

RA22-020

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May 13, 2022

U.S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, DC 20555-0001

LaSalle County Station, Units 1 and 2  
Renewed Facility Operating License Nos. NPF-11 and NPF-18  
NRC Docket Nos. 50-373, 50-374, and 72-70

Subject: 2021 Annual Radiological Environmental Operating Report

Enclosed is the Constellation Energy Generation, LLC, 2021 Annual Radiological Environmental Operating Report for LaSalle County Station, submitted in accordance with Technical Specification 5.6.2, "Annual Radiological Environmental Operating Report." The enclosed report contains the results of groundwater monitoring conducted in accordance with Constellation's Radiological Groundwater Protection Program, which is a voluntary program implemented in 2006. This information is being reported in accordance with a nuclear industry initiative.

There are no regulatory commitments contained within this letter. Should you have any questions concerning this letter, please contact Mr. Daniel Mearhoff, Regulatory Assurance Manager, at (815) 415-2800.

Respectfully,



Phil W. Hansett  
Site Vice President  
LaSalle County Station

Enclosures: LaSalle County Station Units 1 and 2 Annual Radiological Environmental Operating Report 1 January through 31 December 2021

cc: Regional Administrator – NRC Region III  
NRC Senior Resident Inspector - LaSalle County Station

Docket No: 50-373  
50-374

# **LASALLE COUNTY STATION UNITS 1 and 2**

Annual Radiological  
Environmental Operating Report

1 January through 31 December 2021

**Prepared By**  
Teledyne Brown Engineering  
Environmental Services



LaSalle County Station  
Marseilles, IL 61341

**May 2022**



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## I. Summary and Conclusions

This report on the Radiological Environmental Monitoring Program conducted for the LaSalle County Station (LSCS) by Exelon covers the period 1 January 2021 through 31 December 2021. During that time period, 1,303 analyses were performed on 1,218 samples. In assessing all the data gathered for this report and comparing these results with preoperational data, it was concluded that the operation of LSCS had no adverse radiological impact on the environment.

Surface water samples were analyzed for concentrations of gross beta, tritium and gamma-emitting nuclides. Ground/well water samples were analyzed for concentrations of tritium and gamma-emitting nuclides. No fission or activation products were detected. Gross beta and tritium activities detected were consistent with those detected in previous years except for the control location November monthly sample (51.6 pCi/L). Several recounts and reanalyses confirmed this value. However, samples from the individual weekly grab samples stored at the sample collector vendor offices showed normal gross beta activity consistent with that detected in previous years.

Commercially and recreationally important fish species were sampled and analyzed for concentrations of gamma-emitting nuclides. No fission or activation products were detected in fish.

Sediment samples were analyzed for concentrations of gamma-emitting nuclides. No fission or activation products were detected.

Air particulate samples were analyzed for concentrations of gross beta and gamma-emitting nuclides. No fission or activation products were detected.

High sensitivity iodine-131 (I-131) analyses were performed on weekly air samples. All results were less than the minimum detectable activity for I-131.

Cow milk samples were analyzed for concentrations of I-131 and gamma-emitting nuclides. All I-131 results were below the minimum detectable activity. Concentrations of naturally occurring potassium-40 (K-40) were consistent with those detected in previous years. No fission or activation products were found. All nuclides were below the minimum detectable activity.

Food product samples were analyzed for concentrations of gamma-emitting nuclides. No fission or activation products were detected.

Vegetation samples were analyzed for concentrations of gamma-emitting nuclides. No fission or activation products were detected.

Environmental gamma radiation measurements were performed quarterly using Optically Stimulated Luminescence Dosimeters (OSLD) for the Radiological Environmental Monitoring Program (REMP). The results from the environmental gamma radiation monitoring program were consistent with those detected in previous years.

## II. Introduction

The LaSalle County Station (LSCS), consists of two boiling water reactors, each rated for 3,546 MWt. Both units are owned and operated by Exelon Corporation and are located in LaSalle County, Illinois. Unit 1 went critical on 16 March 1982. Unit 2 went critical on 02 December 1983. The site is located in northern Illinois, approximately 75 miles southwest of Chicago, Illinois.

A Radiological Environmental Monitoring Program (REMP) for LSCS was initiated in 1982 (the preoperational period for most media covers the periods 1 January 1979 through 26 December 1981 and was summarized in a separate report.). This report covers those analyses performed by Teledyne Brown Engineering (TBE) and Landauer on samples collected during the period 1 January 2021 through 31 December 2021.

### A. Objectives of the REMP

The objectives of the REMP are to:

1. Provide data on measurable levels of radiation and radioactive materials in the site environs.
2. Evaluate the relationship between quantities of radioactive material released from the plant and resultant radiation doses to individuals from principal pathways of exposure.

### B. Implementation of the Objectives

The implementation of the objectives is accomplished by:

1. Identifying significant exposure pathways.
2. Establishing baseline radiological data of media within those pathways.
3. Continuously monitoring those media before and during Station operation to assess Station radiological effects (if any) on man and the environment.

### III. Program Description

#### A. Sample Collection

Samples for the LSCS REMP were collected for Exelon Nuclear by Environmental Inc. (Midwest Labs). This section describes the general collection methods used by Environmental Inc. (Midwest Labs) to obtain environmental samples for the LSCS REMP in 2021. Sample locations and descriptions can be found in Tables B-1 and B-2, and Figures B-1 through B-3, Appendix B.

##### Aquatic Environment

The aquatic environment was evaluated by performing radiological analyses on samples of surface water, ground/well water, fish, and sediment. Two gallon water samples were collected weekly from two surface water locations (L-21 and L-40) and composited for monthly and quarterly required analyses. Control location was L-21. Two ground/well water locations (L-27 and L-28) were also grab sampled quarterly. Wells 4, 5 and 6 are associated with L-28. L-27 and L-28 Well 6 could be affected by LaSalle's effluent releases. All samples were collected via grab sample. The samples were then transferred to new unused plastic containers. Both the grab container and the sample containers were rinsed with source water prior to actual sample collection. Fish samples were collected semiannually at three locations, L-34, L-35 and L-36 (Control). Sediment samples composed of recently deposited substrate were collected at three locations semiannually, L-21 (Control), L-40 and L-41.

##### Atmospheric Environment

The atmospheric environment was evaluated by performing radiological analyses on samples of airborne particulate and iodine. Airborne particulate and iodine samples were collected and analyzed weekly at nine locations (L-01, L-03, L-04, L-05, L-06, L-07, L-08, L-10, and L-11A). The control location was L-10. Airborne particulate and iodine samples were obtained at each location, using a vacuum pump to pull air through an iodine cartridge and a glass fiber particulate filter. The pumps were run continuously and sampled air at the rate of approximately one cubic foot per minute. The particulate filters and iodine cartridges were replaced weekly and sent to the laboratory for analysis.

##### Terrestrial Environment

The terrestrial environment was evaluated by performing radiological analyses on samples of milk and food product. Samples are typically collected biweekly at one milk location (L-42) from May through September, and monthly from December through April. The control location was L-42. All samples, when available, were collected in new unused two gallon plastic bottles from the bulk tank at each location, preserved with sodium bisulfite, and shipped promptly to the laboratory.



Food products were collected during the growing season at five locations (L-42, L-Quad 1, L-Quad 2, L-Quad 3 and L-Quad 4). The control location was L-42. Various types of samples were collected and placed in new unused plastic bags and sent to the laboratory for analysis.

Vegetation samples were collected monthly during the growing season from May through October at three locations (L-Veg C, L-ESE1, and L-ESE2). The control location was L-Veg C and was located in the lowest deposition sector (ENE sector) surrounding LaSalle. Various vegetation samples were also collected in the highest deposition sector (ESE sector) surrounding LaSalle. The samples were collected and placed in new unused plastic bags and sent to the laboratory for analysis.

#### Ambient Gamma Radiation

Beginning in the first quarter of 2012, Exelon changed the type of dosimetry used for the Radiological Environmental Monitoring Program (REMP). Optically Stimulated Luminescent Dosimetry (OSLD) were deployed and Thermo-luminescent Dosimetry (TLD) were discontinued. This change may cause step changes in readings, up or down, depending on site characteristics. However, the relative comparison to control locations remains valid. OSLD technology is different than that used in a TLD but has the same purpose (to measure direct radiation).

Each location consisted of 2 OSLD sets. The OSLDs were exchanged quarterly and sent to Landauer for analysis. The OSLD locations were placed on and around the LSCS site as follows:

An inner ring consisting of 16 locations (L-101, L-102, L-103, L-104, L-105, L-106, L-107, L-108, L-109, L-110, L-111B, L-112, L-113A, L-114, L-115 and L-116) near and within the site perimeter representing fence post doses (i.e., at locations where the doses will be potentially greater than maximum annual off-site doses from LSCS releases).

An outer ring consisting of 17 locations (L-201, L-202, L-203, L-204, L-205A, L-205B, L-206, L-207, L-208, L-209, L-210, L-211, L-212, L-213, L-214, L-215 and L-216) extending to approximately 5 miles from the site designed to measure possible exposures to nearby population.

An other set consisting of eight locations (L-01, L-03, L-04, L-05, L-06, L-07, L-08, and L-11A).

The balance of one location (L-10) representing the control area.

The specific OSLD locations were determined by the following criteria:

1. The presence of relatively dense population;
2. Site meteorological data taking into account distance and elevation for each of the sixteen 22 ½ degree sectors around the site, where estimated annual dose from LSCS, if any, would be most significant;

3. On hills free from local obstructions and within sight of the vents (where practical);
4. And near the closest dwelling to the vents in the prevailing downwind direction.

(Two OSLDs were placed at each location approximately six feet above ground level.)

#### B. Sample Analysis

This section describes the general analytical methodologies used by Environmental Inc. (Midwest Labs) and TBE to collect and analyze, respectively, the environmental samples for radioactivity for the LSCS REMP in 2021. The analytical procedures used by the laboratory are listed in Table B-2.

In order to achieve the stated objectives, the current program includes the following analyses:

1. Concentrations of beta emitters in surface water and air particulates
2. Concentrations of gamma emitters in ground/well and surface water, air particulates, milk, fish, sediment and vegetation
3. Concentrations of tritium in ground/well and surface water
4. Concentrations of I-131 in air and milk
5. Ambient gamma radiation levels at various site environs

#### C. Data Interpretation

The radiological and direct radiation data collected prior to LaSalle County Station becoming operational were used as a baseline with which these operational data were compared. For the purpose of this report, LaSalle County Station was considered operational at initial criticality. In addition, data were compared to previous years' operational data for consistency and trending. Several factors were important in the interpretation of the data:

##### 1. Lower Limit of Detection and Minimum Detectable Concentration

The lower limit of detection (LLD) is defined as the smallest concentration of radioactive material in a sample that would yield a net count (above background) that would be detected with only a 5% probability of falsely concluding that a blank observation represents a "real" signal. The LLD is intended as a before the fact (a priori) estimate of a system (including instrumentation, procedure and sample type) and not as an after the fact (a posteriori) criteria for the presence of activity. All analyses were designed to achieve the required LSCS detection capabilities for environmental sample analysis.

The minimum detectable concentration (MDC) is defined above with the exception that the measurement is an after the fact estimate of the

presence of activity.

## 2. Net Activity Calculation and Reporting of Results

Net activity for a sample was calculated by subtracting background activity from the sample activity. Since the REMP measures extremely small changes in radioactivity in the environment, background variations may result in sample activity being lower than the background activity effecting a negative number. An MDC was reported in all cases where positive activity was not detected.

Gamma spectroscopy results for each type of sample were grouped as follows:

For surface water, food products, and vegetation: 12 nuclides including Mn-54, Co-58, Fe-59, Co-60, Zn-65, Zr-95, Nb-95, I-131, Cs-134, Cs-137, Ba-140, and La-140 were reported.

For ground/well water, fish, sediment, air particulate and milk: 11 nuclides including Mn-54, Co-58, Fe-59, Co-60, Zn-65, Zr-95, Nb-95, Cs-134, Cs-137, Ba-140, and La-140 were reported.

Means and standard deviations of the results were calculated. The standard deviations represent the variability of measured results for different samples rather than single analysis uncertainty.

### D. Program Exceptions

For 2021, the LSCS REMP had a sample recovery rate of >99%. Sample anomalies and missed samples are listed in the following tables:

Table D-1 LISTING OF SAMPLE ANOMALIES

Sample Type	Location Code	Collection Date(s)	Reason
MI	L-42	01/07/21 02/03/21 03/03/21	Farmer stopped milking cows before calving season.
AP/AI	L-01	01/07/21	Low reading of 41.2 hrs., caused by a recent power restoration. Restoration date and time estimated based on the timer reading. Note: during the collection on 1/13/21 timer indicated 145.3 hrs. which is the expected value for the 6 days collection period.
AP/AI	L-11A	01/20/21	Timer indicates approximately 5 hrs. less than expected due to a power outage. Note: during the 1/27/21 collection the timer indicated 193.0 hrs.; expected value for the 8 days collection period.
AP/AI	L-06	01/27/21	Timer indicates approximately 9.3 hrs. less than expected due to a possible power outage.

Table D-1 LISTING OF SAMPLE ANOMALIES (cont'd)

Sample Type	Location Code	Collection Date	Reason
AP/AI	L-03	02/11/21	Pump Vmax lower than usual, possibly caused by low temperatures. Pump exchanged.
SW	L-21	02/11/21 02/18/21	River Frozen
AP/AI	L-06	02/18/21	Timer indicates lower value of 128.8 hrs during the 7 days collection period, possibly caused by a power outage.
OSLD	L-03	02/18/21	Unable to check OSLDs. Access road blocked by unplowed snow.
SW	L-40	02/11/21 02/18/21	River Frozen
AP/AI	L-03	02/25/21	Sample collected after a two- week run, after clearing of the access road of snow.
AP/AI	L-01	04/26/21	The pump found not running with the timer indicating 126.7 hrs. No electricity at the station due to a broken power wire. Chemistry informed. Pump exchanged as a precaution.
AP/AI	L-01	05/13/21	Pump started on 5/7/21 @ 14:30 after power restoration. Total collection time was 138.2 hrs.
AP/AI	L-05	07/14/21	Timer displayed 4.4 hrs. less than expected. Timer replaced. Time shortage due to combination of faulty timer and power outage.
MI	L-42	06/02/21 06/17/21	No sample due to very limited milk production.
AP/AI	L-05	07/22/21	Timer displayed 8.2 hrs. less than expected. Timer replaced. Time shortage due to combination of faulty timer and power outage.
AP/AI	L-05	07/29/21	Timer displayed 8.4 hrs. less than expected. Timer replaced. Time shortage due to combination of faulty timer and power outage.
AP/AI	L-03	08/19/21	Timer indicated a low value of 82 hrs. due to a power outage. During the week of 8/26/21 collection time indicated the expected 168.3 hrs.

Table D-2 LISTING OF MISSED SAMPLES

Sample Type	Location Code	Collection Date(s)	Reason
AP/AI	L-03	02/18/21	Unable to reach the station due to unplowed access road
OSLD	L-212	03/31/21	OSLD missing, possibly dislodged by strong winds or snow removal activities. Premises searched unsuccessfully.
OSLD	L-209	06/30/21	OSLD missing, possibly dislodged by strong winds. Premises searched unsuccessfully.
OSLD	L-102	09/29/21	OSLD missing, possibly dislodged by strong winds. Premises searched unsuccessfully.
BS	L-41	1 <sup>st</sup> half, 2021	Unable to collect sample due to location inaccessibility. Future samples will be collected by fish collectors by boat at the shoreline.

Each program exception has been reviewed to understand the causes of the program exception. Occasional equipment breakdowns and power outages were unavoidable.

The overall sample recovery rate indicates that the appropriate procedures and equipment are in place to assure reliable program implementation.

E. Program Changes

There were no program changes in 2021.

## IV. Results and Discussion

### A. Aquatic Environment

#### 1. Surface Water

Samples were taken weekly and composited monthly at two locations (L-21 and L-40). Of these locations only L-40 located downstream, could be affected by LaSalle's effluent releases. The following analyses were performed:

##### Gross Beta

Samples from all locations were analyzed for concentrations of gross beta (Table C-I.1, Appendix C). Gross beta was detected in 23 out of 24 samples with a range of 3.2 to 51.6 pCi/L. The gross beta results for control location L-21 collect during the month of November 2021 showed elevated results greater than Chemistry's administrative investigation level of 15 pCi/L<sup>1</sup>. The initial analysis reported a value of 51.6 pCi/L. An immediate recount confirmed the original results (count 1 = 50.1 pCi/L). The gamma analysis showed no gamma producing radionuclides. After discussions with the laboratory another aliquot was obtained and analyzed. That reanalysis also, confirmed both earlier results (analysis 2 = 52.3 pCi/L). At this point approximately 30 days since the end of the November sample collection had passed.

Review of the sample container and the sample planchet mount wait indicated a significant amount of material was in the sample. Another gross beta analysis was requested. This analysis split the aliquot into two matrices suspended and dissolved portions. The results of that analysis, although higher than the investigation level did not confirm the original results (analysis 3 suspended = < 3.8 pCi/L and dissolved = 17.1 pCi/L).

The sample collector vendor was contacted to send an aliquot from each of the four weekly grab samples used to make the original monthly composite. Each of the four aliquot samples showed gross beta activity of less than 10 pCi/L. The average of these four results (6.5 pCi/L) was consistent with those detected in previous years (Figure C-1, Appendix C). The required LLD was met for all samples.

##### Tritium

Quarterly composites of weekly collections were analyzed for tritium activity (Table C-I.2, Appendix C). Tritium was detected in 5 of 8 samples with a range of 245 - 676 pCi/L. Concentrations detected were consistent with those detected in previous years. (Figure C-2, Appendix C).

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<sup>1</sup> CY-AA-170-1000, Radiological Environmental Monitoring Program and Meteorological Program Implementation, Attachment 1, Analytical Results Investigation Levels

### Gamma Spectrometry

Samples from both locations were analyzed for gamma-emitting nuclides (Table C–I.3, Appendix C). No nuclides were detected, and all required LLDs were met.

## 2. Ground/Well Water

Quarterly grab samples were collected at two locations (L-27 and L-28). Wells 4, 5 and 6 are associated with L-28. L-27 and L-28 Well 6 could be affected by LaSalle's effluent releases. The following analyses were performed:

### Tritium

Quarterly grab samples from the locations were analyzed for tritium activity (Table C–II.1, Appendix C). No tritium was detected and the contractually-required 200 pCi/L LLDs were met.

### Gamma Spectrometry

Samples from all locations were analyzed for gamma-emitting nuclides (Table C–II.2, Appendix C). No nuclides were detected, and all required LLDs were met.

## 3. Fish

Fish samples were collected at three locations (L-34, L-35 and L-36) semiannually. Locations L-34 and L-35 could be affected by LaSalle's effluent releases. The following analysis was performed:

### Gamma Spectrometry

The edible portion of fish samples from both locations was analyzed for gamma-emitting nuclides (Table C–III.1, Appendix C). Naturally occurring K-40 was found at all stations and ranged from 2,600 to 3,792 pCi/kg wet. No fission or activation products were found.

## 4. Sediment

Aquatic sediment samples were collected at three locations (L-21, L-40 and L-41) semiannually. Location L-21 is located upstream and is not affected by LaSalle's liquid effluent releases. Locations L-40 and L-41, located downstream, could be affected by LaSalle's effluent releases. The following analysis was performed:

### Gamma Spectrometry

Sediment samples from the three locations were analyzed for gamma-emitting nuclides (Table C–IV.1, Appendix C). Naturally occurring K-40 was found at all stations and ranged from 10,010 to 17,510 pCi/kg dry. No fission or activation products were found.



## B. Atmospheric Environment

### 1. Airborne

#### a. Air Particulates

Continuous air particulate samples were collected from nine locations on a weekly basis. The nine locations were separated into four groups: Group I (onsite) represents locations within the LSCS site boundary (L-03 and L-05), Group II (near-site) represents the locations near the LSCS site (L-01 and L-06), Group III (far-field) represents the locations at an intermediate distance from LSCS (L-04, L-07, L-08, and L-11A) and Group IV (control) represents the control location at a remote distance (L-10). The following analyses were performed:

#### Gross Beta

Weekly samples were analyzed for concentrations of beta emitters (Table C-V.1 and C-V.2, Appendix C). Detectable gross beta activity was observed at all locations. Comparison of results among the four groups aid in determining the effects, if any, resulting from the operation of LSCS. The results from the onsite locations (Group I) ranged from 7 to  $39\text{E}-3$  pCi/m<sup>3</sup> with a mean of  $19\text{E}-3$  pCi/m<sup>3</sup>. The results from the near-site location (Group II) ranged from 6 to  $38\text{E}-3$  pCi/m<sup>3</sup> with a mean of  $20\text{E}-3$  pCi/m<sup>3</sup>. The results from the far-field locations (Group III) ranged from 5 to  $37\text{E}-3$  pCi/m<sup>3</sup> with a mean of  $19\text{E}-3$  pCi/m<sup>3</sup>. The results from the control location (Group IV) ranged from 8 to  $39\text{E}-3$  pCi/m<sup>3</sup> with a mean of  $20\text{E}-3$  pCi/m<sup>3</sup>. Comparison of the 2021 air particulate data with previous year's data indicate no effects from the operation of LSCS (Figures C-3 through C-8, Appendix C). In addition, comparisons of the weekly mean values for 2021 indicate no notable differences among the four groups.

#### Gamma Spectrometry

Weekly samples were composited quarterly and analyzed for gamma-emitting nuclides (Table C-V.3, Appendix C). Naturally occurring Be-7, due to cosmic ray activity, was detected in 36 of 36 samples. These values ranged from 82 to  $183\text{E}-3$  pCi/m<sup>3</sup>. All other nuclides were less than the MDC.

#### b. Airborne Iodine

Continuous air samples were collected from ten locations (L-01, L-03, L-04, L-05, L-06, L-07, L-08, L-10, and L-11A) and analyzed weekly for I-131 (Table C-VI.1, Appendix C). No I-131 was detected.

## 2. Terrestrial

### a. Milk

Samples were collected from one location (L-42) five times during 2021. The following analyses were performed:

#### Iodine-131

Milk samples from the location were analyzed for concentrations of I-131 (Table C–VII.1, Appendix C). I-131 was not detected, and the required LLDs were met.

#### Gamma Spectrometry

Milk samples were analyzed for concentrations of gamma-emitting nuclides (Table C–VII.2, Appendix C). Naturally occurring K-40 activity was found in all milk samples and ranged from 643 to 1,272 pCi/l. No other nuclides were detected, and all required LLDs were met.

### b. Food Products

Food product samples were collected at five locations (L42, L-Quad 1, L-Quad 2, L-Quad 3 and L-Quad 4) when available. All locations could be affected by LaSalle's effluent releases. The following analysis was performed:

#### Gamma Spectrometry

Samples from all available locations were analyzed for gamma-emitting nuclides (Table C–VIII.1, Appendix C). No nuclides were detected, and all required LLDs were met.

### c. Vegetation

Vegetation samples were collected monthly during the growing season from May through October at three locations (L-Veg C, L-ESE-1, and L-ESE-2). The control location was L-Veg C and was located in the lowest deposition sector (ENE sector) surrounding LaSalle. Various vegetation samples were also collected in the highest deposition sector (ESE sector) surrounding LaSalle. The following analyses were performed:

#### Gamma Spectrometry

Samples from all available locations were analyzed for gamma-emitting nuclides (Table C-VIII.2, Appendix C). No nuclides were detected, and all required LLDs were met.

C. Ambient Gamma Radiation

Ambient gamma radiation levels were measured utilizing Optically Stimulated Luminescence Dosimeters (OSLD). Forty-two OSLD locations were established around the site. Results of OSLD measurements are listed in Tables C–IX.1, Appendix C.

All OSLD measurements were at or below 22 mrem/std. quarter, with a range of 13.5 to 21.8 mrem/quarter. A comparison of the Normalized Annual Dose to the Baseline Background and Minimum Differential Dose indicates that there is no evidence of dose which could be attributed to facility-related direct radiation.

D. Land Use Census

A Land Use Census conducted August 17, 2021, around the LaSalle County Station (LSCS) was performed by Environmental Inc. (Midwest Labs) for Exelon Nuclear to comply with Radiological Effluent Control 12.5.2 of the LaSalle’s Offsite Dose Calculation Manual. The purpose of the survey was to document the nearest resident and milk producing animal in each of the sixteen 22 ½ degree sectors around the site within 10 km (6.2 miles). The distance and direction of all locations from the LSCS reactor buildings were positioned using Global Positioning System (GPS) technology. Since there were no milk animals within 10 km of LSCS, beef cows were identified. There were no changes required to the LSCS REMP as a result of this survey. The results of this survey are summarized below:

Distance in Miles from the LSCS Reactor Buildings				
Sector		Residence Miles	Livestock Miles	Milk Farm Miles
A	N	3.9	4.0	-
B	NNE	1.6	1.7	-
C	NE	2.1	3.5	-
D	ENE	3.3	4.6	-
E	E	3.2	-	14.2
F	ESE	1.4	-	-
G	SE	1.7	5.1	-
H	SSE	1.8	4.7	-
J	S	1.5	1.5	-
K	SSW	0.7	-	-
L	SW	1.0	5.8	-
M	WSW	1.5	-	-
N	W	1.7	3.0	-
P	WNW	0.9	3.0	-
Q	NW	1.7	3.3	-
R	NNW	1.7	4.5	-

E. Errata Data

There is no errata data for 2021.

