89	205.55	699.2	13.5	818.6	10.55	10.82	0.27	-0.20		0.49	2.8	0.37	0.6	
	8/30/2017 17:30	8.20	8.20	213.76	718.7	19.5	838.1	10.83	10.93	0.10	0.08		0.08	2.4	0.32	2.9	
	9/6/2017 13:55	6.85	6.85	220.61	733.7	15.0	853.1	10.75	11.01	0.26	0.00		0.49	2.2	0.29	0.4	
	END OF TEST INTERVAL - SHUTDOWN DUE TO HURRICANE																
	9/22/2017 8:39	--	--	--	--	--	853.1	10.08	12.32	2.24	--			--	--	--	
	9/22/2017 9:56	0.05	0.05	220.66	736.7	3.0	856.1	10.77	10.98	0.21	0.02		0.49	56.7	7.57	11.3	
	9/29/2017 13:35	7.15	7.15	227.81	752.9	16.2	872.3	10.61	10.78	0.17	-0.14		0.49	2.3	0.30	0.5	
	10/6/2017 13:55	7.01	0.37	228.18	752.9	0.0	872.3	9.98	10.95	0.97	-0.77		0.49	0.0	0.00	0.0	
	10/12/2017 11:42	5.91	5.90	234.08	764.9	12.0	884.3	10.83	10.99	0.16	0.08		0.49	2.0	0.27	0.4	
	10/19/2017 11:50	7.01	4.08	238.15	771.7	6.8	891.1	10.22	11.44	1.22	-0.53		0.49	1.7	0.22	0.3	
	11/2/2017 9:15	13.89	13.88	252.03	798.6	26.9	918.0	11.21	11.45	0.24	0.46		0.49	1.9	0.26	0.4	
	11/8/2017 12:27	6.13	6.13	258.17	804.8	6.2	924.2	11.17	11.39	0.22	0.42		0.49	1.0	0.14	0.2	
	11/15/2017 11:50	6.97	6.97	265.13	811.6	6.8	931.0	11.03	11.22	0.19	0.28		0.49	1.0	0.13	0.2	
	11/22/2017 10:36	6.95	6.94	272.07	820.6	9.0	940.0	11.52	11.79	0.27	0.77		0.49	1.3	0.17	0.3	
	11/30/2017 11:32	8.04	7.86	279.93	830.6	10.0	950.0	11.47	11.72	0.25	0.72		0.49	1.3	0.17	0.3	
	12/6/2017 12:19	6.03	6.03	285.96	834.6	4.0	954.0	11.16	11.38	0.22	0.41		0.49	0.7	0.09	0.1	
	12/13/2017 11:08	6.95	6.94	292.90	840.6	6.0	960.0	11.59	11.82	0.23	0.84		0.49	0.9	0.12	0.2	
	12/21/2017 13:00	8.08	8.07	300.97	846.6	6.0	966.0	11.55	11.68	0.13	0.80		0.49	0.7	0.10	0.1	
	12/28/2017 13:48	7.03	6.75	307.72	853.2	6.6	972.6	11.80	12.05	0.25	1.05		0.49	1.0	0.13	0.2	
	1/5/2018 14:01	8.01	8.00	315.72	858.6	5.4	978.0	11.52	11.75	0.23	0.77		0.49	0.7	0.09	0.1	
	1/12/2018 13:09	6.96	6.27	322.00	864.6	6.0	984.0	11.74	11.95	0.21	0.99		0.49	1.0	0.13	0.2	
	1/19/2018 13:55	7.03	7.03	329.02	871.8	7.2	991.2	11.56	11.84	0.28	0.81		0.49	1.0	0.14	0.2	
	1/26/2018 9:47	6.83	6.83	335.85	875.6	3.8	995.0	12.17	12.42	0.25	1.42		0.49	0.6	0.07	0.1	
	2/1/2018 12:25	6.11	5.74	341.59	879.6	4.0	999.0	11.58	11.86	0.28	0.83		0.49	0.7	0.09	0.1	
	2/7/2018 9:12	5.87	5.86	334.89	885.6	6.0	1005.0	11.96	12.28	0.32	1.21		0.49	1.0	0.14	0.2	
	2/15/2018 12:21	8.13	8.12	343.97	890.6	5.0	1010.0	11.50	11.74	0.24	0.75		0.49	0.6	0.08	0.1	
	2/22/2018 14:34	7.09	7.09	348.68	895.6	5.0	1015.0	11.67	11.89	0.22	0.92		0.49	0.7	0.09	0.1	
	2/28/2018 8:27	5.75	5.74	340.63	898.6	3.0	1018.0	11.32	11.55	0.23	0.57		0.49	0.5	0.07	0.1	
	3/8/2018 9:39	8.05	7.77	351.74	902.6	4.0	1022.0	11.67	11.99	0.32	0.92		0.49	0.5	0.07	0.1	
	3/15/2018 12:50	7.13	7.06	355.74	910.6	8.0	1030.0	11.62	11.86	0.24	0.87		0.49	1.1	0.15	0.2	
	3/22/2018 12:06	6.97	6.96	347.59	916.6	6.0	1036.0	12.13	12.31	0.18	1.38		0.49	0.9	0.12	0.2	
	3/29/2018 11:21	6.97	0.55	352.28	923.2	6.6	1042.6	11.55	11.88	0.33	0.80		0.49	12.1	1.62	2.4	
	4/6/2018 11:18	8.00	7.99	363.73	927.6	4.4	1047.0	11.95	12.26	0.31	1.20		0.49	0.6	0.07	0.1	
	4/12/2018 12:25	6.05	6.04	353.63	930.9	3.3	1050.3	11.77	12.00	0.23	1.02		0.49	0.5	0.07	0.1	
	4/18/2018 13:10	6.03	6.03	358.31	938.6	7.7	1058.0	10.95	11.19	0.24	0.20		0.49	1.3	0.17	0.3	
	4/27/2018 13:09	9.00	7.99	371.72	941.8	3.2	1061.2	11.56	11.78	0.22	0.81		0.49	0.4	0.05	0.1	0.35

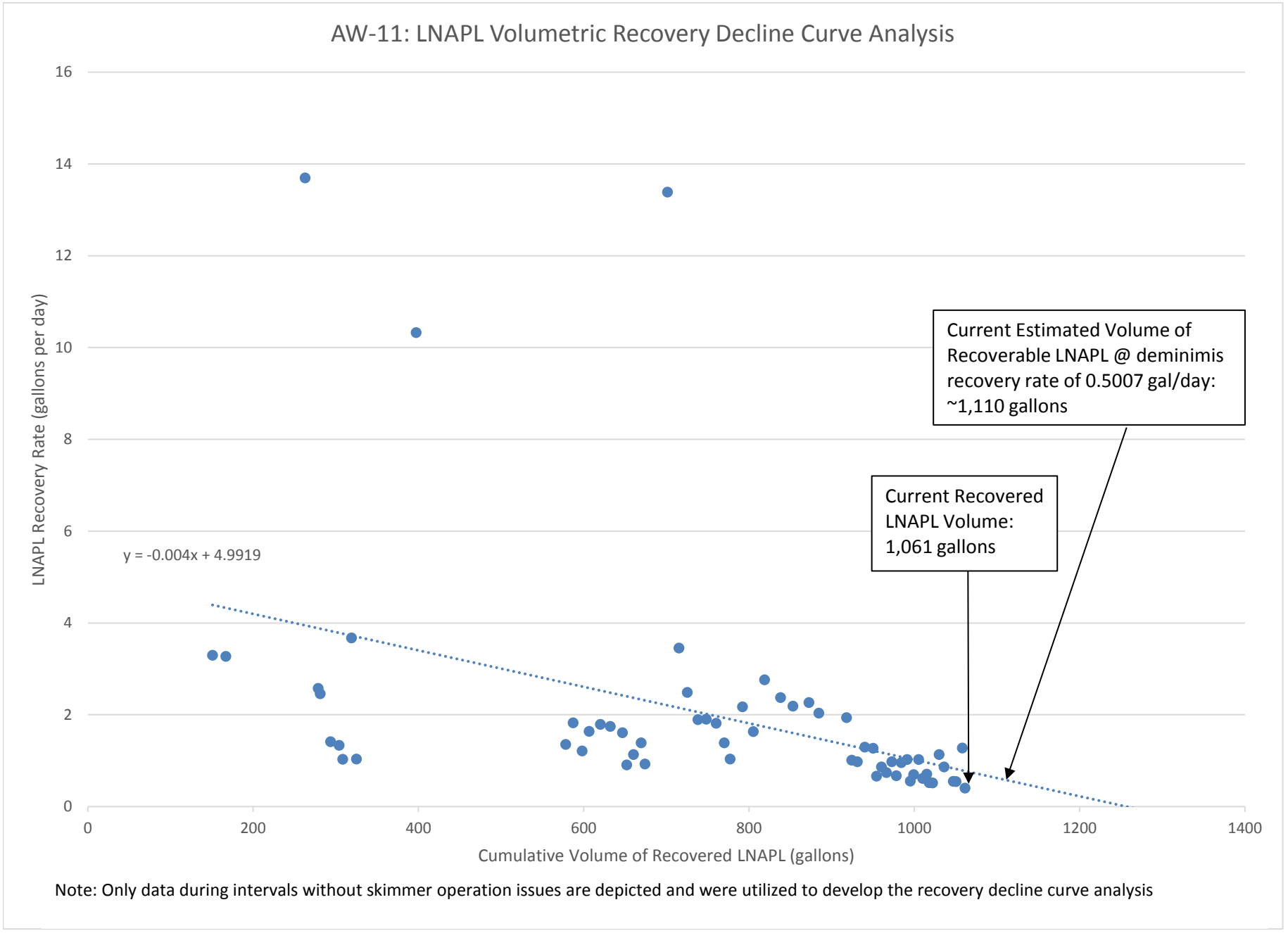
Assumed LNAPL specific gravity = 0.854

All calculations performed pursuant to the methodology detailed in ASTM E2856-13

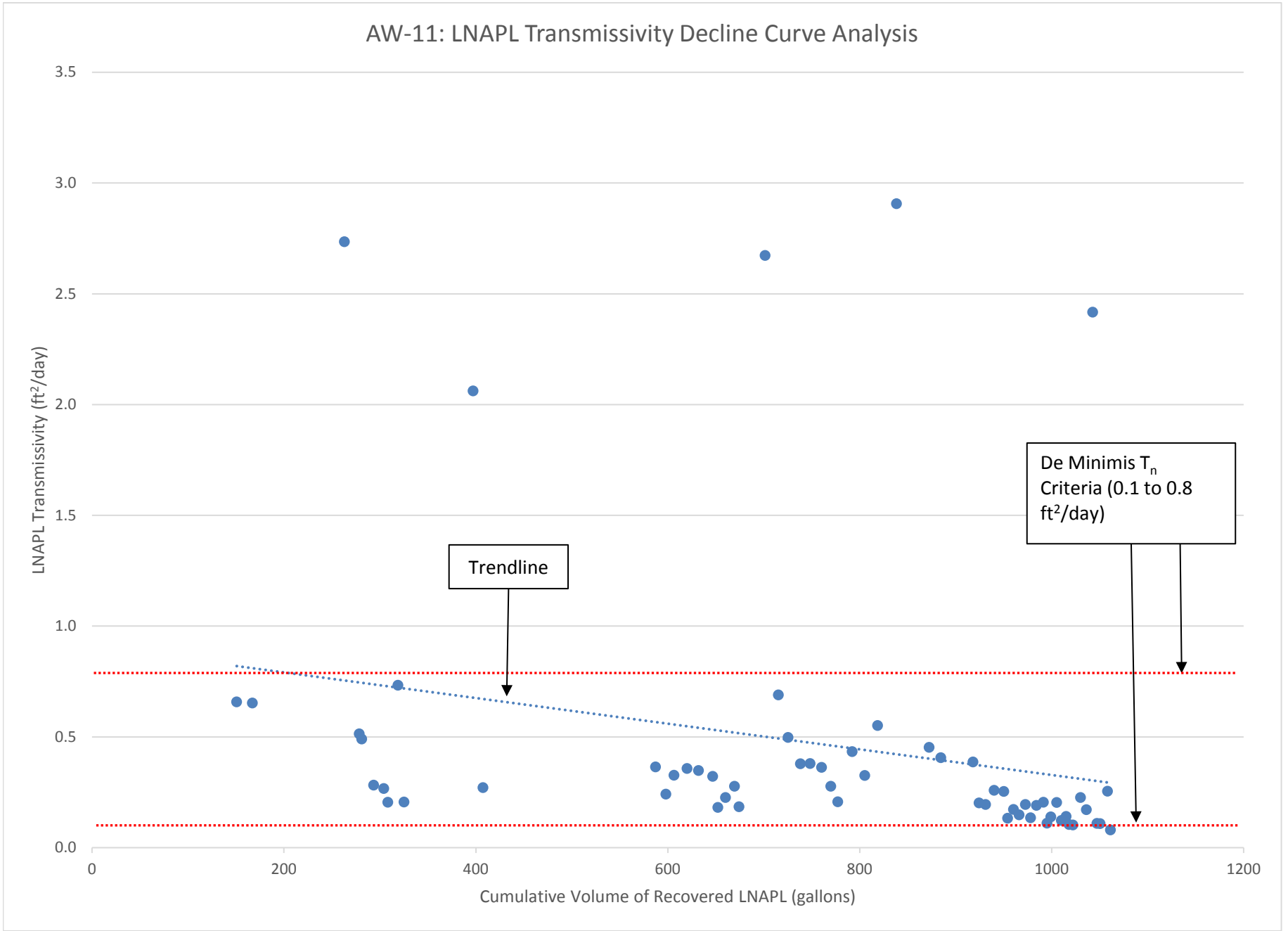
[a]The maximum theoretical drawdown is used for each interval calculation where the measured drawdown is negative or where it exceeds the theoretical maximum.

[b]Represents the geometric mean of the stabilized recovery rates/LNAPL transmissivity estimates (i.e., excludes initial elevated values that would not represent potential long-term recovery rates).


AW-11: Cumulative LNAPL Recovery and LNAPL Recovery Rate Over Time
Cumulative LNAPL Recovery
LNAPL Recovery Rate
Cumulative Volume of Recovered LNAPL (gallons)
LNAPL Recovery Rate (gallons per day)
Date
0
200
400
600
800
1000
1200
0
10
20
30
40
50
60
12/16/16
1/25/17
3/6/17
4/15/17
5/25/17
7/4/17
8/13/17
9/22/17
11/1/17
12/11/17
1/20/18
3/1/18
4/10/18
5/20/18
6/29/18



Note: Only data during intervals without skimmer operation issues are depicted and were utilized to develop the recovery decline curve analysis


AW-11: LNAPL Transmissivity Decline Curve Analysis
LNAPL Transmissivity (ft²/day)
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
0
200
400
600
800
1000
1200
Cumulative Volume of Recovered LNAPL (gallons)
Trendline
De Minimis Tn Criteria (0.1 to 0.8 ft²/day)

Appendix A

AW-12 LNAPL Skimming Test Results
IMTT Savannah North Terminal
Savannah, Georgia

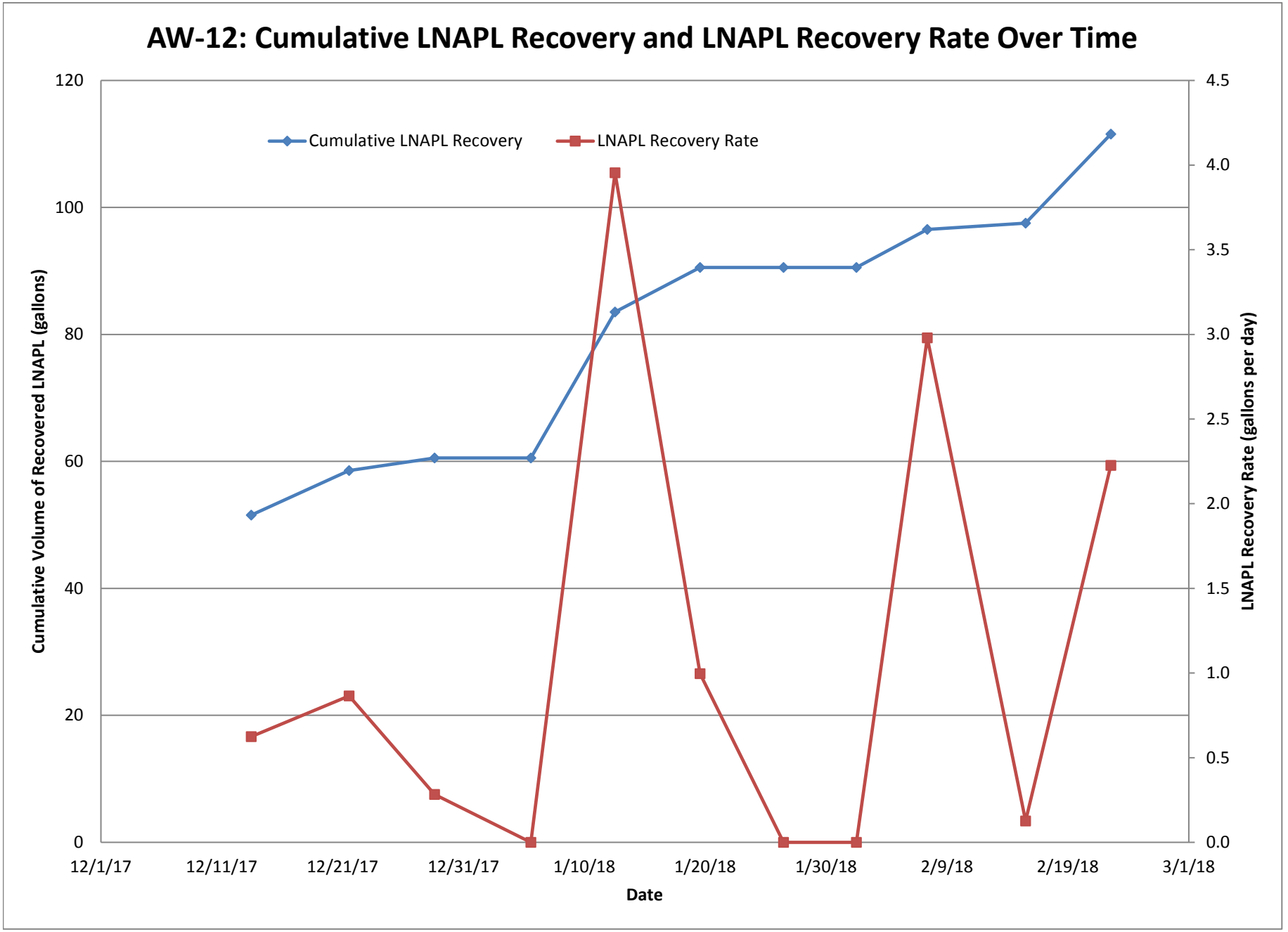
Well ID	Measurement Date & Time	Time Between Measurement Events (days)	Actual Skimmer Run-Time Between Measurement Events (days)	Cumulative Run Time (days)	Total Volume of LNAPL Recovered (gallons)	Volume of LNAPL Recovered During Measurement Interval (gallons)	RUNNING Total Volume of LNAPL Recovered (gallons)	Depth to LNAPL (feet btoc)	Depth to Water (feet btoc)	In-Well LNAPL Thickness (feet)	LNAPL Drawdown (feet)	Maximum Theoretical Unconfined LNAPL Drawdown (feet)	LNAPL Drawdown Used in Transmissivity Estimate[a] (feet)	Average LNAPL Recovery Rate for Interval (gal/day)	Average LNAPL Recovery Rate for Interval (ft^3/day)	Estimated LNAPL Transmissivity for Interval (ft^2/day)	Overall Average LNAPL Transmissivity[b] (ft^2/day)
AW-12 Short term test	Equilibrium							8.60	14.81	6.21	--	1.07		--	--	--	
	9/22/2016 11:45	--		--	--	--		5.47	16.20	10.73	--		--	--	--	--	
	9/28/2016 8:55	5.88	5.88	5.88	24.6	24.6	24.6	11.31	11.41	0.10	2.71		1.07	4.2	0.56	0.4	
	10/5/2016 13:03	7.17	7.17	13.05	30.5	5.9	30.5	11.18	12.26	1.08	2.58		1.07	0.8	0.11	0.08	0.08
AW-12 Long term test	12/6/2017 11:17	--	--	0.00	--	--	30.5	11.24	17.11	5.87	--			--	--	--	
	12/6/2017 14:20	0.13	0.13	0.13	12.0	12.0	42.5	10.48	12.47	1.99	1.88		1.07	94.4	12.62	8.6	
	12/6/2017 14:50	0.02	0.02	0.15	15.0	3.0	45.5	11.70	12.20	0.50	3.10		1.07	144.0	19.25	13.2	
	12/6/2017 15:20	0.02	0.02	0.17	17.0	2.0	47.5	11.81	12.19	0.38	3.21		1.07	96.0	12.83	8.8	
	12/6/2017 15:50	0.02	0.02	0.19	17.0	0.0	47.5	11.53	11.81	0.28	2.93		1.07	0.0	0.00	0.0	
	12/13/2017 10:24	6.77	6.40	6.59	21.0	4.0	51.5	12.00	12.15	0.15	3.40		1.07	0.6	0.08	0.1	
	12/21/2017 12:45	8.10	8.10	14.69	28.0	7.0	58.5	12.00	12.15	0.15	3.40		1.07	0.9	0.12	0.1	
	12/28/2017 14:34	7.08	7.08	21.77	30.0	2.0	60.5	11.98	12.21	0.23	3.38		1.07	0.3	0.04	0.0	
	1/5/2018 13:43	7.96	7.53	29.30	30.0	0.0	60.5	11.80	11.90	0.10	3.20		1.07	0.0	0.00	0.0	
	1/12/2018 12:51	6.96	5.82	35.11	53.0	23.0	83.5	11.41	11.93	0.52	2.81		1.07	4.0	0.53	0.4	
	1/19/2018 13:25	7.02	7.02	42.14	60.0	7.0	90.5	11.52	11.69	0.17	2.92		1.07	1.0	0.13	0.1	
	1/26/2018 11:12	6.91	3.18	45.31	60.0	0.0	90.5	12.33	13.05	0.72	3.73		1.07	0.0	0.00	0.0	
	2/1/2018 11:56	6.03	0.00	45.31	60.0	0.0	90.5	11.61	11.83	0.22	3.01		1.07	0.0	0.00	0.0	
	2/7/2018 8:35	5.86	2.01	47.33	66.0	6.0	96.5	12.17	12.20	0.03	3.57		1.07	3.0	0.40	0.3	
	2/15/2018 11:56	8.14	7.95	55.28	67.0	1.0	97.5	11.78	11.94	0.16	3.18		1.07	0.1	0.02	0.0	
	2/22/2018 13:07	7.05	6.29	61.56	81.0	14.0	111.5	12.28	12.30	0.02	3.68		1.07	2.2	0.30	0.2	0.08
	2/28/2018 9:55	5.87	0.00	61.56	81.0	0.0	111.5	11.51	11.70	0.19	2.91		--	--	--	--	
	END OF TEST INTERVAL																