F. Summary of Results – Inter-Laboratory Comparison Program

The TBE Laboratory analyzed Performance Evaluation (PE) samples of air particulate, air iodine, milk, soil, vegetation, and water matrices for various analytes. The PE samples supplied by Analytics Inc., Environmental Resource Associates (ERA) and Department of Energy (DOE) Mixed Analyte Performance Evaluation Program (MAPEP), were evaluated against the following pre-set acceptance criteria:

1. Analytics Evaluation Criteria

Analytics' evaluation report provides a ratio of TBE's result and Analytics' known value. Since flag values are not assigned by Analytics, TBE evaluates the reported ratios based on internal QC requirements based on the DOE MAPEP criteria.

2. ERA Evaluation Criteria

ERA's evaluation report provides an acceptance range for control and warning limits with associated flag values. ERA's acceptance limits are established per the USEPA, National Environmental Laboratory Accreditation Conference (NELAC), state-specific Performance Testing (PT) program requirements or ERA's SOP for the Generation of Performance Acceptance Limits, as applicable. The acceptance limits are either determined by a regression equation specific to each analyte or a fixed percentage limit promulgated under the appropriate regulatory document.

3. DOE Evaluation Criteria

MAPEP's evaluation report provides an acceptance range with associated flag values. MAPEP defines three levels of performance:

- Acceptable (flag = "A") - result within  $\pm 20\%$  of the reference value
- Acceptable with Warning (flag = "W") - result falls in the  $\pm 20\%$  to  $\pm 30\%$  of the reference value
- Not Acceptable (flag = "N") - bias is greater than 30% of the reference value

*Note: The Department of Energy (DOE) Mixed Analyte Performance Evaluation Program (MAPEP) samples are created to mimic conditions found at DOE sites which do not resemble typical environmental samples obtained at commercial nuclear power facilities.*

For the TBE laboratory, 146 out of 154 analyses performed met the specified acceptance criteria. Seven analyses did not meet the specified acceptance criteria and were addressed through the TBE Corrective Action Program. *NOTE: One analysis (soil for Tc-99) that did not meet acceptance criteria was performed for TBE information and is not on the list of required ICP analyses. A summary is found below:*

1. The ERA MRAD March 2021 Water Fe-55 result was evaluated as *Not Acceptable*. The reported value for Fe-55 was 579 pCi/L and the known result was 275 pCi/L (acceptance range 162 - 400). When reviewing the original sample data, it was found that the carrier yield was 52.6% (lower than typical water samples). Looking at the etched plate that was counted, it appeared that some loss of sample could have occurred. The sample was logged for reanalysis and used as the workgroup duplicate. The results were acceptable at 197 and 221 respectively. Yields were 97.4% and 105.7% and the plated samples were centered with no apparent loss of sample. The loss of sample during plating resulted in a low yield which produced an artificially high sample result. (NCR 21-01)
2. The MAPEP February 2021 AP Gross Alpha result was evaluated as *Not Acceptable*. The reported value was 0.371 Bq/sample and the known result was 1.77 Bq/sample (acceptance range 0.53 - 3.01). A similar failure had occurred several years prior due to the filter being placed with the wrong side up on the detector. At that time, a small dot was placed on the top of the filter prior to removal from the package to indicate the correct side for counting. The current sample was still in the detector when the result was received (dot side facing the detector). The sample was recounted with a similar result and was flipped and recounted. The flipped result was 0.661 Bq/sample, within the acceptable range. Because TBE cannot rely on receiving correct packaging from the provider, MAPEP AP cross-checks will be counted on both sides going forward. *NOTE: The August sample had the same packaging issue (upside down).* (NCR 21-02)
3. The MAPEP February 2021 soil Ni-63 was evaluated as *Not Acceptable*. The reported value was 310 Bq/kg and the known result was 689 (acceptance range 482 - 896). All workgroup QC was reviewed with no anomalies. The analytical procedure had been revised prior to this analysis to eliminate added interferences. The sample yield was >100%, indicative of incomplete separation from interferences, leading to a lower result. The procedure was again revised after acceptable results were obtained. (NCR 21-03)
4. The ERA October 2021 water Gross Beta result was evaluated as *Not Acceptable*. The reported value was 63.0 pCi/L and the known was 55.7 (acceptance range 38.1 - 62.6) or 113% of the known. The 2-sigma error was 6.8, placing the reported result well within the acceptable range. All QA was reviewed with no anomalies. A follow-up Quick Response cross-check was analyzed with a 120% ratio (see item 7). (NCR 21-10)
5. The ERA October 2021 water Tritium result was evaluated as *Not Acceptable*. The reported value was 13,800 pCi/L and the known was

17,200 (acceptance range 15,000 - 18,900). The 2-sigma error was 1,430, placing the result within the acceptable range. TBE's internal QC acceptance is 70% - 130%, while ERA's for this sample was 87% - 110%. All QA was reviewed with no anomalies. A Quick Response follow-up cross-check was analyzed with a result of 17,500 pCi/L (known 17,800 pCi/L). (NCR 21-11)

6. The MAPEP August 2021 soil Ni-63 result was evaluated as *Not Acceptable*. The reported value was 546 Bq/kg and the known result was 1,280 Bq/kg (acceptance range 896 - 1,664). All QC was reviewed and no anomalies found. The procedure revision to remove added MAPAP interferences was ineffective for this sample. No client soil matrix samples were analyzed for Ni-63 in 2020 or 2021. The root cause investigation is still ongoing at this time. (NCR 21-13)
7. The ERA December 2021 Quick Response water Gross Beta result was evaluated as *Not Acceptable*. The reported value was 47.6 pCi/L and the known was 39.8 pCi/L or 120% of the known (acceptance range of 26.4 - 47.3). The 2-sigma error was 6.1, placing the reported result well within the acceptable range. All QA was reviewed with no anomalies. The original sample was recounted on a different detector with a result of  $40.3 \pm 6.27$  pCi/L. The "failure" of this sample and the RAD-127 was due to the narrow upper acceptance ranges assigned (119% and 112%) (NCR 21-14)

The Inter-Laboratory Comparison Program provides evidence of "in control" counting systems and methods, and that the laboratories are producing accurate and reliable data.

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**APPENDIX A**

**RADIOLOGICAL ENVIRONMENTAL  
MONITORING REPORT ANNUAL SUMMARY**

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**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR  
THE LASALLE COUNTY STATION, 2021**

NAME OF FACILITY:		LASALLE COUNTY STATION		DOCKET NUMBER:		50-373 & 50-374			
LOCATION OF FACILITY:		MARSEILLES, IL		REPORTING PERIOD:		2021			
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR	CONTROL	LOCATION WITH HIGHEST ANNUAL MEAN (M)		NUMBER OF NONROUTINE REPORTED MEASUREMENTS	
				LOCATIONS MEAN (M) (F) RANGE	LOCATION MEAN (M) (F) RANGE	MEAN (M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION		
SURFACE WATER (PC/LITER)	GR-B	24	4	6.3	6.2	6.3	L-40 INDICATOR	0	
				(11/12)	(12/12)	(11/12)	ILLINOIS RIVER - DOWNSTREAM		
					3.2 - 10.6	3.6 - 8.7	3.2 - 10.6	5.2 MILES NNW OF SITE	
	H-3	8	200	455	374	455	L-40 INDICATOR	0	
				(2/4)	(3/4)	(2/4)	ILLINOIS RIVER - DOWNSTREAM		
					245 - 664	247 - 594	245 - 664	5.2 MILES NNW OF SITE	
	GAMMA		24						
		MN-54		15	<LLD	<LLD	-		0
		CO-58		15	<LLD	<LLD	-		0
		FE-59		30	<LLD	<LLD	-		0
		CO-60		15	<LLD	<LLD	-		0
		ZN-65		30	<LLD	<LLD	-		0
		NB-95		15	<LLD	<LLD	-		0
		ZR-95		30	<LLD	<LLD	-		0
	I-131		15	<LLD	<LLD	-		0	
	CS-134		15	<LLD	<LLD	-		0	
	CS-137		18	<LLD	<LLD	-		0	
	BA-140		60	<LLD	<LLD	-		0	
	LA-140		15	<LLD	<LLD	-		0	
GROUND WATER (PC/LITER)	H-3	12	200	<LLD	<LLD	-		0	
	GAMMA		12						
		MN-54		15	<LLD	<LLD	-		0
		CO-58		15	<LLD	<LLD	-		0
		FE-59		30	<LLD	<LLD	-		0
		CO-60		15	<LLD	<LLD	-		0
		ZN-65		30	<LLD	<LLD	-		0
		NB-95		15	<LLD	<LLD	-		0
		ZR-95		30	<LLD	<LLD	-		0
		CS-134		15	<LLD	<LLD	-		0
		CS-137		18	<LLD	<LLD	-		0
		BA-140		60	<LLD	<LLD	-		0
		LA-140		15	<LLD	<LLD	-		0

(M) The Mean Values are calculated using the positive values (values ≥ MDC). (F) Fraction of detectable measurement are indicated in parentheses.

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR  
THE LASALLE COUNTY STATION, 2021**

NAME OF FACILITY:		LASALLE COUNTY STATION		DOCKET NUMBER:		50-373 & 50-374		
LOCATION OF FACILITY:		MARSEILLES, IL		REPORTING PERIOD:		2021		
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR LOCATIONS MEAN (M) (F) RANGE	CONTROL LOCATION MEAN (M) (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN (M) MEAN (M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
<b>FISH</b> (PCI/KG WET)	<b>GAMMA</b>	12						
	K-40		NA	3117 (8/8) 2622 - 3731	3122 (4/4) 2600 - 3792	3122 (4/4) 2600 - 3792	L-36 CONTROL ILLINOIS RIVER - UPSTREAM 4.3 MILES NE OF SITE	0
	MN-54		130	<LLD	<LLD	-		0
	CO-58		130	<LLD	<LLD	-		0
	FE-59		260	<LLD	<LLD	-		0
	CO-60		130	<LLD	<LLD	-		0
	ZN-65		260	<LLD	<LLD	-		0
	NB-95		NA	<LLD	<LLD	-		0
	ZR-95		NA	<LLD	<LLD	-		0
	CS-134		130	<LLD	<LLD	-		0
	CS-137		150	<LLD	<LLD	-		0
	BA-140		NA	<LLD	<LLD	-		0
	LA-140		NA	<LLD	<LLD	-		0
<b>SEDIMENT</b> (PCI/KG DRY)	<b>GAMMA</b>	5						
	K-40		NA	11440 (3/3) 10010 - 12910	31810 (2/2) 1466 - 2041	31810 (2/2) 1466 - 2041	L-21 CONTROL ILLINOIS RIVER - UPSTREAM 4.0 MILES NE OF SITE	0
	MN-54		NA	<LLD	<LLD	-		0
	CO-58		NA	<LLD	<LLD	-		0
	FE-59		NA	<LLD	<LLD	-		0
	CO-60		NA	<LLD	<LLD	-		0
	ZN-65		NA	<LLD	<LLD	-		0
	NB-95		NA	<LLD	<LLD	-		0
	ZR-95		NA	<LLD	<LLD	-		0
	CS-134		150	<LLD	<LLD	-		0
	CS-137		180	<LLD	<LLD	-		0
	BA-140		NA	<LLD	<LLD	-		0
	LA-140		NA	<LLD	<LLD	-		0
<b>AIR PARTICULATE</b> (E-3 PCI/CU.METER)	<b>GR-B</b>	466	10	19.0 (409/414) 5 - 39	20 (52/52) 8 - 39	20 (52/52) 8 - 39	L-10 CONTROL STREATOR 13.5 MILES SW OF SITE	0

(M) The Mean Values are calculated using the positive values (values ≥ MDC). (F) Fraction of detectable measurement are indicated in parentheses.

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR  
THE LASALLE COUNTY STATION, 2021**

NAME OF FACILITY:		LASALLE COUNTY STATION		DOCKET NUMBER:		50-373 & 50-374			
LOCATION OF FACILITY:		MARSEILLES, IL		REPORTING PERIOD:		2021			
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR	CONTROL	LOCATION WITH HIGHEST ANNUAL MEAN (M)			NUMBER OF NONROUTINE REPORTED MEASUREMENTS
				LOCATIONS MEAN (M) (F) RANGE	LOCATION MEAN (M) (F) RANGE	MEAN (M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION		
AIR PARTICULATE (E-3 PCI/CU.METER)	<b>GAMMA</b>	36							
	Be-7		NA	130 (32/32) 82 - 183	133 (4/4) 99 - 173	133 (4/4) 99 - 173	L-10 CONTROL STREATOR 13.5 MILES SW OF SITE	0	
	CO-58		NA	<LLD	<LLD	-		0	
	FE-59		NA	<LLD	<LLD	-		0	
	CO-60		NA	<LLD	<LLD	-		0	
	ZN-65		NA	<LLD	<LLD	-		0	
	NB-95		NA	<LLD	<LLD	-		0	
	ZR-95		NA	<LLD	<LLD	-		0	
	CS-134		50	<LLD	<LLD	-		0	
	CS-137		60	<LLD	<LLD	-		0	
	BA-140		NA	<LLD	<LLD	-		0	
LA-140		NA	<LLD	<LLD	-		0		
AIR IODINE (E-3 PCI/CU.METER)	<b>GAMMA</b>	466							
	I-131		70	<LLD	<LLD	-		0	
MILK (PCI/LITER)	I-131	5	1	NA	<LLD	-		0	
	<b>GAMMA</b>	5							
	K-40		NA	NA	942 (5/5) 643 - 1272	942 (5/5) 643 - 1272	L-42 CONTROL BIOS FARM 14.2 MILES E OF SITE	0	
	MN-54		NA	NA	<LLD	-		0	
	CO-58		NA	NA	<LLD	-		0	
	FE-59		NA	NA	<LLD	-		0	
	CO-60		NA	NA	<LLD	-		0	
	ZN-65		NA	NA	<LLD	-		0	
	NB-95		NA	NA	<LLD	-		0	
	ZR-95		NA	NA	<LLD	-		0	
	CS-134		15	NA	<LLD	-		0	
	CS-137		18	NA	<LLD	-		0	
	BA-140		60	NA	<LLD	-		0	
	LA-140		15	NA	<LLD	-		0	

(M) The Mean Values are calculated using the positive values (values ≥ MDC). (F) Fraction of detectable measurement are indicated in parentheses.

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR  
THE LASALLE COUNTY STATION, 2021**

NAME OF FACILITY:		LASALLE COUNTY STATION		DOCKET NUMBER:		50-373 & 50-374		
LOCATION OF FACILITY:		MARSEILLES, IL		REPORTING PERIOD:		2021		
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR LOCATIONS MEAN (M) (F) RANGE	CONTROL LOCATION MEAN (M) (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN (M) MEAN (M) (F) RANGE		NUMBER OF NONROUTINE REPORTED MEASUREMENTS
						STATION #	DISTANCE AND DIRECTION	
<b>FOOD PRODUCTS</b> (PCI/KG WET)	<b>GAMMA</b>	20						
	MN-54		NA	<LLD	<LLD	-		0
	CO-58		NA	<LLD	<LLD	-		0
	FE-59		NA	<LLD	<LLD	-		0
	CO-60		NA	<LLD	<LLD	-		0
	ZN-65		NA	<LLD	<LLD	-		0
	NB-95		NA	<LLD	<LLD	-		0
	ZR-95		NA	<LLD	<LLD	-		0
	I-131		60	<LLD	<LLD	-		0
	CS-134		60	<LLD	<LLD	-		0
	CS-137		80	<LLD	<LLD	-		0
	BA-140		NA	<LLD	<LLD	-		0
	LA-140		NA	<LLD	<LLD	-		0
<b>VEGETATION</b> (PCI/KG WET)	<b>GAMMA</b>	43						
	MN-54		NA	<LLD	<LLD	-		0
	CO-58		NA	<LLD	<LLD	-		0
	FE-59		NA	<LLD	<LLD	-		0
	CO-60		NA	<LLD	<LLD	-		0
	ZN-65		NA	<LLD	<LLD	-		0
	NB-95		NA	<LLD	<LLD	-		0
	ZR-95		NA	<LLD	<LLD	-		0
	I-131		60	<LLD	<LLD	-		0
	CS-134		60	<LLD	<LLD	-		0
	CS-137		80	<LLD	<LLD	-		0
	BA-140		NA	<LLD	<LLD	-		0
	LA-140		NA	<LLD	<LLD	-		0
<b>DIRECT RADIATION</b> (MILLI-ROENTGEN/QTR.)	<b>OSLD-QUARTERLY</b>	165	NA	18.3 (161/161) 13.5 - 43.6	15.4 (4/4) 14.1 - 16.8	19.8 (4/4) 17.0 - 21.8	L-110 INDICATOR 0.6 MILES SSW	0

(M) The Mean Values are calculated using the positive values (values ≥ MDC). (F) Fraction of detectable measurement are indicated in parentheses.

## **APPENDIX B**

### **LOCATION DESIGNATION, DISTANCE & DIRECTION, AND SAMPLE COLLECTION & ANALYTICAL METHODS**



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TABLE B-1:

Radiological Environmental Monitoring Program - Sampling Locations,  
Distance and Direction, LaSalle County Station, 2021

Location	Location Description	Distance & Direction From Site
<u>A. Surface Water</u>		
L-21	Illinois River at Seneca, Upstream (control)	4.0 miles NE
L-40	Illinois River, Downstream (indicator)	5.2 miles NNW
<u>B. Ground/Well Water</u>		
L-27	LSCS Onsite Well (indicator)	0 miles at station
L-28-W4	Marseilles Well (control)	7.0 miles NNW
L-28-W5	Marseilles Well (control)	6.7 miles NNW
L-28-W6	Marseilles Well (indicator)	4.1 miles N
<u>C. Milk - bi-weekly / monthly</u>		
L-42	Biros Farm (control)	14.2 miles E
<u>D. Air Particulates / Air Iodine</u>		
L-01	Nearsite 1 (indicator)	1.5 miles NNW
L-03	Onsite 3 (indicator)	1.0 miles ENE
L-04	Rte. 170 (indicator)	3.2 miles E
L-05	Onsite 5 (indicator)	0.3 miles ESE
L-06	Nearsite 6 (indicator)	0.4 miles W
L-07	Seneca (indicator)	5.2 miles NNE
L-08	Marseilles (indicator)	6.0 miles NNW
L-10	Streator (control)	13.5 miles SW
L-11A	Ransom (indicator)	6.0 miles S
<u>E. Fish</u>		
L-34	LaSalle Cooling Lake (indicator)	2.0 miles E
L-35	Marseilles Pool of Illinois River, Downstream (indicator)	6.5 miles NNW
L-36	Illinois River, Upstream of Discharge (control)	4.3 miles NE
<u>F. Sediment</u>		
L-21	Illinois River at Seneca, Upstream (control)	4.0 miles NE
L-40	Illinois River, Downstream (indicator)	5.2 miles NNW
L-41	Illinois River, Downstream (indicator)	4.6 miles N
<u>G. Food Products</u>		
Quadrant 1	171 Valley View, Seneca IL	5.2 miles NE
Quadrant 1	281 E. Lincoln, Seneca IL	5.1 miles NE
Quadrant 2	106 W. Thomas, Ransom, IL	6.0 miles S
Quadrant 2	205 W. Plumb, Ransom IL	5.3 miles S
Quadrant 3	1814 E. 25 <sup>th</sup> Rd., Ransom IL	3.5 miles SW
Quadrant 4	2507 N. 2553 Rd., Marseilles IL	4.3 miles NNW
Control	Biros Farm	14.2 miles E
<u>H. Vegetation</u>		
L-Veg C	Control	9.5 miles ENE
L-ESE 1	Indicator	1.5 miles ESE
L-ESE 2	Indicator	6.0 miles ESE

TABLE B-1:

Radiological Environmental Monitoring Program - Sampling Locations,  
Distance and Direction, LaSalle County Station, 2021

Location	Location Description	Distance & Direction From Site
<u>I. Environmental Dosimetry - OSLD</u>		
<u>Inner Ring</u>		
L-101-1 and -2		0.5 miles N
L-102-1 and -2		0.6 miles NNE
L-103-1 and -2		0.7 miles NE
L-104-1 and -2		0.8 miles ENE
L-105-1 and -2		0.7 miles E
L-106-1 and -2		1.4 miles ESE
L-107-1 and -2		0.8 miles SE
L-108-1 and -2		0.5 miles SSE
L-109-1 and -2		0.6 miles S
L-110-1 and -2		0.6 miles SSW
L-111b-1 and -2		0.8 miles SW
L-112-1 and -2		0.9 miles WSW
L-113a-1 and -2		0.8 miles W
L-114-1 and -2		0.9 miles WNW
L-115-1 and -2		0.7 miles NW
L-116-1 and -2		0.6 miles NNW
<u>Outer Ring</u>		
L-201-3 and -4		4.0 miles N
L-202-3 and -4		3.6 miles NNE
L-203-1 and -2		4.0 miles NE
L-204-1 and -2		3.2 miles ENE
L-205A-1 and -2		3.2 miles ESE
L-205B-3 and -4		5.1 miles E
L-206-1 and -2		4.3 miles SE
L-207-1 and -2		4.5 miles SSE
L-208-1 and -2		4.5 miles S
L-209-1 and -2		4.0 miles SSW
L-210-1 and -2		3.3 miles SW
L-211-1 and -2		4.5 miles WSW
L-212-1 and -2		4.0 miles W
L-213-3 and -4		4.9 miles W
L-214-3 and -4		5.1 miles WNW
L-215-3 and -4		5.0 miles NW
L-216-3 and -4		5.0 miles NNW
<u>Other</u>		
L-01-1 and -2	Nearsite 1 (indicator)	1.5 miles NNW
L-03-1 and -2	Onsite 3 (indicator)	1.0 miles ENE
L-04-1 and -2	Rte. 170 (indicator)	3.2 miles E
L-05-1 and -2	Onsite 5 (indicator)	0.3 miles ESE
L-06-1 and -2	Nearsite 6 (indicator)	0.4 miles W
L-07-1 and -2	Seneca (indicator)	5.2 miles NNE
L-08-1 and -2	Marseilles (indicator)	6.0 miles NNW
L-11A-1 and -2	Ransom (indicator)	6.0 miles S
<u>Control and Special Interest</u>		
L-10-1 and -2	Streator	13.5 miles SW

TABLE B-2: Radiological Environmental Monitoring Program – Summary of Sample Collection and Analytical Methods, LaSalle County Station, 2021

Sample Medium	Analysis	Sampling Method	Analytical Procedure Number
Surface Water	Gamma Spectroscopy	Monthly composite from weekly grab samples.	TBE, TBE-2007 Gamma-Emitting Radioisotope Analysis
Surface Water	Gross Beta	Monthly composite from weekly grab samples.	TBE, TBE-2008 Gross Alpha and/or Gross Beta Activity in Various Matrices
Surface Water	Tritium	Quarterly composite from weekly grab samples.	TBE, TBE-2011 Tritium Analysis in Drinking Water by Liquid Scintillation
Ground/Well Water	Gamma Spectroscopy	Quarterly grab samples.	TBE, TBE-2007 Gamma-Emitting Radioisotope Analysis
Ground/Well Water	Tritium	Quarterly grab samples.	TBE, TBE-2011 Tritium Analysis in Drinking Water by Liquid Scintillation
Fish	Gamma Spectroscopy	Semi-annual samples collected via electroshocking or other techniques	TBE-2007 Gamma-Emitting Radioisotope Analysis
Sediment	Gamma Spectroscopy	Semi-annual grab samples	TBE, TBE-2007 Gamma-Emitting Radioisotope Analysis
Air Particulates	Gross Beta	One-week composite of continuous air sampling through glass fiber filter paper	TBE, TBE-2008 Gross Alpha and/or Gross Beta Activity in Various Matrices
Air Particulates	Gamma Spectroscopy	Quarterly composite of each station	TBE, TBE-2007 Gamma-Emitting Radioisotope Analysis
Air Iodine	Gamma Spectroscopy	Bi-weekly composite of continuous air sampling through charcoal filter	TBE, TBE-2007 Gamma-Emitting Radioisotope Analysis
Milk	I-131	Bi-weekly grab sample when cows are on pasture. Monthly all other times	TBE, TBE-2012 Radioiodine in Various Matrices
Milk	Gamma Spectroscopy	Bi-weekly grab sample when cows are on pasture. Monthly all other times	TBE, TBE-2007 Gamma-Emitting Radioisotope Analysis
Food Products	Gamma Spectroscopy	Annual grab samples.	TBE, TBE-2007 Gamma-Emitting Radioisotope Analysis
Vegetation	Gamma Spectroscopy	Monthly grab samples during growing season	TBE, TBE-2007 Gamma-Emitting Radioisotope Analysis
OSLD	Optically Stimulated Luminescence Dosimetry	Quarterly OSLDs comprised of two Al <sub>2</sub> O <sub>3</sub> :C Landauer Incorporated elements.	Landauer Incorporated



Figure B-1  
Inner Ring OSLD Locations  
of the LaSalle County Station, 2021



Figure B-2  
 Outer Ring OSLD Locations and Fixed Air Sampling Locations  
 of the LaSalle County Station, 2021





Figure B-3  
 Ingestion and Waterborne Exposure Pathway Sample Locations  
 of the LaSalle County Station, 2021



## **APPENDIX C**

### **DATA TABLES AND FIGURES**



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**Table C-I.1 CONCENTRATIONS OF GROSS BETA IN SURFACE WATER SAMPLES  
COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2021**  
RESULTS IN UNITS OF PCI/LITER  $\pm$  2 SIGMA

COLLECTION PERIOD	L-21	L-40
01/07/21 - 01/28/21	5.2 $\pm$ 2.2	3.2 $\pm$ 2.1
02/03/21 - 02/25/21	8.5 $\pm$ 2.4	7.8 $\pm$ 2.3
03/03/21 - 03/31/21	6.2 $\pm$ 2.5	7.2 $\pm$ 2.6
04/07/21 - 04/29/21	8.7 $\pm$ 2.7	6.7 $\pm$ 2.7
05/05/21 - 05/27/21	8.0 $\pm$ 2.2	5.9 $\pm$ 2.1
06/02/21 - 06/30/21	3.6 $\pm$ 2.2	4.2 $\pm$ 2.2
07/07/21 - 07/29/21	6.0 $\pm$ 2.4	6.0 $\pm$ 2.4
08/04/21 - 08/26/21	5.2 $\pm$ 2.4	< 3.2
09/01/21 - 09/29/21	5.8 $\pm$ 2.4	5.2 $\pm$ 2.3
10/07/21 - 10/28/21	4.5 $\pm$ 2.3	3.5 $\pm$ 2.3
11/03/21 - 11/26/21	6.5 $\pm$ 2.1	10.6 $\pm$ 2.7
12/01/21 - 12/29/21	5.8 $\pm$ 2.2	8.9 $\pm$ 2.5
(1) MEAN $\pm$ 2 STD DEV	6.2 $\pm$ 3.1	6.3 $\pm$ 4.6

**Table C-I.2 CONCENTRATIONS OF TRITIUM IN SURFACE WATER SAMPLES  
COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2021**  
RESULTS IN UNITS OF PCI/LITER  $\pm$  2 SIGMA

COLLECTION PERIOD	L-21	L-40
01/07/21 - 03/31/21	594 $\pm$ 142	664 $\pm$ 154
04/07/21 - 06/30/21	< 183	< 186
07/07/21 - 09/29/21	282 $\pm$ 129	245 $\pm$ 129
10/07/21 - 12/29/21	247 $\pm$ 124	< 191
(1) MEAN $\pm$ 2 STD DEV	374 $\pm$ 382	455 $\pm$ 593

(1) THE MEAN AND TWO STANDARD DEVIATION ARE CALCULATED USING THE POSITIVE VALUES (VALUES  $\geq$  MDC)

Table C-1.3

**CONCENTRATIONS OF GAMMA EMITTERS IN SURFACE WATER SAMPLES  
COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2021  
RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA**

SITE	COLLECTION		Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
	PERIOD													
L-21	01/07/21 - 01/28/21		< 2	< 2	< 4	< 2	< 4	< 2	< 3	< 7	< 2	< 2	< 16	< 6
	02/03/21 - 02/25/21		< 3	< 3	< 8	< 4	< 7	< 4	< 7	< 12	< 4	< 3	< 26	< 9
	03/03/21 - 03/31/21		< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 9	< 2	< 2	< 17	< 6
	04/07/21 - 04/29/21		< 2	< 2	< 6	< 3	< 5	< 3	< 4	< 9	< 2	< 3	< 18	< 7
	05/05/21 - 05/27/21		< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 8	< 2	< 2	< 16	< 5
	06/02/21 - 06/30/21		< 2	< 2	< 4	< 2	< 3	< 2	< 4	< 10	< 2	< 2	< 18	< 6
	07/07/21 - 07/29/21		< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 9	< 2	< 2	< 17	< 6
	08/04/21 - 08/26/21		< 2	< 2	< 5	< 2	< 5	< 2	< 4	< 10	< 3	< 2	< 20	< 6
	09/01/21 - 09/29/21		< 2	< 2	< 4	< 2	< 3	< 2	< 3	< 11	< 2	< 2	< 18	< 6
	10/07/21 - 10/28/21		< 4	< 4	< 9	< 4	< 9	< 4	< 5	< 15	< 4	< 4	< 31	< 10
	11/03/21 - 11/26/21		< 2	< 2	< 4	< 2	< 3	< 2	< 3	< 7	< 2	< 2	< 13	< 5
	12/01/21 - 12/29/21		< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 7	< 1	< 1	< 12	< 4
		MEAN		-	-	-	-	-	-	-	-	-	-	-
L-40	01/07/21 - 01/28/21		< 2	< 2	< 5	< 2	< 4	< 3	< 4	< 8	< 2	< 2	< 16	< 6
	02/03/21 - 02/25/21		< 3	< 3	< 6	< 3	< 5	< 3	< 5	< 11	< 3	< 3	< 21	< 8
	03/03/21 - 03/31/21		< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 11	< 2	< 2	< 20	< 6
	04/07/21 - 04/29/21		< 2	< 3	< 5	< 2	< 5	< 2	< 4	< 9	< 3	< 2	< 20	< 6
	05/05/21 - 05/27/21		< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 9	< 2	< 2	< 18	< 5
	06/02/21 - 06/30/21		< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 11	< 2	< 2	< 20	< 7
	07/07/21 - 07/29/21		< 2	< 2	< 5	< 2	< 5	< 2	< 5	< 9	< 3	< 2	< 17	< 5
	08/04/21 - 08/26/21		< 2	< 3	< 5	< 2	< 5	< 3	< 5	< 9	< 3	< 3	< 19	< 7
	09/01/21 - 09/29/21		< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 12	< 2	< 2	< 21	< 8
	10/07/21 - 10/28/21		< 4	< 4	< 8	< 4	< 7	< 4	< 6	< 14	< 4	< 4	< 30	< 9
	11/03/21 - 11/26/21		< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 7	< 2	< 2	< 15	< 5
	12/01/21 - 12/29/21		< 1	< 2	< 4	< 2	< 3	< 2	< 3	< 9	< 2	< 2	< 15	< 5
		MEAN		-	-	-	-	-	-	-	-	-	-	-

C-2

**Table C-II.1 CONCENTRATIONS OF TRITIUM IN GROUND/WELL WATER SAMPLES  
COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2021**  
RESULTS IN UNITS OF PCI/LITER  $\pm$  2 SIGMA

COLLECTION PERIOD	L-27	L-28-W4	L-28-W5	L-28-W6
01/13/21 - 01/13/21	< 187		< 188	< 188
04/07/21 - 04/07/21	< 187	< 187		< 182
07/07/21 - 07/07/21	< 184		< 177	< 180
10/13/21 - 10/13/21	< 177	< 177		< 171
MEAN	-	-	-	-

Table C-II.2

**CONCENTRATIONS OF GAMMA EMITTERS IN GROUND/WELL WATER SAMPLES  
COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2021**

RESULTS IN UNITS OF PCI/LITER  $\pm$  2 SIGMA

SITE	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
L-27	01/13/21 - 01/13/21	< 4	< 4	< 11	< 5	< 7	< 5	< 8	< 6	< 4	< 25	< 8
	04/15/21 - 04/15/21	< 6	< 7	< 14	< 6	< 16	< 7	< 12	< 8	< 7	< 27	< 10
	07/07/21 - 07/07/21	< 7	< 7	< 15	< 9	< 15	< 8	< 14	< 7	< 9	< 20	< 8
	10/13/21 - 10/13/21	< 3	< 3	< 6	< 3	< 6	< 4	< 7	< 4	< 4	< 16	< 7
	MEAN	-	-	-	-	-	-	-	-	-	-	-
L-28-W4	04/07/21 - 04/07/21	< 5	< 4	< 9	< 5	< 10	< 4	< 7	< 6	< 4	< 21	< 8
	10/13/21 - 10/13/21	< 5	< 5	< 10	< 4	< 7	< 4	< 9	< 5	< 6	< 20	< 7
	MEAN	-	-	-	-	-	-	-	-	-	-	-
L-28-W5	01/13/21 - 01/13/21	< 6	< 5	< 10	< 6	< 12	< 5	< 9	< 6	< 5	< 28	< 8
	07/07/21 - 07/07/21	< 7	< 7	< 13	< 8	< 14	< 9	< 12	< 8	< 9	< 32	< 12
	MEAN	-	-	-	-	-	-	-	-	-	-	-
L-28-W6	01/13/21 - 01/13/21	< 6	< 6	< 12	< 7	< 11	< 6	< 9	< 5	< 5	< 30	< 7
	04/07/21 - 04/07/21	< 4	< 4	< 8	< 6	< 8	< 5	< 7	< 4	< 4	< 21	< 6
	07/07/21 - 07/07/21	< 6	< 6	< 14	< 7	< 15	< 7	< 8	< 7	< 6	< 22	< 12
	10/13/21 - 10/13/21	< 4	< 4	< 8	< 4	< 7	< 5	< 8	< 4	< 5	< 20	< 7
	MEAN	-	-	-	-	-	-	-	-	-	-	-

Table C-III.1

**CONCENTRATIONS OF GAMMA EMITTERS IN FISH SAMPLES COLLECTED  
IN THE VICINITY OF LASALLE COUNTY STATION, 2021  
RESULTS IN UNITS OF PCI/KG WET ± 2 SIGMA**

SITE	COLLECTION		Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
	PERIOD												
L-34													
<i>Bluegill</i>	05/06/21		< 43	< 35	< 91	< 29	< 85	< 34	< 66	< 32	< 37	< 156	< 67
<i>Largemouth Bass</i>	05/06/21		< 36	< 30	< 71	< 26	< 53	< 30	< 48	< 35	< 32	< 152	< 53
<i>Bluegill</i>	10/11/21		< 46	< 49	< 66	< 62	< 119	< 50	< 69	< 54	< 46	< 283	< 70
<i>Largemouth Bass</i>	10/11/21		< 37	< 61	< 91	< 55	< 111	< 56	< 105	< 71	< 60	< 309	< 106
	<i>MEAN</i>		-	-	-	-	-	-	-	-	-	-	-
L-35													
<i>Channel Catfish</i>	05/05/21		< 48	< 42	< 104	< 61	< 75	< 53	< 90	< 42	< 47	< 245	< 51
<i>Smallmouth Buffalo</i>	05/05/21		< 50	< 49	< 108	< 49	< 93	< 65	< 82	< 64	< 50	< 292	< 80
<i>Channel Catfish</i>	10/11/21		< 58	< 54	< 107	< 58	< 123	< 64	< 84	< 70	< 42	< 268	< 79
<i>Smallmouth Bass</i>	10/11/21		< 58	< 66	< 174	< 70	< 140	< 66	< 122	< 65	< 55	< 408	< 106
	<i>MEAN</i>		-	-	-	-	-	-	-	-	-	-	-
L-36													
<i>Smallmouth Buffalo</i>	05/05/21		< 50	< 60	< 100	< 66	< 108	< 57	< 88	< 54	< 60	< 269	< 62
<i>Channel Catfish</i>	05/05/21		< 39	< 42	< 85	< 47	< 93	< 42	< 75	< 65	< 56	< 211	< 75
<i>Smallmouth Bass</i>	10/11/21		< 80	< 83	< 184	< 104	< 157	< 100	< 179	< 86	< 76	< 516	< 98
<i>Channel Catfish</i>	10/11/21		< 53	< 42	< 110	< 61	< 112	< 53	< 94	< 36	< 54	< 250	< 85
	<i>MEAN</i>		-	-	-	-	-	-	-	-	-	-	-

C-5

**Table C-IV.1**

**CONCENTRATIONS OF GAMMA EMITTERS IN SEDIMENT SAMPLES  
COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2021**

RESULTS IN UNITS OF PCI/KG DRY ± 2 SIGMA

SITE	COLLECTION		Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
	PERIOD												
L-21	05/25/21		< 76	< 82	< 204	< 100	< 189	< 85	< 154	< 108	< 109	< 382	< 124
	10/12/21		< 64	< 58	< 141	< 58	< 127	< 67	< 113	< 86	< 82	< 425	< 103
		MEAN	-	-	-	-	-	-	-	-	-	-	-
L-40	05/25/21		< 83	< 80	< 175	< 85	< 172	< 86	< 156	< 87	< 101	< 315	< 130
	10/12/21		< 64	< 59	< 145	< 69	< 128	< 68	< 105	< 68	< 60	< 365	< 80
		MEAN	-	-	-	-	-	-	-	-	-	-	-
L-41	05/25/21	(1)											
L-41	10/11/21		< 42	< 57	< 129	< 63	< 109	< 55	< 85	< 61	< 52	< 280	< 95
		MEAN	-	-	-	-	-	-	-	-	-	-	-

C-6

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

Table C-V.1

**CONCENTRATIONS OF GROSS BETA IN AIR PARTICULATE SAMPLES  
COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2021  
RESULTS IN UNITS OF E-3 PCI/CU METER ± 2 SIGMA**

COLLECTION PERIOD	GROUP I		GROUP II		GROUP III			GROUP IV	
	L-03	L-05	L-01	L-06	L-04	L-07	L-08	L-11A	L-10
12/30/20 - 01/07/21	19 ± 4	23 ± 4	28 ± 14	18 ± 4	21 ± 4	24 ± 4	23 ± 4	19 ± 4	22 ± 4
01/07/21 - 01/13/21	18 ± 5	17 ± 5	18 ± 5	18 ± 5	19 ± 5	16 ± 5	17 ± 5	18 ± 5	22 ± 5
01/13/21 - 01/20/21	19 ± 5	23 ± 5	21 ± 5	20 ± 5	21 ± 5	23 ± 5	22 ± 5	19 ± 5	24 ± 5
01/20/21 - 01/28/21	12 ± 3	12 ± 4	13 ± 4	12 ± 4	10 ± 3	13 ± 4	12 ± 3	9 ± 3	11 ± 3
01/28/21 - 02/03/21	13 ± 5	15 ± 5	15 ± 5	17 ± 5	13 ± 5	16 ± 5	13 ± 4	15 ± 5	14 ± 5
02/03/21 - 02/11/21	31 ± 5	36 ± 5	38 ± 5	33 ± 5	34 ± 5	34 ± 5	33 ± 5	32 ± 5	28 ± 5
02/11/21 - 02/18/21	18 ± 3	21 ± 5	19 ± 4	28 ± 6	23 ± 5	21 ± 5	16 ± 4	21 ± 4	19 ± 4
02/18/21 - 02/25/21	(1)	26 ± 5	22 ± 5	26 ± 5	24 ± 5	24 ± 5	18 ± 4	28 ± 5	29 ± 5
02/25/21 - 03/03/21	22 ± 5	19 ± 5	19 ± 5	21 ± 5	24 ± 5	23 ± 5	25 ± 5	17 ± 5	19 ± 5
03/03/21 - 03/11/21	16 ± 4	21 ± 4	18 ± 4	20 ± 4	16 ± 4	18 ± 4	14 ± 3	17 ± 4	20 ± 4
03/11/21 - 03/18/21	14 ± 4	12 ± 4	14 ± 4	11 ± 4	14 ± 4	9 ± 4	12 ± 4	12 ± 4	16 ± 4
03/18/21 - 03/25/21	14 ± 4	16 ± 4	18 ± 5	16 ± 4	16 ± 4	15 ± 4	19 ± 5	17 ± 4	16 ± 4
03/25/21 - 03/31/21	14 ± 5	9 ± 5	16 ± 5	16 ± 5	12 ± 5	11 ± 5	11 ± 5	14 ± 5	12 ± 5
03/31/21 - 04/07/21	18 ± 4	14 ± 4	17 ± 4	17 ± 4	13 ± 4	17 ± 4	18 ± 4	14 ± 4	12 ± 4
04/07/21 - 04/15/21	8 ± 4	< 5	6 ± 3	< 5	8 ± 4	6 ± 3	< 5	< 5	8 ± 4
04/15/21 - 04/22/21	12 ± 4	11 ± 4	15 ± 4	14 ± 4	12 ± 4	13 ± 4	14 ± 4	14 ± 4	13 ± 4
04/22/21 - 04/29/21	23 ± 5	18 ± 5	22 ± 6	20 ± 5	24 ± 5	21 ± 5	25 ± 5	18 ± 4	20 ± 5
04/29/21 - 05/05/21	17 ± 5	14 ± 4	(1)	14 ± 5	13 ± 5	12 ± 4	15 ± 5	18 ± 5	16 ± 5
05/05/21 - 05/13/21	7 ± 3	12 ± 3	10 ± 4	11 ± 3	12 ± 3	8 ± 3	10 ± 3	9 ± 3	10 ± 3
05/13/21 - 05/20/21	16 ± 5	15 ± 5	14 ± 4	18 ± 5	13 ± 4	18 ± 5	18 ± 5	16 ± 4	22 ± 5
05/20/21 - 05/27/21	17 ± 5	16 ± 5	10 ± 4	19 ± 5	15 ± 5	15 ± 5	12 ± 4	13 ± 4	17 ± 5
05/27/21 - 06/02/21	14 ± 4	14 ± 4	19 ± 5	19 ± 5	18 ± 5	17 ± 5	16 ± 5	15 ± 5	17 ± 5
06/02/21 - 06/10/21	15 ± 3	19 ± 4	16 ± 3	18 ± 4	18 ± 4	19 ± 4	17 ± 4	14 ± 3	14 ± 4
06/10/21 - 06/17/21	16 ± 4	12 ± 4	15 ± 4	16 ± 4	15 ± 4	13 ± 4	18 ± 4	14 ± 4	15 ± 4
06/17/21 - 06/24/21	19 ± 5	20 ± 5	18 ± 5	17 ± 4	17 ± 4	19 ± 5	17 ± 4	17 ± 4	20 ± 5
06/24/21 - 06/30/21	7 ± 4	7 ± 4	6 ± 4	8 ± 4	8 ± 4	< 6	7 ± 4	5 ± 4	8 ± 4
06/30/21 - 07/07/21	15 ± 4	14 ± 4	14 ± 4	14 ± 4	17 ± 5	14 ± 4	17 ± 4	10 ± 4	17 ± 5
07/07/21 - 07/14/21	15 ± 4	8 ± 4	12 ± 4	11 ± 4	15 ± 4	16 ± 4	11 ± 4	15 ± 4	11 ± 4
07/14/21 - 07/22/21	18 ± 4	16 ± 4	19 ± 4	16 ± 4	16 ± 4	17 ± 4	14 ± 4	13 ± 4	18 ± 4
07/22/21 - 07/29/21	32 ± 5	33 ± 5	27 ± 5	29 ± 5	30 ± 5	26 ± 5	25 ± 5	30 ± 5	34 ± 5
07/29/21 - 08/04/21	17 ± 5	16 ± 5	16 ± 5	16 ± 5	11 ± 5	17 ± 5	14 ± 5	16 ± 5	23 ± 6
08/04/21 - 08/12/21	22 ± 4	22 ± 4	24 ± 5	22 ± 4	23 ± 4	21 ± 4	24 ± 5	22 ± 4	25 ± 5
08/12/21 - 08/19/21	26 ± 9	18 ± 5	22 ± 5	23 ± 5	17 ± 5	19 ± 5	21 ± 5	19 ± 5	23 ± 5
08/19/21 - 08/26/21	25 ± 5	21 ± 5	29 ± 5	20 ± 5	20 ± 5	24 ± 5	24 ± 5	25 ± 5	28 ± 5
08/26/21 - 09/01/21	21 ± 5	21 ± 5	21 ± 5	23 ± 5	18 ± 5	28 ± 5	22 ± 5	22 ± 5	27 ± 5
09/01/21 - 09/09/21	22 ± 4	19 ± 4	19 ± 4	20 ± 4	20 ± 4	20 ± 4	22 ± 4	22 ± 4	18 ± 4
09/09/21 - 09/16/21	22 ± 4	25 ± 5	30 ± 5	27 ± 5	25 ± 5	24 ± 4	26 ± 5	27 ± 5	25 ± 5
09/16/21 - 09/23/21	24 ± 5	20 ± 5	20 ± 5	22 ± 5	17 ± 5	20 ± 5	17 ± 5	22 ± 5	20 ± 5
09/23/21 - 09/29/21	27 ± 6	27 ± 6	23 ± 5	28 ± 6	27 ± 6	24 ± 6	25 ± 6	28 ± 6	25 ± 6
09/29/21 - 10/07/21	27 ± 5	26 ± 4	22 ± 4	26 ± 4	26 ± 4	32 ± 5	25 ± 4	25 ± 4	25 ± 4
10/07/21 - 10/13/21	25 ± 5	23 ± 5	27 ± 5	23 ± 5	23 ± 5	27 ± 5	21 ± 4	21 ± 4	23 ± 5
10/13/21 - 10/21/21	29 ± 5	26 ± 4	24 ± 4	26 ± 4	23 ± 4	28 ± 5	25 ± 4	23 ± 4	23 ± 4
10/21/21 - 10/28/21	13 ± 4	10 ± 4	11 ± 4	9 ± 4	11 ± 4	15 ± 4	10 ± 4	8 ± 4	13 ± 4
10/28/21 - 11/03/21	13 ± 4	17 ± 4	14 ± 4	15 ± 4	16 ± 4	12 ± 4	11 ± 4	12 ± 4	16 ± 4
11/03/21 - 11/10/21	32 ± 5	25 ± 5	28 ± 5	25 ± 5	31 ± 5	29 ± 5	35 ± 5	26 ± 5	31 ± 5
11/10/21 - 11/19/21	15 ± 4	14 ± 4	17 ± 4	15 ± 3	17 ± 4	14 ± 4	17 ± 4	15 ± 3	16 ± 4
11/19/21 - 11/26/21	20 ± 5	26 ± 5	24 ± 5	21 ± 5	20 ± 5	21 ± 5	21 ± 5	23 ± 5	20 ± 5
11/26/21 - 12/01/21	27 ± 6	15 ± 5	25 ± 6	25 ± 6	23 ± 6	28 ± 7	19 ± 6	23 ± 6	25 ± 6
12/01/21 - 12/09/21	17 ± 4	18 ± 4	16 ± 4	23 ± 5	20 ± 4	20 ± 4	20 ± 4	19 ± 4	21 ± 4
12/09/21 - 12/16/21	19 ± 5	21 ± 5	18 ± 5	18 ± 5	21 ± 5	21 ± 5	20 ± 5	15 ± 5	21 ± 5
12/16/21 - 12/23/21	26 ± 5	36 ± 6	31 ± 5	26 ± 5	26 ± 5	33 ± 5	34 ± 5	32 ± 5	33 ± 5
12/23/21 - 12/29/21	39 ± 6	35 ± 6	32 ± 6	38 ± 6	37 ± 6	35 ± 6	37 ± 6	35 ± 6	39 ± 6
(2) MEAN ± 2 STD DEV	19 ± 13	19 ± 14	19 ± 13	20 ± 12	19 ± 13	20 ± 13	19 ± 13	19 ± 13	20 ± 13

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

(2) THE MEAN AND TWO STANDARD DEVIATION ARE CALCULATED USING THE POSITIVE VALUES (VALUES ≥ MDC)



Table C-V.2

**MONTHLY AND YEARLY MEAN VALUES OF GROSS BETA CONCENTRATIONS IN AIR  
PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2021  
RESULTS IN UNITS OF E-3 PCI/CU METER ± 2 SIGMA**