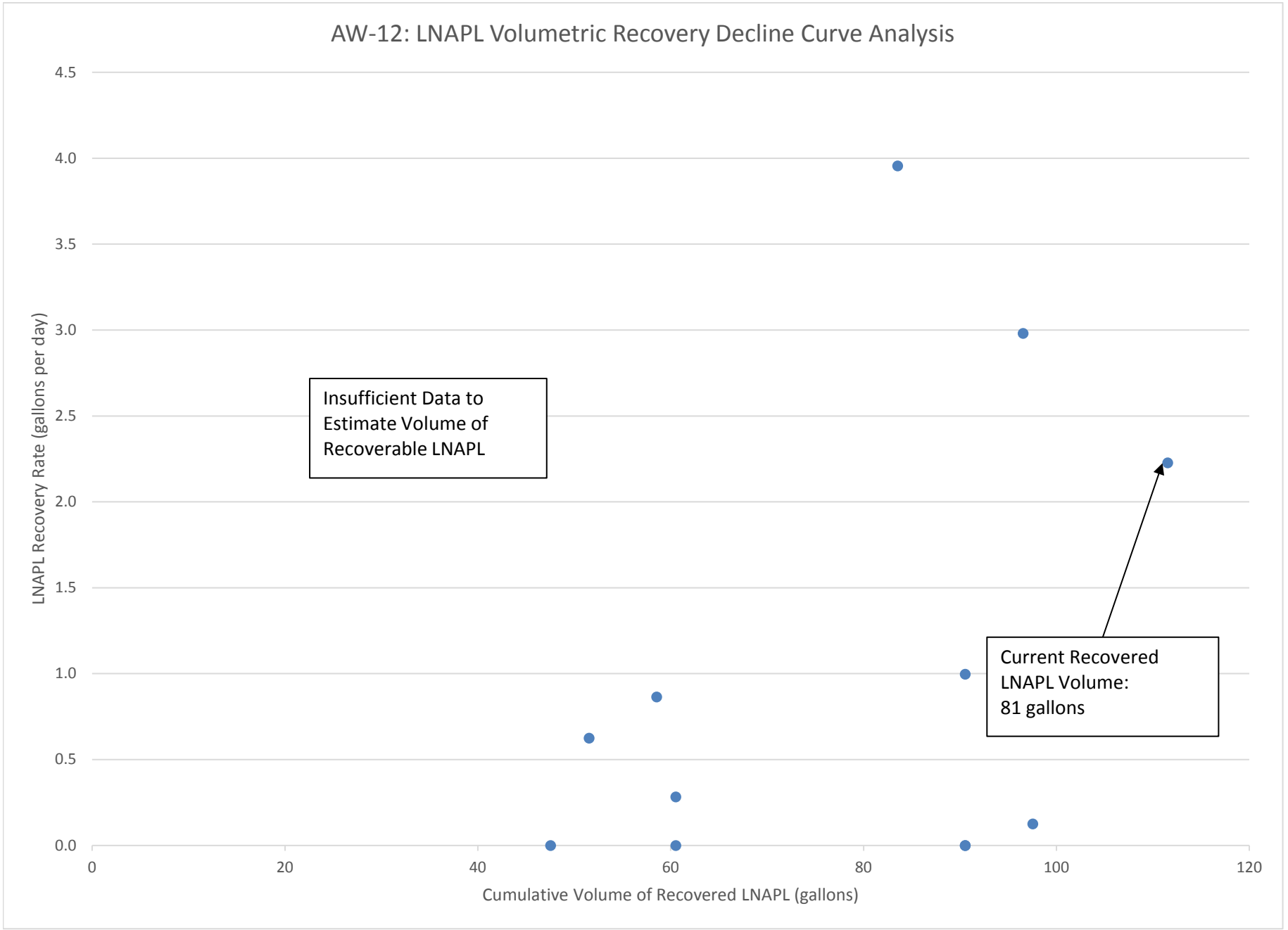
Assumed LNAPL specific gravity = 0.8275

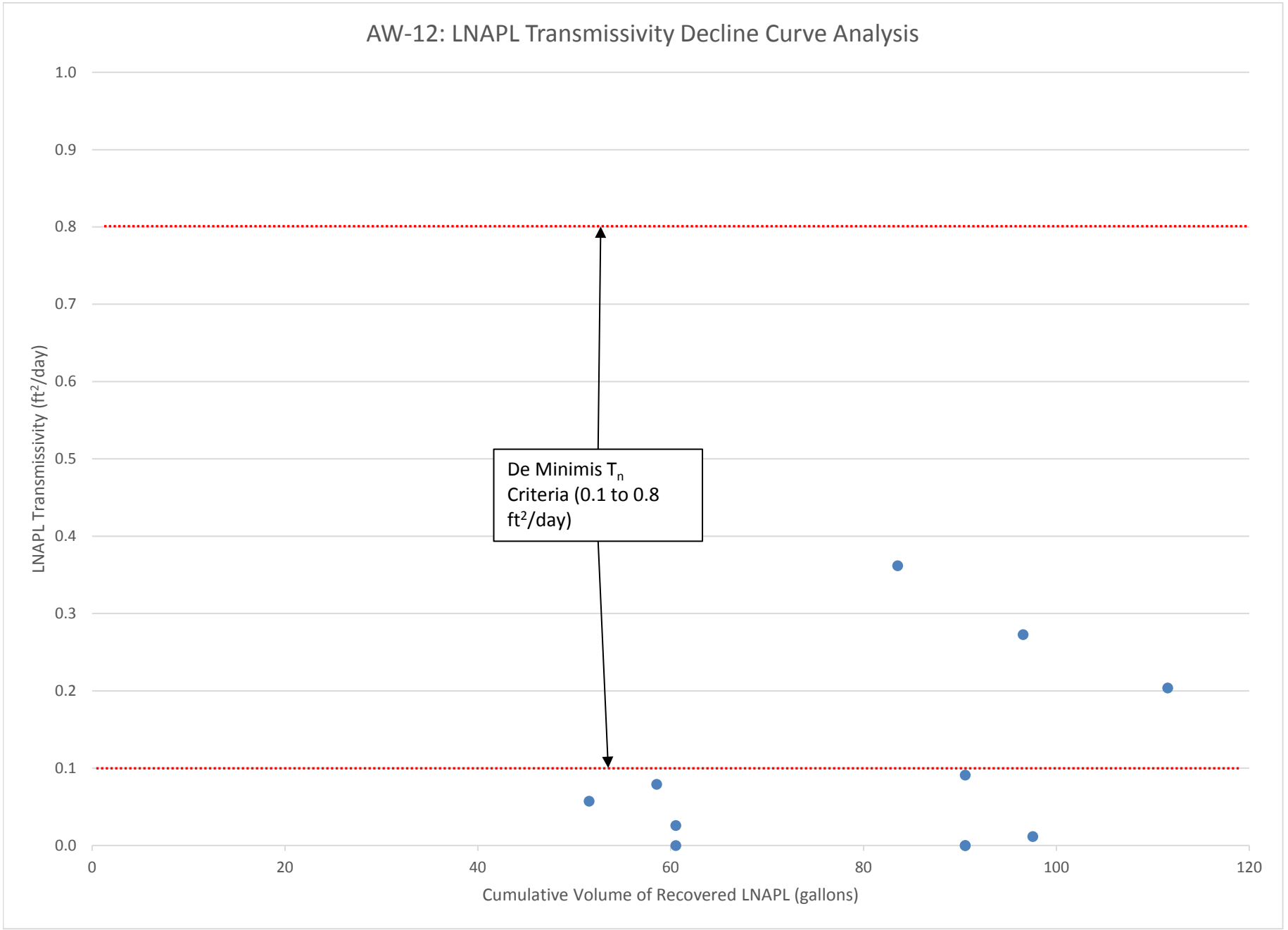
All calculations performed pursuant to the methodology detailed in ASTM E2856-13

[a]The maximum theoretical drawdown is used for each interval calculation where the measured drawdown is negative or where it exceeds the theoretical maximum.

[b]Represents the geometric mean of the stabilized recovery rates/LNAPL transmissivity estimates (i.e., excludes initial elevated values that would not represent potential long-term recovery rates).


AW-12: Cumulative LNAPL Recovery and LNAPL Recovery Rate Over Time
Cumulative LNAPL Recovery
LNAPL Recovery Rate
Cumulative Volume of Recovered LNAPL (gallons)
LNAPL Recovery Rate (gallons per day)
Date
120
100
80
60
40
20
0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
12/1/17
12/11/17
12/21/17
12/31/17
1/10/18
1/20/18
1/30/18
2/9/18
2/19/18
3/1/18


AW-12: LNAPL Volumetric Recovery Decline Curve Analysis
LNAPL Recovery Rate (gallons per day)
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
0
20
40
60
80
100
120
Cumulative Volume of Recovered LNAPL (gallons)
Insufficient Data to Estimate Volume of Recoverable LNAPL
Current Recovered LNAPL Volume: 81 gallons


AW-12: LNAPL Transmissivity Decline Curve Analysis
LNAPL Transmissivity (ft²/day)
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0
20
40
60
80
100
120
Cumulative Volume of Recovered LNAPL (gallons)
De Minimis Tn Criteria (0.1 to 0.8 ft²/day)

Appendix A

AW-22 LNAPL Skimming Test Results
IMTT Savannah North Terminal
Savannah, Georgia

Well ID	Measurement Date & Time	Time Between Measurement Events (days)	Actual Skimmer Run-Time Between Measurement Events (days)	Cumulative Run Time (days)	Total Volume of LNAPL Recovered (gallons)	Volume of LNAPL Recovered During Measurement Interval (gallons)	RUNNING Total Volume of LNAPL Recovered (gallons)	Depth to LNAPL (feet btoc)	Depth to Water (feet btoc)	In-Well LNAPL Thickness (feet)	LNAPL Drawdown (feet)	Maximum Theoretical Unconfined LNAPL Drawdown (feet)	LNAPL Drawdown Used in Transmissivity Estimate[a] (feet)	Average LNAPL Recovery Rate for Interval (gal/day)	Average LNAPL Recovery Rate for Interval (ft^3/day)	Estimated LNAPL Transmissivity for Interval (ft^2/day)	Overall Average LNAPL Transmissivity[b] (ft^2/day)
	Equilibrium	--		--	--	--		11.91	15.46	3.55	--	0.52	--	--	--	--	
AW-22 Short term test	9/22/2016 11:45	--		--	--	--		11.20	15.75	4.55	--		--	--	--	--	
	9/28/2016 8:40	5.87	5.87	5.87	51.00	51.00	51.00	11.82	13.45	1.63	-0.09		0.52	8.7	1.16	1.6	
	10/5/2016 13:40	7.21	5.98	11.85	103.53	52.53	103.53	11.89	13.48	1.59	-0.02		0.52	8.8	1.17	1.7	
	END OF TEST INTERVAL - SHUTDOWN DUE TO HURRICANE																
	10/13/2016 12:50	7.97		0.00	0.00	0.00	103.53	10.15	13.85	3.70			--	--	--	--	
	10/20/2016 10:50	6.92	6.92	6.92	51.00	51.00	154.53	11.07	13.47	2.40	-0.84		0.52	7.4	0.99	1.4	
	END OF TEST INTERVAL - DUE TO SKIMMER MALFUNCTION																
	10/28/2016 10:50	--		--		--		10.78	13.17	2.39			--	--	--	--	
	11/4/2016 10:30	6.99	6.94	6.94	36.23	36.23	190.76	11.72	13.40	1.68	-0.19		0.52	5.2	0.70	1.0	
	11/16/2016 7:30	11.88	11.82	18.77	48.02	11.79	202.55	11.90	11.93	0.03	-0.01		0.52	1.0	0.13	0.2	
	11/22/2016 11:41	6.17	6.19	24.95	48.81	0.79	203.34	12.06	14.05	1.99	0.15		0.10	0.1	0.02	0.1	
	END OF TEST INTERVAL - DUE TO SKIMMER MALFUNCTION																
	11/29/2016 12:20	--	--	--	--	--		11.52	14.31	2.79			--	--	--	--	
	12/5/2016 12:15	6.00	5.99	0.00	37.32	37.32	240.66	12.71	13.65	0.94	0.80		0.52	6.2	0.83	1.2	
	12/7/2016 12:30	2.01	1.77	0.00	37.32	0.00	240.66	11.95	13.46	1.51	0.04		0.04	0.0	0.00	0.0	
	12/14/2016 9:24	6.87	6.38	8.15	37.32	0.00	240.66	12.26	12.35	0.09	0.35		0.35	0.0	0.00	0.0	
	12/21/2016 9:00	6.98	6.93	15.07	37.32	0.00	240.66	12.35	12.37	0.02	0.44		0.44	0.0	0.00	0.0	
	12/27/2016 12:00	6.13	6.08	21.15	37.32	0.00	240.66	11.90	12.12	0.22	-0.01		0.52	0.0	0.00	0.0	
	1/4/2017 11:06	7.96	7.91	29.06	37.32	0.00	240.66	12.69	12.80	0.11	0.78		0.52	0.0	0.00	0.0	
	1/9/2017 11:17	5.01	4.90	33.95	50.12	12.80	253.46	12.54	12.61	0.07	0.63		0.52	2.6	0.35	0.5	
	1/19/2017 8:20	9.88	9.81	43.76	52.51	2.39	255.85	12.67	12.73	0.06	0.76		0.52	0.2	0.03	0.0	0.5
	END OF TEST INTERVAL																
AW-22 Long term test	9/21/2017 16:00	--	--	0.00	--	--	--	10.44	14.20	3.76	--			--	--	--	
	9/22/2017 8:44	0.70	0.70	0.70	2.30	2.3	258.2	11.59	11.65	0.06	-0.32		0.52	3.3	0.44	0.62	
	9/29/2017 12:43	7.17	7.17	7.86	5.80	3.5	261.7	11.65	11.68	0.03	-0.26		0.52	0.5	0.07	0.09	
	10/6/2017 12:42	7.00	7.00	14.86	7.30	1.5	263.2	11.41	11.50	0.09	-0.50		0.52	0.2	0.03	0.04	
	10/12/2017 10:55	5.93	5.93	20.79	9.30	2.0	265.2	12.22	12.40	0.18	0.31		0.31	0.3	0.05	0.11	
	10/19/2017 11:05	7.01	7.01	27.80	9.80	0.5	265.7	11.60	11.72	0.12	-0.31		0.52	0.1	0.01	0.01	
	11/2/2017 8:32	13.89	13.89	41.69	14.30	4.5	270.2	12.76	12.86	0.10	0.85		0.52	0.3	0.04	0.06	
	11/8/2017 11:57	6.14	6.14	47.83	14.30	0.0	270.2	12.60	12.82	0.22	0.69		0.52	0.0	0.00	0.00	
	11/15/2017 11:09	6.97	6.97	54.80	14.30	0.0	270.2	12.30	12.81	0.51	0.39		0.39	0.0	0.00	0.00	
	11/22/2017 10:06	6.96	6.96	61.75	17.30	3.0	273.2	12.87	13.07	0.20	0.96		0.52	0.4	0.06	0.08	
	11/30/2017 9:42	7.98	7.98	69.74	19.30	2.0	275.2	12.65	12.84	0.19	0.74		0.52	0.3	0.03	0.05	0.07
	TEST COMPLETED																

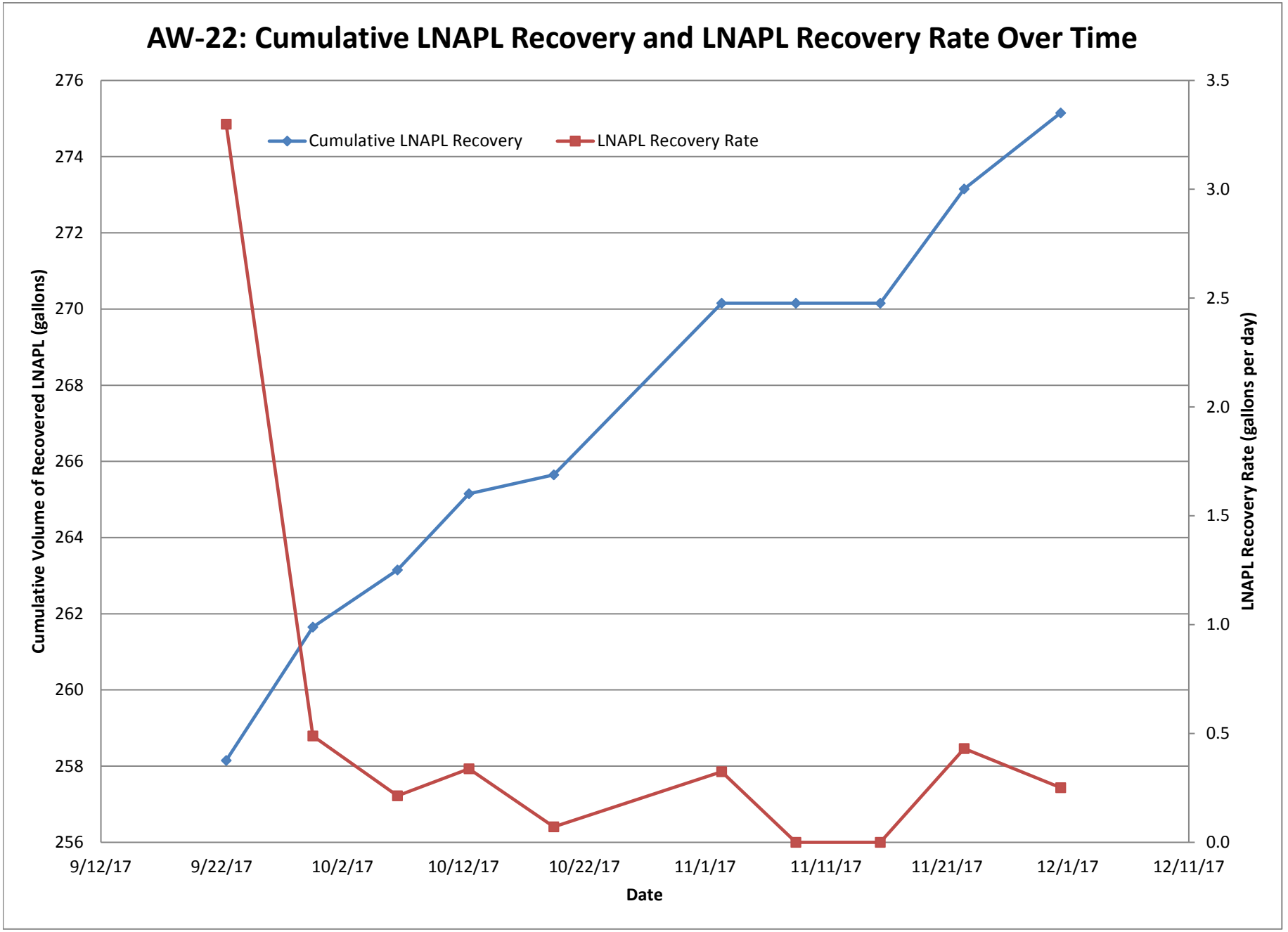
Assumed LNAPL specific gravity = 0.854

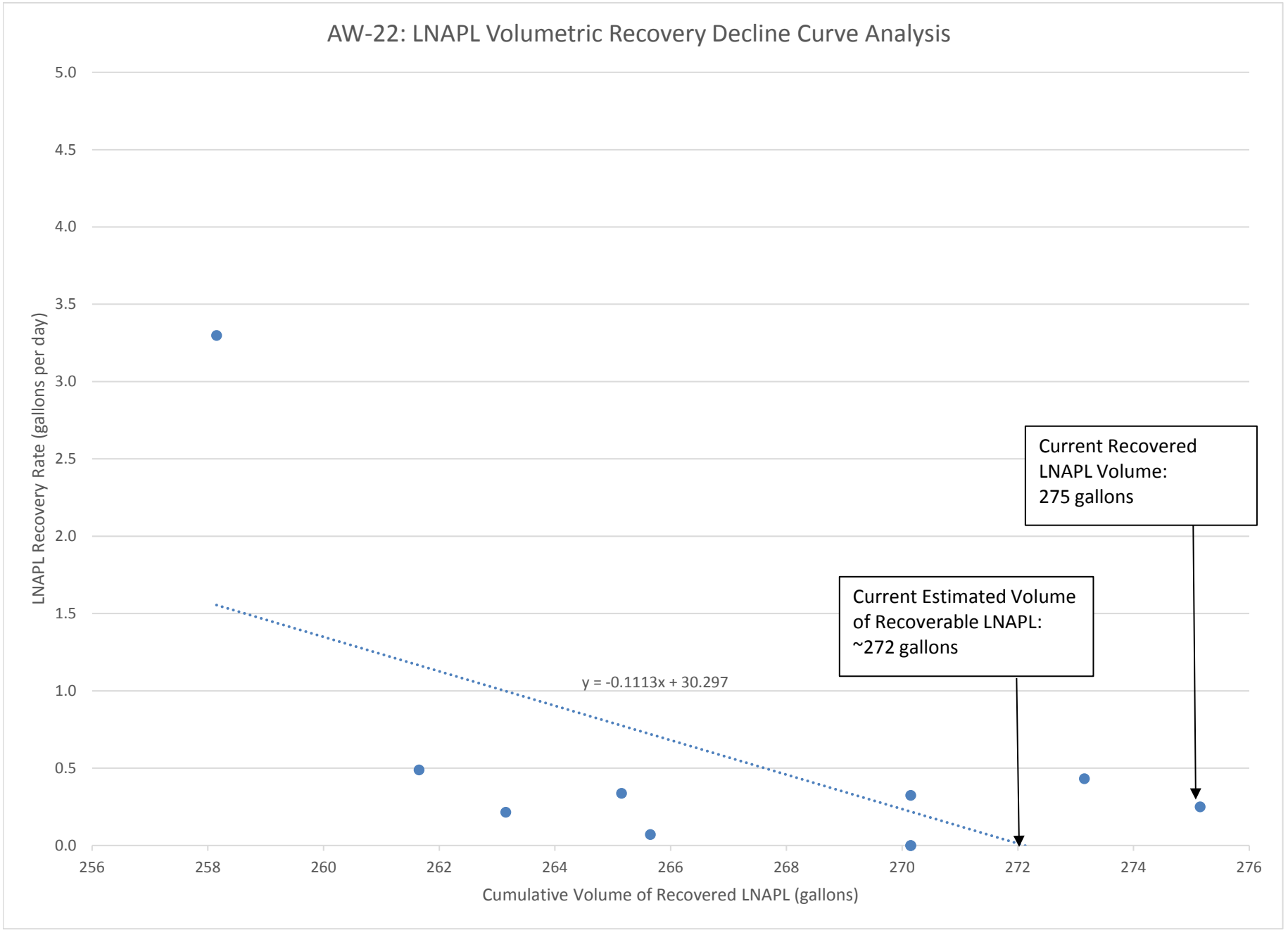
All calculations performed pursuant to the methodology detailed in ASTM E2856-13