GROUP I - ONSITE LOCATIONS				GROUP II - NEAR-SITE LOCATIONS				GROUP III - FAR-FIELD LOCATIONS				GROUP IV - CONTROL LOCATION			
COLLECTION PERIOD	MIN	MAX	MEAN ± 2SD	COLLECTION PERIOD	MIN	MAX	MEAN ± 2SD	COLLECTION PERIOD	MIN	MAX	MEAN ± 2SD	COLLECTION PERIOD	MIN	MAX	MEAN ± 2SD
12/30/20 - 02/03/21	12	23	17 ± 8	12/30/20 - 02/03/21	12	28	18 ± 9	12/30/20 - 02/03/21	9	24	17 ± 9	12/30/20 - 02/03/21	11	24	18 ± 11
02/03/21 - 03/03/21	18	36	25 ± 13	02/03/21 - 03/03/21	19	38	26 ± 14	02/03/21 - 03/03/21	16	34	25 ± 12	02/03/21 - 03/03/21	19	29	24 ± 11
03/03/21 - 03/31/21	9	21	14 ± 6	03/03/21 - 03/31/21	11	20	16 ± 5	03/03/21 - 03/31/21	9	19	14 ± 6	03/03/21 - 03/31/21	12	20	16 ± 6
03/31/21 - 04/29/21	8	23	15 ± 11	03/31/21 - 04/29/21	6	22	16 ± 10	03/31/21 - 04/29/21	6	25	15 ± 11	03/31/21 - 04/29/21	8	20	13 ± 10
04/29/21 - 06/02/21	7	17	14 ± 6	04/29/21 - 06/02/21	10	19	15 ± 8	04/29/21 - 06/02/21	8	18	14 ± 6	04/29/21 - 06/02/21	10	22	16 ± 9
06/02/21 - 06/30/21	7	20	15 ± 10	06/02/21 - 06/30/21	6	18	14 ± 9	06/02/21 - 06/30/21	5	19	15 ± 9	06/02/21 - 06/30/21	8	20	14 ± 10
06/30/21 - 07/29/21	8	33	19 ± 18	06/30/21 - 07/29/21	11	29	18 ± 13	06/30/21 - 07/29/21	10	30	18 ± 13	06/30/21 - 07/29/21	11	34	20 ± 20
07/29/21 - 09/01/21	16	26	21 ± 6	07/29/21 - 09/01/21	16	29	22 ± 8	07/29/21 - 09/01/21	11	28	20 ± 8	07/29/21 - 09/01/21	23	28	25 ± 5
09/01/21 - 09/29/21	19	27	23 ± 6	09/01/21 - 09/29/21	19	30	24 ± 8	09/01/21 - 09/29/21	17	28	23 ± 7	09/01/21 - 09/29/21	18	25	22 ± 7
09/29/21 - 11/03/21	10	29	21 ± 14	09/29/21 - 11/03/21	9	27	20 ± 14	09/29/21 - 11/03/21	8	32	20 ± 14	09/29/21 - 11/03/21	13	25	20 ± 10
11/03/21 - 12/01/21	14	32	22 ± 14	11/03/21 - 12/01/21	15	28	22 ± 9	11/03/21 - 12/01/21	14	35	22 ± 12	11/03/21 - 12/01/21	16	31	23 ± 12
12/01/21 - 12/29/21	17	39	26 ± 18	12/01/21 - 12/29/21	16	38	25 ± 16	12/01/21 - 12/29/21	15	37	27 ± 16	12/01/21 - 12/29/21	21	39	29 ± 18
12/30/20 - 12/29/21	7	39	19 ± 14	12/30/20 - 12/29/21	6	38	20 ± 13	12/30/20 - 12/29/21	5	37	19 ± 13	12/30/20 - 12/29/21	8	39	20 ± 13

Table C-V.3

**CONCENTRATIONS OF GAMMA EMITTERS IN AIR PARTICULATE SAMPLES  
COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2021  
RESULTS IN UNITS OF E-3 PCI/CU METER ± 2 SIGMA**

SITE	COLLECTION		Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
	PERIOD												
L-01	12/30/20 - 03/31/21		< 4	< 6	< 17	< 3	< 10	< 7	< 11	< 5	< 4	< 200	< 81
	03/31/21 - 06/30/21		< 2	< 3	< 12	< 2	< 6	< 4	< 5	< 2	< 2	< 167	< 84
	06/30/21 - 09/29/21		< 2	< 3	< 11	< 3	< 6	< 2	< 6	< 2	< 2	< 124	< 53
	09/29/21 - 12/29/21		< 4	< 6	< 16	< 4	< 8	< 5	< 9	< 4	< 3	< 257	< 94
		MEAN	-	-	-	-	-	-	-	-	-	-	-
L-03	12/30/20 - 03/31/21		< 2	< 4	< 13	< 3	< 6	< 4	< 6	< 2	< 2	< 118	< 40
	03/31/21 - 06/30/21		< 2	< 3	< 7	< 3	< 6	< 3	< 6	< 2	< 2	< 140	< 66
	06/30/21 - 09/29/21		< 3	< 4	< 13	< 3	< 7	< 4	< 9	< 3	< 3	< 184	< 42
	09/29/21 - 12/29/21		< 2	< 3	< 8	< 2	< 6	< 4	< 6	< 2	< 2	< 134	< 50
		MEAN	-	-	-	-	-	-	-	-	-	-	-
L-04	12/30/20 - 03/31/21		< 3	< 4	< 11	< 3	< 9	< 6	< 6	< 3	< 3	< 219	< 50
	03/31/21 - 06/30/21		< 2	< 4	< 12	< 2	< 7	< 4	< 8	< 2	< 3	< 203	< 69
	06/30/21 - 09/29/21		< 2	< 3	< 10	< 2	< 5	< 3	< 4	< 2	< 2	< 108	< 43
	09/29/21 - 12/29/21		< 2	< 4	< 12	< 2	< 6	< 4	< 5	< 2	< 2	< 120	< 79
		MEAN	-	-	-	-	-	-	-	-	-	-	-
L-05	12/30/20 - 03/31/21		< 3	< 4	< 12	< 3	< 7	< 4	< 7	< 3	< 2	< 144	< 23
	03/31/21 - 06/30/21		< 3	< 5	< 14	< 3	< 6	< 6	< 8	< 4	< 3	< 206	< 107
	06/30/21 - 09/29/21		< 3	< 4	< 16	< 3	< 8	< 5	< 9	< 3	< 4	< 177	< 91
	09/29/21 - 12/29/21		< 3	< 4	< 10	< 3	< 9	< 5	< 8	< 3	< 3	< 196	< 54
		MEAN	-	-	-	-	-	-	-	-	-	-	-
L-06	12/30/20 - 03/31/21		< 2	< 3	< 7	< 2	< 5	< 3	< 6	< 3	< 2	< 114	< 43
	03/31/21 - 06/30/21		< 2	< 2	< 10	< 2	< 4	< 2	< 6	< 2	< 2	< 144	< 42
	06/30/21 - 09/29/21		< 2	< 2	< 13	< 2	< 5	< 3	< 7	< 2	< 1	< 102	< 56
	09/29/21 - 12/29/21		< 2	< 3	< 10	< 2	< 4	< 3	< 5	< 2	< 2	< 94	< 57
		MEAN	-	-	-	-	-	-	-	-	-	-	-

Table C-V.3

**CONCENTRATIONS OF GAMMA EMITTERS IN AIR PARTICULATE SAMPLES  
COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2021  
RESULTS IN UNITS OF E-3 PCI/CU METER ± 2 SIGMA**

SITE	COLLECTION		Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
	PERIOD												
L-07	12/30/20 - 03/31/21		< 2	< 1	< 10	< 3	< 6	< 3	< 6	< 3	< 2	< 119	< 34
	03/31/21 - 06/30/21		< 3	< 3	< 12	< 3	< 5	< 5	< 8	< 3	< 2	< 184	< 80
	06/30/21 - 09/29/21		< 3	< 4	< 13	< 4	< 9	< 5	< 10	< 4	< 3	< 212	< 89
	09/29/21 - 12/29/21		< 3	< 5	< 14	< 4	< 5	< 6	< 9	< 4	< 3	< 252	< 101
	MEAN		-	-	-	-	-	-	-	-	-	-	-
L-08	12/30/20 - 03/31/21		< 4	< 4	< 15	< 4	< 8	< 6	< 9	< 3	< 3	< 165	< 86
	03/31/21 - 06/30/21		< 3	< 6	< 15	< 3	< 8	< 6	< 9	< 4	< 3	< 250	< 104
	06/30/21 - 09/29/21		< 2	< 3	< 8	< 2	< 6	< 3	< 7	< 2	< 2	< 148	< 63
	09/29/21 - 12/29/21		< 2	< 4	< 12	< 2	< 5	< 3	< 5	< 2	< 2	< 131	< 75
	MEAN		-	-	-	-	-	-	-	-	-	-	-
L-10	12/30/20 - 03/31/21		< 2	< 3	< 7	< 3	< 5	< 3	< 6	< 2	< 2	< 100	< 41
	03/31/21 - 06/30/21		< 2	< 4	< 11	< 2	< 5	< 4	< 7	< 3	< 2	< 146	< 62
	06/30/21 - 09/29/21		< 2	< 2	< 6	< 2	< 4	< 4	< 6	< 2	< 2	< 118	< 42
	09/29/21 - 12/29/21		< 3	< 4	< 11	< 3	< 7	< 3	< 6	< 3	< 3	< 181	< 77
	MEAN		-	-	-	-	-	-	-	-	-	-	-
L-11A	12/30/20 - 03/31/21		< 3	< 5	< 12	< 3	< 7	< 5	< 7	< 4	< 3	< 123	< 72
	03/31/21 - 06/30/21		< 2	< 2	< 9	< 2	< 6	< 2	< 5	< 2	< 2	< 98	< 55
	06/30/21 - 09/29/21		< 2	< 2	< 6	< 2	< 5	< 3	< 5	< 2	< 2	< 118	< 56
	09/29/21 - 12/29/21		< 3	< 4	< 7	< 3	< 7	< 3	< 9	< 2	< 2	< 139	< 43
	MEAN		-	-	-	-	-	-	-	-	-	-	-

C-10

Table C-VI.1

**CONCENTRATIONS OF I-131 IN AIR IODINE SAMPLES  
COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2021  
RESULTS IN UNITS OF E-3 PCI/CU METER ± 2 SIGMA**

COLLECTION PERIOD	GROUP I		GROUP II		GROUP III			GROUP IV	
	L-03	L-05	L-01	L-06	L-04	L-07	L-08	L-11A	L-10
12/30/20 - 01/07/21	< 22	< 21	< 40	< 20	< 21	< 52	< 52	< 34	< 54
01/07/21 - 01/13/21	< 56	< 27	< 56	< 55	< 56	< 53	< 52	< 52	< 31
01/13/21 - 01/20/21	< 41	< 46	< 47	< 45	< 45	< 43	< 42	< 45	< 23
01/20/21 - 01/28/21	< 37	< 18	< 38	< 38	< 36	< 43	< 42	< 40	< 42
01/28/21 - 02/03/21	< 51	< 51	< 35	< 50	< 52	< 29	< 57	< 59	< 58
02/03/21 - 02/11/21	< 18	< 26	< 25	< 24	< 25	< 20	< 23	< 23	< 23
02/11/21 - 02/18/21	< 16	< 64	< 65	< 47	< 62	< 65	< 69	< 66	< 34
02/18/21 - 02/25/21	(1)	< 47	< 49	< 45	< 45	< 58	< 54	< 57	< 28
02/25/21 - 03/03/21	< 62	< 61	< 63	< 45	< 30	< 24	< 47	< 45	< 46
03/03/21 - 03/11/21	< 43	< 44	< 44	< 39	< 41	< 41	< 40	< 41	< 29
03/11/21 - 03/18/21	< 48	< 42	< 48	< 47	< 47	< 49	< 47	< 47	< 33
03/18/21 - 03/25/21	< 49	< 48	< 49	< 37	< 34	< 36	< 18	< 36	< 38
03/25/21 - 03/31/21	< 35	< 15	< 37	< 66	< 36	< 68	< 66	< 64	< 33
03/31/21 - 04/07/21	< 65	< 28	< 65	< 58	< 65	< 58	< 57	< 58	< 25
04/07/21 - 04/15/21	< 48	< 48	< 47	< 40	< 47	< 42	< 27	< 41	< 44
04/15/21 - 04/22/21	< 42	< 43	< 43	< 21	< 43	< 49	< 48	< 48	< 34
04/22/21 - 04/29/21	< 53	< 53	< 45	< 38	< 52	< 39	< 39	< 38	< 24
04/29/21 - 05/05/21	< 33	< 33	(1)	< 38	< 36	< 39	< 38	< 38	< 17
05/05/21 - 05/13/21	< 45	< 46	< 47	< 46	< 46	< 45	< 45	< 31	< 47
05/13/21 - 05/20/21	< 13	< 31	< 30	< 29	< 31	< 30	< 29	< 28	< 18
05/20/21 - 05/27/21	< 53	< 53	< 50	< 45	< 53	< 28	< 45	< 44	< 47
05/27/21 - 06/02/21	< 58	< 58	< 59	< 60	< 27	< 63	< 63	< 63	< 66
06/02/21 - 06/10/21	< 40	< 41	< 40	< 39	< 39	< 40	< 38	< 38	< 19
06/10/21 - 06/17/21	< 48	< 47	< 45	< 48	< 23	< 56	< 53	< 54	< 24
06/17/21 - 06/24/21	< 23	< 39	< 38	< 38	< 38	< 47	< 45	< 45	< 46
06/24/21 - 06/30/21	< 61	< 60	< 60	< 55	< 62	< 48	< 55	< 55	< 56
06/30/21 - 07/07/21	< 25	< 26	< 24	< 11	< 25	< 11	< 11	< 10	< 11
07/07/21 - 07/14/21	< 52	< 26	< 50	< 49	< 51	< 50	< 50	< 49	< 35
07/14/21 - 07/22/21	< 32	< 20	< 31	< 33	< 31	< 45	< 44	< 43	< 46
07/22/21 - 07/29/21	< 56	< 29	< 54	< 55	< 56	< 39	< 38	< 38	< 23
07/29/21 - 08/04/21	< 50	< 50	< 50	< 52	< 45	< 43	< 41	< 41	< 18
08/04/21 - 08/12/21	< 21	< 36	< 36	< 36	< 35	< 34	< 33	< 33	< 33
08/12/21 - 08/19/21	< 40	< 33	< 31	< 34	< 34	< 44	< 43	< 42	< 44
08/19/21 - 08/26/21	< 55	< 53	< 53	< 48	< 54	< 48	< 47	< 24	< 48
08/26/21 - 09/01/21	< 15	< 15	< 15	< 26	< 15	< 28	< 12	< 26	< 27
09/01/21 - 09/09/21	< 50	< 50	< 49	< 48	< 50	< 49	< 22	< 47	< 49
09/09/21 - 09/16/21	< 53	< 52	< 52	< 36	< 53	< 35	< 35	< 21	< 36
09/16/21 - 09/23/21	< 25	< 41	< 39	< 58	< 40	< 30	< 60	< 58	< 62
09/23/21 - 09/29/21	< 59	< 61	< 61	< 60	< 27	< 54	< 62	< 62	< 62
09/29/21 - 10/07/21	< 25	< 51	< 50	< 50	< 50	< 31	< 31	< 31	< 31
10/07/21 - 10/13/21	< 44	< 45	< 21	< 43	< 44	< 30	< 29	< 29	< 29
10/13/21 - 10/21/21	< 39	< 39	< 37	< 38	< 39	< 39	< 37	< 37	< 33
10/21/21 - 10/28/21	< 39	< 39	< 37	< 31	< 38	< 33	< 31	< 32	< 20
10/28/21 - 11/03/21	< 59	< 59	< 57	< 26	< 31	< 12	< 26	< 27	< 27
11/03/21 - 11/10/21	< 34	< 34	< 14	< 33	< 32	< 26	< 25	< 24	< 24
11/10/21 - 11/19/21	< 18	< 37	< 35	< 35	< 35	< 35	< 33	< 33	< 33
11/19/21 - 11/26/21	< 41	< 41	< 40	< 47	< 41	< 23	< 46	< 46	< 46
11/26/21 - 12/01/21	< 24	< 46	< 46	< 40	< 46	< 21	< 40	< 42	< 40
12/01/21 - 12/09/21	< 19	< 32	< 31	< 31	< 31	< 42	< 42	< 42	< 42
12/09/21 - 12/16/21	< 49	< 47	< 24	< 24	< 48	< 61	< 58	< 59	< 58
12/16/21 - 12/23/21	< 43	< 42	< 42	< 38	< 22	< 40	< 39	< 23	< 38
12/23/21 - 12/29/21	< 48	< 47	< 46	< 46	< 24	< 34	< 32	< 32	< 32
MEAN	-	-	-	-	-	-	-	-	-

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

**Table C-VII.1 CONCENTRATIONS OF I-131 IN MILK SAMPLES COLLECTED  
IN THE VICINITY OF LASALLE COUNTY STATION, 2021**  
RESULTS IN UNITS OF PCI/LITER  $\pm$  2 SIGMA

COLLECTION PERIOD	<u>CONTROL FARM</u> L-42
03/31/21	< 0.9
05/05/21	< 0.9
05/20/21	< 0.8
10/21/21	< 0.9
11/03/21	< 0.6
MEAN	-

Table C-VII.2

**CONCENTRATIONS OF GAMMA EMITTERS IN MILK SAMPLES COLLECTED  
IN THE VICINITY OF LASALLE COUNTY STATION, 2021  
RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA**

COLLECTION		Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
SITE	PERIOD											
L-42	03/31/21	< 8	< 7	< 15	< 8	< 16	< 8	< 14	< 6	< 7	< 37	< 9
	05/05/21	< 6	< 8	< 18	< 9	< 20	< 5	< 12	< 7	< 9	< 26	< 11
	05/20/21	< 5	< 5	< 11	< 6	< 11	< 6	< 9	< 6	< 6	< 22	< 7
	10/21/21	< 7	< 6	< 14	< 6	< 16	< 6	< 10	< 6	< 7	< 24	< 9
	11/03/21	< 7	< 8	< 16	< 7	< 16	< 7	< 11	< 8	< 7	< 31	< 9
	MEAN	-	-	-	-	-	-	-	-	-	-	-

Table C-VIII.1

**CONCENTRATIONS OF GAMMA EMITTERS IN FOOD PRODUCT SAMPLES  
COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2021**

RESULTS IN UNITS OF PCI/KG WET  $\pm$  2 SIGMA

SITE	COLLECTION		Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
	PERIOD													
L-42														
	<i>Hay</i>	06/30/21	< 29	< 29	< 70	< 33	< 76	< 28	< 50	< 47	< 29	< 33	< 134	< 41
	<i>Hay</i>	07/14/21	< 29	< 34	< 85	< 39	< 89	< 35	< 60	< 50	< 41	< 32	< 129	< 36
	<i>Pasturage</i>	07/29/21	< 28	< 25	< 50	< 39	< 64	< 30	< 57	< 46	< 33	< 30	< 137	< 41
	<i>Pasturage</i>	08/13/21	< 35	< 37	< 89	< 36	< 101	< 40	< 60	< 50	< 46	< 41	< 165	< 34
	<i>Pasturage</i>	08/26/21	< 41	< 31	< 73	< 35	< 90	< 36	< 61	< 41	< 37	< 31	< 137	< 50
	<i>Corn leaves</i>	09/09/21	< 30	< 34	< 65	< 30	< 82	< 34	< 50	< 49	< 28	< 35	< 141	< 28
	<i>Pasturage</i>	09/09/21	< 30	< 28	< 49	< 39	< 77	< 30	< 56	< 44	< 34	< 30	< 129	< 32
	<i>Pasturage</i>	09/23/21	< 41	< 34	< 76	< 40	< 92	< 40	< 54	< 45	< 30	< 43	< 127	< 33
	<i>Pasturage</i>	10/07/21	< 30	< 28	< 59	< 32	< 57	< 25	< 58	< 38	< 34	< 30	< 138	< 33
	<i>Pasturage</i>	12/01/21	< 19	< 17	< 39	< 19	< 40	< 19	< 32	< 19	< 21	< 20	< 70	< 17
		<i>MEAN</i>	-	-	-	-	-	-	-	-	-	-	-	-
L-QUAD 1														
	<i>Red beets</i>	07/14/21	< 34	< 33	< 67	< 42	< 66	< 33	< 73	< 41	< 32	< 31	< 127	< 41
	<i>Red beet stem/leaves</i>	07/14/21	< 27	< 27	< 70	< 33	< 69	< 35	< 44	< 49	< 28	< 30	< 133	< 27
		<i>MEAN</i>	-	-	-	-	-	-	-	-	-	-	-	-
L-QUAD 2														
	<i>Horseradish</i>	07/22/21	< 30	< 22	< 43	< 27	< 48	< 28	< 48	< 40	< 31	< 25	< 121	< 27
	<i>Potatoes</i>	07/22/21	< 19	< 20	< 44	< 20	< 49	< 19	< 27	< 26	< 22	< 18	< 78	< 26
	<i>Cabbage</i>	07/14/21	< 28	< 34	< 59	< 35	< 42	< 32	< 61	< 36	< 33	< 30	< 112	< 36
		<i>MEAN</i>	-	-	-	-	-	-	-	-	-	-	-	-
L-QUAD 3														
	<i>Red beets</i>	07/29/21	< 16	< 16	< 37	< 17	< 32	< 18	< 27	< 36	< 17	< 17	< 107	< 25
	<i>Red beet leaves</i>	08/04/21	< 16	< 15	< 32	< 18	< 34	< 17	< 28	< 24	< 18	< 17	< 74	< 23
	<i>Red beet</i>	08/04/21	< 15	< 15	< 30	< 16	< 31	< 15	< 27	< 22	< 17	< 17	< 73	< 19
		<i>MEAN</i>	-	-	-	-	-	-	-	-	-	-	-	-
L-QUAD 4														
	<i>Kohlrabi</i>	07/22/21	< 18	< 16	< 43	< 16	< 32	< 17	< 33	< 26	< 22	< 17	< 75	< 19
	<i>Carrots</i>	07/22/21	< 29	< 33	< 83	< 35	< 79	< 38	< 67	< 44	< 31	< 33	< 149	< 48
		<i>MEAN</i>	-	-	-	-	-	-	-	-	-	-	-	-

C-14

Table C-VIII.2

**CONCENTRATIONS OF GAMMA EMITTERS IN VEGETATION SAMPLES  
COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2021  
RESULTS IN UNITS OF PCI/KG WET ± 2 SIGMA**

SITE	COLLECTION		Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
	PERIOD													
L-VEG C														
Grass	05/20/21		< 17	< 18	< 37	< 17	< 36	< 17	< 29	< 23	< 19	< 18	< 73	< 19
Dandelion	05/20/21		< 21	< 20	< 42	< 19	< 46	< 20	< 36	< 28	< 24	< 23	< 87	< 26
Milkweed	06/17/21		< 31	< 22	< 49	< 26	< 60	< 27	< 51	< 37	< 34	< 31	< 120	< 37
Clover	06/17/21		< 26	< 24	< 40	< 25	< 50	< 23	< 42	< 34	< 31	< 30	< 129	< 39
Milkweed	07/14/21		< 27	< 31	< 67	< 30	< 72	< 33	< 49	< 50	< 36	< 33	< 133	< 40
Grass	07/14/21		< 42	< 41	< 92	< 46	< 88	< 42	< 64	< 52	< 41	< 39	< 149	< 74
Radish	07/14/21		< 30	< 29	< 61	< 33	< 64	< 31	< 51	< 48	< 31	< 32	< 140	< 42
Collard greens	07/22/21		< 36	< 33	< 79	< 36	< 94	< 38	< 57	< 53	< 35	< 38	< 188	< 43
Swiss chard	07/22/21		< 28	< 26	< 60	< 37	< 73	< 34	< 51	< 47	< 34	< 38	< 137	< 52
Clover	08/12/21		< 31	< 40	< 67	< 45	< 74	< 39	< 66	< 54	< 36	< 44	< 160	< 43
Velvet leaves	08/12/21		< 28	< 35	< 64	< 40	< 90	< 33	< 49	< 47	< 40	< 50	< 154	< 40
Milkweed	09/16/21		< 39	< 30	< 71	< 48	< 96	< 43	< 65	< 52	< 37	< 39	< 162	< 43
Clover	09/16/21		< 26	< 32	< 86	< 45	< 67	< 38	< 69	< 54	< 42	< 37	< 196	< 50
Alfalfa	09/16/21		< 16	< 16	< 31	< 16	< 36	< 17	< 28	< 29	< 18	< 18	< 78	< 21
Grass	10/21/21		< 38	< 32	< 81	< 35	< 79	< 34	< 61	< 51	< 40	< 37	< 144	< 38
Dandelion	10/21/21		< 26	< 29	< 57	< 31	< 57	< 28	< 47	< 41	< 30	< 29	< 118	< 37
	MEAN		-	-	-	-	-	-	-	-	-	-	-	-
L-ESE-1														
Clover	05/20/21		< 22	< 20	< 47	< 21	< 45	< 22	< 38	< 31	< 23	< 23	< 95	< 26
Dandelion	05/20/21		< 14	< 12	< 28	< 16	< 32	< 15	< 23	< 19	< 16	< 15	< 54	< 17
Clover	06/17/21		< 32	< 34	< 83	< 31	< 87	< 23	< 62	< 42	< 36	< 34	< 138	< 42
Grass	06/17/21		< 27	< 23	< 59	< 37	< 53	< 29	< 42	< 43	< 26	< 28	< 123	< 34
Clover	07/14/21		< 33	< 29	< 77	< 28	< 81	< 31	< 68	< 48	< 29	< 43	< 145	< 38
Dandelion	07/14/21		< 28	< 29	< 103	< 37	< 92	< 31	< 67	< 46	< 39	< 44	< 193	< 50
Clover	08/12/21		< 16	< 15	< 34	< 16	< 34	< 15	< 26	< 22	< 17	< 16	< 64	< 20
Grass	08/12/21		< 40	< 31	< 85	< 40	< 90	< 35	< 54	< 48	< 38	< 39	< 150	< 32
Dandelion	09/16/21		< 36	< 38	< 75	< 32	< 75	< 34	< 62	< 57	< 38	< 42	< 158	< 48
Grass	09/16/21		< 33	< 33	< 71	< 34	< 75	< 35	< 56	< 51	< 35	< 34	< 152	< 48
Dandelion	10/21/21		< 35	< 38	< 84	< 35	< 81	< 40	< 66	< 55	< 42	< 33	< 161	< 34
Clover	10/21/21		< 47	< 44	< 114	< 46	< 108	< 48	< 84	< 56	< 47	< 49	< 214	< 85
	MEAN		-	-	-	-	-	-	-	-	-	-	-	-
L-ESE-2														
Clover	05/20/21		< 18	< 19	< 37	< 23	< 42	< 20	< 34	< 24	< 21	< 20	< 79	< 21
Dandelion	05/20/21		< 21	< 21	< 39	< 21	< 45	< 22	< 38	< 29	< 23	< 21	< 87	< 21
Grass	05/20/21		< 18	< 17	< 36	< 18	< 34	< 17	< 30	< 20	< 19	< 18	< 68	< 23
Pplantain	06/17/21		< 30	< 28	< 51	< 26	< 57	< 29	< 58	< 42	< 40	< 26	< 131	< 19
Dandelion	06/17/21		< 26	< 28	< 49	< 33	< 56	< 27	< 38	< 32	< 23	< 30	< 100	< 32
Plantain	07/14/21		< 26	< 34	< 79	< 32	< 66	< 33	< 51	< 54	< 35	< 33	< 137	< 49
Dandelion	07/14/21		< 33	< 25	< 75	< 27	< 70	< 38	< 68	< 52	< 40	< 37	< 159	< 43
Clover	07/14/21		< 37	< 35	< 70	< 42	< 76	< 30	< 63	< 53	< 36	< 39	< 176	< 49
Plantain	08/12/21		< 31	< 36	< 51	< 30	< 66	< 31	< 46	< 53	< 43	< 33	< 187	< 50
Clover	08/12/21		< 37	< 36	< 84	< 35	< 80	< 41	< 61	< 54	< 35	< 36	< 163	< 53
Clover	09/16/21		< 41	< 36	< 77	< 38	< 81	< 38	< 64	< 55	< 34	< 32	< 140	< 41
Plantain	09/16/21		< 48	< 31	< 86	< 46	< 102	< 42	< 76	< 56	< 39	< 33	< 193	< 61
Dandelion	09/16/21		< 19	< 18	< 38	< 19	< 38	< 17	< 31	< 29	< 20	< 18	< 83	< 24
Clover	10/21/21		< 33	< 34	< 84	< 42	< 73	< 34	< 53	< 53	< 41	< 47	< 140	< 33
Dandelion	10/21/21		< 31	< 34	< 81	< 47	< 79	< 36	< 57	< 54	< 38	< 41	< 160	< 40
	MEAN		-	-	-	-	-	-	-	-	-	-	-	-



Table C-IX.1

## QUARTERLY DLR RESULTS FOR LASALLE COUNTY STATION, 2021

Location	Location Qtrly Baseline, B <sub>Q</sub> (mrem)	B <sub>Q</sub> + MDD <sub>Q</sub>	2021 Normalized Net Dose, M <sub>QX</sub> (mrem/std. Qtr.)				Normalized Annual Dose, M <sub>A</sub> (mrem/yr)	B <sub>A</sub> <sup>(1)</sup>	B <sub>A</sub> + MDD <sub>A</sub> <sup>(2)</sup>	Annual Facility Dose, F <sub>A</sub> (mrem)	Annual Facility Dose, F <sub>A</sub> >10 mrem
			1	2	3	4					
L-01	13.30	22.0	17.4	19.0	17.9	20.1	74.4	53.1	87.3	ND	No
L-03	11.90	20.6	17.1	17.6	18.8	20.2	73.7	45.3	79.5	ND	No
L-04	12.00	20.7	15.6	17.4	17.9	17.9	68.7	45.6	79.8	ND	No
L-05	11.70	20.4	16.2	17.5	18.4	19.5	71.6	46.8	81.0	ND	No
L-06	13.20	21.9	16.5	18.7	19.7	19.9	74.8	53.0	87.2	ND	No
L-07	12.90	21.6	16.9	16.9	18.6	19.7	72.1	51.5	85.7	ND	No
L-08	12.50	21.2	16.7	17.4	18.9	17.5	70.5	50.1	84.3	ND	No
L-10	10.00	18.7	14.1	15.7	15.1	16.8	61.6	39.8	74.0	ND	No
L-101	13.30	22.0	17.9	17.6	17.8	19.8	73.1	50.4	84.6	ND	No
L-102	14.90	23.6	18.9	18.8	(3)	21.6	59.2	59.5	93.7	ND	No
L-103	12.30	21.0	17.2	17.8	17.9	19.7	72.6	49.2	83.4	ND	No
L-104	11.60	20.3	16.5	17.1	17.2	20.4	71.2	46.3	80.5	ND	No
L-105	13.30	22.0	17.8	18.5	20.2	20.4	76.9	53.2	87.4	ND	No
L-106	12.30	21.0	15.6	18.3	17.5	18.8	70.1	49.2	83.4	ND	No
L-107	12.80	21.5	14.4	18.6	18.7	19.9	71.6	51.2	85.4	ND	No
L-108	11.10	19.8	18.6	18.5	19.2	20.7	77.0	44.3	78.5	ND	No
L-109	12.90	21.6	16.7	18.8	18.2	20.3	73.9	51.6	85.8	ND	No
L-110	12.40	21.1	17.9	17.9	18.8	20.0	74.5	49.7	83.9	ND	No
L-111B	13.10	21.8	17.0	19.6	20.8	21.8	79.2	52.3	86.5	ND	No
L-112	12.40	21.1	15.8	18.8	18.8	19.0	72.4	49.6	83.8	ND	No
L-113A	13.80	22.5	18.1	20.3	19.2	21.4	78.9	55.2	89.4	ND	No
L-114	13.10	21.8	16.6	20.3	19.9	18.8	75.6	50.0	84.2	ND	No
L-115	11.20	19.9	17.2	17.9	17.4	19.9	72.4	44.8	79.0	ND	No
L-116	11.20	19.9	16.2	16.3	17.3	18.9	68.7	44.8	79.0	ND	No
L-11A	10.30	19.0	15.2	16.2	17.7	17.6	66.7	41.2	75.4	ND	No
L-201	11.00	19.7	13.5	14.9	14.3	15.3	58.0	43.8	78.0	ND	No
L-202	10.20	18.9	15.2	17.3	15.5	17.1	65.1	40.9	75.1	ND	No
L-203	12.80	21.5	17.8	17.6	19.0	19.5	73.9	51.1	85.3	ND	No
L-204	13.30	22.0	18.1	19.3	18.9	21.6	77.9	50.7	84.9	ND	No
L-205A	12.20	20.9	16.4	19.0	19.1	19.9	74.4	48.8	83.0	ND	No
L-205B	12.00	20.7	16.4	19.0	19.1	19.9	74.4	45.7	79.9	ND	No
L-206	12.90	21.6	17.0	18.1	18.2	19.5	72.8	51.6	85.8	ND	No
L-207	12.10	20.8	16.9	17.8	17.5	19.6	71.8	48.5	82.7	ND	No
L-208	13.10	21.8	17.1	19.5	19.1	20.6	76.1	44.6	78.8	ND	No
L-209	12.40	21.1	16.4	(3)	18.9	19.4	54.7	47.2	81.4	ND	No
L-210	13.70	22.4	18.2	19.6	20.0	20.9	78.6	51.9	86.1	ND	No
L-211	13.50	22.2	17.4	18.7	19.9	19.9	75.8	54.1	88.3	ND	No
L-212	13.30	22.0	(3)	17.7	19.3	20.7	57.6	50.5	84.7	ND	No
L-213	11.50	20.2	16.5	17.8	18.6	19.3	72.1	41.6	75.8	ND	No
L-214	11.90	20.6	16.8	17.9	19.4	19.2	73.2	47.6	81.8	ND	No
L-215	13.6	22.3	18.2	19.9	19.1	20.6	77.7	54.4	88.6	ND	No
L-216	13.4	22.1	17.5	17.7	18.2	20.7	74.0	53.5	87.7	ND	No

<sup>(1)</sup> **Baseline background dose (B<sub>A</sub>):** The estimated mean background radiation dose at each field monitoring location annually based on historical measurements, excluding any dose contribution from the monitored facility

<sup>(2)</sup> **Minimum differential dose (MDD<sub>A</sub>):** The smallest amount of facility related dose at each monitored location annually above the baseline background dose that can be reliably detected by an environmental dosimetry system

<sup>(3)</sup> SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

**Table C-IX.1 QUARTERLY OSLD RESULTS FOR LASALLE COUNTY STATION, 2021**  
RESULTS IN UNITS OF MILLIREM/QUARTER  $\pm$  2 STANDARD DEVIATIONS

STATION CODE	MEAN $\pm$ 2 S.D.	JAN - MAR	APR - JUN	JUL - SEP	OCT - DEC
L-01	18.6 $\pm$ 2.4	17.4	19.0	17.9	20.1
L-03	18.4 $\pm$ 2.8	17.1	17.6	18.8	20.2
L-04	17.2 $\pm$ 2.2	15.6	17.4	17.9	17.9
L-05	17.9 $\pm$ 2.8	16.2	17.5	18.4	19.5
L-06	18.7 $\pm$ 3.2	16.5	18.7	19.7	19.9
L-07	18.0 $\pm$ 2.8	16.9	16.9	18.6	19.7
L-08	17.6 $\pm$ 1.8	16.7	17.4	18.9	17.5
L-10	15.4 $\pm$ 2.2	14.1	15.7	15.1	16.8
L-11A	18.3 $\pm$ 2.1	17.9	17.6	17.8	19.8
L-101	19.7 $\pm$ 3.2	18.9	18.8	(1)	21.6
L-102	18.2 $\pm$ 2.2	17.2	17.8	17.9	19.7
L-103	17.8 $\pm$ 3.5	16.5	17.1	17.2	20.4
L-104	19.2 $\pm$ 2.5	17.8	18.5	20.2	20.4
L-105	17.5 $\pm$ 2.8	15.6	18.3	17.5	18.8
L-106	17.9 $\pm$ 4.8	14.4	18.6	18.7	19.9
L-107	19.2 $\pm$ 2.0	18.6	18.5	19.2	20.7
L-108	18.5 $\pm$ 3.0	16.7	18.8	18.2	20.3
L-109	18.6 $\pm$ 2.0	17.9	17.9	18.8	20.0
L-110	19.8 $\pm$ 4.1	17.0	19.6	20.8	21.8
L-111B	18.1 $\pm$ 3.0	15.8	18.8	18.8	19.0
L-112	19.7 $\pm$ 2.8	18.1	20.3	19.2	21.4
L-113A	18.9 $\pm$ 3.3	16.6	20.3	19.9	18.8
L-114	18.1 $\pm$ 2.5	17.2	17.9	17.4	19.9
L-115	17.2 $\pm$ 2.4	16.2	16.3	17.3	18.9
L-116	16.7 $\pm$ 2.4	15.2	16.2	17.7	17.6
L-201	14.5 $\pm$ 1.6	13.5	14.9	14.3	15.3
L-202	16.3 $\pm$ 2.1	15.2	17.3	15.5	17.1
L-203	18.5 $\pm$ 1.9	17.8	17.6	19.0	19.5
L-204	19.5 $\pm$ 3.0	18.1	19.3	18.9	21.6
L-205A	18.6 $\pm$ 3.0	16.4	19.0	19.1	19.9
L-205B	18.6 $\pm$ 3.0	16.4	19.0	19.1	19.9
L-206	18.2 $\pm$ 2.0	17.0	18.1	18.2	19.5
L-207	17.9 $\pm$ 2.4	16.9	17.8	17.5	19.6
L-208	19.0 $\pm$ 2.9	17.1	19.5	19.1	20.6
L-209	18.2 $\pm$ 3.2	16.4	(1)	18.9	19.4
L-210	19.6 $\pm$ 2.2	18.2	19.6	20.0	20.9
L-211	19.0 $\pm$ 2.4	17.4	18.7	19.9	19.9
L-212	19.2 $\pm$ 3.0	(1)	17.7	19.3	20.7
L-213	18.0 $\pm$ 2.4	16.5	17.8	18.6	19.3
L-214	18.3 $\pm$ 2.4	16.8	17.9	19.4	19.2
L-215	19.4 $\pm$ 2.1	18.2	19.9	19.1	20.6
L-216	18.5 $\pm$ 2.9	17.5	17.7	18.2	20.7

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

**TABLE C-IX.2 MEAN QUARTERLY OSLD RESULTS FOR THE INNER RING, OUTER RING, OTHER AND CONTROL LOCATIONS FOR LASALLE COUNTY STATION, 2021**  
RESULTS IN UNITS OF MILLIREM/QUARTER ± 2 STANDARD DEVIATIONS OF THE STATION DATA

COLLECTION PERIOD	INNER RING ± 2 S.D.	OUTER RING	OTHER	CONTROL
JAN-MAR	16.9 ± 2.4	16.8 ± 2.3	16.6 ± 1.2	14.1 ± 0
APR-JUN	18.3 ± 2.2	18.3 ± 2.2	17.8 ± 1.5	15.7 ± 0
JUL-SEP	18.5 ± 2.1	18.5 ± 2.1	18.6 ± 1.3	15.1 ± 0
OCT-DEC	19.9 ± 2.1	19.9 ± 2.1	19.3 ± 2.2	15.4 ± 0

**Table C-IX.3 SUMMARY OF THE AMBIENT DOSIMETRY PROGRAM FOR LASALLE COUNTY STATION, 2021**  
RESULTS IN UNITS OF MILLIREM/QUARTER

LOCATION	SAMPLES ANALYZED	PERIOD MINIMUM	PERIOD MAXIMUM	PERIOD MEAN ± 2 S.D.
INNER RING	67	14.4	21.8	18.4 ± 3.1
OUTER RING	66	13.5	21.6	18.3 ± 3.3
OTHER	28	15.6	20.2	18.1 ± 2.5
CONTROL	4	14.1	16.8	15.4 ± 2.2

INNER RING STATIONS - L-101-1, L-101-2, L-102-1, L-102-2, L-103-1, L-103-2, L-104-1, L-104-2, L-105-1, L-105-2, L-106-1, L-106-2, L-107-1, L-107-2, L-108-1, L-108-2, L109-1, L109-2, L110-1, L110-2, L-111B-1, L-111B-2, L-112-1, L-112-2, L113A-1, L-113A-2, L114-1, L-114-2, L-115-1, L-115-2, L-116-1, L-116-2

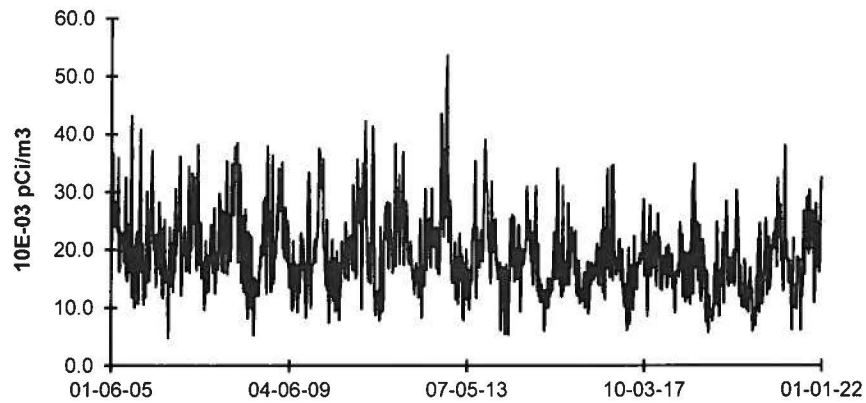
OUTER RING STATIONS - L-201-3, L-201-4, L-202-3, L-202-4, L-203-1, L-203-2, L-204-1, L-204-2, L205-1, L-205-2, L-205-3, L-205-4, L-206-1, L-206-2, L-207-1, L207-2, L208-1, L208-2, L209-1, L209-2, L210-1, L-210-2, L-211-1, L-211-2, L-212-1, L-212-2, L-213-3, L-213-4, L-214-3, L-214-4, L-215-3, L-215-4, L-2016-3, L-216-4

OTHER STATIONS - L-01-1, L-01-2, L-03-1, L-03-2, L-04-1, L-04-2, L-05-1, L-05-2, L-06-1, L-06-2, L-07-1, L-07-2, L-08-1, L-08-2, L-11A-1, L-11A-2

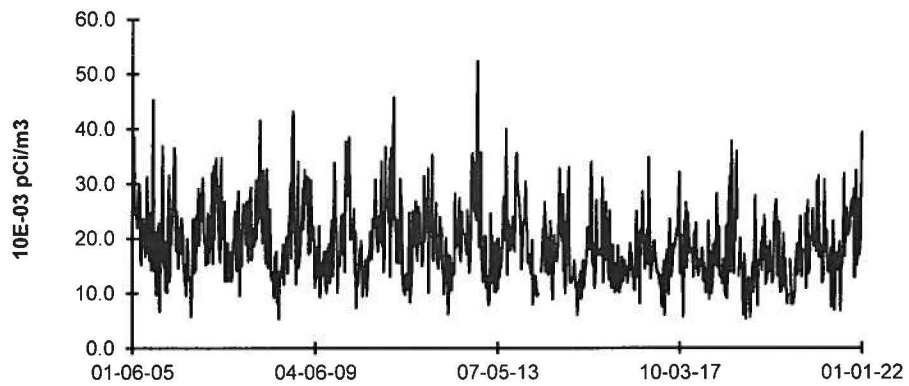
CONTROL STATIONS - L-10-1, L-10-2

**FIGURE C-3**  
**Air Particulate - Gross Beta - Stations L-01 and L-03**  
**Collected in the Vicinity of LSCS, 2005 - 2021**

**L-01 Nearsite No. 1**

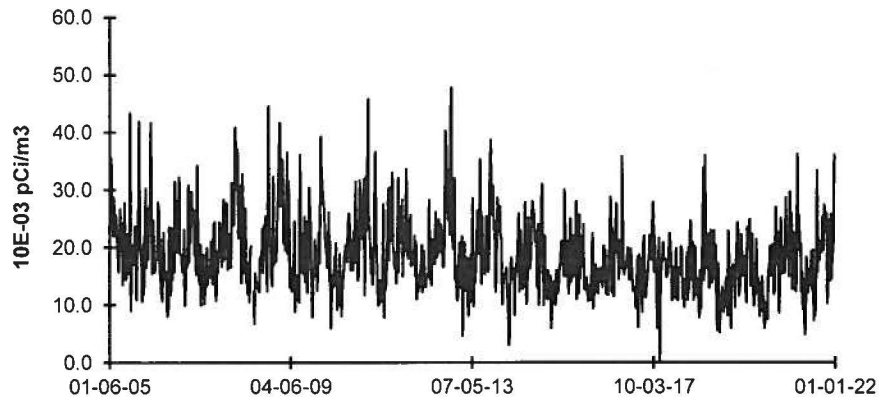


**L-03 Onsite No. 3**

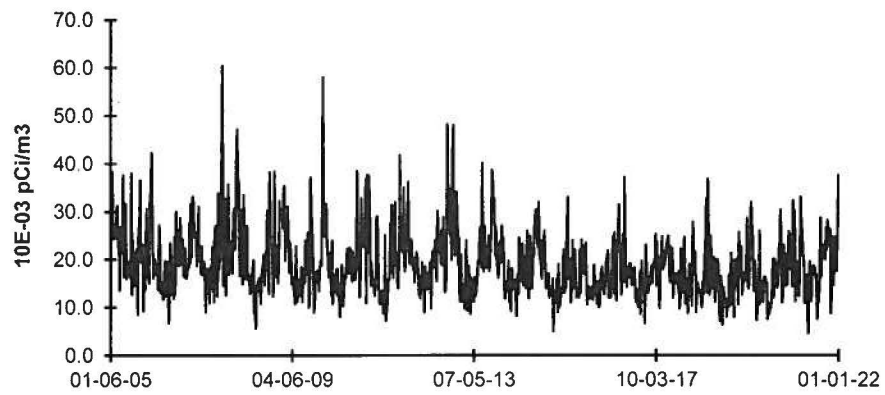


**FIGURE C-4**  
**Air Particulate - Gross Beta - Stations L-05 and L-06**  
**Collected in the Vicinity of LSCS, 2005 - 2021**

**L-05 Onsite No. 5**

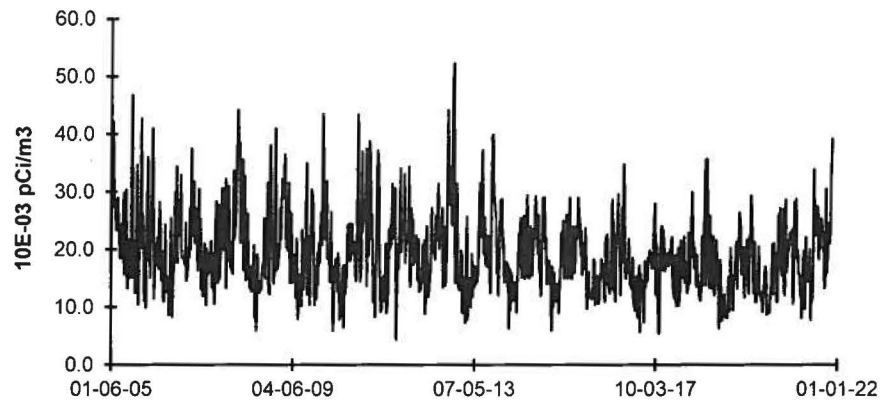


**L-06 Nearsite No. 6**



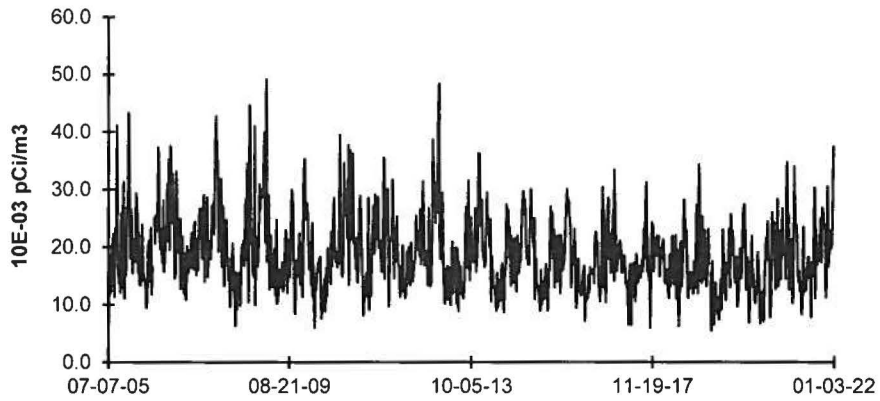
**FIGURE C-5**  
**Air Particulate - Gross Beta - Station L-10 (C)**  
**Collected in the Vicinity of LSCS, 2005 - 2021**

L-10 (C) Streator

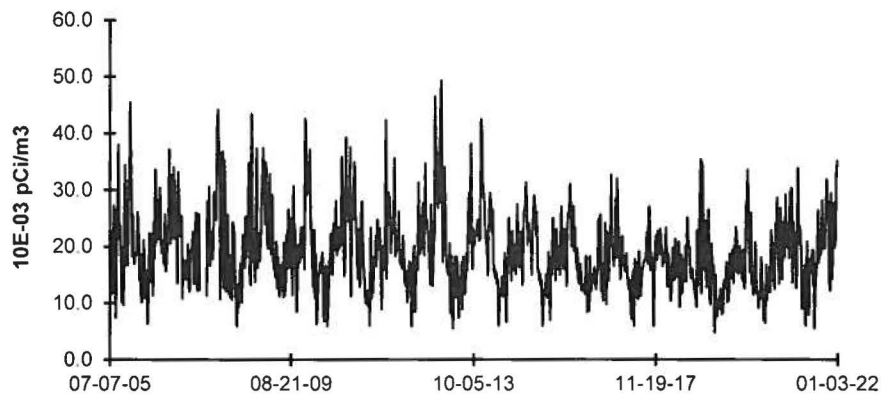


**FIGURE C-6**  
**Air Particulate - Gross Beta - Stations L-04 and L-07**  
**Collected in the Vicinity of LSCS, 2005 - 2021**