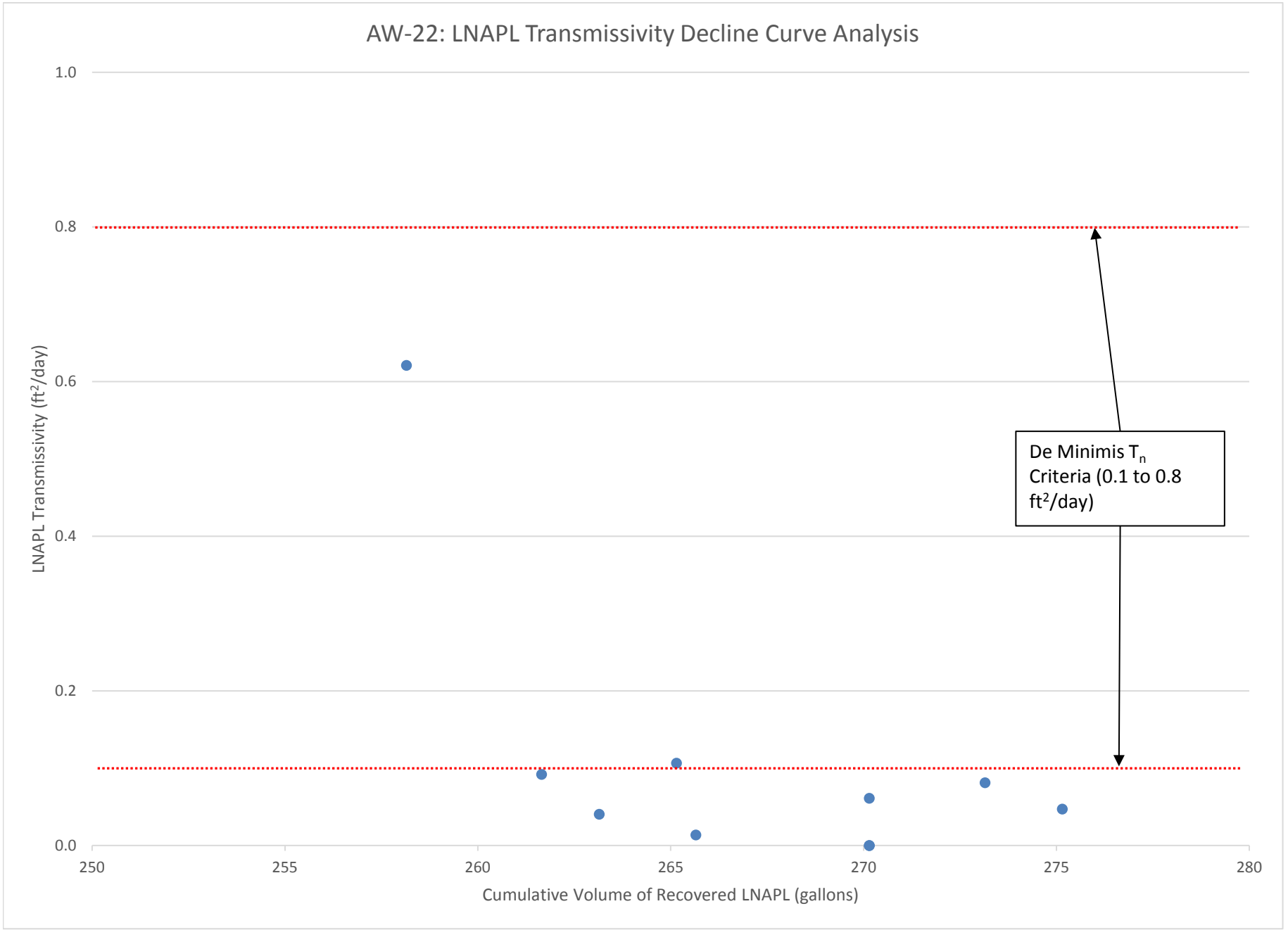
[a]The maximum theoretical drawdown is used for each interval calculation where the measured drawdown is negative or where it exceeds the theoretical maximum.

[b]Represents the geometric mean of the stabilized recovery rates/LNAPL transmissivity estimates (i.e., excludes initial elevated values that would not represent potential long-term recovery rates).

Equilibrium data is an average of quarterly groundwater data collected from March 2016 through Februrary 2018 and excludes data collected during or following skimming operations.


AW-22: Cumulative LNAPL Recovery and LNAPL Recovery Rate Over Time
Cumulative LNAPL Recovery
LNAPL Recovery Rate
Cumulative Volume of Recovered LNAPL (gallons)
LNAPL Recovery Rate (gallons per day)
Date
276
274
272
270
268
266
264
262
260
258
256
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
9/12/17
9/22/17
10/2/17
10/12/17
10/22/17
11/1/17
11/11/17
11/21/17
12/1/17
12/11/17


AW-22: LNAPL Volumetric Recovery Decline Curve Analysis
LNAPL Recovery Rate (gallons per day)
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
256
258
260
262
264
266
268
270
272
274
276
Cumulative Volume of Recovered LNAPL (gallons)
y = -0.1113x + 30.297
Current Recovered LNAPL Volume: 275 gallons
Current Estimated Volume of Recoverable LNAPL: ~272 gallons


AW-22: LNAPL Transmissivity Decline Curve Analysis
1.0
0.8
0.6
0.4
0.2
0.0
LNAPL Transmissivity (ft²/day)
250
255
260
265
270
275
280
Cumulative Volume of Recovered LNAPL (gallons)
De Minimis Tn Criteria (0.1 to 0.8 ft²/day)

Appendix A

AW-49 LNAPL Skimming Test Results
IMTT Savannah North Terminal
Savannah, Georgia

Well ID	Measurement Date & Time	Time Between Measurement Events (days)	Actual Skimmer Run-Time Between Measurement Events (days)	Cumulative Run Time (days)	Total Volume of LNAPL Recovered (gallons)	Volume of LNAPL Recovered During Measurement Interval (gallons)	RUNNING Total Volume of LNAPL Recovered (gallons)	Depth to LNAPL (feet btoc)	Depth to Water (feet btoc)	In-Well LNAPL Thickness (feet)	LNAPL Drawdown (feet)	Maximum Theoretical Unconfined LNAPL Drawdown (feet)	LNAPL Drawdown Used in Transmissivity Estimate[a] (feet)	Average LNAPL Recovery Rate for Interval (gal/day)	Average LNAPL Recovery Rate for Interval (ft^3/day)	Estimated LNAPL Transmissivity for Interval (ft^2/day)	Overall Average LNAPL Transmissivity[b] (ft^2/day)
AW-49 Short term test	Equilibrium	--	--		--	--		12.92	16.35	3.43	--	0.50		--	--	--	
	6/8/2016 17:00	--		--	--	--		12.71	17.76	5.05	--		--				
	6/9/2016 9:00	0.67	0.67	0.67	7.8	7.8	7.8	11.36	16.24	4.88	-1.56		0.50	11.7	1.56	2.3	
	6/10/2016 7:17	0.93	0.92	1.58	8.6	0.8	8.6	11.16	16.20	5.04	-1.76		0.50	0.8	0.11	0.2	
	6/13/2016 10:35	2.92	2.88	4.67	20.1	11.5	20.1	11.50	16.89	5.39	-1.42		0.50	4.0	0.54	0.8	
	6/22/2016 17:10	9.27	9.15	13.82	45.3	25.2	45.3	11.72	16.91	5.19	-1.20		0.50	2.8	0.37	0.5	
	6/27/2016 15:50	4.94	0.00	13.82	45.3	0.0	45.3	11.70	17.02	5.32	-1.22		0.50	0.0	0	0	0.6
	9/14/2016 16:35	--	--		--	--		12.15	15.80	3.65	--			--	--	--	
	9/14/2016 17:20	0.03	0.03	0.03	2.3	2.3	47.6	12.25	14.55	2.30	-0.67		0.50	73.6	9.84	14.4	
	9/15/2016 8:15	0.62	0.62	0.65	21.1	18.8	66.4	12.25	12.41	0.16	-0.67		0.50	30.2	4.04	5.9	
	9/15/2016 8:45	0.02	0.02	0.67	21.6	0.5	66.9	12.21	12.41	0.20	-0.71		0.50	24.0	3.21	4.7	
	9/15/2016 11:45	0.13	0.13	0.80	23.4	1.8	68.7	12.33	12.50	0.17	-0.59		0.50	14.4	1.92	2.8	
	9/21/2016 12:07	6.02	5.93	6.73	134.4	111.0	179.7	12.57	12.86	0.29	-0.35		0.50	18.7	2.50	3.7	
	9/22/2016 9:50	0.90	0.90	7.63	146.9	12.5	192.2	13.22	13.47	0.25	0.30		0.30	13.9	1.86	4.5	
	9/28/2016 8:35	5.95	5.94	13.57	205.2	58.3	250.5	12.37	12.60	0.23	-0.55		0.50	9.8	1.31	1.9	
	10/5/2016 14:32	7.25	6.26	19.83	260.7	55.5	306.0	12.16	12.29	0.13	-0.76		0.50	8.9	1.19	1.7	4.0
	END OF TEST INTERVAL - SHUTDOWN DUE TO HURRICANE																
	10/13/2016 13:00	7.94	0.00	19.83	0.0	--	306.0	10.60	15.33	4.73	-2.32			--	--	--	
	10/20/2016 12:20	6.97	3.63	23.45	267.0	267.0	573.0	10.88	14.04	3.16	-2.04		0.50	23.1	3.09	4.5	
	END OF TEST INTERVAL - SHUTDOWN DUE TO FULL TANK - PUMPED 11/21/2016																
	10/28/2016 11:23	--	--	--	--	--	573.0	11.55	13.80	2.25	--			--	--	--	
	11/4/2016 12:30	7.05	6.13	6.13	134.0	134.0	707.0	12.35	12.67	0.32	-0.57		0.50	21.9	2.92	4.3	
	11/15/2016 17:02	11.19	11.19	17.32	356.0	222.0	929.0	13.00	13.19	0.19	0.08		0.50	19.8	2.65	3.9	
	END OF TEST INTERVAL - SHUTDOWN DUE TO FULL TANK																
	11/22/2016 12:34	--	6.81	--	65.0	65.0	994.0	13.00	14.30	1.30	0.08		0.50	9.5	1.28	1.9	
	11/29/2016 15:35	--	7.13	--	115.0	50.0	1044.0	13.06	14.44	1.38	0.14		0.50	7.0	0.94	1.4	
	12/7/2016 13:20	--	--	--	--	--	1044.0	12.87	13.40	0.53	--			--	--	--	
	12/14/2016 9:50	--	--	--	--	--	1044.0	12.35	13.00	0.65	--			--	--	--	
	SHUTDOWN DUE TO FULL TANK																
	12/21/2016 9:20	--	--	--	--	--	1044.0	12.93	14.30	1.37	--			--	--	--	
	12/27/2016 12:40	6.14	6.13	6.14	29.7	29.7	1073.7	13.03	13.40	0.37	0.11		0.50	4.8	0.65	0.9	
	1/4/2017 13:03	8.02	8.00	14.14	68.5	38.8	1112.5	13.05	13.26	0.21	0.13		0.50	4.8	0.65	0.9	
	1/9/2017 11:36	4.94	4.93	19.07	84.4	15.9	1128.4	13.41	13.68	0.27	0.49		0.50	3.2	0.43	0.6	
	1/19/2017 14:12	10.11	5.51	24.58	100.1	15.7	1144.1	12.45	14.48	2.03	-0.47		0.50	2.8	0.38	0.6	
	1/20/2017 10:49	0.86	0.12	24.71	100.1	0.0	1144.1	13.36	14.74	1.38	0.44		0.50	0.0	0.00	0.0	
	1/23/2017 15:17	3.19	1.58	26.28	105.5	5.4	1149.6	12.82	13.83	1.01	-0.10		0.50	3.4	0.46	0.7	
	1/26/2017 13:01	2.91	2.90	29.18	125.5	20.0	1169.6	12.92	13.22	0.30	0.00		0.50	6.9	0.92	1.3	
	1/31/2017 12:55	5.00	4.99	34.17	147.2	21.7	1191.3	12.65	12.90	0.25	-0.27		0.50	4.3	0.58	0.9	
	2/7/2017 12:56	7.00	6.99	41.17	168.8	21.5	1212.8	13.17	13.30	0.13	0.25		0.50	3.1	0.41	0.6	
	2/13/2017 14:28	6.06	6.06	47.23	195.8	27.0	1239.8	13.30	13.61	0.31	0.38		0.50	4.5	0.60	0.9	
	2/14/2017 14:24	1.00	1.00	48.22	197.5	1.7	1241.5	12.99	13.21	0.22	0.07		0.50	1.7	0.23	0.3	
	2/23/2017 11:08	8.86	8.61	56.83	225.8	28.4	1269.8	12.99	13.20	0.21	0.07		0.50	3.3	0.44	0.6	
	3/3/2017 10:10	7.96	5.83	62.66	237.4	11.6	1281.4	13.44	15.32	1.88	0.52		0.50	2.0	0.27	0.4	
	3/7/2017 13:27	4.14	4.13	66.80	259.1	21.7	1303.1	13.66	13.92	0.26	0.74		0.50	5.2	0.70	1.0	
	3/10/2017 10:34	2.88	2.88	69.68	268.6	9.4	1312.6	13.29	13.60	0.31	0.37		0.50	3.3	0.44	0.6	
	3/16/2017 11:30	6.04	3.25	72.92	284.6	16.0	1328.6	13.26	14.40	1.14	0.34		0.50	4.9	0.66	1.0	
	3/23/2017 10:53	6.97	0.76	73.68	286.8	2.2	1330.8	13.30	14.06	0.76	0.38		0.50	2.9	0.39	0.6	
	3/31/2017 8:41	7.91	7.90	81.58	299.8	13.0	1343.8	13.62	13.93	0.31	0.70		0.50	1.6	0.22	0.3	

Appendix A

AW-49 LNAPL Skimming Test Results
IMTT Savannah North Terminal
Savannah, Georgia

Well ID	Measurement Date & Time	Time Between Measurement Events (days)	Actual Skimmer Run-Time Between Measurement Events (days)	Cumulative Run Time (days)	Total Volume of LNAPL Recovered (gallons)	Volume of LNAPL Recovered During Measurement Interval (gallons)	RUNNING Total Volume of LNAPL Recovered (gallons)	Depth to LNAPL (feet btoc)	Depth to Water (feet btoc)	In-Well LNAPL Thickness (feet)	LNAPL Drawdown (feet)	Maximum Theoretical Unconfined LNAPL Drawdown (feet)	LNAPL Drawdown Used in Transmissivity Estimate[a] (feet)	Average LNAPL Recovery Rate for Interval (gal/day)	Average LNAPL Recovery Rate for Interval (ft^3/day)	Estimated LNAPL Transmissivity for Interval (ft^2/day)	Overall Average LNAPL Transmissivity[b] (ft^2/day)
AW-49 Long term test	4/3/2017 10:10	3.06	2.81	84.39	305.8	6.0	1349.8	13.74	14.02	0.28	0.82		0.50	2.1	0.29	0.4	
	4/13/2017 11:53	10.07	10.07	94.46	328.3	22.5	1372.3	13.12	13.38	0.26	0.20		0.50	2.2	0.30	0.4	
	4/18/2017 11:33	4.99	4.98	99.43	340.0	11.7	1384.0	13.70	14.10	0.40	0.78		0.50	2.4	0.31	0.5	
	4/27/2017 11:03	8.98	8.97	108.41	356.3	16.3	1400.3	13.00	13.35	0.35	0.08		0.50	1.8	0.24	0.4	
	5/2/2017 12:47	5.07	4.82	113.23	365.8	9.5	1409.8	13.69	13.96	0.27	0.77		0.50	2.0	0.26	0.4	
	5/10/2017 10:47	7.92	7.91	121.14	385.5	19.7	1429.5	13.40	13.68	0.28	0.48		0.50	2.5	0.33	0.5	
	5/17/2017 7:46	6.87	6.87	128.00	405.8	20.3	1449.8	13.85	14.08	0.23	0.93		0.50	3.0	0.40	0.6	
	5/26/2017 10:51	9.13	9.12	137.13	427.8	22.0	1471.8	13.35	13.58	0.23	0.43		0.50	2.4	0.32	0.5	
	6/1/2017 8:02	5.88	5.62	142.75	439.8	12.0	1483.8	13.55	13.79	0.24	0.63		0.50	2.1	0.29	0.4	
	6/8/2017 11:40	7.15	7.14	149.89	445.1	5.3	1489.1	12.87	13.00	0.13	-0.05		0.50	0.7	0.10	0.1	
	6/15/2017 11:16	6.98	6.98	156.87	454.4	9.3	1498.4	13.51	13.79	0.28	0.59		0.50	1.3	0.18	0.3	
	6/20/2017 9:56	4.94	4.94	161.81	463.8	9.4	1507.8	13.52	13.74	0.22	0.60		0.50	1.9	0.25	0.4	
	6/22/2017 10:46	2.03	2.03	163.84	467.8	4.0	1511.8	13.13	13.41	0.28	0.21		0.50	2.0	0.26	0.4	
	6/26/2017 11:42	4.04	4.04	167.88	472.8	5.0	1516.8	13.07	13.33	0.26	0.15		0.50	1.2	0.17	0.2	
	6/30/2017 11:45	4.00	4.00	171.87	474.5	1.8	1518.5	13.36	13.64	0.28	0.44		0.50	0.4	0.06	0.1	
	7/7/2017 8:17	6.86	6.60	178.47	481.8	7.3	1525.8	12.92	13.17	0.25	0.00		0.50	1.1	0.15	0.2	
	7/12/2017 14:23	5.25	5.25	183.72	493.8	12.0	1537.8	12.86	13.12	0.26	-0.06		0.50	2.3	0.31	0.4	
	7/19/2017 11:22	6.87	6.87	190.59	504.8	11.0	1548.8	13.29	13.52	0.23	0.37		0.50	1.6	0.21	0.3	
	7/26/2017 11:02	6.99	6.98	197.57	518.8	14.0	1562.8	12.72	12.90	0.18	-0.20		0.50	2.0	0.27	0.4	
	8/2/2017 11:54	7.04	6.78	204.35	559.8	41.0	1603.8	12.79	13.02	0.23	-0.13		0.50	6.0	0.81	1.2	
	8/9/2017 9:46	6.91	6.90	211.25	597.8	38.0	1641.8	12.46	12.70	0.24	-0.46		0.50	5.5	0.74	1.1	
	8/17/2017 8:40	7.95	7.95	219.20	631.7	33.9	1675.7	12.34	12.58	0.24	-0.58		0.50	4.3	0.57	0.8	
	8/22/2017 12:45	5.17	5.16	224.36	667.2	35.5	1711.2	12.18	12.38	0.20	-0.74		0.50	6.9	0.92	1.3	
	8/30/2017 17:22	8.19	8.15	232.51	716.1	48.9	1760.1	12.19	12.41	0.22	-0.73		0.50	6.0	0.80	1.2	
	9/6/2017 13:15	6.83	5.72	238.24	750.7	34.6	1794.7	12.43	12.68	0.25	-0.49		0.50	6.0	0.81	1.2	
	END OF TEST INTERVAL - SHUTDOWN DUE TO HURRICANE																
	9/21/2017 15:22	--	--	--	--	--	1794.7	11.28	13.61	2.33	--			--	--	--	
	9/22/2017 8:05	0.70	0.70	0.70	22.0	22.0	1816.7	12.30	12.55	0.25	-0.62		0.50	31.6	4.22	6.2	
	9/29/2017 13:45	7.24	7.24	7.93	105.3	83.3	1900.0	12.37	12.65	0.28	-0.55		0.50	11.5	1.54	2.3	
	10/6/2017 13:21	6.98	0.46	8.40	106.4	1.1	1901.1	11.75	13.35	1.60	-1.17		0.50	2.4	0.32	0.5	
	10/12/2017 11:32	5.92	5.92	14.32	126.4	20.0	1921.1	12.77	13.08	0.31	-0.15		0.50	3.4	0.45	0.7	
	10/19/2017 12:00	7.02	7.02	21.34	172.8	46.4	1967.5	11.82	12.02	0.20	-1.10		0.50	6.6	0.88	1.3	
	11/2/2017 9:05	13.88	13.88	35.21	218.1	45.3	2012.8	12.72	13.00	0.28	-0.20		0.50	3.3	0.44	0.6	
	11/8/2017 12:21	6.14	6.14	41.35	223.1	5.0	2017.8	12.67	12.80	0.13	-0.25		0.50	0.8	0.11	0.2	
	11/15/2017 11:42	6.97	6.97	48.32	223.1	0.0	2017.8	12.73	13.55	0.82	-0.19		0.50	0.0	0.00	0.0	
	11/22/2017 10:28	6.95	6.71	55.03	223.1	0.0	2017.8	12.90	14.27	1.37	-0.02		0.50	0.0	0.00	0.0	
	11/30/2017 11:24	8.04	8.04	63.07	238.1	15.0	2032.8	13.55	13.76	0.21	0.63		0.50	1.9	0.25	0.4	
	12/6/2017 12:12	6.03	6.03	69.11	242.1	4.0	2036.8	12.64	12.80	0.16	-0.28		0.50	0.7	0.09	0.1	
	12/13/2017 10:56	6.95	6.95	76.05	247.1	5.0	2041.8	14.39	15.08	0.69	1.47		0.50	0.7	0.10	0.1	
	12/21/2017 13:06	8.09	7.85	83.90	283.1	36.0	2077.8	13.09	13.25	0.16	0.17		0.50	4.6	0.61	0.9	
	12/28/2017 14:00	7.04	7.04	90.94	298.1	15.0	2092.8	13.34	14.30	0.96	0.42		0.50	2.1	0.28	0.4	
	1/5/2018 14:10	8.01	8.01	98.95	298.1	0.0	2092.8	13.00	13.60	0.60	0.08		0.50	0.0	0.00	0.0	
	1/12/2018 13:19	6.96	6.96	105.91	315.1	17.0	2109.8	13.72	13.97	0.25	0.80		0.50	2.4	0.33	0.5	
	1/19/2018 14:05	7.03	6.79	112.71	328.1	13.0	2122.8	13.31	13.52	0.21	0.39		0.50	1.9	0.26	0.4	
	1/26/2018 11:39	6.90	6.90	119.61	339.1	11.0	2133.8	14.01	14.29	0.28	1.09		0.50	1.6	0.21	0.3	