**L-04 Rte. 170**

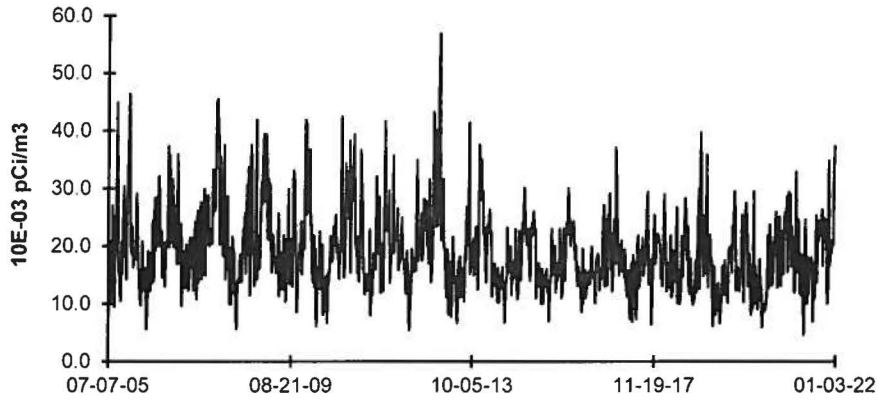


**L-07 Seneca**

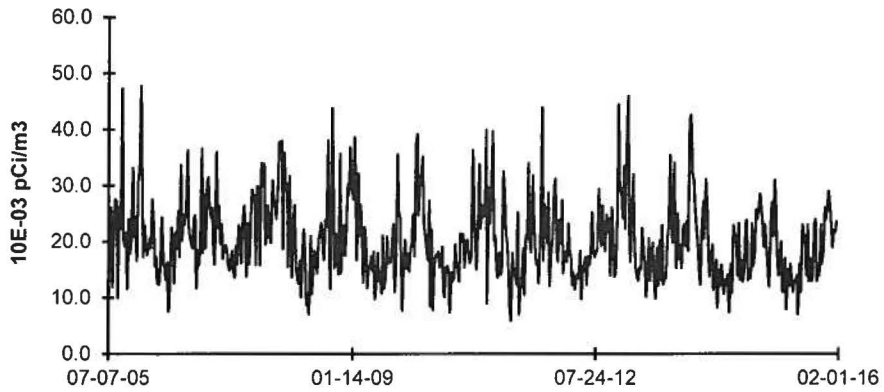


**FIGURE C-7**  
**Air Particulate - Gross Beta - Stations L-08 and L-11**  
**Collected in the Vicinity of LSCS, 2005 - 2021**

**L-08 Marseilles**



**L-11 Ransom (1)**

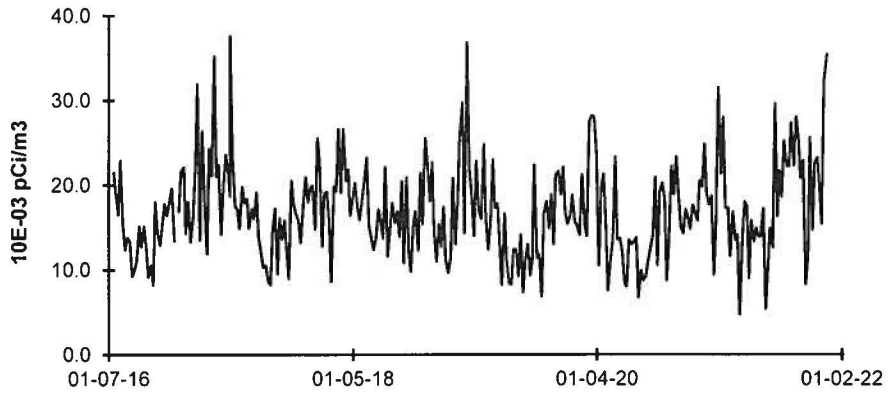


*(1) Air monitoring station L-11 was retired on 01/21/16*



**FIGURE C-8**  
**Air Particulate - Gross Beta - Station L-11A**  
**Collected in the Vicinity of LSCS, 2016 - 2021**

**L-11A Ransom (1)**



*(1) Air monitoring station L-11A was placed in service on 01/14/16*

## **APPENDIX D**

# **INTER-LABORATORY COMPARISON PROGRAM**

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**Analytics Environmental Radioactivity Cross Check Program  
Teledyne Brown Engineering Environmental Services**

**Table D.1**

Month/Year	Identification Number	Matrix	Nuclide	Units	TBE Reported Value	Known Value <sup>(a)</sup>	Ratio of TBE to Analytics Result	Evaluation <sup>(b)</sup>		
March 2021	E13466	Milk	Sr-89	pCi/L	84.6	87.1	0.97	A		
			Sr-90	pCi/L	11.5	12.6	0.91	A		
	E13467	Milk	Ce-141	pCi/L	111	125	0.89	A		
			Co-58	pCi/L	123	128	0.96	A		
			Co-60	pCi/L	140	154	0.91	A		
			Cr-51	pCi/L	252	242	1.04	A		
			Cs-134	pCi/L	130	151	0.86	A		
			Cs-137	pCi/L	110	110	1.00	A		
			Fe-59	pCi/L	105	109	0.96	A		
			I-131	pCi/L	77.6	86.9	0.89	A		
			Mn-54	pCi/L	111	112	0.99	A		
			Zn-65	pCi/L	200	211	0.95	A		
			E13468	Charcoal	I-131	pCi	83.5	88.5	0.94	A
			E13469	AP	Ce-141	pCi	103.0	103	1.00	A
					Co-58	pCi	93.3	105	0.89	A
Co-60	pCi	136			126	1.08	A			
Cr-51	pCi	213			198	1.07	A			
Cs-134	pCi	123.0			124	0.99	A			
Cs-137	pCi	86.3			90.1	0.96	A			
Fe-59	pCi	81.3			89.6	0.91	A			
Mn-54	pCi	93.5			92.0	1.02	A			
Zn-65	pCi	166	173	0.96	A					
E13470	Soil	Ce-141	pCi/g	0.232	0.262	0.89	A			
		Co-58	pCi/g	0.251	0.268	0.94	A			
		Co-60	pCi/g	0.306	0.322	0.95	A			
		Cr-51	pCi/g	0.517	0.506	1.02	A			
		Cs-134	pCi/g	0.263	0.317	0.83	A			
		Cs-137	pCi/g	0.278	0.301	0.92	A			
		Fe-59	pCi/g	0.228	0.229	1.00	A			
		Mn-54	pCi/g	0.221	0.235	0.94	A			
Zn-65	pCi/g	0.448	0.441	1.02	A					
E13471	AP	Sr-89	pCi	92.2	95.5	0.97	A			
		Sr-90	pCi	11.7	13.9	0.84	A			

(a) The Analytics known value is equal to 100% of the parameter present in the standard as determined by gravimetric and/or volumetric measurements made during standard preparation

(b) Analytics evaluation based on TBE internal QC limits:

A = Acceptable - reported result falls within ratio limits of 0.80-1.20

W = Acceptable with warning - reported result falls within 0.70-0.80 or 1.20-1.30

N = Not Acceptable - reported result falls outside the ratio limits of < 0.70 and > 1.30

**Analytics Environmental Radioactivity Cross Check Program  
Teledyne Brown Engineering Environmental Services**

**Table D.1**

Month/Year	Identification Number	Matrix	Nuclide	Units	TBE Reported Value	Known Value <sup>(a)</sup>	Ratio of TBE to Analytics Result	Evaluation <sup>(b)</sup>			
September 2021	E13472	Milk	Sr-89	pCi/L	66.4	85.4	0.78	W			
			Sr-90	pCi/L	11.9	14.0	0.85	A			
September 2021	E13473	Milk	Ce-141	pCi/L	118	114	1.03	A			
			Co-58	pCi/L	116	118	0.98	A			
			Co-60	pCi/L	142	145	0.98	A			
			Cr-51	pCi/L	244	236	1.03	A			
			Cs-134	pCi/L	81	93.1	0.87	A			
			Cs-137	pCi/L	105	112	0.94	A			
			Fe-59	pCi/L	105	102	1.03	A			
			I-131	pCi/L	65.1	85.6	0.76	W			
			Mn-54	pCi/L	128	128	1.00	A			
			Zn-65	pCi/L	158	153	1.03	A			
			E13474	Charcoal	I-131	pCi	85.2	90.9	0.94	A	
			September 2021	E13475	AP	Ce-141	pCi	126	135	0.94	A
						Co-58	pCi	148	139	1.07	A
Co-60	pCi	183				171	1.07	A			
Cr-51	pCi	322				278	1.16	A			
Cs-134	pCi	118				110	1.08	A			
Cs-137	pCi	147				132	1.12	A			
Fe-59	pCi	131				120	1.09	A			
Mn-54	pCi	161				151	1.06	A			
September 2021	E13476	Soil	Ce-141	pCi/g	0.215	0.219	0.98	A			
			Co-58	pCi/g	0.208	0.226	0.92	A			
			Co-60	pCi/g	0.277	0.277	1.00	A			
			Cr-51	pCi/g	0.388	0.452	0.86	A			
			Cs-134	pCi/g	0.157	0.178	0.88	A			
			Cs-137	pCi/g	0.270	0.284	0.95	A			
			Fe-59	pCi/g	0.218	0.195	1.12	A			
			Mn-54	pCi/g	0.239	0.246	0.97	A			
			Zn-65	pCi/g	0.312	0.293	1.06	A			
			September 2021	E13477	AP	Sr-89	pCi	85.6	68.3	1.25	W
Sr-90	pCi	12.6				11.2	1.13	A			

(a) The Analytics known value is equal to 100% of the parameter present in the standard as determined by gravimetric and/or volumetric measurements made during standard preparation

(b) Analytics evaluation based on TBE internal QC limits:

A = Acceptable - reported result falls within ratio limits of 0.80-1.20

W = Acceptable with warning - reported result falls within 0.70-0.80 or 1.20-1.30

N = Not Acceptable - reported result falls outside the ratio limits of < 0.70 and > 1.30

**DOE's Mixed Analyte Performance Evaluation Program (MAPEP)  
Teledyne Brown Engineering Environmental Services**

**Table D.2**

Month/Year	Identification Number	Matrix	Nuclide	Units	TBE Reported Value	Known Value <sup>(a)</sup>	Acceptance Range	Evaluation <sup>(b)</sup>
February 2021	21-GrF44	AP	Gross Alpha	Bq/sample	0.371	1.77	0.53 - 3.01	N <sup>(3)</sup>
			Gross Beta	Bq/sample	0.731	0.65	0.325 - 0.974	A
	21-MaS44	Soil	Ni-63	Bq/kg	310	689.0	482 - 896	N <sup>(4)</sup>
			Tc-99	Bq/kg	457	638	447 - 829	W
	21-MaSU44	Urine	Cs-134	Bq/L	2.34	2.73	1.91 - 3.55	A
			Cs-137	Bq/L	2.54	2.71	1.90 - 3.52	A
			Co-57	Bq/L	0.4100		(1)	A
			Co-60	Bq/L	2.24	2.44	1.71 - 3.17	A
			Mn-54	Bq/L	2.03	2.03	1.42 - 2.64	A
			K-40	Bq/L	52.8	54.0	38 - 70	A
			U-234	Bq/L	0.108	0.0877	0.0614 - 0.114	W
			U-238	Bq/L	0.101	0.091	0.064 - 0.118	A
			Zn-65	Bq/L	1.06	1.34	(2)	A
	21-MaW44	Water	Ni-63	Bq/L	6.7	8.2	5.7 - 10.7	A
			Tc-99	Bq/L	3.850	4.01	2.81 - 5.21	A
	21-RdV44	Vegetation	Cs-134	Bq/sample	3.13	3.60	2.5 - 4.7	A
			Cs-137	Bq/sample	4.64	4.69	3.28 - 6.10	A
			Co-57	Bq/sample	5.25	5.05	3.54 - 6.57	A
			Co-60	Bq/sample	2.86	2.99	2.09 - 3.89	A
			Mn-54	Bq/sample	5.02	5.25	3.68 - 6.83	A
			Sr-90	Bq/sample	0.631	0.673	0.471 - 0.875	A
			Zn-65	Bq/sample	-0.233		(1)	A
	August 2021	21-GrF45	AP	Gross Alpha	Bq/sample	0.368	0.960	0.288 - 1.632
Gross Beta				Bq/sample	0.595	0.553	0.277 - 0.830	A
21-MaS45		Soil	Ni-63	Bq/kg	546	1280	896 - 1664	N <sup>(5)</sup>
			Tc-99	Bq/kg	453	777	544 - 1010	N <sup>(6)</sup>
21-MaSU45		Urine	Cs-134	Bq/L	3.10	3.62	2.53 - 4.71	A
			Cs-137	Bq/L	0.083		(1)	A
			Co-57	Bq/L	0.844	0.87	0.606 - 1.125	A
			Co-60	Bq/L	0.0535		(1)	A
			Mn-54	Bq/L	0.459	0.417	(2)	A
			K-40	Bq/L	48.8	54.0	38 - 70	A
			U-234	Bq/L	0.133	0.116	0.081 - 0.151	A
			U-238	Bq/L	0.137	0.121	0.085 - 0.157	A
Zn-65		Bq/L	0.339	0.420	(2)	A		
21-MaW45		Water	Ni-63	Bq/L	33.5	39.5	27.7 - 51.4	A
			Tc-99	Bq/L	3.5	3.7	2.60 - 4.82	A
21-RdV45		Vegetation	Cs-134	Bq/sample	3.42	4.34	3.04 - 5.64	W
			Cs-137	Bq/sample	2.14	2.21	1.55 - 2.87	A
			Co-57	Bq/sample	4.08	4.66	3.26 - 6.06	A
			Co-60	Bq/sample	2.81	3.51	2.46 - 4.56	A
			Mn-54	Bq/sample	0.035		(1)	A
			Sr-90	Bq/sample	1.15	1.320	0.92 - 1.72	A
			Zn-65	Bq/sample	2.05	2.43	1.70 - 3.16	A

(a) The MAPEP known value is equal to 100% of the parameter present in the standard as determined by gravimetric and/or volumetric measurements made during standard preparation

(b) DOE/MAPEP evaluation:

A = Acceptable - reported result falls within ratio limits of 0.80-1.20

W = Acceptable with warning - reported result falls within 0.70-0.80 or 1.20-1.30

N = Not Acceptable - reported result falls outside the ratio limits of < 0.70 and > 1.30

(1) False positive test

(2) Sensitivity evaluation

(3) See NCR 21-02

(4) See NCR 21-03

(5) See NCR 21-13

(6) Tc-99 cross-checks done for TBE information only - not required

**ERA Environmental Radioactivity Cross Check Program  
Teledyne Brown Engineering Environmental Services**

**Table D.3**

Month/Year	Identification Number	Matrix	Nuclide	Units	TBE Reported Value	Known Value <sup>(a)</sup>	Acceptance Limits	Evaluation <sup>(b)</sup>
March 2021	MRAD-34	Water	Am-241	pCi/L	175	157	108 - 201	A
			Fe-55	pCi/L	579	275	162 - 400	N <sup>(1)</sup>
			Pu-238	pCi/L	181	171	103 - 222	A
			Pu-239	pCi/L	153	142	87.9 - 175	A
		Soil	Sr-90	pCi/kg	6570	9190	2860 - 14,300	A
		AP	Fe-55	pCi/filter	107	121	44.2 - 193	A
			U-234	pCi/filter	25.99	25.5	18.9 - 29.9	A
U-238	pCi/filter		24.7	25.3	19.1 - 30.2	A		
April 2021	RAD-125	Water	Ba-133	pCi/L	92.3	90.5	76.2 - 99.6	A
			Cs-134	pCi/L	62.9	70.5	57.5 - 77.6	A
			Cs-137	pCi/L	161	168	151 - 187	A
			Co-60	pCi/L	22.5	20.9	17.7 - 25.8	A
			Zn-65	pCi/L	183	177.0	159 - 208	A
			GR-A	pCi/L	30.8	30.2	15.4 - 39.4	A
			GR-B	pCi/L	60.1	67.5	46.8 - 74.2	A
			U-Nat	pCi/L	36.45	36.9	30.0 - 40.8	A
			H-3	pCi/L	13,400	14,600	12,800 - 16,100	A
			Sr-89	pCi/L	64.5	63.5	51.4 - 71.5	A
			Sr-90	pCi/L	22.8	23.0	16.5 - 27.0	A
			I-131	pCi/L	28.2	26.7	22.2 - 31.4	A
			September 2021	MRAD-35	Water	Am-241	pCi/L	68
Fe-55	pCi/L	179				246	145 - 358	A
Pu-238	pCi/L	102				114	68.5 - 148	A
Pu-239	pCi/L	32				34.3	21.2 - 42.3	A
Soil	Sr-90	pCi/kg			6160	6090	1,900 - 9,490	A
AP	Fe-55	pCi/filter			493	548	200 - 874	A
	Pu-238	pCi/filter			28	28.5	21.5 - 35.0	A
	Pu-239	pCi/filter			21	21.6	16.1 - 26.1	A
	U-234	pCi/filter			7.95	7.76	5.75 - 9.09	A
	U-238	pCi/filter			8.0	7.69	5.81 - 9.17	A
October 2021	RAD-127	Water	Ba-133	pCi/L	82.8	87.5	73.6 - 96.2	A
			Cs-134	pCi/L	64.0	70.1	57.1 - 77.1	A
			Cs-137	pCi/L	145	156	140 - 174	A
			Co-60	pCi/L	83.2	85.9	77.3 - 96.8	A
			Zn-65	pCi/L	133	145	130 - 171	A
			GR-A	pCi/L	76.0	66.7	35.0 - 82.5	A
			GR-B	pCi/L	63.0	55.7	38.1 - 62.6	N <sup>(2)</sup>
			U-Nat	pCi/L	52.88	55.5	45.3 - 61.1	A
			H-3	pCi/L	13,800	17,200	15,000 - 18,900	N <sup>(3)</sup>
			Sr-89	pCi/L	54.9	61.0	49.1 - 68.9	A
			Sr-90	pCi/L	24.8	29.3	21.3 - 34.0	A
			I-131	pCi/L	27.4	26.4	21.9 - 31.1	A
			December 2021	QR 120121Y	Water	GR-B	pCi/L	47.6
H-3	pCi/L	17,500				17,800	15,600 - 19,600	A

(a) The ERA known value is equal to 100% of the parameter present in the standard as determined by gravimetric and/or volumetric measurements made during standard preparation.

(b) ERA evaluation:

A = Acceptable - Reported value falls within the Acceptance Limits

N = Not Acceptable - Reported value falls outside of the Acceptance Limits

(1) See NCR 21-01

(2) See NCR 21-10

(3) See NCR 21-11

(4) See NCR 21-14

## **APPENDIX E**

### **EFFLUENT DATA**



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## Introduction

LaSalle County Station, a two-unit BWR, is located near Marseilles, Illinois in LaSalle County, 3.5 miles south of the Illinois River. Both units are rated at 3546 MWt. Unit 1 loaded fuel in March 1982. Unit 2 loaded fuel in late December 1983. The Station is designed to keep releases to the environment at levels below those specified in the regulations.

Liquid effluents, although no longer batch released from LaSalle County Station, were designed to be released to the Illinois River in controlled batches after radioassay of each batch. Gaseous effluents are released to the atmosphere after delay allowing time for short-lived (noble) gases to decay. Releases to the atmosphere are sampled and analyzed on a routine basis. The gaseous effluent samples are analyzed for particulate, iodine, noble gas, and tritium activity. The particulate and iodine sample results are obtained from continuously collected composite samples. The noble gas and tritium sample results are obtained from routine grab samples. The results of effluent analyses are summarized on a monthly basis and reported to the Nuclear Regulatory Commission as required per Technical Specifications. Airborne concentrations of noble gases, tritium, I-131, and particulate radioactivity in offsite areas are calculated using effluent and meteorological data.

Environmental monitoring is conducted by sampling at indicator and control (background) locations in the vicinity of LaSalle County Station to measure changes in radiation or radioactivity levels that may be attributable to station operations. If significant changes attributable to LaSalle County Station are measured, these changes are correlated with effluent releases. External gamma radiation exposure from noble gases and internal dose from I-131 in milk are the critical pathways at this site; however, an environmental monitoring program is conducted which also includes these and many other pathways which are less significant in terms of radiation protection.

## Summary

Gaseous effluents for the period contributed to only a small fraction of the LaSalle County Station Radiological Effluent Controls Limits. Liquid effluents had no contribution to offsite dose, as no liquid batch radioactive discharges were conducted. Calculations of environmental concentrations based on effluent, Illinois River flow, and meteorological data for the period indicate that consumption by the public of radionuclides attributable to LaSalle County Station does not exceed regulatory limits.

Radiation exposure from radionuclides released to the atmosphere represented the critical pathway for the period with a maximum individual total dose estimated to be  $3.98\text{E-}05$  mrem for the year, where a shielding factor of 0.7 and an occupancy factor of 0.95 are assumed for the nearest resident. The assessment of radiation doses is performed in accordance with the Offsite Dose Calculation Manual (ODCM), specifically, a comparison of preoperational studies with operational controls or with previous environmental surveillance reports and an assessment of the observed impacts of the plant operation on the environment. Control locations are basis for "preoperational data." The results of analysis confirm that the station is operating in compliance with 10 CFR 50 Appendix I, 10 CFR 20 and 40 CFR 190.

## 1.0 Effluents

### 1.1 Gaseous Effluents to the Atmosphere

Measured concentrations of noble gases, radioiodine, and particulate radioactivity released to the atmosphere during the year, are listed in Table 1.1-1. A total of  $3.85\text{E}+01$  curies of fission and activation gases were released with an average release rate of  $1.22\text{E}+00$   $\mu\text{Ci}/\text{sec}$ .

A total of  $7.28\text{E}-03$  curies of I-131 were released during the year with an average release rate of  $2.31\text{E}-04$   $\mu\text{Ci}/\text{sec}$ .

A total of  $1.02\text{E}-04$  curies of beta-gamma emitters were released as airborne particulate matter with an average release rate of  $3.23\text{E}-06$   $\mu\text{Ci}/\text{sec}$ .

A total of  $9.98\text{E}+01$  curies of tritium were released with an average release rate of  $3.16\text{E}+00$   $\mu\text{Ci}/\text{sec}$ .

Alpha-emitting radionuclides were below the lower limit of detection (LLD).

A total of  $3.13\text{E}+01$  curies of carbon-14 were released with an average release rate of  $9.93\text{E}-01$   $\mu\text{Ci}/\text{sec}$ .

### 1.2 Liquids Released to Illinois River

There were no liquid batch releases in 2021. Continuous release path activity was below applicable Lower Limits of Detection.

## 2.0 Solid Radioactive Waste

Solid radioactive wastes were shipped by truck to a disposal facility or to a waste processor. For further detail, refer the LaSalle 2021 Annual Radioactive Effluent Release Report (ARERR). This report was submitted to the USNRC by the required date of May 1<sup>st</sup>, 2022.

## 3.0 Dose To Man

### 3.1 Gaseous Effluent Pathways

Table 3.1-1 summarizes the doses resulting from releases of airborne radioactivity via the different exposure pathways.

#### 3.1.1 Noble Gases

##### 3.1.1.1 Gamma Dose Rates

Unit 1 and Unit 2 gaseous releases at LaSalle County Station are reported as Unit 1 releases due to a single station vent stack (SVS) release point. Offsite Gamma air and whole body dose rates are shown in Table 3.1-1 and were calculated based on measured release rates, isotopic composition of the noble gases and average meteorological data for the period. Doses based on concurrent meteorological data are shown in Table 3.4-1. Based on

measured effluents and meteorological data, the maximum total body dose to an individual would be  $3.98\text{E-}05$  mrem (Table 3.1-1) for the year, with an occupancy factor of 0.95 and a shielding factor of 0.7 included. The maximum total body dose based on measured effluents and concurrent meteorological data would be  $1.27\text{E-}02$  mrem (Table 3.4-1).

The maximum gamma air dose was  $5.94\text{E-}05$  mrad from Table 3.1-1, and the maximum gamma air dose from concurrent meteorological data was  $7.48\text{E-}05$  mrad (Table 3.4-1).

#### 3.1.1.2 Beta Air and Skin Dose Rates

The range of beta particles in air is relatively small (on the order of a few meters or less); consequently, plumes of gaseous effluents may be considered "infinite" for purpose of calculating the dose from beta radiation incident on the skin. However, the actual dose to sensitive skin tissues is difficult to calculate due to the effect of the beta particle energies, thickness of inert skin and clothing covering sensitive tissues. For purposes of this report the skin is taken to have a thickness of  $7.0\text{ mg/cm}^2$  and an occupancy factor of 1.0 is used. The skin dose (from beta and gamma radiation) for the year was  $7.49\text{E-}05$  mrem from Table 3.1-1, and the skin dose from concurrent meteorological data was  $1.45\text{E-}04$  mrem (Table 3.4-1).

The maximum offsite beta dose for the year was  $1.84\text{E-}05$  mrad from Table 3.1-1, and the maximum offsite beta dose from concurrent meteorological data was  $1.21\text{E-}04$  mrad (Table 3.4-1).

### 3.1.2 Radioactive Iodine

The human thyroid exhibits a significant capacity to concentrate ingested or inhaled iodine. The radioiodine, I-131, released during routing operation of the plant, may be made available to man resulting in a dose to the thyroid. The principal pathway of interest for this radionuclide is ingestion of radioiodine in milk.

#### 3.1.2.1 Dose to Thyroid

The hypothetical thyroid dose to a maximum exposed individual living near the station via ingestion of milk was calculated. The radionuclide considered was I-131 and the source of milk was taken to be the nearest dairy farm with the cows pastured from May through October. The maximum thyroid dose due to I-131 was  $4.07\text{E-}02$  mrem for the year.