Appendix A

AW-49 LNAPL Skimming Test Results
IMTT Savannah North Terminal
Savannah, Georgia

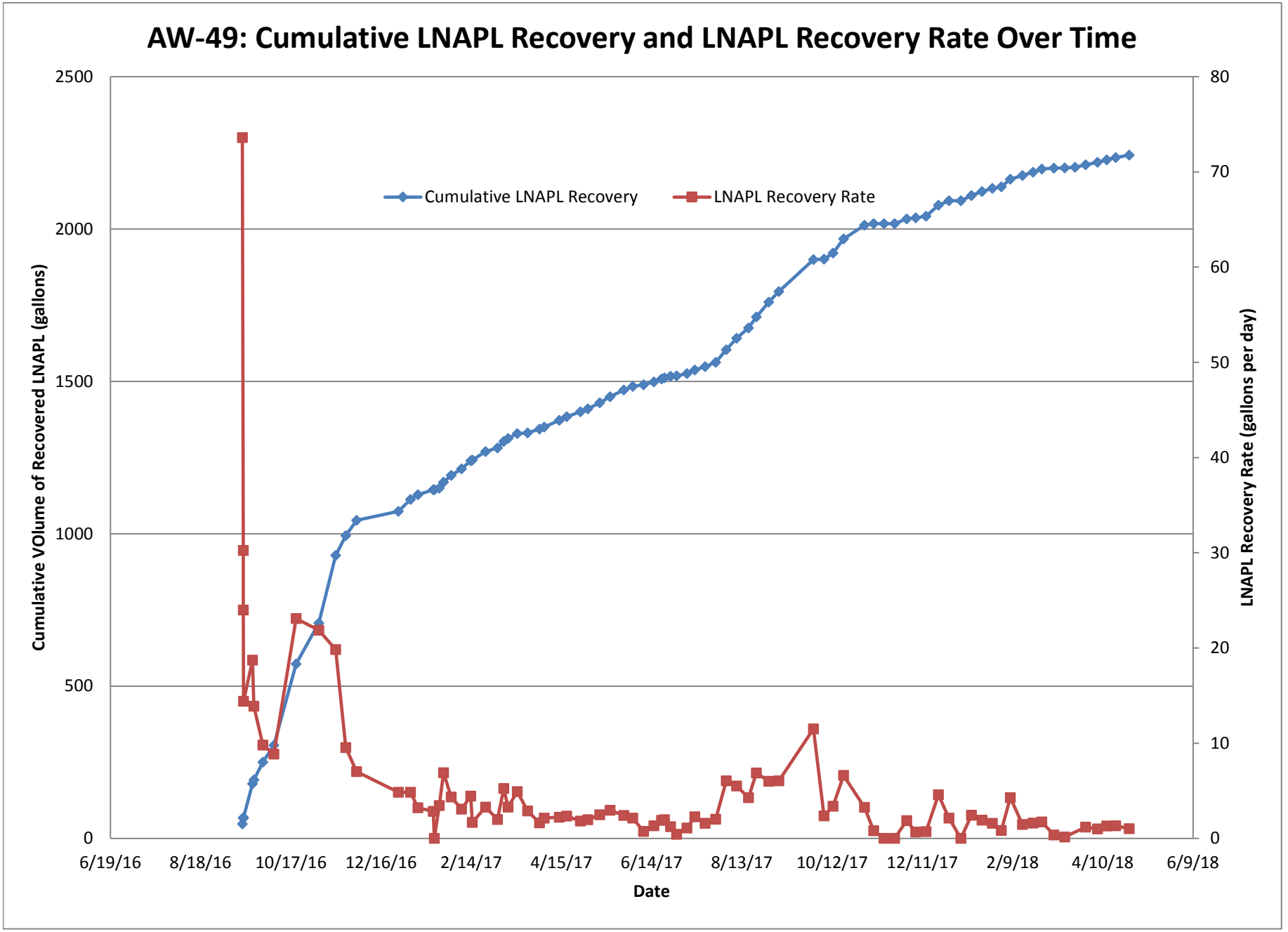
Well ID	Measurement Date & Time	Time Between Measurement Events (days)	Actual Skimmer Run-Time Between Measurement Events (days)	Cumulative Run Time (days)	Total Volume of LNAPL Recovered (gallons)	Volume of LNAPL Recovered During Measurement Interval (gallons)	RUNNING Total Volume of LNAPL Recovered (gallons)	Depth to LNAPL (feet btoc)	Depth to Water (feet btoc)	In-Well LNAPL Thickness (feet)	LNAPL Drawdown (feet)	Maximum Theoretical Unconfined LNAPL Drawdown (feet)	LNAPL Drawdown Used in Transmissivity Estimate[a] (feet)	Average LNAPL Recovery Rate for Interval (gal/day)	Average LNAPL Recovery Rate for Interval (ft^3/day)	Estimated LNAPL Transmissivity for Interval (ft^2/day)	Overall Average LNAPL Transmissivity[b] (ft^2/day)
	2/1/2018 12:32	6.04	6.04	125.64	344.1	5.0	2138.8	13.14	13.17	0.03	0.22		0.50	0.8	0.11	0.2	
	2/7/2018 8:52	5.85	5.85	131.49	369.1	25.0	2163.8	13.88	14.20	0.32	0.96		0.50	4.3	0.57	0.8	
	2/15/2018 12:15	8.14	8.14	139.63	381.1	12.0	2175.8	13.25	13.31	0.06	0.33		0.50	1.5	0.20	0.3	
	2/22/2018 14:27	7.09	6.85	146.48	392.1	11.0	2186.8	13.14	13.35	0.21	0.22		0.50	1.6	0.21	0.3	
	2/28/2018 8:17	5.74	5.74	152.22	402.1	10.0	2196.8	12.74	12.80	0.06	-0.18		0.50	1.7	0.23	0.3	
	3/8/2018 9:23	8.05	8.05	160.27	405.1	3.0	2199.8	13.54	13.84	0.30	0.62		0.50	0.4	0.05	0.1	
	3/15/2018 13:35	7.17	7.14	167.41	406.1	1.0	2200.8	13.24	14.75	1.51	0.32		0.50	0.1	0.02	0.0	
	3/22/2018 11:30	6.91	0.02	167.42	408.1	2.0	2202.8	13.47	15.02	1.55	0.55		0.50	113.7	15.20	22.3	
	3/29/2018 11:13	6.99	6.74	174.16	416.1	8.0	2210.8	13.07	13.24	0.17	0.15		0.50	1.2	0.16	0.2	
	4/6/2018 11:03	7.99	7.99	182.15	424.1	8.0	2218.8	13.74	13.96	0.22	0.82		0.50	1.0	0.13	0.2	
	4/12/2018 13:00	6.08	6.08	188.24	432.1	8.0	2226.8	13.83	14.10	0.27	0.91		0.50	1.3	0.18	0.3	
	4/18/2018 13:48	6.03	6.03	194.27	440.1	8.0	2234.8	13.43	13.70	0.27	0.51		0.50	1.3	0.18	0.3	
	4/27/2018 13:20	8.98	7.74	202.01	448.1	8.0	2242.8	13.52	13.76	0.24	0.60		0.50	1.0	0.14	0.2	0.47

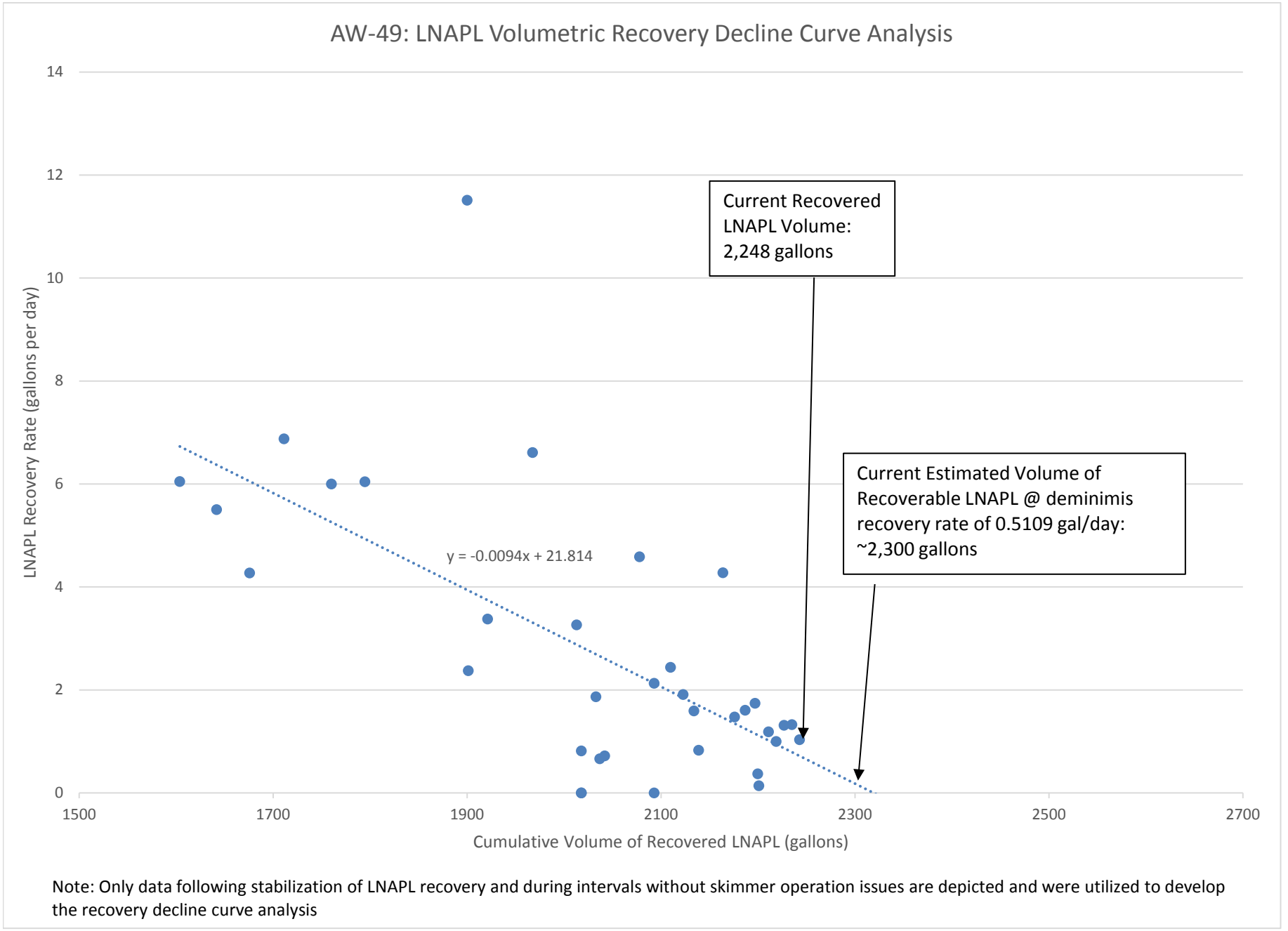
Assumed LNAPL specific gravity = 0.854

All calculations performed pursuant to the methodology detailed in ASTM E2856-13

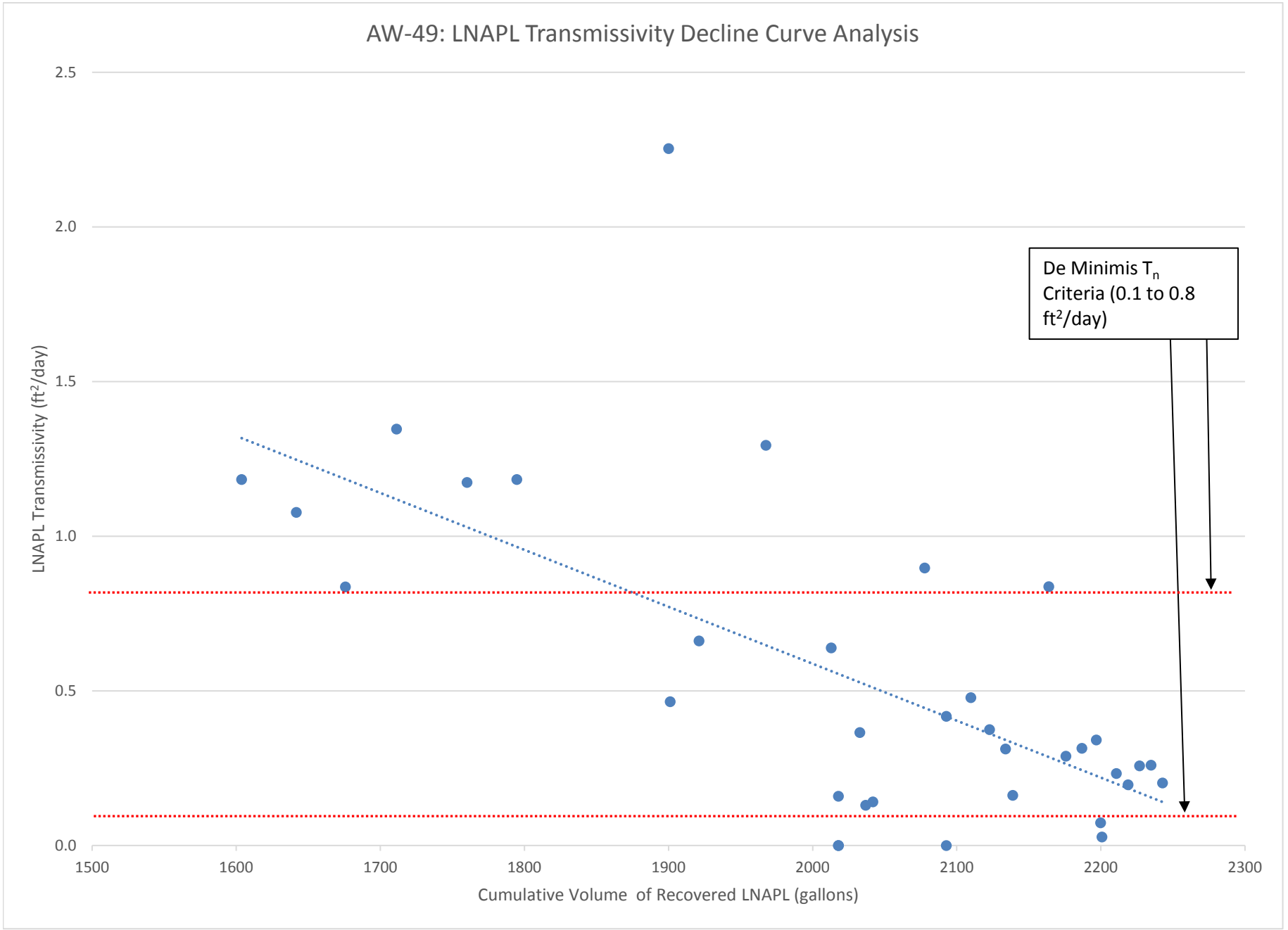
[a]The maximum theoretical drawdown is used for each interval calculation where the measured drawdown is negative or where it exceeds the theoretical maximum.

[b]Represents the geometric mean of the stabilized recovery rates/LNAPL transmissivity estimates (i.e., excludes initial elevated values that would not represent potential long-term recovery rates).


AW-49: Cumulative LNAPL Recovery and LNAPL Recovery Rate Over Time
Cumulative LNAPL Recovery
LNAPL Recovery Rate
Cumulative VOlume of Recovered LNAPL (gallons)
LNAPL Recovery Rate (gallons per day)
Date
2500
2000
1500
1000
500
0
80
70
60
50
40
30
20
10
0
6/19/16
8/18/16
10/17/16
12/16/16
2/14/17
4/15/17
6/14/17
8/13/17
10/12/17
12/11/17
2/9/18
4/10/18
6/9/18



Note: Only data following stabilization of LNAPL recovery and during intervals without skimmer operation issues are depicted and were utilized to develop the recovery decline curve analysis


AW-49: LNAPL Transmissivity Decline Curve Analysis
LNAPL Transmissivity (ft²/day)
2.5
2.0
1.5
1.0
0.5
0.0
1500
1600
1700
1800
1900
2000
2100
2200
2300
Cumulative Volume of Recovered LNAPL (gallons)
De Minimis Tn Criteria (0.1 to 0.8 ft²/day)

Appendix A

AW-54 LNAPL Skimming Test Results
IMTT Savannah North Terminal
Savannah, Georgia

Well ID	Measurement Date & Time	Time Between Measurement Events (days)	Actual Skimmer Run-Time Between Measurement Events (days)	Cumulative Run Time (days)	Total Volume of LNAPL Recovered (gallons)	Volume of LNAPL Recovered During Measurement Interval (gallons)	RUNNING Total Volume of LNAPL Recovered (gallons)	Depth to LNAPL (feet btoc)	Depth to Water (feet btoc)	In-Well LNAPL Thickness (feet)	LNAPL Drawdown (feet)	Maximum Theoretical Unconfined LNAPL Drawdown (feet)	LNAPL Drawdown Used in Transmissivity Estimate[a] (feet)	Average LNAPL Recovery Rate for Interval (gal/day)	Average LNAPL Recovery Rate for Interval (ft^3/day)	Estimated LNAPL Transmissivity for Interval (ft^2/day)	Overall Average LNAPL Transmissivity[b] (ft^2/day)
	Equilibrium	--		--	--	--		5.44	15.59	10.15	--	1.48	--	--	--	--	
AW-54 Short term test	8/25/2016 10:45	--		--	--	--		5.45	15.48	10.03	--		--	--	--	--	
	8/31/2016 11:15	6.02	4.46	4.46	50.0	50.0	50.0	6.15	10.55	4.40	0.71		1.48	11.2	1.50	0.7	
	9/7/2016 14:15	7.13	5.13	9.59	100.0	50.0	100.0	--	--	--	--		1.48	9.7	1.30	0.6	
	9/14/2016 14:30	7.01	5.26	14.84	150.0	50.0	150.0	6.48	9.24	2.76	1.04		1.48	9.5	1.27	0.6	
	9/21/2016 12:20	6.91	7.53	22.37	200.0	50.0	200.0	6.10	7.60	1.50	0.66		1.48	6.6	0.89	0.4	0.6
AW-54 Long term test	6/20/2017 8:45	--	--	0.00	--	--	--	5.40	15.82	10.42	--			--	--	--	
	6/20/2017 10:47	0.08	0.08	0.08	6.0	6.0	206.0	5.90	13.30	7.40	0.46		1.48	70.8	9.47	4.7	
	6/22/2017 9:54	1.96	1.96	2.05	18.0	12.0	218.0	5.30	13.82	8.52	-0.14		1.48	6.1	0.82	0.4	
	6/26/2017 10:48	6.00	4.02	4.11	18.0	0.0	218.0	5.55	16.15	10.60	0.11		1.48	0.0	0.00	0.0	
	6/30/2017 10:50	4.00	2.40	6.51	78.5	60.5	278.5	5.90	11.65	5.75	0.46		1.48	25.2	3.37	1.7	
	7/7/2017 11:58	7.05	0.00	6.51	78.5	0.0	278.5	--	--	--	--		--	--	--	--	
	7/12/2017 14:52	5.12	5.12	11.63	112.5	34.0	312.5	6.25	6.50	0.25	0.81		1.48	6.6	0.89	0.4	
	7/19/2017 10:50	6.83	6.70	18.32	112.5	0.0	312.5	5.62	5.85	0.23	0.18		1.48	0.0	0.00	0.0	
	7/26/2017 10:35	6.99	6.99	25.31	115.0	2.5	315.0	6.00	6.42	0.42	0.56		1.48	0.4	0.05	0.0	
	8/2/2017 10:48	7.01	7.01	32.32	116.5	1.5	316.5	6.26	6.57	0.31	0.82		1.48	0.2	0.03	0.0	
	8/9/2017 9:04	6.93	6.79	39.11	118.5	2.0	318.5	6.12	6.32	0.20	0.68		1.48	0.3	0.04	0.0	
	8/17/2017 8:05	7.96	7.96	47.07	119.5	1.0	319.5	6.08	6.35	0.27	0.64		1.48	0.1	0.02	0.0	
	8/22/2017 13:05	5.21	5.21	52.28	119.5	0.0	319.5	6.95	7.12	0.17	1.51		1.48	0.0	0.00	0.0	0.13
	End of Test																
	8/29/2017 16:00	12.33						6.00	8.56	2.56							
First Intermittent Skimming Event	3/7/2018 13:42	--	--	0.00	--	--	319.5	5.25	15.40	10.15	--			--	--	--	
	3/7/2018 15:52	0.09	0.09	0.09	5.0	5.0	324.5	6.14	11.60	5.46	0.70		1.48	55.4	7.40	3.7	
	3/8/2018 8:45	0.70	0.70	0.79	11.5	6.5	331.0	6.79	6.90	0.11	1.35		1.48	9.2	1.24	0.6	
	3/15/2018 13:15	7.19	5.39	6.18	11.5	0.0	331.0	6.59	6.80	0.21	1.15		1.48	0.0	0.00	0.0	
	3/22/2018 12:55	6.99	6.99	13.17	13.5	2.0	333.0	6.85	7.01	0.16	1.41		1.48	0.3	0.04	0.0	
	3/29/2018 11:44	6.95	6.95	20.12	13.5	0.0	333.0	6.46	6.80	0.34	1.02		1.48	0.0	0.00	0.0	
	4/6/2018 11:38	8.00	8.00	28.12	13.5	0.0	333.0	6.90	7.06	0.16	1.46		1.48	0.0	0.00	0.0	
	4/12/2018 12:50	6.05	5.81	33.93	13.5	0.0	333.0	6.64	7.18	0.54	1.20		1.48	0.0	0.00	0.0	
	4/18/2018 13:32	6.03	6.03	39.95	13.5	0.0	333.0	6.60	6.80	0.20	1.16		1.48	0.0	0.00	0.0	
	4/27/2018 13:39	9.00	9.09	49.05	13.5	0.0	333.0	6.26	6.42	0.16	0.82		1.48	0.0	0.00	0.0	0.08