### 3.2 Liquid Effluent Pathways

The three principal pathways through the aquatic environment for potential doses to man from liquid waste are ingestion of potable water, eating aquatic foods, and exposure while on the shoreline. Not all of these pathways are significant or applicable at a given time but a reasonable approximation of the dose can be made by adjusting the dose formula for season of the year or type and degree of use of the aquatic environment. NRC developed equations\* were used to calculate the doses to the whole body, lower gastrointestinal tracts, thyroid, bone and skin; specific parameters for use in the equations are given in the Offsite Dose Calculation Manual. The maximum whole body dose was 0.00E+00 mrem and organ dose was 0.00E+00 for the year mrem (Table 3.2-1).

### 3.3 Assessment of Dose to Member of Public

During the period January to December 2021, LaSalle County Station did not exceed these limits as shown in Table 3.1-1 and Table 3.2-1 (based on annual average meteorological data), and as shown in Table 3.3-1:

- The Radiological Effluent Technical Standards (RETS) limits on dose or dose commitment to an individual due to radioactive materials in liquid effluents from each reactor unit (1.5 mrem to the whole body or 5 mrem to any organ during any calendar year; 3 mrem to the whole body or 10 mrem to any organ during the calendar year).
- The RETS limits on air dose in noble gases released in gaseous effluents to a member of the public from each reactor unit (5 mrad for gamma radiation or 10 mrad for beta radiation during any calendar quarter; 10 mrad for gamma radiation or 20 mrad for beta radiation during a calendar year).
- The RETS limits on dose to a member of the public due to iodine-131, iodine-133, tritium and radionuclides in particulate form with half-lives greater than eight days in gaseous effluents released from each reactor unit (7.5 mrem to any organ during any calendar quarter; 15 mrem to any organ during any calendar year).
- The 10 CFR 20 limit on Total Effective Dose Equivalent to individual members of the public (100 mrem).

### 4.0 Site Meteorology

A summary of the site meteorological measurements taken during each calendar quarter of the year is given in Appendix F. The data are presented as cumulative joint frequency distributions of the wind direction for the 375' level and wind speed class by atmospheric stability class determined from the temperature difference between the 375' and 33' levels. Data recovery for these measurements was 99.4% during 2021.

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\*Nuclear Regulatory Commission, Regulatory Guide 1.109 (Rev. 1)

## **APPENDIX E-1**

### **DATA TABLES AND FIGURES**



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**Table 1.1-1**

LASALLE COUNTY NUCLEAR POWER STATION  
EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT (2021)  
UNIT 1 AND UNIT 2  
DOCKET NUMBERS 50-373 AND 50-374  
GASEOUS EFFLUENTS SUMMATION OF ALL RELEASES

<b>A. Fission &amp; Activation Gases</b>	<b>Unit</b>	<b>Quarter 1</b>	<b>Quarter 2</b>	<b>Quarter 3</b>	<b>Quarter 4</b>	<b>Total</b>	<b>Est. Total Error %</b>
1. Total Release	Ci	1.97E+01	8.81E+00	7.90E+00	2.10E+00	3.85E+01	2.50E+01
2. Average release rate for the period	μCi/sec	2.50E+00	1.12E+00	1.00E+00	2.66E-01	1.22E+00	
3. Percent of ODCM limit	%	*	*	*	*	*	
<b>B. Radioiodines</b>							
1. Total Iodine – 131	Ci	2.38E-03	1.60E-03	1.32E-03	1.98E-03	7.28E-03	1.50E+01
2. Average release rate for the period	μCi/sec	3.02E-04	2.03E-04	1.67E-04	2.51E-04	2.31E-04	
3. Percent of ODCM limit	%	*	*	*	*	*	
<b>C. Particulates</b>							
1. Particulates with half-lives > 8 days	Ci	5.76E-05	4.40E-05	3.69E-08	1.07E-07	1.02E-04	3.50E+01
2. Average release rate for the period	μCi/sec	7.41E-06	5.59E-06	4.64E-09	1.35E-08	3.23E-06	
3. Percent of ODCM limit	%	*	*	*	*	*	
<b>D. Tritium</b>							
1. Total Release	Ci	3.85E+01	2.34E+01	2.16E+01	1.63E+01	9.98E+01	1.50E+01
2. Average release rate for the period	μCi/sec	4.88E+00	2.97E+00	2.74E+00	2.07E+00	3.16E+00	
3. Percent of ODCM limit	%	*	*	*	*	*	
<b>E. Gross Alpha</b>							
1. Total Release	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	N/A
2. Average release rate for the period	μCi/sec	<LLD	<LLD	<LLD	<LLD	<LLD	
3. Percent of ODCM limit	%	*	*	*	*	*	
<b>F. Carbon-14</b>							
1. Total Release	Ci	7.83E+00	7.83E+00	7.83E+00	7.83E+00	3.13E+01	N/A
2. Average release rate for the period	μCi/sec	1.01E+00	9.95E-01	9.85E-01	9.85E-01	9.93E-01	
3. Percent of ODCM limit	%	*	*	*	*	*	

\*\*\* This information is contained in the Radiological Impact on Man section of the report.

"<" Indicates activity of sample is less than LLD given in μCi/ml

The LaSalle County Nuclear Power Station maximum expected annual dose from Carbon-14 has been calculated using the maximum gross thermal capacity at full power operation. The resultant bounding doses are based upon site specific assumptions of source term.

**Table 1.2-1**  
 LASALLE COUNTY NUCLEAR POWER STATION  
 EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT (2021)  
 LIQUID RELEASES  
 UNIT 1 AND UNIT 2  
 SUMMATION OF ALL LIQUID RELEASES

<b>A. Fission &amp; Activation Products</b>	<b>Unit</b>	<b>Quarter 1</b>	<b>Quarter 2</b>	<b>Quarter 3</b>	<b>Quarter 4</b>	<b>Est. Total Error %</b>
1. Total Release (not including tritium, gases & alpha)	Ci	<LLD	<LLD	<LLD	<LLD	N/A
2. Average diluted concentration during period	μCi/mL	<LLD	<LLD	<LLD	<LLD	
3. Percent of applicable limit	%	*	*	*	*	

<b>B. Tritium</b>						
1. Total Release	Ci	<LLD	<LLD	<LLD	<LLD	N/A
2. Average diluted concentration during period	μCi/mL	<LLD	<LLD	<LLD	<LLD	
3. Percent of applicable limit	%	*	*	*	*	

<b>C. Dissolved &amp; Entrained Gases</b>						
1. Total Release	Ci	<LLD	<LLD	<LLD	<LLD	N/A
2. Average diluted concentration during period	μCi/mL	<LLD	<LLD	<LLD	<LLD	
3. Percent of applicable limit	%	*	*	*	*	

<b>D. Gross Alpha Activity</b>						
1. Total Release	Ci	<LLD	<LLD	<LLD	<LLD	N/A
2. Average release rate for the period	μCi/mL	<LLD	<LLD	<LLD	<LLD	
3. Percent of ODCM limit	%	*	*	*	*	

<b>E. Volume of Waste Released (prior to dilution)</b>	Liters	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
--	--------	----------	----------	----------	----------	--

<b>F. Volume of Dilution Water Used During Period</b>	Liters	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
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\*\*\* This information is contained in the Radiological Impact on Man section of the report.  
 "<" Indicates activity of sample is less than LLD given in μCi/ml

**Table 3.1-1**

LASALLE COUNTY NUCLEAR POWER STATION  
EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT (2021)  
RADIOLOGICAL IMPACT ON MAN

MAXIMUM DOSES RESULTING FROM GASEOUS RELEASES AND COMPLIANCE STATUS

Adult Receptor	Quarterly Limit	Units	1st Quarter	% of Limit	2nd Quarter	% of Limit	3rd Quarter	% of Limit	4th Quarter	% of Limit	Annual Limit	Annual	% of Limit
Gamma Air	5.00E+00	mRad	1.30E-05	2.60E-04	2.17E-05	4.34E-04	2.07E-05	4.14E-04	4.08E-06	8.16E-05	1.00E+01	5.94E-05	5.94E-04
Beta Air	1.00E+01	mRad	8.34E-06	8.34E-05	4.73E-06	4.73E-05	4.26E-06	4.26E-05	1.11E-06	1.11E-05	2.00E+01	1.84E-05	1.84E-04
NG Total Body	2.50E+00	mRem	8.62E-06	3.45E-04	1.46E-05	5.84E-04	1.39E-05	5.56E-04	2.75E-06	1.10E-04	5.00E+00	3.98E-05	3.98E-04
NG Skin	7.50E+00	mRem	1.84E-05	2.45E-04	2.64E-05	3.52E-04	2.50E-05	3.33E-04	5.08E-06	6.77E-05	1.50E+01	7.49E-05	7.49E-04
NNG Organ	7.50E+00	mRem	3.14E-03	4.19E-02	3.13E-03	4.17E-02	3.13E-03	4.17E-02	3.13E-03	4.17E-02	1.50E+01	1.25E-02	1.25E-01
Teenager Receptor	Quarterly Limit	Units	1st Quarter	% of Limit	2nd Quarter	% of Limit	3rd Quarter	% of Limit	4th Quarter	% of Limit	Annual Limit	Annual	% of Limit
Gamma Air	5.00E+00	mRad	1.30E-05	2.60E-04	2.17E-05	4.34E-04	2.07E-05	4.14E-04	4.08E-06	8.16E-05	1.00E+01	5.94E-05	5.94E-04
Beta Air	1.00E+01	mRad	8.34E-06	8.34E-05	4.73E-06	4.73E-05	4.26E-06	4.26E-05	1.11E-06	1.11E-05	2.00E+01	1.84E-05	1.84E-04
NG Total Body	2.50E+00	mRem	8.62E-06	3.45E-04	1.46E-05	5.84E-04	1.39E-05	5.56E-04	2.75E-06	1.10E-04	5.00E+00	3.98E-05	3.98E-04
NG Skin	7.50E+00	mRem	1.84E-05	2.45E-04	2.64E-05	3.52E-04	2.50E-05	3.33E-04	5.08E-06	6.77E-05	1.50E+01	7.49E-05	7.49E-04
NNG Organ	7.50E+00	mRem	4.73E-03	6.31E-02	4.73E-03	6.31E-02	4.72E-03	6.29E-02	4.72E-03	6.29E-02	1.50E+01	1.89E-02	1.89E-01
Child Receptor	Quarterly Limit	Units	1st Quarter	% of Limit	2nd Quarter	% of Limit	3rd Quarter	% of Limit	4th Quarter	% of Limit	Annual Limit	Annual	% of Limit
Gamma Air	5.00E+00	mRad	1.30E-05	2.60E-04	2.17E-05	4.34E-04	2.07E-05	4.14E-04	4.08E-06	8.16E-05	1.00E+01	5.94E-05	5.94E-04
Beta Air	1.00E+01	mRad	8.34E-06	8.34E-05	4.73E-06	4.73E-05	4.26E-06	4.26E-05	1.11E-06	1.11E-05	2.00E+01	1.84E-05	1.84E-04
NG Total Body	2.50E+00	mRem	8.62E-06	3.45E-04	1.46E-05	5.84E-04	1.39E-05	5.56E-04	2.75E-06	1.10E-04	5.00E+00	3.98E-05	3.98E-04
NG Skin	7.50E+00	mRem	1.84E-05	2.45E-04	2.64E-05	3.52E-04	2.50E-05	3.33E-04	5.08E-06	6.77E-05	1.50E+01	7.49E-05	7.49E-04
NNG Organ	7.50E+00	mRem	1.11E-02	1.48E-01	1.11E-02	1.48E-01	1.11E-02	1.48E-01	1.11E-02	1.48E-01	1.50E+01	4.44E-02	4.44E-01
Infant Receptor	Quarterly Limit	Units	1st Quarter	% of Limit	2nd Quarter	% of Limit	3rd Quarter	% of Limit	4th Quarter	% of Limit	Annual Limit	Annual	% of Limit
Gamma Air	5.00E+00	mRad	1.30E-05	2.60E-04	2.17E-05	4.34E-04	2.07E-05	4.14E-04	4.08E-06	8.16E-05	1.00E+01	5.94E-05	5.94E-04
Beta Air	1.00E+01	mRad	8.34E-06	8.34E-05	4.73E-06	4.73E-05	4.26E-06	4.26E-05	1.11E-06	1.11E-05	2.00E+01	1.84E-05	1.84E-04
NG Total Body	2.50E+00	mRem	8.62E-06	3.45E-04	1.46E-05	5.84E-04	1.39E-05	5.56E-04	2.75E-06	1.10E-04	5.00E+00	3.98E-05	3.98E-04
NG Skin	7.50E+00	mRem	1.84E-05	2.45E-04	2.64E-05	3.52E-04	2.50E-05	3.33E-04	5.08E-06	6.77E-05	1.50E+01	7.49E-05	7.49E-04
NNG Organ	7.50E+00	mRem	1.28E-02	1.71E-01	9.11E-03	1.21E-01	7.80E-03	1.04E-01	1.10E-02	1.47E-01	1.50E+01	4.07E-02	4.07E-01

E-1-4

The LaSalle County Nuclear Power Station maximum expected annual dose from Carbon-14 has been calculated using the maximum gross thermal capacity at full power operation. The resultant bounding doses are based upon site specific assumptions of source term.

**Table 3.2-1**

LASALLE COUNTY NUCLEAR POWER STATION  
EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT (2021)

RADIOLOGICAL IMPACT ON MAN  
MAXIMUM DOSES RESULTING FROM LIQUID RELEASES AND COMPLIANCE STATUS

	Infant Receptor	Quarterly Limit	Units	1st Quarter	% of Limit	2nd Quarter	% of Limit	3 <sup>rd</sup> Quarter	% of Limit	4th Quarter	% of Limit	Annual Limit	% of Limit
	<b>10CFR50 Appendix I compliance</b>												
	Total Body	1.50E+00	mRem	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00	3.00E+00	0.00
	Organ	5.00E+00	mRem	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00	1.00E+01	0.00
	<b>40CFR141 compliance (nearest public drinking water)</b>												
	Total Body		mRem	0.00E+00		0.00E+00		0.00E+00		0.00E+00		4.00E+00	0.00
	Organ		mRem	0.00E+00		0.00E+00		0.00E+00		0.00E+00		4.00E+00	0.00
	<b>Child Receptor</b>												
	<b>10CFR50 Appendix I compliance</b>												
	Total Body	1.50E+00	mRem	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00	3.00E+00	0.00
	Organ	5.00E+00	mRem	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00	1.00E+01	0.00
E-1-5	<b>40CFR141 compliance (nearest public drinking water)</b>												
	Total Body		mRem	0.00E+00		0.00E+00		0.00E+00		0.00E+00		4.00E+00	0.00
	Organ		mRem	0.00E+00		0.00E+00		0.00E+00		0.00E+00		4.00E+00	0.00
	<b>Teenager Receptor</b>												
	<b>10CFR50 Appendix I compliance</b>												
	Total Body	1.50E+00	mRem	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00	3.00E+00	0.00
	Organ	5.00E+00	mRem	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00	1.00E+01	0.00
	<b>40CFR141 compliance (nearest public drinking water)</b>												
	Total Body		mRem	0.00E+00		0.00E+00		0.00E+00		0.00E+00		4.00E+00	0.00
	Organ		mRem	0.00E+00		0.00E+00		0.00E+00		0.00E+00		4.00E+00	0.00
	<b>Adult Receptor</b>												
	<b>10CFR50 Appendix I compliance</b>												
	Total Body	1.50E+00	mRem	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00	3.00E+00	0.00
	Organ	5.00E+00	mRem	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00	0.00E+00	0.00	1.00E+01	0.00
	<b>40CFR141 compliance (nearest public drinking water)</b>												
	Total Body		mRem	0.00E+00		0.00E+00		0.00E+00		0.00E+00		4.00E+00	0.00
	Organ		mRem	0.00E+00		0.00E+00		0.00E+00		0.00E+00		4.00E+00	0.00

**Table 3.3-1**

LASALLE COUNTY NUCLEAR POWER STATION  
EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT (2021)

RADIOLOGICAL IMPACT ON MAN  
MAXIMUM DOSES RESULTING FROM LIQUID RELEASES AND COMPLIANCE STATUS

**10CFR20 / 40CFR190 Compliance**

	1 <sup>st</sup> Quarter Dose (mRem)	2 <sup>nd</sup> Quarter Dose (mRem)	3 <sup>rd</sup> Quarter Dose (mRem)	4 <sup>th</sup> Quarter Dose (mRem)	Annual Dose (mRem)	Annual Limit (mRem/yr)	% Annual Limit
<b>Unit 1</b>							
40CFR190 Compliance							
U1 D <sup>Ex</sup>	9.65E-02	9.62E-02	7.18E-02	9.82E-02	3.63E-01	25	1.45
10CFR20 Compliance							
U1 D <sup>Tot</sup>	1.11E-01	1.07E-01	8.29E-02	1.10E-01	4.11E-01	100	0.41
40CFR190 Compliance							
Bone	1.11E-02	1.11E-02	1.11E-02	1.11E-02	4.44E-02	25	0.18
Liver	2.26E-03	2.24E-03	2.25E-03	2.25E-03	9.00E-03	25	0.04
Thyroid	1.28E-02	9.11E-03	7.80E-03	1.10E-02	4.07E-02	75	0.05
Kidney	2.27E-03	2.25E-03	2.25E-03	2.26E-03	9.03E-03	25	0.04
Lung	2.24E-03	2.23E-03	2.24E-03	2.24E-03	8.95E-03	25	0.04
GI-LLI	2.24E-03	2.24E-03	2.24E-03	2.24E-03	8.96E-03	25	0.04
Skin	3.26E-05	2.50E-05	1.15E-06	1.50E-06	6.02E-05	25	0.00
<b>Unit 2</b>							
40CFR190 Compliance							
U2 D <sup>Ex</sup>	5.48E-02	7.72E-02	7.23E-02	9.84E-02	3.03E-01	25	1.21
10CFR20 Compliance							
U2 D <sup>Tot</sup>	5.48E-02	7.72E-02	7.23E-02	9.84E-02	3.03E-01	100	0.30
40CFR190 Compliance							
Bone	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	25	0.00
Liver	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	25	0.00
Thyroid	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	75	0.00
Kidney	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	25	0.00
Lung	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	25	0.00
GI-LLI	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	25	0.00
Skin	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	25	0.00

**Table 3.4-1**

LASALLE COUNTY NUCLEAR POWER STATION  
EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT (2021)  
RADIOLOGICAL IMPACT ON MAN

MAXIMUM DOSES RESULTING FROM AIRBORNE RELEASES  
BASED ON CONCURRENT METEOROLOGICAL DATA

**Doses Resulting From Airborne Releases**

The following are the maximum annual calculated cumulative offsite doses resulting from LaSalle County Station airborne releases:

**LaSalle County Generating Station:**

<u>Dose</u>	<u>Maximum Value</u>	<u>Sector Affected</u>
gamma air <sup>(1)</sup>	7.480 E-05 mrad	Northeast
beta air <sup>(2)</sup>	1.210 E-04 mrad	Northeast
whole body <sup>(3)</sup>	1.270 E-02 mrem	Northeast
skin <sup>(4)</sup>	1.450 E-04 mrem	Northeast
organ <sup>(5)</sup> (infant-thyroid)	1.550 E-01 mrem	North-Northeast

**Compliance Status**

<b>10 CFR 50 Appendix I</b>	<b>Yearly Objective</b>	<b>% of Appendix I</b>
gamma air	10.0 mrad	0.00
beta air	20.0 mrad	0.00
whole body	5.0 mrem	0.25
skin	15.0 mrem	0.00
organ	15.0 mrem	1.03

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(1) Gamma Air Dose – GASPAR II, NUREG-0597

(2) Beta Air Dose – GASPAR II, NUREG-0597

(3) Whole Body Dose – GASPAR II, NUREG-0597

(4) Skin Dose – GASPAR II, NUREG-0597

(5) Inhalation and Food Pathways Dose – GASPAR II, NUREG-0597

## **APPENDIX F**

### **METEOROLOGICAL DATA**



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LaSalle County Generating Station

Period of Record: January - March 2021  
 Stability Class - Extremely Unstable - 200Ft-33Ft Delta-T (F)  
 Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	2	0	0	0	2
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0
S	0	0	0	3	3	2	8
SSW	0	0	0	0	0	0	0
SW	0	0	0	0	0	0	0
WSW	0	0	0	0	1	0	1
W	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	0	2	3	4	2	11

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 0

LaSalle County Generating Station

Period of Record: January - March 2021  
 Stability Class - Moderately Unstable - 200Ft-33Ft Delta-T (F)  
 Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	1	0	0	1
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	0	1	0	0	0	1
SSE	0	0	0	0	0	0	0
S	0	0	1	3	3	0	7
SSW	0	0	0	3	0	1	4
SW	0	0	0	0	1	2	3
WSW	0	0	0	1	3	0	4
W	0	1	0	0	0	0	1
WNW	0	0	0	3	2	0	5
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	1	2	11	9	3	26

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 0

LaSalle County Generating Station

Period of Record: January - March 2021  
 Stability Class - Slightly Unstable - 200Ft-33Ft Delta-T (F)  
 Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	0	1	0	0	0	0	1
NE	0	0	3	0	0	0	3
ENE	0	0	2	2	1	0	5
E	0	0	0	0	0	0	0
ESE	0	0	2	0	0	0	2
SE	0	0	3	0	0	0	3
SSE	0	0	3	4	0	0	7
S	0	1	2	5	1	2	11
SSW	0	0	3	5	0	1	9
SW	0	0	1	0	0	1	2
WSW	0	1	0	0	1	0	2
W	0	1	1	1	1	0	4
WNW	0	0	1	3	3	0	7
NW	0	0	0	3	0	1	4
NNW	0	0	1	0	0	0	1
Variable	0	0	0	0	0	0	0
Total	0	4	22	23	7	5	61

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 0

LaSalle County Generating Station

Period of Record: January - March 2021  
 Stability Class - Neutral - 200Ft-33Ft Delta-T (F)  
 Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	29	85	30	0	0	145
NNE	0	16	18	7	15	0	56
NE	1	6	33	29	7	1	77
ENE	0	6	15	3	13	2	39
E	5	11	16	9	2	4	47
ESE	0	8	8	3	8	0	27
SE	0	7	15	8	1	0	31
SSE	1	1	9	3	1	1	16
S	4	14	7	7	2	1	35
SSW	0	10	5	8	4	3	30
SW	1	10	9	7	7	0	34
WSW	0	10	23	17	3	0	53
W	0	12	53	15	18	2	100
WNW	3	11	57	30	21	3	125
NW	1	5	35	13	2	3	59
NNW	0	18	83	92	0	0	193
Variable	0	0	0	0	0	0	0
Total	17	174	471	281	104	20	1067

Hours of calm in this stability class: 1  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 0

LaSalle County Generating Station

Period of Record: January - March 2021  
 Stability Class - Slightly Stable - 200Ft-33Ft Delta-T (F)  
 Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	4	20	14	1	0	0	39
NNE	0	13	3	1	0	0	17
NE	1	10	3	3	0	0	17
ENE	4	3	8	1	0	0	16
E	2	12	11	0	1	1	27
ESE	0	5	9	9	3	0	26
SE	2	11	11	10	8	1	43
SSE	2	5	9	10	9	2	37
S	1	4	5	9	16	3	38
SSW	1	5	6	12	7	5	36
SW	1	2	9	21	5	0	38
WSW	2	3	12	13	0	0	30
W	0	5	22	18	12	8	65
WNW	0	16	25	22	6	1	70
NW	1	9	29	4	0	0	43
NNW	1	20	9	0	0	0	30
Variable	0	0	0	0	0	0	0
Total	22	143	185	134	67	21	572

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 4  
 Hours of missing stability measurements in all stability classes: 0

LaSalle County Generating Station

Period of Record: January - March 2021  
 Stability Class - Moderately Stable - 200Ft-33Ft Delta-T (F)  
 Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	3	0	0	0	0	3
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	1	0	0	0	1
E	0	6	9	0	0	0	15
ESE	0	10	5	0	0	0	15
SE	1	10	8	1	0	0	20
SSE	1	5	4	4	0	0	14
S	2	5	7	4	0	0	18
SSW	0	5	9	10	0	0	24
SW	1	0	5	15	3	0	24
WSW	0	5	17	10	1	0	33
W	1	7	7	5	0	0	20
WNW	0	8	13	0	0	0	21
NW	1	2	9	0	0	0	12
NNW	1	1	0	0	0	0	2
Variable	0	0	0	0	0	0	0
Total	8	67	94	49	4	0	222

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 0

LaSalle County Generating Station

Period of Record: January - March 2021

Stability Class - Extremely Stable - 200Ft-33Ft Delta-T (F)  
 Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	3	2	0	0	0	5
ESE	0	7	10	0	0	0	17
SE	1	12	28	0	0	0	41
SSE	0	5	15	4	0	0	24
S	0	6	12	8	0	0	26
SSW	1	2	17	8	2	0	30
SW	0	3	3	5	0	0	11
WSW	0	5	0	2	0	0	7
W	4	5	11	0	0	0	20
WNW	1	10	3	0	0	0	14
NW	0	0	0	0	0	0	0
NNW	1	0	0	0	0	0	1
Variable	0	0	0	0	0	0	0
Total	8	58	101	27	2	0	196