Assumed LNAPL specific gravity = 0.854

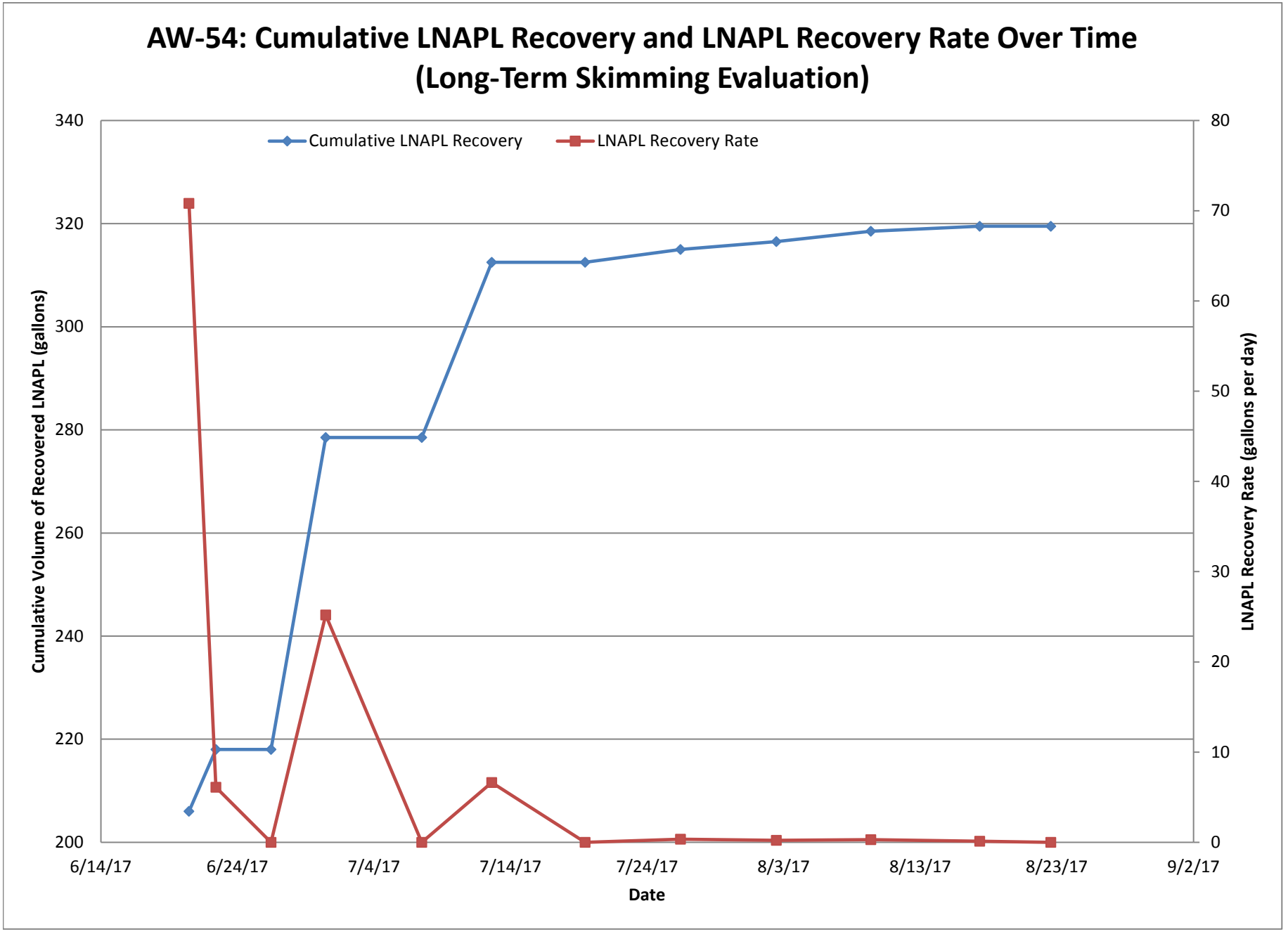
All calculations performed pursuant to the methodology detailed in ASTM E2856-13

[a]The maximum theoretical drawdown is used for each interval calculation where the measured drawdown is negative or where it exceeds the theoretical maximum.

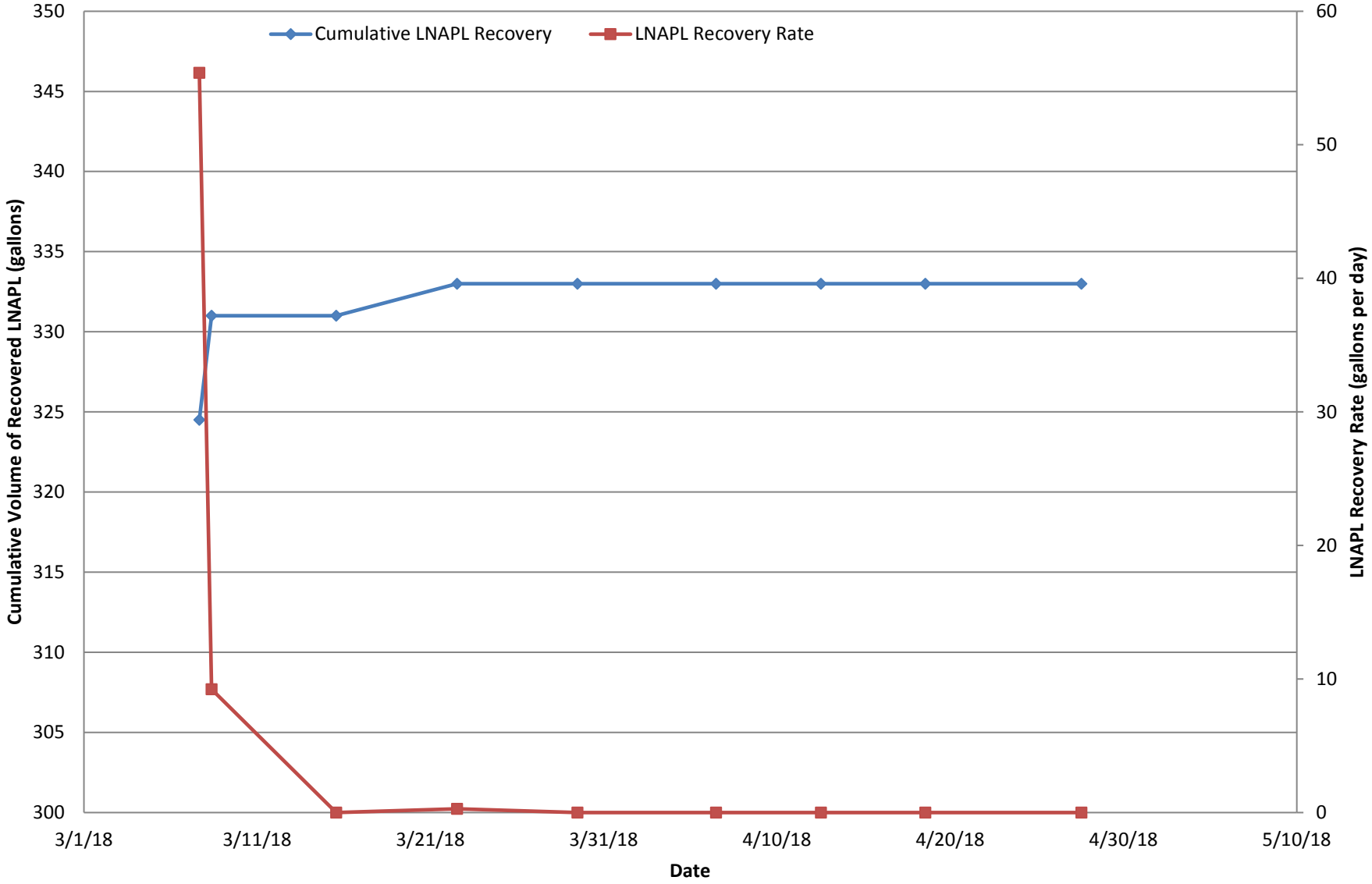
[b]Represents the geometric mean of the stabilized recovery rates/LNAPL transmissivity estimates (i.e., excludes initial elevated values that would not represent potential long-term recovery rates).

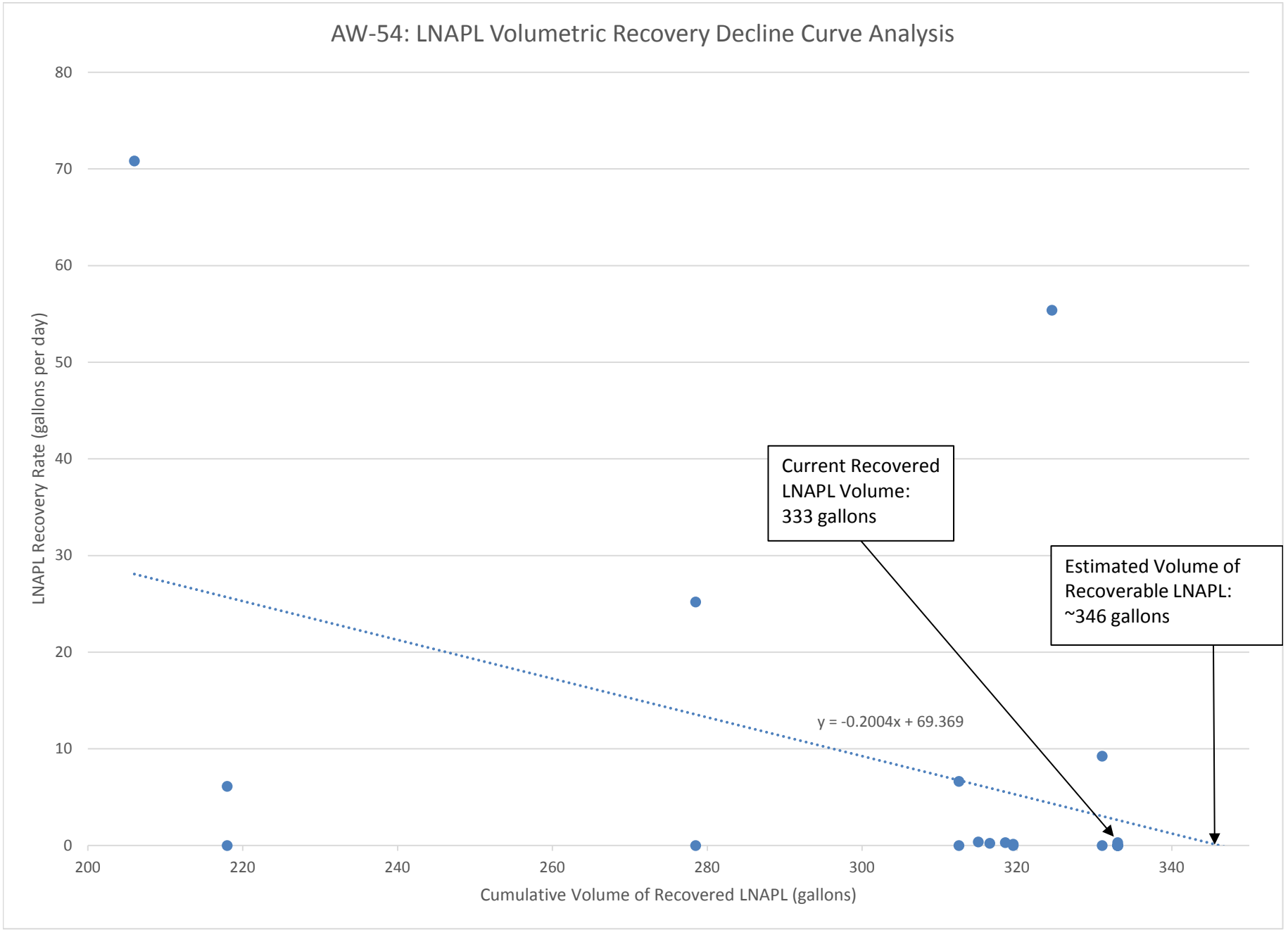
Equilibrium data is an average of quarterly groundwater data collected from March 2016 through Februrary 2018 and excludes data collected during or following skimming operations.

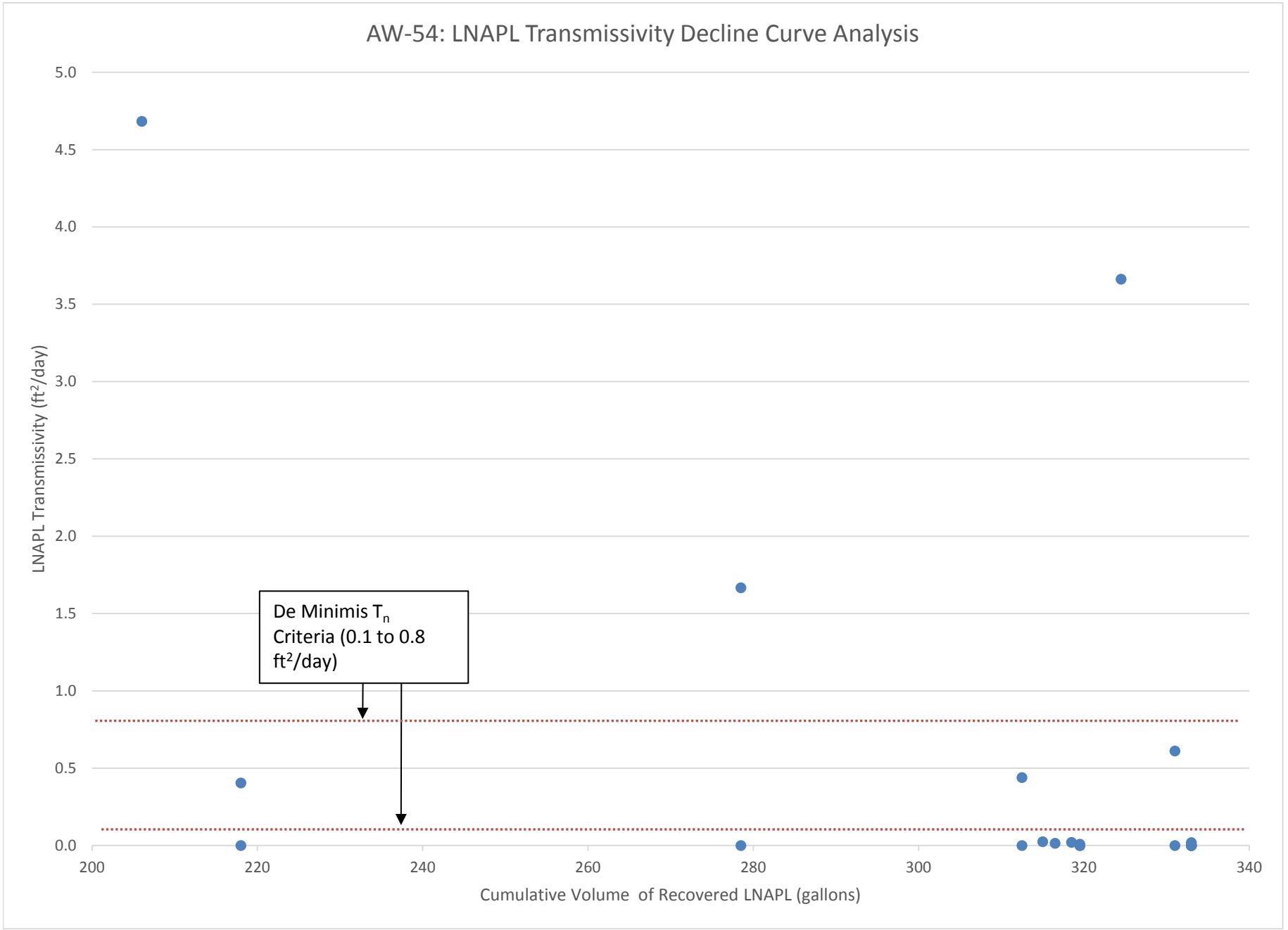
AW-54: Cumulative LNAPL Recovery and LNAPL Recovery Rate Over Time (Long-Term Skimming Evaluation)



AW-54: Cumulative LNAPL Recovery and LNAPL Recovery Rate Over Time (First Intermittent Skimming Event)




AW-54: LNAPL Volumetric Recovery Decline Curve Analysis
LNAPL Recovery Rate (gallons per day)
80
70
60
50
40
30
20
10
0
200
220
240
260
280
300
320
340
Cumulative Volume of Recovered LNAPL (gallons)
Current Recovered LNAPL Volume: 333 gallons
Estimated Volume of Recoverable LNAPL: ~346 gallons
y = -0.2004x + 69.369


AW-54: LNAPL Transmissivity Decline Curve Analysis
LNAPL Transmissivity (ft²/day)
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
200
220
240
260
280
300
320
340
Cumulative Volume of Recovered LNAPL (gallons)
De Minimis Tn Criteria (0.1 to 0.8 ft²/day)

Appendix A

AW-56 LNAPL Skimming Test Results
IMTT Savannah North Terminal
Savannah, Georgia

Well ID	Measurement Date & Time	Time Between Measurement Events (days)	Actual Skimmer Run-Time Between Measurement Events (days)	Cumulative Run Time (days)	Total Volume of LNAPL Recovered (gallons)	Volume of LNAPL Recovered During Measurement Interval (gallons)	RUNNING Total Volume of LNAPL Recovered (gallons)	Depth to LNAPL (feet btoc)	Depth to Water (feet btoc)	In-Well LNAPL Thickness (feet)	LNAPL Drawdown (feet)	Maximum Theoretical Unconfined LNAPL Drawdown (feet)	LNAPL Drawdown Used in Transmissivity Estimate[a] (feet)	Average LNAPL Recovery Rate for Interval (gal/day)	Average LNAPL Recovery Rate for Interval (ft^3/day)	Estimated LNAPL Transmissivity for Interval (ft^2/day)	Overall Average LNAPL Transmissivity[b] (ft^2/day)
AW-56 Short term test	Equilibrium							8.74	14.19	5.45	--	0.80		--	--	--	
	8/25/2016 11:45	--		--	--	--		9.12	15.13	6.01	--		--	--	--	--	
	8/31/2016 10:40	5.95	5.95	5.95	36.1	36.1	36.1	10.01	13.02	3.01	1.27		0.80	6.1	0.81	0.7	
	9/7/2016 11:45	7.05	7.05	13.00	67.3	31.2	67.3	10.90	13.40	2.50	2.16		0.80	4.4	0.59	0.5	
	9/14/2016 17:30	7.24	7.24	20.24	117.3	50.0	117.3	10.99	14.55	3.56	2.25		0.80	6.9	0.92	0.8	
	9/15/2016 7:45	0.59	0.59	20.83	126.8	9.5	126.8	10.98	11.10	0.12	2.24		0.80	16.0	2.14	2.0	
	9/21/2016 14:40	6.29	6.29	27.12	--	--		--	--	--	--			--	--	--	0.9
AW-56 Long-term Test	2/23/2017 9:45	--	--	--	--	--		10.80	15.85	5.05	--			--	--	--	
	2/23/2017 11:42	0.08	0.05	0.05	38.1	38.1	164.9	12.05	13.33	1.28	3.31		0.80	744.3	99.50	91.5	
	2/23/2017 13:08	0.06	0.06	0.11	40.5	2.4	167.3	12.30	12.65	0.35	3.56		0.80	40.2	5.37	4.9	
	3/3/2017 9:40	7.86	7.86	7.97	74.4	33.9	201.3	12.72	13.00	0.28	3.98		0.80	4.3	0.58	0.5	
	SHUTDOWN DUE TO TANK FAILURE																
	3/7/2017 14:00	--	--		--	--	216.3	12.20	16.95	4.75	--			--	--	--	
	3/10/2017 9:40	2.82	2.82	2.82	11.5	11.5	227.8	11.34	14.90	3.56	2.60		0.80	4.1	0.54	0.5	
	3/16/2017 10:35	6.04	6.04	8.86	17.7	6.2	233.9	11.86	16.90	5.04	3.12		0.80	1.0	0.14	0.1	
	3/23/2017 9:58	6.97	6.07	14.93	51.2	33.5	267.5	11.77	13.61	1.84	3.03		0.80	5.5	0.74	0.7	
	3/31/2017 7:50	7.91	7.65	22.58	59.4	8.2	275.7	12.75	13.00	0.25	4.01		0.80	1.1	0.14	0.1	
	4/3/2017 9:38	3.07	3.09	25.67	72.4	13.0	288.7	12.72	12.90	0.18	3.98		0.80	4.2	0.56	0.5	
	4/13/2017 11:20	10.07	10.11	35.78	106.2	33.8	322.5	11.76	11.91	0.15	3.02		0.80	3.3	0.45	0.4	
	4/18/2017 10:47	4.98	5.00	40.78	119.9	13.7	336.2	12.25	15.25	3.00	3.51		0.80	2.7	0.37	0.3	
	4/27/2017 10:41	9.00	9.03	49.80	130.9	11.0	347.2	11.10	14.35	3.25	2.36		0.80	1.2	0.16	0.1	
	5/2/2017 12:58	5.10	5.11	54.92	155.2	24.3	371.5	12.44	12.66	0.22	3.70		0.80	4.8	0.64	0.6	
	5/10/2017 10:30	7.90	7.65	62.56	179.2	24.0	395.5	12.00	12.46	0.46	3.26		0.80	3.1	0.42	0.4	
	5/17/2017 7:32	6.88	6.90	69.47	208.2	29.0	424.5	12.83	13.28	0.45	4.09		0.80	4.2	0.56	0.5	
	5/26/2017 10:42	9.13	9.16	78.63	244.2	36.0	460.5	11.95	11.98	0.03	3.21		0.80	3.9	0.53	0.5	
	6/1/2017 7:45	5.88	5.90	84.53	263.2	19.0	479.5	12.31	12.59	0.28	3.57		0.80	3.2	0.43	0.4	
	6/8/2017 11:15	7.15	6.89	91.42	271.7	8.5	488.0	11.13	12.86	1.73	2.39		0.80	1.2	0.16	0.2	
	6/15/2017 10:29	6.97	6.98	98.39	305.2	33.5	521.5	12.51	12.72	0.21	3.77		0.80	4.8	0.64	0.6	
	6/20/2017 9:36	4.96	4.88	103.28	320.2	15.0	536.5	12.27	12.51	0.24	3.53		0.80	3.1	0.41	0.4	
	6/22/2017 10:57	2.06	2.04	105.31	327.2	7.0	543.5	11.86	12.00	0.14	3.12		0.80	3.4	0.46	0.4	
	6/26/2017 12:30	4.06	4.08	109.39	341.2	14.0	557.5	11.55	11.60	0.05	2.81		0.80	3.4	0.46	0.4	
	6/30/2017 12:28	4.00	3.92	113.31	360.2	19.0	576.5	12.02	12.11	0.09	3.28		0.80	4.9	0.65	0.6	
	7/7/2017 8:03	6.82	6.84	120.14	383.2	23.0	599.5	11.65	11.84	0.19	2.91		0.80	3.4	0.45	0.4	
	7/12/2017 14:36	5.27	5.19	125.34	407.8	24.6	624.1	11.65	11.74	0.09	2.91		0.80	4.7	0.63	0.6	
	7/19/2017 11:45	6.88	6.90	132.24	449.2	41.4	665.5	12.51	12.68	0.17	3.77		0.80	6.0	0.80	0.7	
	7/26/2017 11:24	6.99	6.91	139.15	466.5	17.3	682.8	11.30	11.43	0.13	2.56		0.80	2.5	0.33	0.3	
	8/2/2017 12:06	7.03	0.01	139.16	469.5	3.0	685.8	10.91	17.11	6.20	2.17		0.80	326.0	43.58	39.9	
	8/9/2017 10:00	6.91	6.83	145.99	501.5	32.0	717.8	11.11	11.22	0.11	2.37		0.80	4.7	0.63	0.6	
	8/17/2017 8:26	7.93	7.87	153.85	531.5	30.0	747.8	11.13	11.25	0.12	2.39		0.80	3.8	0.51	0.5	
	8/22/2017 12:25	5.17	5.09	158.94	552.0	20.5	768.3	10.80	10.98	0.18	2.06		0.80	4.0	0.54	0.5	
	8/30/2017 17:38	8.22	8.24	167.18	576.5	24.5	792.8	10.74	10.91	0.17	2.00		0.80	3.0	0.40	0.4	
	9/6/2017 12:47	6.80	3.44	170.62	587.5	11.0	803.8	10.24	15.51	5.27	1.50		0.80	3.2	0.43	0.4	0.4
	END OF TEST INTERVAL - SHUTDOWN DUE TO HURRICANE																

Appendix A

AW-56 LNAPL Skimming Test Results
IMTT Savannah North Terminal
Savannah, Georgia

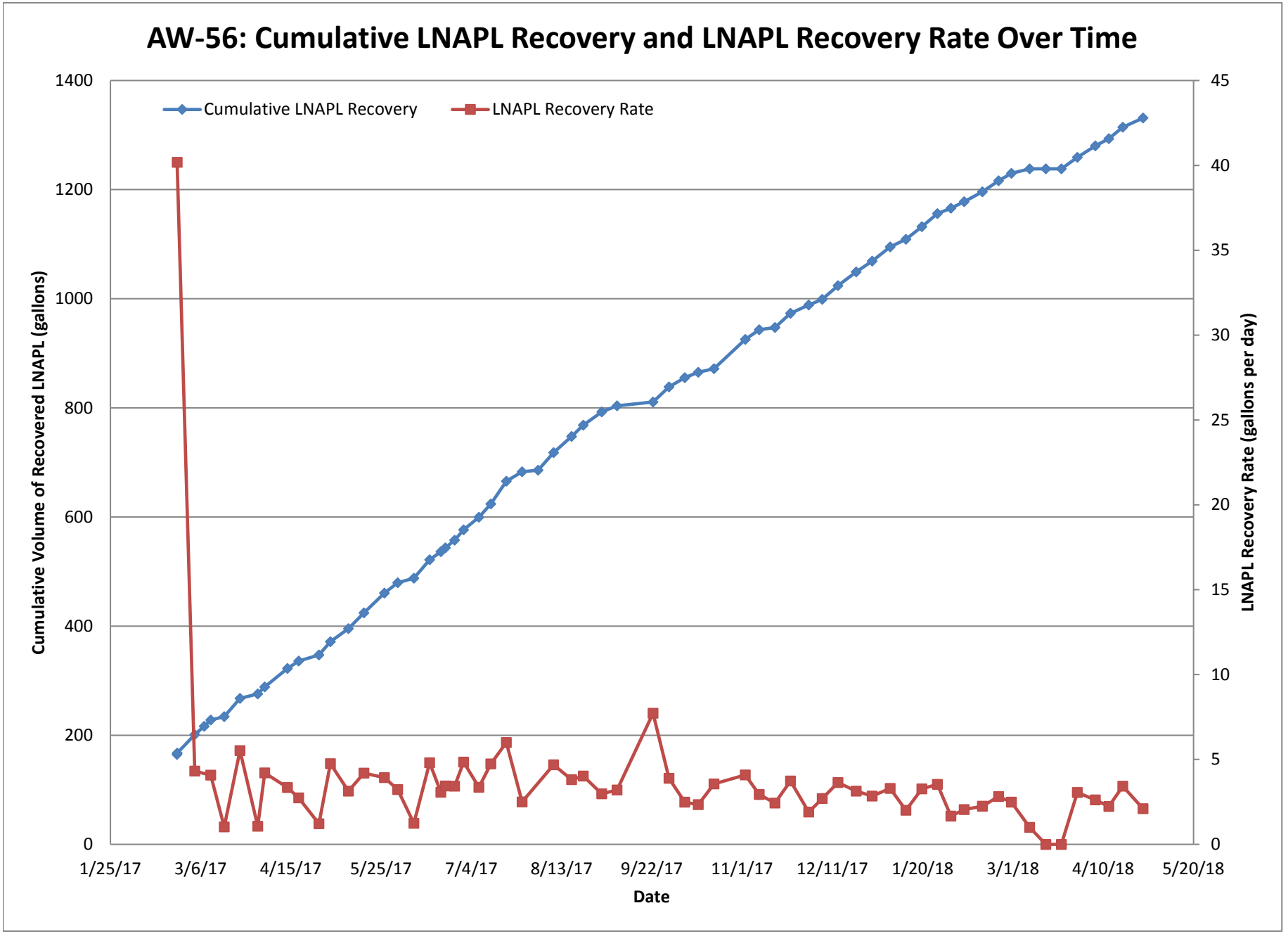
Well ID	Measurement Date & Time	Time Between Measurement Events (days)	Actual Skimmer Run-Time Between Measurement Events (days)	Cumulative Run Time (days)	Total Volume of LNAPL Recovered (gallons)	Volume of LNAPL Recovered During Measurement Interval (gallons)	RUNNING Total Volume of LNAPL Recovered (gallons)	Depth to LNAPL (feet btoc)	Depth to Water (feet btoc)	In-Well LNAPL Thickness (feet)	LNAPL Drawdown (feet)	Maximum Theoretical Unconfined LNAPL Drawdown (feet)	LNAPL Drawdown Used in Transmissivity Estimate[a] (feet)	Average LNAPL Recovery Rate for Interval (gal/day)	Average LNAPL Recovery Rate for Interval (ft^3/day)	Estimated LNAPL Transmissivity for Interval (ft^2/day)	Overall Average LNAPL Transmissivity[b] (ft^2/day)
AW-56 Long term test	9/21/2017 12:03	--	--	--	--	--	803.8	9.42	15.12	5.70	--			--	--	--	
	9/22/2017 11:50	0.99	0.91	171.53	7.0	7.0	810.8	10.82	11.06	0.24	2.08		0.80	7.7	1.03	0.9	
	9/29/2017 13:24	7.07	7.07	178.59	34.5	27.5	838.3	11.26	11.45	0.19	2.52		0.80	3.9	0.52	0.5	
	10/6/2017 12:35	6.97	6.89	185.49	51.6	17.1	855.4	10.52	10.72	0.20	1.78		0.80	2.5	0.33	0.3	
	10/12/2017 11:03	5.94	4.26	189.75	61.6	10.0	865.4	11.05	16.60	5.55	2.31		0.80	2.3	0.31	0.3	
	10/19/2017 11:15	7.01	1.82	191.57	68.1	6.5	871.9	9.65	14.55	4.90	0.91		0.80	3.6	0.48	0.4	
	11/2/2017 8:41	13.89	13.08	204.66	121.6	53.5	925.4	11.30	11.36	0.06	2.56		0.80	4.1	0.55	0.5	
	11/8/2017 12:02	6.14	6.14	210.80	139.6	18.0	943.4	11.22	11.51	0.29	2.48		0.80	2.9	0.39	0.4	
	11/15/2017 11:17	6.97	1.64	212.44	143.6	4.0	947.4	10.95	15.42	4.47	2.21		0.80	2.4	0.33	0.3	
	11/22/2017 10:11	6.95	6.95	219.39	169.6	26.0	973.4	11.80	11.95	0.15	3.06		0.80	3.7	0.50	0.5	
	11/30/2017 10:55	8.03	7.91	227.30	184.6	15.0	988.4	12.30	12.52	0.22	3.56		0.80	1.9	0.25	0.2	
	12/6/2017 11:28	6.02	3.86	231.16	195.0	10.4	998.8	10.65	14.32	3.67	1.91		0.80	2.7	0.36	0.3	
	12/13/2017 10:32	6.96	6.96	238.12	220.3	25.3	1024.1	12.54	12.76	0.22	3.80		0.80	3.6	0.49	0.4	
	12/21/2017 12:38	8.09	7.96	246.08	245.3	25.0	1049.1	11.63	11.73	0.10	2.89		0.80	3.1	0.42	0.4	
	12/28/2017 13:15	7.03	7.03	253.10	265.3	20.0	1069.1	12.40	12.65	0.25	3.66		0.80	2.8	0.38	0.3	
	1/5/2018 13:37	8.02	7.89	260.99	291.3	26.0	1095.1	11.61	11.69	0.08	2.87		0.80	3.3	0.44	0.4	
	1/12/2018 12:46	6.96	6.96	267.96	305.3	14.0	1109.1	12.71	12.94	0.23	3.97		0.80	2.0	0.27	0.2	
	1/19/2018 14:15	7.06	7.05	275.01	328.3	23.0	1132.1	11.80	11.98	0.18	3.06		0.80	3.3	0.44	0.4	
	1/26/2018 11:05	6.87	6.78	281.79	352.3	24.0	1156.1	12.97	13.65	0.68	4.23		0.80	3.5	0.47	0.4	
	2/1/2018 11:48	6.03	6.03	287.82	362.3	10.0	1166.1	11.54	11.63	0.09	2.80		0.80	1.7	0.22	0.2	
	2/7/2018 8:16	5.85	5.85	293.67	374.3	12.0	1178.1	12.82	13.14	0.32	4.08		0.80	2.1	0.27	0.3	
	2/15/2018 10:45	8.10	8.02	301.69	392.3	18.0	1196.1	11.80	12.01	0.21	3.06		0.80	2.2	0.30	0.3	
	2/22/2018 13:20	7.11	7.09	308.78	412.3	20.0	1216.1	11.92	12.10	0.18	3.18		0.80	2.8	0.38	0.3	
	2/28/2018 8:02	5.78	5.64	314.42	426.3	14.0	1230.1	11.18	11.39	0.21	2.44		0.80	2.5	0.33	0.3	
	3/8/2018 8:27	8.02	8.02	322.44	434.3	8.0	1238.1	11.89	16.41	4.52	3.15		0.80	1.0	0.13	0.1	
	3/15/2018 12:30	7.17	7.15	329.58	434.3	0.0	1238.1	11.66	15.22	3.56	2.92		0.80	0.0	0.00	0.0	
	3/22/2018 10:25	6.91	0.00	329.59	434.3	0.0	1238.1	12.12	16.27	4.15	3.38		0.80	0.0	0.00	0.0	
	3/29/2018 10:50	7.02	6.87	336.46	455.3	21.0	1259.1	11.60	11.92	0.32	2.86		0.80	3.1	0.41	0.4	
	4/6/2018 10:48	8.00	8.00	344.46	476.3	21.0	1280.1	12.61	12.85	0.24	3.87		0.80	2.6	0.35	0.3	
	4/12/2018 11:55	6.05	6.05	350.50	489.8	13.5	1293.6	12.60	12.82	0.22	3.86		0.80	2.2	0.30	0.3	
	4/18/2018 14:15	6.10	6.10	356.60	510.7	20.9	1314.5	12.11	12.23	0.12	3.37		0.80	3.4	0.46	0.4	
	4/27/2018 14:15	9.00	7.97	364.57	527.4	16.7	1331.2	12.35	13.00	0.65	3.61		0.80	2.1	0.28	0.3	0.36

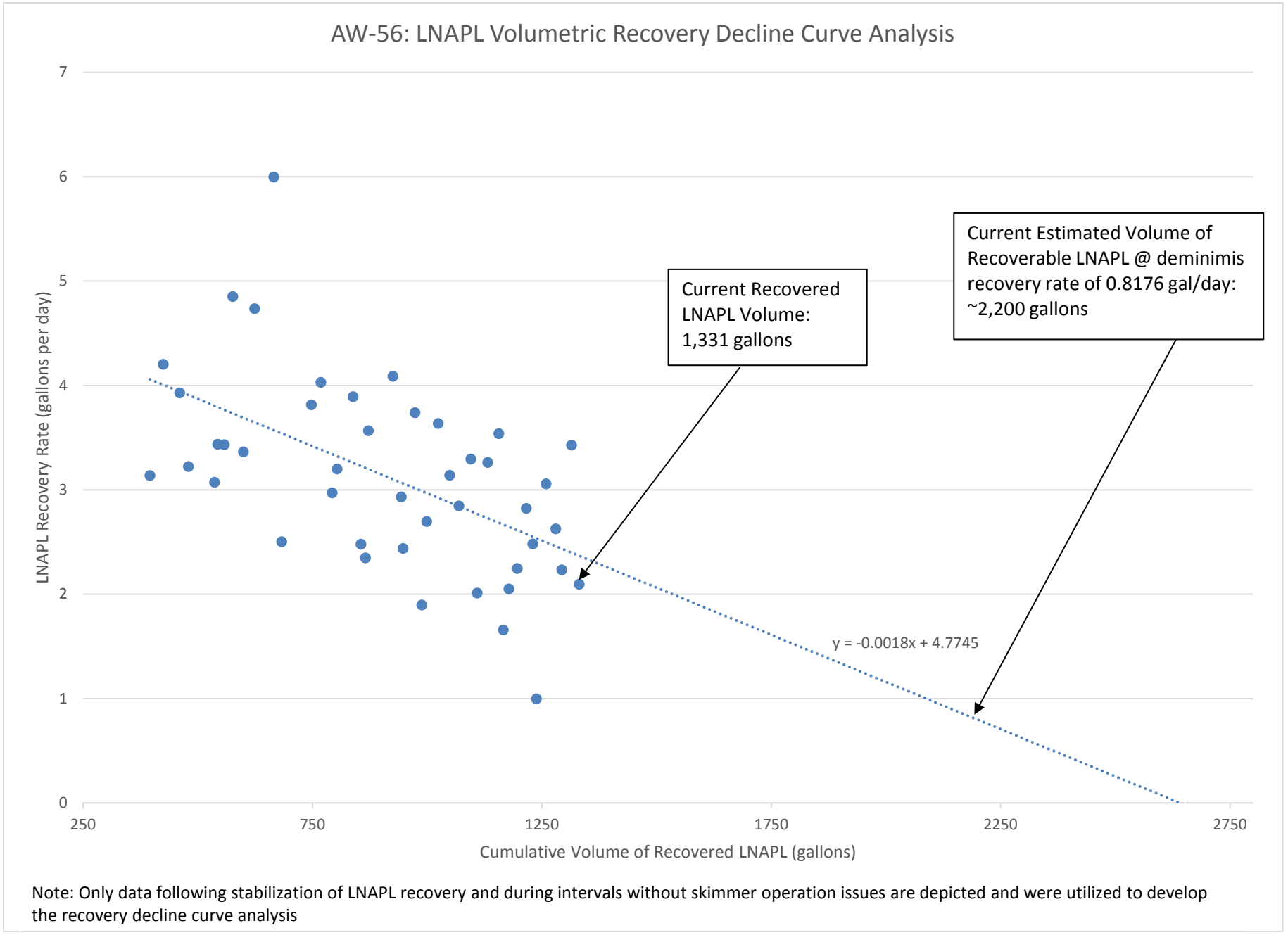
Assumed LNAPL specific gravity = 0.854

All calculations performed pursuant to the methodology detailed in ASTM E2856-13

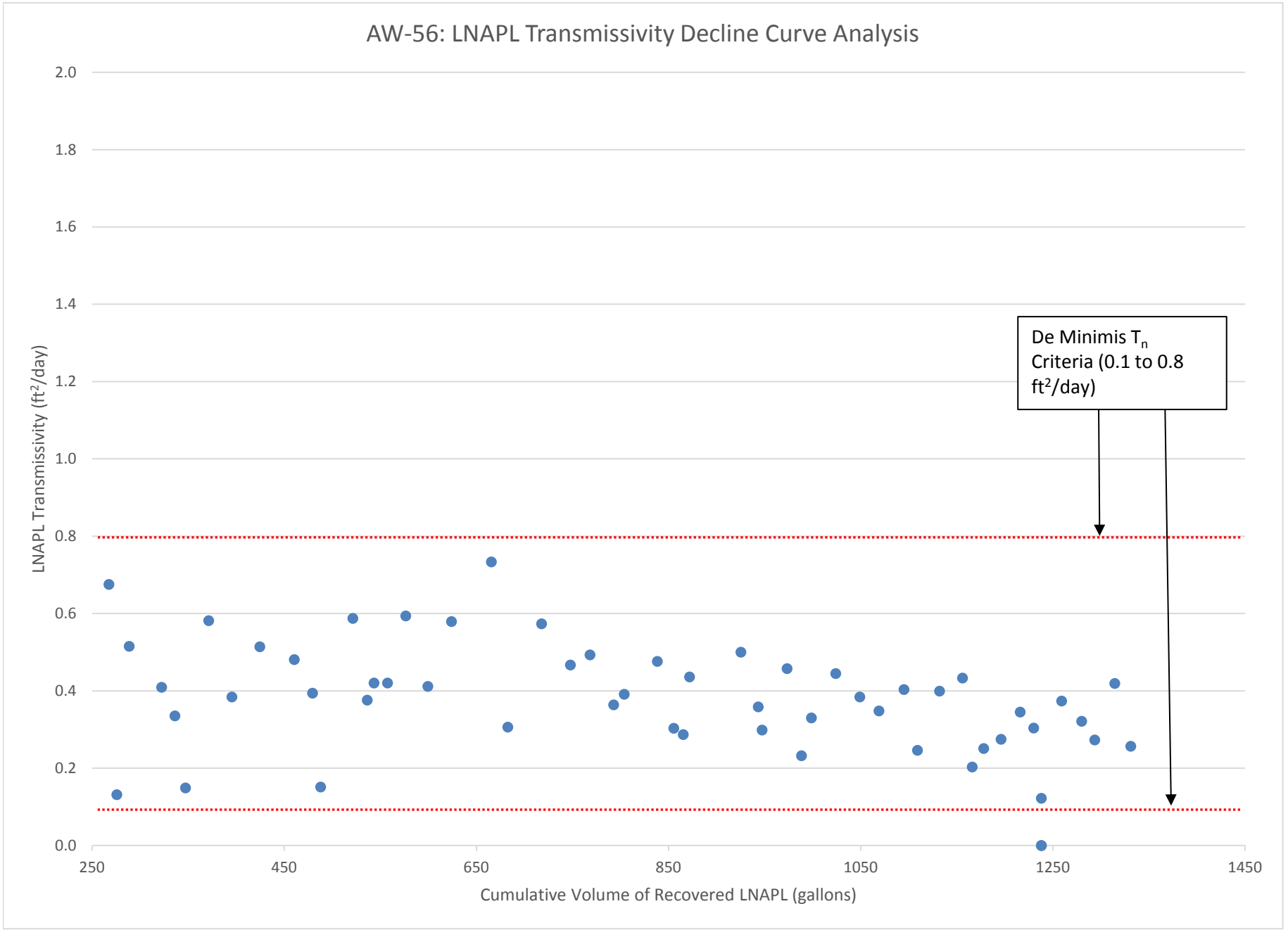
[a]The maximum theoretical drawdown is used for each interval calculation where the measured drawdown is negative or where it exceeds the theoretical maximum.

[b]Represents the geometric mean of the stabilized recovery rates/LNAPL transmissivity estimates (i.e., excludes initial elevated values that would not represent potential long-term recovery rates).


AW-56: Cumulative LNAPL Recovery and LNAPL Recovery Rate Over Time
Cumulative LNAPL Recovery
LNAPL Recovery Rate
Cumulative Volume of Recovered LNAPL (gallons)
LNAPL Recovery Rate (gallons per day)
Date
0
200
400
600
800
1000
1200
1400
0
5
10
15
20
25
30
35
40
45
1/25/17
3/6/17
4/15/17
5/25/17
7/4/17
8/13/17
9/22/17
11/1/17
12/11/17
1/20/18
3/1/18
4/10/18
5/20/18



Note: Only data following stabilization of LNAPL recovery and during intervals without skimmer operation issues are depicted and were utilized to develop the recovery decline curve analysis


AW-56: LNAPL Transmissivity Decline Curve Analysis
LNAPL Transmissivity (ft²/day)
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
250
450
650
850
1050
1250
1450
Cumulative Volume of Recovered LNAPL (gallons)
De Minimis T_n Criteria (0.1 to 0.8 ft²/day)

Appendix A

AW-68 LNAPL Skimming Test Results
IMTT Savannah North Terminal
Savannah, Georgia

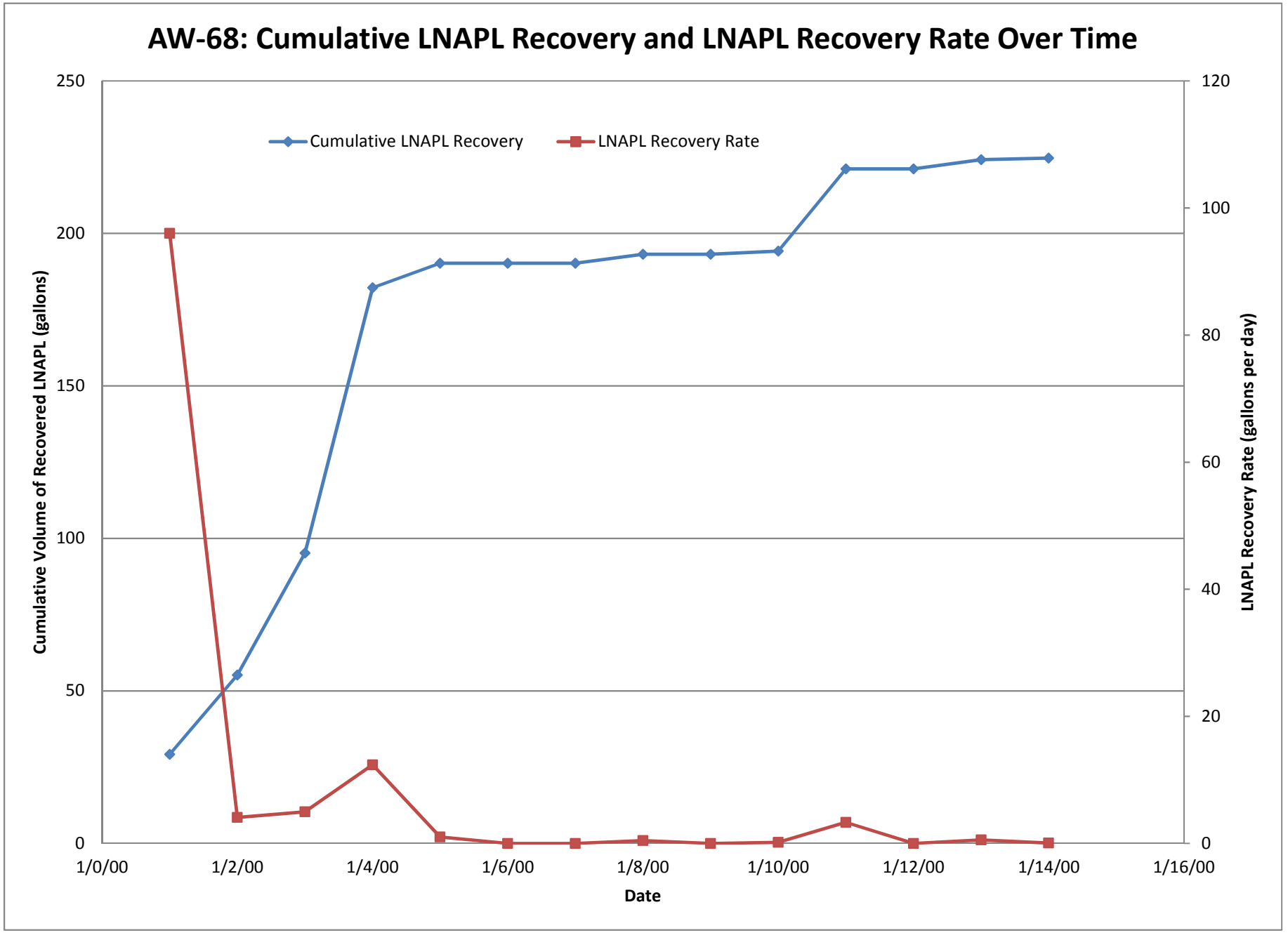
Well ID	Measurement Date & Time	Time Between Measurement Events (days)	Actual Skimmer Run-Time Between Measurement Events (days)	Cumulative Run Time (days)	Total Volume of LNAPL Recovered (gallons)	Volume of LNAPL Recovered During Measurement Interval (gallons)	RUNNING Total Volume of LNAPL Recovered (gallons)	Depth to LNAPL (feet btoc)	Depth to Water (feet btoc)	In-Well LNAPL Thickness (feet)	LNAPL Drawdown (feet)	Maximum Theoretical Unconfined LNAPL Drawdown (feet)	LNAPL Drawdown Used in Transmissivity Estimate[a] (feet)	Average LNAPL Recovery Rate for Interval (gal/day)	Average LNAPL Recovery Rate for Interval (ft^3/day)	Estimated LNAPL Transmissivity for Interval (ft^2/day)	Overall Average LNAPL Transmissivity[b] (ft^2/day)
AW-68 Short term test	Equilibrium							10.80	17.07	6.27	--	0.92		--	--	--	
	5/17/2016 11:30	--		--	--	--		11.40	15.11	3.71	--		--	--	--	--	
	5/20/2016 9:15	2.91	2.91	2.91	5.2	5.2	5.2	10.74	10.91	0.17	-0.06		0.92	1.8	0.24	0.2	
	5/25/2016 11:00	5.07	3.60	6.51	6.6	1.4	6.6	10.43	10.76	0.33	-0.37		0.92	0.4	0.05	0.04	
	6/1/2016 13:00	7.08	4.04	10.55	6.9	0.3	6.9	11.46	11.84	0.38	0.66		0.92	0.1	0.010	0.01	
	6/8/2016 12:15	6.97	6.97	17.51	13.2	6.3	13.2	9.90	10.85	0.95	-0.90		0.92	0.9	0.12	0.10	0.0
AW-68 Long term test	11/30/2017 9:50	--	--	0.00	--	--	--	10.83	17.17	6.34	--			--	--	--	
	12/6/2017 11:08	6.05	6.05	6.05	0.0	0.0	13.2	10.12	15.15	5.03	-0.68		0.92	0.0	0.00	0.0	
	12/6/2017 14:20	0.13	0.13	6.18	12.0	12.0	25.2	11.11	13.05	1.94	0.31		0.92	90.0	12.03	9.6	
	12/6/2017 14:50	0.02	0.02	6.20	13.0	1.0	26.2	11.36	12.45	1.09	0.56		0.92	48.0	6.42	5.1	
	12/6/2017 15:20	0.02	0.02	6.22	14.0	1.0	27.2	11.60	12.35	0.75	0.80		0.92	48.0	6.42	5.1	
	12/6/2017 15:50	0.02	0.02	6.25	16.0	2.0	29.2	11.89	12.27	0.38	1.09		0.92	96.0	12.83	10.2	
	12/13/2017 10:40	6.78	6.34	12.59	42.0	26.0	55.2	12.36	12.61	0.25	1.56		0.92	4.1	0.55	0.4	
	12/21/2017 12:31	8.08	8.08	20.67	82.0	40.0	95.2	11.35	11.37	0.02	0.55		0.92	5.0	0.66	0.5	
	12/28/2017 13:23	7.04	7.04	27.70	169.0	87.0	182.2	12.10	12.17	0.07	1.30		0.92	12.4	1.65	1.3	
	1/5/2018 13:23	8.00	7.80	35.50	177.0	8.0	190.2	11.33	11.35	0.02	0.53		0.92	1.0	0.14	0.1	
	1/12/2018 12:39	6.97	6.97	42.47	177.0	0.0	190.2	12.59	12.65	0.06	1.79		0.92	0.0	0.00	0.0	
	1/19/2018 13:04	7.02	7.02	49.49	177.0	0.0	190.2	11.51	11.86	0.35	0.71		0.92	0.0	0.00	0.0	
	1/26/2018 11:25	6.93	6.93	56.42	180.0	3.0	193.2	12.78	13.95	1.17	1.98		0.92	0.4	0.06	0.0	
	2/1/2018 11:36	6.01	5.81	62.23	180.0	0.0	193.2	11.23	11.43	0.20	0.43		0.92	0.0	0.00	0.0	
	2/7/2018 8:25	5.87	5.87	68.10	181.0	1.0	194.2	12.65	13.05	0.40	1.85		0.92	0.2	0.02	0.0	
	2/15/2018 12:02	8.15	8.15	76.25	208.0	27.0	221.2	11.64	11.71	0.07	0.84		0.92	3.3	0.44	0.4	
	2/22/2018 12:57	7.04	7.04	83.28	208.0	0.0	221.2	11.41	11.72	0.31	0.61		0.92	0.0	0.00	0.0	
	2/28/2018 7:52	5.79	5.58	88.87	211.0	3.0	224.2	10.86	11.05	0.19	0.06		0.92	0.5	0.07	0.1	
	3/7/2018 11:30	7.15	7.15	96.02	211.5	0.5	224.7	11.49	11.78	0.29	0.69		0.92	0.1	0.01	0.0	0.12
	Test Completed																

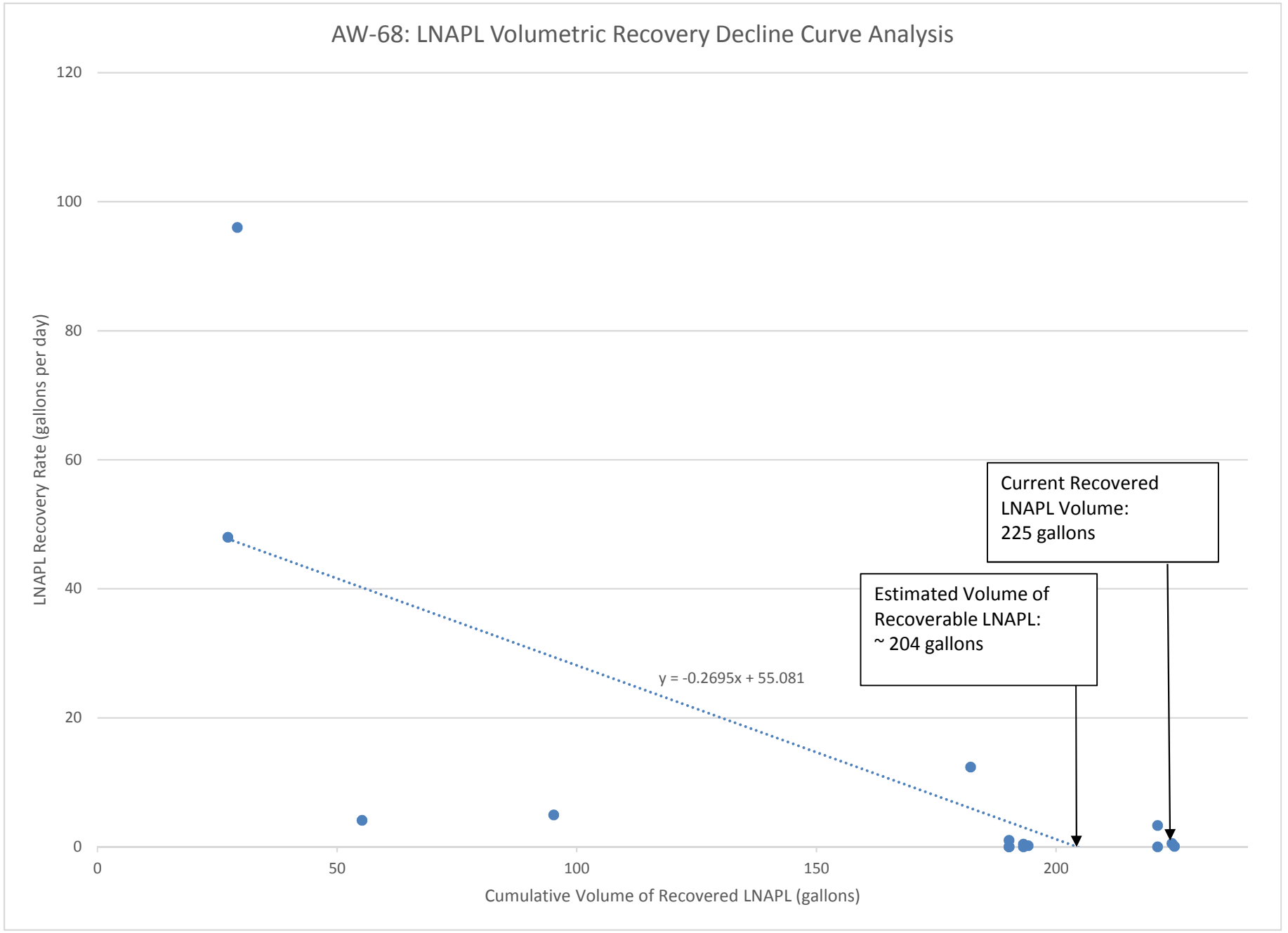
Assumed LNAPL specific gravity = 0.854

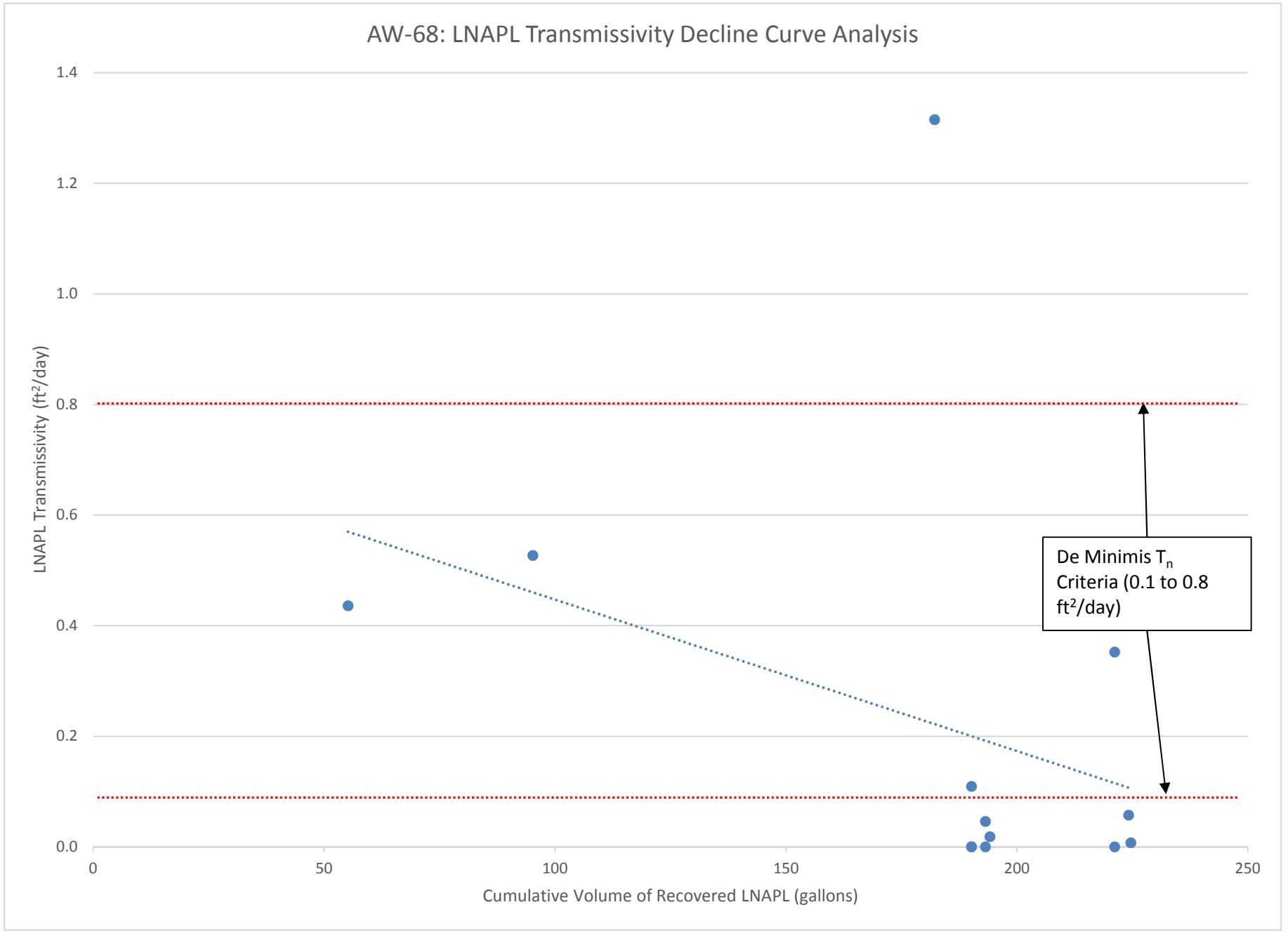
All calculations performed pursuant to the methodology detailed in ASTM E2856-13

[a]The maximum theoretical drawdown is used for each interval calculation where the measured drawdown is negative or where it exceeds the theoretical maximum.

[b]Represents the geometric mean of the stabilized recovery rates/LNAPL transmissivity estimates (i.e., excludes initial elevated values that would not represent potential long-term recovery rates).


AW-68: Cumulative LNAPL Recovery and LNAPL Recovery Rate Over Time
Cumulative LNAPL Recovery
LNAPL Recovery Rate
Cumulative Volume of Recovered LNAPL (gallons)
LNAPL Recovery Rate (gallons per day)
Date
250
200
150
100
50
0
120
100
80
60
40
20
0
1/0/00
1/2/00
1/4/00
1/6/00
1/8/00
1/10/00
1/12/00
1/14/00
1/16/00


AW-68: LNAPL Volumetric Recovery Decline Curve Analysis
LNAPL Recovery Rate (gallons per day)
120
100
80
60
40
20
0
0
50
100
150
200
Cumulative Volume of Recovered LNAPL (gallons)
y = -0.2695x + 55.081
Current Recovered LNAPL Volume: 225 gallons
Estimated Volume of Recoverable LNAPL: ~ 204 gallons


AW-68: LNAPL Transmissivity Decline Curve Analysis
LNAPL Transmissivity (ft²/day)
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0
50
100
150
200
250
Cumulative Volume of Recovered LNAPL (gallons)
De Minimis Tn Criteria (0.1 to 0.8 ft²/day)

Appendix A

AW-82 LNAPL Skimming Test Results
IMTT Savannah North Terminal
Savannah, Georgia

Well ID	Measurement Date & Time	Time Between Measurement Events (days)	Actual Skimmer Run-Time Between Measurement Events (days)	Cumulative Run Time (days)	Total Volume of LNAPL Recovered (gallons)	Volume of LNAPL Recovered During Measurement Interval (gallons)	RUNNING Total Volume of LNAPL Recovered (gallons)	Depth to LNAPL (feet btoc)	Depth to Water (feet btoc)	In-Well LNAPL Thickness (feet)	LNAPL Drawdown (feet)	Maximum Theoretical Unconfined LNAPL Drawdown (feet)	LNAPL Drawdown Used in Transmissivity Estimate[a] (feet)	Average LNAPL Recovery Rate for Interval (gal/day)	Average LNAPL Recovery Rate for Interval (ft^3/day)	Estimated LNAPL Transmissivity for Interval (ft^2/day)	Overall Average LNAPL Transmissivity[b] (ft^2/day)
AW-82 Short term test	Equilibrium							9.58	12.46	2.88	--	0.42		--	--	--	
	6/28/2016 11:00	--		--	--	--		9.11	12.62	3.51	--		--	--	--	--	
	6/28/2016 14:15	0.14	0.13	0.13	4.1	4.1	4.1	--	--	--			0.42	30.4	4.07	7.1	
	7/1/2016 9:25	2.80	2.78	2.92	6.0	1.9	6.0	8.89	12.33	3.44	-0.69		0.42	0.7	0.09	0.2	
	7/7/2016 13:10	6.16	6.16	9.08	12.3	6.3	12.3	9.27	12.42	3.15	-0.31		0.42	1.0	0.14	0.2	
	7/11/2016 12:00	3.95	2.24	11.31	22.7	10.4	22.7	9.66	13.36	3.70	0.08		0.42	4.7	0.62	1.1	
	7/12/2016 9:35	0.90	0.65	11.96	26.0	3.3	26.0	9.63	12.65	3.02	0.05		0.42	5.1	0.68	1.2	
	7/12/2016 12:25	0.12	0.12	12.08	26.4	0.4	26.4	9.82	12.74	2.92	0.24		0.42	3.4	0.45	0.8	
	7/19/2016 12:00	6.98	6.98	19.06	49.7	23.3	49.7	9.69	12.56	2.87	0.11		0.42	3.3	0.45	0.8	
	7/21/2016 13:45	2.07	2.02	21.08	57.8	8.1	57.8	9.53	12.85	3.32	-0.05		0.42	4.0	0.53	0.9	
	7/27/2016 11:25	5.90	5.84	26.93	79.1	21.3	79.1	10.00	13.00	3.00	0.42		0.42	3.6	0.49	0.8	0.6
	END OF TEST INTERVAL																
	11/16/2016 10:05	--	--	--	--	--		9.04	11.81	2.77	--		--	--	--	--	
	11/22/2016 11:20	6.05	5.94	5.94	16.2	16.2	95.3	10.82	10.96	0.14	1.24		0.42	2.7	0.36	0.6	
	11/29/2016 11:55	7.02	7.02	12.96	42.1	25.9	121.2	10.29	11.80	1.51	0.71		0.42	3.7	0.49	0.9	
	12/5/2016 11:55	6.00	5.77	18.73	80.9	38.8	160.0	10.56	11.30	0.74	0.98		0.42	6.7	0.90	1.6	
	12/7/2016 12:10	2.01	2.00	20.73	89.0	8.1	168.1	10.54	10.92	0.38	0.96		0.42	4.0	0.54	0.9	
	12/14/2016 9:10	6.88	6.82	27.55	104.3	15.4	183.4	10.45	10.58	0.13	0.87		0.42	2.3	0.30	0.5	
	12/21/2016 8:48	6.98	6.94	34.50	114.1	9.7	193.2	10.45	11.40	0.95	0.87		0.42	1.4	0.19	0.3	
	12/27/2016 11:40	6.12	6.00	40.50	125.3	11.2	204.4	10.37	10.56	0.19	0.79		0.42	1.9	0.25	0.4	
	1/4/2017 10:46	7.96	7.92	48.41	150.1	24.8	229.2	11.14	11.56	0.42	1.56		0.42	3.1	0.42	0.7	
	1/9/2017 11:04	5.01	4.80	53.21	165.3	15.2	244.4	10.87	10.96	0.09	1.29		0.42	3.2	0.42	0.7	
	1/19/2017 9:45	9.95	9.81	63.02	190.7	25.4	269.8	11.10	11.28	0.18	1.52		0.42	2.6	0.35	0.6	0.7
	END OF TEST INTERVAL																
	4/27/2017 11:50	--	--	0.00	--	--	--	9.97	13.02	3.05	--			--	--	--	
	5/2/2017 13:01	5.05	5.05	5.05	119.0	119.0	388.8	11.23	11.38	0.15	1.65		0.42	23.6	3.15	5.5	
	5/10/2017 10:17	7.89	7.89	12.94	194.0	75.0	463.8	10.85	12.26	1.41	1.27		0.42	9.5	1.27	2.2	
	5/17/2017 7:24	6.88	6.88	19.82	246.0	52.0	515.8	10.93	11.09	0.16	1.35		0.42	7.6	1.01	1.8	
	5/26/2017 10:34	9.13	9.13	28.95	306.0	60.0	575.8	10.96	11.15	0.19	1.38		0.42	6.6	0.88	1.5	
	6/1/2017 7:34	5.88	5.88	34.82	327.0	21.0	596.8	10.61	10.80	0.19	1.03		0.42	3.6	0.48	0.8	
	6/8/2017 11:05	7.15	6.88	41.70	352.0	25.0	621.8	10.31	10.45	0.14	0.73		0.42	3.6	0.49	0.8	
	6/15/2017 10:20	6.97	6.97	48.67	367.9	15.9	637.7	10.81	10.98	0.17	1.23		0.42	2.3	0.30	0.5	
	6/22/2017 11:00	7.03	7.03	55.70	392.9	25.0	662.7	10.48	10.63	0.15	0.90		0.42	3.6	0.48	0.8	
	6/26/2017 12:38	4.07	4.07	59.77	406.0	13.1	675.8	10.51	10.66	0.15	0.93		0.42	3.2	0.43	0.8	
	6/30/2017 12:34	4.00	4.00	63.76	459.5	53.5	729.3	10.56	11.45	0.89	0.98		0.42	13.4	1.79	3.1	
	7/7/2017 7:55	6.81	5.40	69.17	469.0	9.5	738.8	10.00	10.90	0.90	0.42		0.42	1.8	0.23	0.4	
	7/12/2017 15:11	5.30	5.30	74.47	486.8	17.8	756.6	10.08	10.16	0.08	0.50		0.42	3.4	0.45	0.8	
	7/19/2017 11:52	6.86	6.59	81.06	497.0	10.2	766.8	10.15	10.24	0.09	0.57		0.42	1.5	0.21	0.4	
	7/26/2017 11:35	6.99	6.99	88.05	540.9	43.9	810.7	10.04	10.06	0.02	0.46		0.42	6.3	0.84	1.5	
	8/2/2017 12:26	7.04	7.04	95.08	549.0	8.1	818.8	9.70	9.91	0.21	0.12		0.42	1.2	0.15	0.3	
	8/9/2017 10:03	6.90	6.90	101.98	552.0	3.0	821.8	9.75	9.90	0.15	0.17		0.42	0.4	0.06	0.1	
	8/17/2017 8:21	7.93	7.93	109.91	554.0	2.0	823.8	9.42	9.45	0.03	-0.16		0.42	0.3	0.03	0.1	
	8/22/2017 12:15	5.16	5.16	115.07	563.0	9.0	832.8	9.48	9.58	0.10	-0.10		0.42	1.7	0.23	0.4	
	8/30/2017 17:42	8.23	7.97	123.04	568.7	5.7	838.5	9.52	9.66	0.14	-0.06		0.42	0.7	0.10	0.2	
	9/6/2017 14:20	6.86	6.86	129.90	574.0	5.3	843.8	--	--	--	--		0.42	0.8	0.10	0.2	
	END OF TEST INTERVAL - SHUTDOWN DUE TO HURRICANE																

Appendix A

AW-82 LNAPL Skimming Test Results
IMTT Savannah North Terminal
Savannah, Georgia

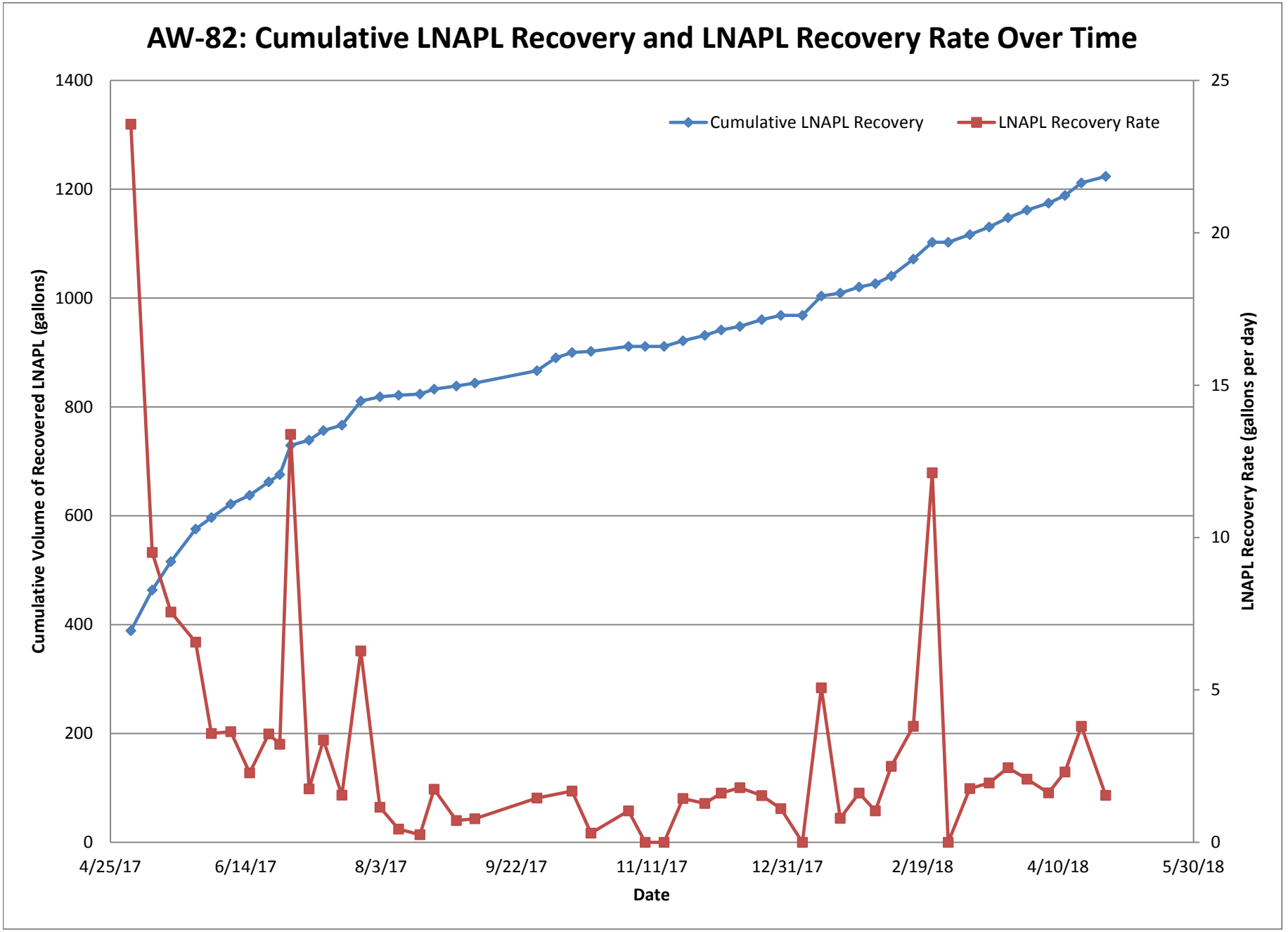
Well ID	Measurement Date & Time	Time Between Measurement Events (days)	Actual Skimmer Run-Time Between Measurement Events (days)	Cumulative Run Time (days)	Total Volume of LNAPL Recovered (gallons)	Volume of LNAPL Recovered During Measurement Interval (gallons)	RUNNING Total Volume of LNAPL Recovered (gallons)	Depth to LNAPL (feet btoc)	Depth to Water (feet btoc)	In-Well LNAPL Thickness (feet)	LNAPL Drawdown (feet)	Maximum Theoretical Unconfined LNAPL Drawdown (feet)	LNAPL Drawdown Used in Transmissivity Estimate[a] (feet)	Average LNAPL Recovery Rate for Interval (gal/day)	Average LNAPL Recovery Rate for Interval (ft^3/day)	Estimated LNAPL Transmissivity for Interval (ft^2/day)	Overall Average LNAPL Transmissivity[b] (ft^2/day)
AW-82 Long term test	9/21/2017 11:28	--	--	--	--	--	843.8	8.59	10.61	2.02	--			--	--	--	
	9/22/2017 8:51	0.89	0.89	130.79	12.3	12.3	856.1	9.35	9.41	0.06	-0.23		0.42	13.8	1.85	3.2	
	9/29/2017 12:35	7.16	7.16	137.95	22.7	10.4	866.5	9.54	9.70	0.16	-0.04		0.42	1.5	0.19	0.3	
	10/6/2017 12:23	6.99	0.74	138.69	46.4	23.7	890.2	9.05	10.36	1.31	-0.53		0.42	32.0	4.27	7.5	
	10/12/2017 10:45	5.93	5.93	144.62	56.4	10.0	900.2	9.75	9.92	0.17	0.17		0.42	1.7	0.23	0.4	
	10/19/2017 11:30	7.03	7.03	151.65	58.5	2.1	902.3	9.27	9.39	0.12	-0.31		0.42	0.3	0.04	0.1	
	11/2/2017 8:34	13.88	8.91	160.56	67.7	9.2	911.5	10.20	10.44	0.24	0.62		0.42	1.0	0.14	0.2	
	11/8/2017 11:50	6.14	6.14	166.69	67.7	0.0	911.5	10.06	10.29	0.23	0.48		0.42	0.0	0.00	0.0	
	11/15/2017 11:01	6.97	6.97	173.66	67.7	0.0	911.5	9.87	10.50	0.63	0.29		0.42	0.0	0.00	0.0	
	11/22/2017 10:09	6.96	6.96	180.62	77.7	10.0	921.5	10.53	10.79	0.26	0.95		0.42	1.4	0.19	0.3	
	11/30/2017 11:40	8.06	7.84	188.46	87.7	10.0	931.5	10.41	10.68	0.27	0.83		0.42	1.3	0.17	0.3	
	12/6/2017 13:00	6.06	6.06	194.52	97.5	9.8	941.3	10.13	10.38	0.25	0.55		0.42	1.6	0.22	0.4	
	12/13/2017 10:10	6.88	3.79	198.31	104.3	6.8	948.1	10.22	12.18	1.96	0.64		0.42	1.8	0.24	0.4	
	12/21/2017 12:03	8.08	8.08	206.39	116.7	12.4	960.5	10.31	12.17	1.86	0.73		0.42	1.5	0.21	0.4	
	12/28/2017 13:35	7.06	7.06	213.45	124.5	7.8	968.3	10.97	11.20	0.23	1.39		0.42	1.1	0.15	0.3	
	1/5/2018 13:18	7.99	7.75	221.21	124.5	0.0	968.3	10.74	10.98	0.24	1.16		0.42	0.0	0.00	0.0	
	1/12/2018 13:35	7.01	7.00	228.21	160.0	35.5	1003.8	10.76	10.98	0.22	1.18		0.42	5.1	0.68	1.2	
	1/19/2018 12:44	6.96	6.96	235.17	165.5	5.5	1009.3	10.65	10.90	0.25	1.07		0.42	0.8	0.11	0.2	
	1/26/2018 10:57	6.93	6.93	242.10	176.7	11.2	1020.5	11.30	11.36	0.06	1.72		0.42	1.6	0.22	0.4	
	2/1/2018 11:28	6.02	6.02	248.12	182.9	6.2	1026.7	10.66	10.90	0.24	1.08		0.42	1.0	0.14	0.2	
	2/7/2018 8:07	5.86	5.62	253.74	196.9	14.0	1040.7	10.83	11.13	0.30	1.25		0.42	2.5	0.33	0.6	
	2/15/2018 11:35	8.14	8.14	261.88	227.9	31.0	1071.7	10.23	10.64	0.41	0.65		0.42	3.8	0.51	0.9	
	2/22/2018 12:50	7.05	2.56	264.44	258.9	31.0	1102.7	10.48	12.24	1.76	0.90		0.42	12.1	1.62	2.8	
	2/28/2018 10:07	5.89	0.00	264.44	258.9	0.0	1102.7	9.85	12.17	2.32	0.27		0.42	0.0	0.00	0.0	
	3/8/2018 8:20	7.93	7.93	272.36	272.9	14.0	1116.7	10.67	10.89	0.22	1.09		0.42	1.8	0.24	0.4	
	3/15/2018 12:40	7.18	7.18	279.54	286.9	14.0	1130.7	10.75	10.96	0.21	1.17		0.42	1.9	0.26	0.5	
	3/22/2018 10:58	6.93	6.93	286.47	303.9	17.0	1147.7	11.40	11.61	0.21	1.82		0.42	2.5	0.33	0.6	
	3/29/2018 10:57	7.00	6.76	293.24	317.9	14.0	1161.7	10.60	10.78	0.18	1.02		0.42	2.1	0.28	0.5	
	4/6/2018 10:55	8.00	8.00	301.23	330.9	13.0	1174.7	11.14	11.39	0.25	1.56		0.42	1.6	0.22	0.4	
	4/12/2018 12:10	6.05	6.05	307.29	344.9	14.0	1188.7	10.94	11.20	0.26	1.36		0.42	2.3	0.31	0.5	
	4/18/2018 13:03	6.04	6.04	313.32	367.9	23.0	1211.7	10.09	10.34	0.25	0.51		0.42	3.8	0.51	0.9	
	4/27/2018 13:01	9.00	7.77	321.09	379.9	12.0	1223.7	10.57	10.81	0.24	0.99		0.42	1.5	0.21	0.4	0.55

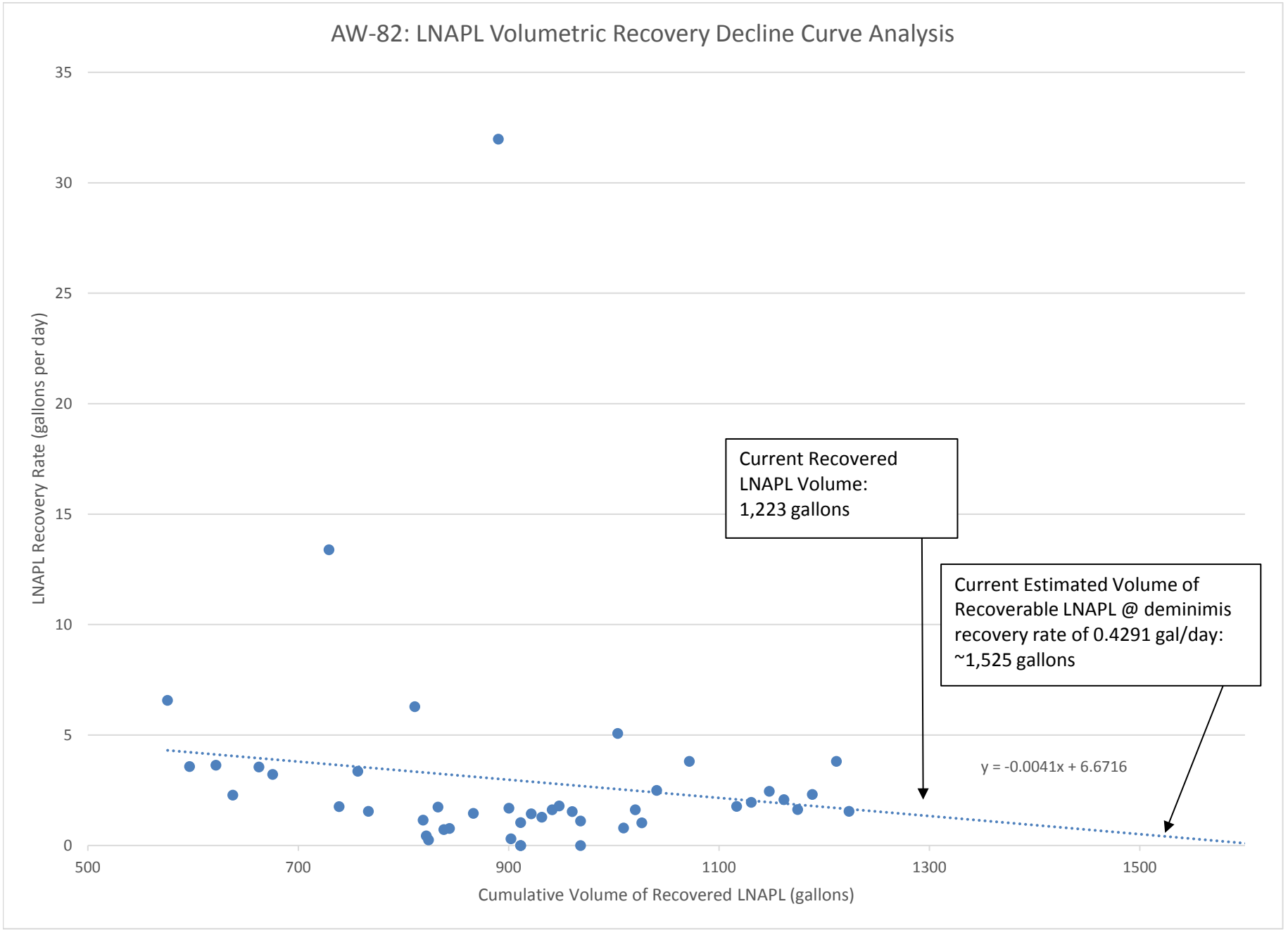
Assumed LNAPL specific gravity = 0.854

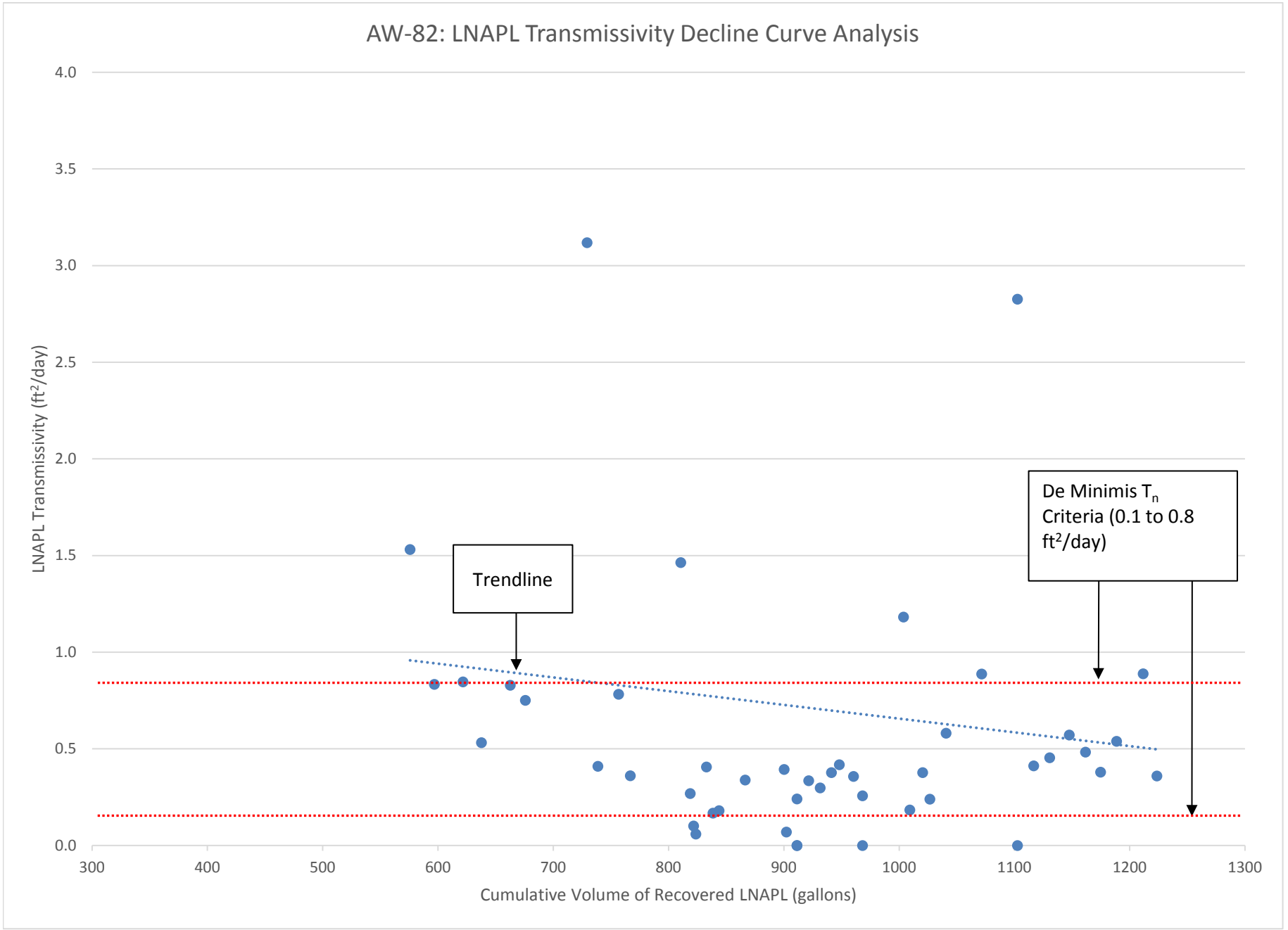
All calculations performed pursuant to the methodology detailed in ASTM E2856-13

[a]The maximum theoretical drawdown is used for each interval calculation where the measured drawdown is negative or where it exceeds the theoretical maximum.

[b]Represents the geometric mean of the stabilized recovery rates/LNAPL transmissivity estimates (i.e., excludes initial elevated values that would not represent potential long-term recovery rates).


AW-82: Cumulative LNAPL Recovery and LNAPL Recovery Rate Over Time
Cumulative LNAPL Recovery
LNAPL Recovery Rate
Cumulative Volume of Recovered LNAPL (gallons)
LNAPL Recovery Rate (gallons per day)
Date
0
200
400
600
800
1000
1200
1400
0
5
10
15
20
25
4/25/17
6/14/17
8/3/17
9/22/17
11/11/17
12/31/17
2/19/18
4/10/18
5/30/18


AW-82: LNAPL Volumetric Recovery Decline Curve Analysis
LNAPL Recovery Rate (gallons per day)
35
30
25
20
15
10
5
0
500
700
900
1100
1300
1500
Cumulative Volume of Recovered LNAPL (gallons)
Current Recovered LNAPL Volume: 1,223 gallons
Current Estimated Volume of Recoverable LNAPL @ deminimis recovery rate of 0.4291 gal/day: ~1,525 gallons
y = -0.0041x + 6.6716


AW-82: LNAPL Transmissivity Decline Curve Analysis
LNAPL Transmissivity (ft²/day)
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
300
400
500
600
700
800
900
1000
1100
1200
1300
Cumulative Volume of Recovered LNAPL (gallons)
Trendline
De Minimis Tn Criteria (0.1 to 0.8 ft²/day)

Appendix B
Labor Hours Summary
November 1, 2017 through April 30, 2018

Appendix B

Labor Hours
IMTT Savannah North Terminal
Savannah, Georgia

November 1, 2017 through April 30, 2018

Category	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18
Professional Engineer Labor Hours	32	26	20.5	28.5	32.5	21
Total Labor Hours	175	134.5	75.25	156.25	200	177