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 0



LaSalle County Generating Station

Period of Record: January - March 2021  
 Stability Class - Extremely Unstable - 375Ft-33Ft Delta-T (F)  
 Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	1	0	0	1
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0
SSW	0	0	0	0	0	0	0
SW	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0
WNW	0	0	0	0	0	2	2
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	0	0	1	0	2	3

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 0

LaSalle County Generating Station

Period of Record: January - March 2021  
 Stability Class - Moderately Unstable - 375Ft-33Ft Delta-T (F)  
 Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0
S	0	0	0	0	0	3	3
SSW	0	0	0	0	0	0	0
SW	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0
WNW	0	0	0	0	0	4	4
NW	0	0	0	0	0	3	3
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	0	0	0	0	10	10

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 3  
 Hours of missing stability measurements in all stability classes: 0

LaSalle County Generating Station

Period of Record: January - March 2021  
 Stability Class - Slightly Unstable - 375Ft-33Ft Delta-T (F)  
 Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	1	0	0	1
ENE	0	0	0	1	0	0	1
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0
S	0	0	0	1	3	2	6
SSW	0	0	0	0	0	0	0
SW	0	0	0	0	0	2	2
WSW	0	0	0	0	3	1	4
W	0	0	0	0	1	1	2
WNW	0	0	0	3	1	3	7
NW	0	0	0	1	0	2	3
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	0	0	7	8	11	26

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 4  
 Hours of missing stability measurements in all stability classes: 0

LaSalle County Generating Station

Period of Record: January - March 2021  
 Stability Class - Neutral - 375Ft-33Ft Delta-T (F)  
 Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	5	6	25	51	25	5	117
NNE	4	7	24	22	0	17	74
NE	0	4	18	24	20	25	91
ENE	1	5	15	5	9	16	51
E	0	4	13	16	3	8	44
ESE	0	2	4	7	1	8	22
SE	0	5	3	12	6	6	32
SSE	2	1	11	10	1	4	29
S	1	0	5	13	10	12	41
SSW	0	4	1	16	9	10	40
SW	1	2	1	9	12	5	30
WSW	1	3	7	20	12	8	51
W	2	5	17	36	9	33	102
WNW	1	0	28	35	22	34	120
NW	0	6	31	41	18	8	104
NNW	2	5	25	51	32	1	116
Variable	0	0	0	0	0	0	0
Total	20	59	228	368	189	200	1064

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 136  
 Hours of missing stability measurements in all stability classes: 0

LaSalle County Generating Station

Period of Record: January - March 2021  
 Stability Class - Slightly Stable - 375Ft-33Ft Delta-T (F)  
 Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	0	12	11	4	0	28
NNE	1	5	6	13	8	1	34
NE	2	5	5	4	2	0	18
ENE	1	2	8	7	0	0	18
E	0	2	2	7	2	1	14
ESE	1	0	4	3	4	2	14
SE	2	0	6	12	9	17	46
SSE	2	1	8	9	6	14	40
S	0	0	4	6	8	33	51
SSW	1	1	2	6	11	16	37
SW	0	8	3	14	3	28	56
WSW	0	1	0	10	9	14	34
W	1	0	3	17	12	15	48
WNW	1	0	10	21	19	15	66
NW	0	1	10	14	4	3	32
NNW	0	2	4	10	4	0	20
Variable	0	0	0	0	0	0	0
Total	13	28	87	164	105	159	556

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 47  
 Hours of missing stability measurements in all stability classes: 0

LaSalle County Generating Station

Period of Record: January - March 2021  
 Stability Class - Moderately Stable - 375Ft-33Ft Delta-T (F)  
 Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	0	3	1	0	5
NNE	0	0	0	1	0	1	2
NE	0	1	0	0	0	0	1
ENE	0	1	0	0	0	0	1
E	0	1	2	1	0	0	4
ESE	0	1	0	4	1	0	6
SE	1	3	8	11	13	2	38
SSE	0	2	2	9	6	3	22
S	0	2	10	6	3	7	28
SSW	1	1	2	3	10	11	28
SW	0	2	2	2	5	8	19
WSW	0	1	3	3	2	14	23
W	0	3	2	2	1	6	14
WNW	0	1	1	10	4	0	16
NW	0	1	6	5	2	0	14
NNW	0	0	0	5	2	0	7
Variable	0	0	0	0	0	0	0
Total	2	21	38	65	50	52	228

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 11  
 Hours of missing stability measurements in all stability classes: 0

LaSalle County Generating Station

Period of Record: January - March 2021

Stability Class - Extremely Stable - 375Ft-33Ft Delta-T (F)

Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	0	0	0	0	0	1
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	1	0	0	0	0	1
E	0	0	0	0	0	0	0
ESE	0	0	0	2	0	0	2
SE	0	0	0	5	9	1	15
SSE	0	0	0	1	12	2	15
S	1	1	0	4	8	6	20
SSW	0	0	0	0	4	4	8
SW	0	0	0	1	2	0	3
WSW	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0
NW	0	0	1	0	0	0	1
NNW	0	0	0	1	0	0	1
Variable	0	0	0	0	0	0	0
Total	2	2	1	14	35	13	67

Hours of calm in this stability class: 0

Hours of missing wind measurements in this stability class: 5

Hours of missing stability measurements in all stability classes: 0

LaSalle County Generating Station

Period of Record: April - June 2021

Stability Class - Extremely Unstable - 200Ft-33Ft Delta-T (F)  
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	2	11	1	0	0	14
NNE	0	5	2	1	0	0	8
NE	0	4	7	0	0	0	11
ENE	0	2	2	0	0	0	4
E	0	2	0	0	0	0	2
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	0	0	0	0	0	1	1
S	0	0	7	2	1	4	14
SSW	0	0	4	2	8	1	15
SW	0	1	2	4	4	2	13
WSW	0	2	6	6	1	0	15
W	0	0	8	0	1	0	9
WNW	0	3	3	1	0	0	7
NW	0	2	4	0	0	0	6
NNW	0	2	6	0	0	0	8
Variable	0	0	0	0	0	0	0
Total	0	25	62	17	15	8	127

Hours of calm in this stability class: 0

Hours of missing wind measurements in this stability class: 0

Hours of missing stability measurements in all stability classes: 3



LaSalle County Generating Station

Period of Record: April - June 2021

Stability Class - Moderately Unstable - 200Ft-33Ft Delta-T (F)  
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	4	4	0	0	8
NNE	0	4	2	0	0	0	6
NE	0	6	2	1	0	0	9
ENE	0	4	1	0	0	0	5
E	0	1	0	0	0	0	1
ESE	0	2	0	0	0	0	2
SE	0	1	0	0	0	0	1
SSE	0	3	1	0	0	0	4
S	1	4	1	6	3	0	15
SSW	0	1	3	3	3	1	11
SW	0	3	6	8	5	1	23
WSW	0	3	2	2	0	0	7
W	0	1	3	3	3	0	10
WNW	0	1	2	2	0	0	5
NW	0	9	2	0	0	0	11
NNW	0	3	1	1	0	0	5
Variable	0	0	0	0	0	0	0
Total	1	46	30	30	14	2	123

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 3

LaSalle County Generating Station

Period of Record: April - June 2021

Stability Class - Slightly Unstable - 200Ft-33Ft Delta-T (F)  
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	5	4	6	0	0	15
NNE	0	1	1	0	0	0	2
NE	0	7	3	1	0	0	11
ENE	0	6	4	0	0	0	10
E	2	1	1	0	0	0	4
ESE	0	1	0	0	0	0	1
SE	2	2	1	0	0	0	5
SSE	1	3	3	0	1	0	8
S	0	3	6	4	0	0	13
SSW	0	9	4	8	0	1	22
SW	0	4	11	3	3	1	22
WSW	0	2	5	1	1	1	10
W	0	5	1	7	2	0	15
WNW	0	8	4	11	0	0	23
NW	0	5	2	1	0	0	8
NNW	0	1	1	6	0	0	8
Variable	0	0	0	0	0	0	0
Total	5	63	51	48	7	3	177

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 3

LaSalle County Generating Station

Period of Record: April - June 2021  
 Stability Class - Neutral - 200Ft-33Ft Delta-T (F)  
 Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	5	4	6	0	0	15
NNE	0	1	1	0	0	0	2
NE	0	7	3	1	0	0	11
ENE	0	6	4	0	0	0	10
E	2	1	1	0	0	0	4
ESE	0	1	0	0	0	0	1
SE	2	2	1	0	0	0	5
SSE	1	3	3	0	1	0	8
S	0	3	6	4	0	0	13
SSW	0	9	4	8	0	1	22
SW	0	4	11	3	3	1	22
WSW	0	2	5	1	1	1	10
W	0	5	1	7	2	0	15
WNW	0	8	4	11	0	0	23
NW	0	5	2	1	0	0	8
NNW	0	1	1	6	0	0	8
Variable	0	0	0	0	0	0	0
Total	5	63	51	48	7	3	177

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 3

LaSalle County Generating Station

Period of Record: April - June 2021  
 Stability Class - Slightly Stable - 200Ft-33Ft Delta-T (F)  
 Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	5	16	2	0	0	0	23
NNE	8	9	0	0	0	0	17
NE	5	9	1	0	0	0	15
ENE	17	4	1	0	0	0	22
E	23	8	4	1	0	0	36
ESE	10	12	4	0	0	0	26
SE	6	26	8	1	0	0	41
SSE	9	27	12	4	0	0	52
S	2	27	27	4	0	0	60
SSW	1	17	18	13	9	0	58
SW	5	13	23	5	1	0	47
WSW	2	17	11	3	0	1	34
W	3	18	17	2	0	0	40
WNW	8	7	7	2	0	0	24
NW	1	5	12	1	0	0	19
NNW	3	4	6	0	0	0	13
Variable	0	0	0	0	0	0	0
Total	108	219	153	36	10	1	527

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 3

LaSalle County Generating Station

Period of Record: April - June 2021

Stability Class - Moderately Stable - 200Ft-33Ft Delta-T (F)  
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	7	2	0	0	0	0	9
NNE	2	1	0	0	0	0	3
NE	7	0	0	0	0	0	7
ENE	19	2	0	0	0	0	21
E	22	7	3	0	0	0	32
ESE	13	8	4	0	0	0	25
SE	1	4	1	1	0	0	7
SSE	0	6	2	0	0	0	8
S	3	5	5	3	0	0	16
SSW	0	4	10	7	0	0	21
SW	0	1	10	6	0	0	17
WSW	6	4	6	6	0	0	22
W	7	5	10	0	0	0	22
WNW	7	10	1	0	0	0	18
NW	3	3	0	0	0	0	6
NNW	4	0	0	0	0	0	4
Variable	0	0	0	0	0	0	0
Total	101	62	52	23	0	0	238

Hours of calm in this stability class: 5  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 3

LaSalle County Generating Station

Period of Record: April - June 2021  
 Stability Class - Extremely Stable - 200Ft-33Ft Delta-T (F)  
 Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	2	0	0	0	0	0	2
NNE	4	0	0	0	0	0	4
NE	5	0	0	0	0	0	5
ENE	11	0	0	0	0	0	11
E	17	0	0	0	0	0	17
ESE	5	1	0	0	0	0	6
SE	2	0	0	0	0	0	2
SSE	1	2	3	0	0	0	6
S	1	1	16	0	0	0	18
SSW	1	2	9	1	0	0	13
SW	2	4	6	0	0	0	12
WSW	2	2	12	0	0	0	16
W	4	2	0	0	0	0	6
WNW	10	1	0	0	0	0	11
NW	9	0	0	0	0	0	9
NNW	9	0	0	0	0	0	9
Variable	0	0	0	0	0	0	0
Total	85	15	46	1	0	0	147

Hours of calm in this stability class: 5  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 3

LaSalle County Generating Station

Period of Record: April - June 2021

Stability Class - Extremely Unstable - 375Ft-33Ft Delta-T (F)

Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0
S	0	0	0	0	0	2	2
SSW	0	0	0	0	0	0	0
SW	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	0	0	0	0	2	2

Hours of calm in this stability class: 0

Hours of missing wind measurements in this stability class: 0

Hours of missing stability measurements in all stability classes: 3

LaSalle County Generating Station

Period of Record: April - June 2021

Stability Class - Moderately Unstable - 375Ft-33Ft Delta-T (F)  
Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	0	0	0	0	0	1	1
S	0	0	0	0	0	2	2
SSW	0	0	0	0	0	5	5
SW	0	1	0	0	0	2	3
WSW	0	0	0	0	0	1	1
W	0	0	0	0	4	0	4
WNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	1	0	0	4	11	16

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 3



LaSalle County Generating Station

Period of Record: April - June 2021

Stability Class - Slightly Unstable - 375Ft-33Ft Delta-T (F)

Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	2	2	0	4
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	0	0	0	1	0	0	1
S	0	0	0	3	2	3	8
SSW	0	0	0	1	3	6	10
SW	0	0	0	0	6	5	11
WSW	0	0	0	0	1	1	2
W	0	0	0	0	6	0	6
WNW	0	0	0	2	3	0	5
NW	0	0	0	1	0	0	1
NNW	0	0	0	2	0	0	2
Variable	0	0	0	0	0	0	0
Total	0	0	0	12	23	15	50

Hours of calm in this stability class: 0

Hours of missing wind measurements in this stability class: 0

Hours of missing stability measurements in all stability classes: 3

LaSalle County Generating Station

Period of Record: April - June 2021  
 Stability Class - Neutral - 375Ft-33Ft Delta-T (F)  
 Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	18	27	24	10	0	79
NNE	2	13	22	11	5	0	53
NE	1	11	13	21	19	0	65
ENE	2	25	31	22	9	1	90
E	4	13	9	9	7	0	42
ESE	6	10	11	10	0	0	37
SE	2	14	6	5	3	0	30
SSE	3	11	6	11	7	1	39
S	2	19	22	21	25	8	97
SSW	1	7	28	30	26	8	100
SW	2	10	19	29	15	7	82
WSW	4	17	18	23	12	3	77
W	2	10	18	18	15	0	63
WNW	1	6	9	21	23	1	61
NW	2	9	5	28	16	2	62
NNW	2	7	16	33	6	1	65
Variable	0	0	0	0	0	0	0
Total	36	200	260	316	198	32	1042

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 3

LaSalle County Generating Station

Period of Record: April - June 2021  
 Stability Class - Slightly Stable - 375Ft-33Ft Delta-T (F)  
 Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	11	9	1	0	22
NNE	1	6	12	10	0	0	29
NE	0	6	16	12	2	0	36
ENE	2	18	12	3	0	0	35
E	1	8	17	15	1	0	42
ESE	0	14	10	20	4	0	48
SE	3	13	13	15	3	2	49
SSE	0	13	8	34	10	1	66
S	0	10	27	44	25	6	112
SSW	1	16	26	41	21	19	124
SW	0	12	12	21	14	13	72
WSW	0	3	11	12	6	1	33
W	0	6	19	11	7	0	43
WNW	3	2	12	20	10	0	47
NW	1	3	8	11	4	0	27
NNW	0	1	5	10	8	0	24
Variable	0	0	0	0	0	0	0
Total	12	132	219	288	116	42	809

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 3

LaSalle County Generating Station

Period of Record: April - June 2021

Stability Class - Moderately Stable - 375Ft-33Ft Delta-T (F)  
Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	2	1	1	0	0	4
NNE	0	6	4	2	0	0	12
NE	0	5	4	1	0	0	10
ENE	1	3	1	0	0	0	5
E	0	2	0	0	0	0	2
ESE	0	3	3	1	0	0	7
SE	0	5	6	3	1	0	15
SSE	0	4	4	3	0	1	12
S	1	1	4	7	6	2	21
SSW	1	3	5	10	12	7	38
SW	4	3	3	7	10	4	31
WSW	3	4	2	9	3	5	26
W	1	2	7	6	6	1	23
WNW	1	3	2	3	0	1	10
NW	1	5	1	6	0	0	13
NNW	1	2	0	1	0	0	4
Variable	0	0	0	0	0	0	0
Total	14	53	47	60	38	21	233

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 3

LaSalle County Generating Station

Period of Record: April - June 2021

Stability Class - Extremely Stable - 375Ft-33Ft Delta-T (F)

Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	1	1	0	0	2
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0
S	0	0	0	1	2	0	3
SSW	0	0	0	0	0	0	0
SW	0	0	2	0	0	0	2
WSW	0	0	4	3	0	0	7
W	0	1	2	4	0	0	7
WNW	0	3	3	0	0	0	6
NW	0	1	1	0	0	0	2
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	5	13	9	2	0	29

Hours of calm in this stability class: 0

Hours of missing wind measurements in this stability class: 0

Hours of missing stability measurements in all stability classes: 3

LaSalle County Generating Station

Period of Record: July - September 2021  
 Stability Class - Extremely Unstable - 200Ft-33Ft Delta-T (F)  
 Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	0	1	1	0	0	0	2
NE	0	2	0	0	0	0	2
ENE	0	1	0	0	0	0	1
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0
SSW	0	0	1	1	1	0	3
SW	0	0	5	1	1	0	7
WSW	0	0	8	0	0	0	8
W	0	1	1	0	0	0	2
WNW	0	2	0	0	0	0	2
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	7	16	2	2	0	27

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 0

LaSalle County Generating Station

Period of Record: July - September 2021  
 Stability Class - Moderately Unstable - 200Ft-33Ft Delta-T (F)  
 Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	0	1	0	0	2
NNE	0	3	2	0	0	0	5
NE	1	1	4	0	0	0	6
ENE	0	0	3	0	0	0	3
E	0	2	1	1	0	0	4
ESE	0	0	1	0	0	0	1
SE	0	0	1	0	0	0	1
SSE	0	0	0	0	0	0	0
S	0	0	5	0	0	0	5
SSW	0	2	8	2	0	0	12
SW	0	1	8	3	2	0	14
WSW	0	8	6	4	0	0	18
W	0	9	2	1	0	0	12
WNW	0	5	4	1	0	0	10
NW	0	6	1	0	0	0	7
NNW	0	1	0	0	0	0	1
Variable	0	0	0	0	0	0	0
Total	1	39	46	13	2	0	101

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 0

LaSalle County Generating Station

Period of Record: July - September 2021  
 Stability Class - Slightly Unstable - 200Ft-33Ft Delta-T (F)  
 Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	2	3	0	0	0	6
NNE	0	3	0	0	0	0	3
NE	0	6	6	0	0	0	12
ENE	2	4	5	1	0	0	12
E	1	5	4	0	0	0	10
ESE	0	1	1	0	0	0	2
SE	0	3	1	0	0	0	4
SSE	0	2	5	0	0	0	7
S	1	6	9	4	0	0	20
SSW	0	3	17	3	1	0	24
SW	0	3	25	7	0	0	35
WSW	0	4	5	11	0	0	20
W	0	11	7	6	0	0	24
WNW	0	9	6	4	3	0	22
NW	0	7	2	4	0	0	13
NNW	1	3	1	3	1	0	9
Variable	0	0	0	0	0	0	0
Total	6	72	97	43	5	0	223

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 0



LaSalle County Generating Station

Period of Record: July - September 2021  
 Stability Class - Neutral - 200Ft-33Ft Delta-T (F)  
 Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	5	28	11	3	0	0	47
NNE	3	28	5	0	0	0	36
NE	4	63	32	0	0	0	99
ENE	12	55	5	2	0	0	74
E	7	23	8	0	0	0	38
ESE	2	11	7	0	0	0	20
SE	5	9	13	1	0	0	28
SSE	1	7	18	1	0	0	27
S	1	10	31	4	0	0	46
SSW	1	11	26	24	1	0	63
SW	0	12	43	17	3	0	75
WSW	3	14	14	5	2	0	38
W	1	22	8	7	1	0	39
WNW	3	15	10	3	0	0	31
NW	7	9	7	8	0	0	31
NNW	8	26	21	18	0	0	73
Variable	0	0	0	0	0	0	0
Total	63	343	259	93	7	0	765

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 0

LaSalle County Generating Station

Period of Record: July - September 2021  
 Stability Class - Slightly Stable - 200Ft-33Ft Delta-T (F)  
 Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	6	27	3	0	0	0	36
NNE	7	25	8	0	0	0	40
NE	7	9	8	0	0	0	24
ENE	14	19	23	1	0	0	57
E	13	13	4	0	0	0	30
ESE	9	10	0	0	0	0	19
SE	3	6	1	0	0	0	10
SSE	3	16	11	1	0	0	31
S	0	19	22	1	0	0	42
SSW	1	13	42	12	0	0	68
SW	2	28	35	15	0	0	80
WSW	2	23	13	3	0	0	41
W	5	16	2	1	0	0	24
WNW	8	9	8	2	0	0	27
NW	7	13	11	2	0	0	33
NNW	5	14	8	1	0	0	28
Variable	0	0	0	0	0	0	0
Total	92	260	199	39	0	0	590

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 0

LaSalle County Generating Station

Period of Record: July - September 2021  
 Stability Class - Moderately Stable - 200Ft-33Ft Delta-T (F)  
 Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	4	8	0	0	0	0	12
NNE	1	1	0	0	0	0	2
NE	3	0	0	0	0	0	3
ENE	1	7	6	0	0	0	14
E	7	25	7	0	0	0	39
ESE	4	13	0	0	0	0	17
SE	2	12	0	0	0	0	14
SSE	2	11	1	0	0	0	14
S	4	25	9	0	0	0	38
SSW	4	24	6	0	0	0	34
SW	2	7	14	3	0	0	26
WSW	2	13	8	2	0	0	25
W	6	13	3	0	0	0	22
WNW	3	15	1	0	0	0	19
NW	5	6	1	0	0	0	12
NNW	1	2	1	0	0	0	4
Variable	0	0	0	0	0	0	0
Total	51	182	57	5	0	0	295

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 0

LaSalle County Generating Station

Period of Record: July - September 2021  
 Stability Class - Extremely Stable - 200Ft-33Ft Delta-T (F)  
 Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	0	0	0	0	0	1
NNE	1	0	0	0	0	0	1
NE	0	0	0	0	0	0	0
ENE	3	3	1	0	0	0	7
E	2	17	2	0	0	0	21
ESE	1	16	0	0	0	0	17
SE	3	12	0	0	0	0	15
SSE	2	20	3	0	0	0	25
S	1	15	4	0	0	0	20
SSW	0	11	1	0	0	0	12
SW	0	12	11	0	0	0	23
WSW	3	4	4	0	0	0	11
W	6	9	0	0	0	0	15
WNW	12	13	4	0	0	0	29
NW	6	0	0	0	0	0	6
NNW	4	0	0	0	0	0	4
Variable	0	0	0	0	0	0	0
Total	45	132	30	0	0	0	207

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 0

LaSalle County Generating Station

Period of Record: July - September 2021  
 Stability Class - Extremely Unstable - 375Ft-33Ft Delta-T (F)  
 Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0
SSW	0	0	0	0	0	0	0
SW	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 0

LaSalle County Generating Station

Period of Record: July - September 2021

Stability Class - Moderately Unstable - 375Ft-33Ft Delta-T (F)  
 Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0
SSW	0	0	0	0	0	1	1
SW	0	0	0	0	0	1	1
WSW	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	0	0	0	0	2	2

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 0

LaSalle County Generating Station

Period of Record: July - September 2021  
 Stability Class - Slightly Unstable - 375Ft-33Ft Delta-T (F)  
 Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	2	0	0	2
ENE	0	0	2	0	0	0	2
E	0	0	0	1	0	0	1
ESE	0	0	1	0	0	0	1
SE	0	0	0	0	0	0	0
SSE	0	0	1	0	0	0	1
S	0	0	2	0	0	0	2
SSW	0	0	0	3	2	1	6
SW	0	0	0	1	1	2	4
WSW	0	0	0	0	1	0	1
W	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	0	6	7	4	3	20

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 0

LaSalle County Generating Station

Period of Record: July - September 2021  
 Stability Class - Neutral - 375Ft-33Ft Delta-T (F)  
 Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	3	20	17	6	16	0	62
NNE	2	18	22	13	2	0	57
NE	5	24	39	46	5	0	119
ENE	1	18	25	10	3	0	57
E	0	18	28	5	0	0	51
ESE	3	5	18	0	0	0	26
SE	3	9	10	2	0	0	24
SSE	1	4	16	8	3	0	32
S	0	14	25	19	6	0	64
SSW	1	13	26	28	23	9	100
SW	0	14	41	39	17	10	121
WSW	1	17	32	13	14	2	79
W	2	18	18	10	4	2	54
WNW	3	10	25	13	6	3	60
NW	0	13	19	14	14	0	60
NNW	0	16	22	11	9	3	61
Variable	0	0	0	0	0	0	0
Total	25	231	383	237	122	29	1027

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 0



LaSalle County Generating Station

Period of Record: July - September 2021  
 Stability Class - Slightly Stable - 375Ft-33Ft Delta-T (F)  
 Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	10	10	14	4	0	39
NNE	0	7	23	18	1	0	49
NE	2	8	23	22	5	0	60
ENE	1	11	15	7	7	0	41
E	1	15	25	13	3	1	58
ESE	0	9	9	7	0	0	25
SE	0	6	7	0	0	0	13
SSE	0	6	5	14	8	0	33
S	2	8	6	25	18	1	60
SSW	0	1	13	34	45	8	101
SW	1	4	29	35	25	18	112
WSW	1	6	7	18	11	2	45
W	1	4	9	19	7	1	41
WNW	0	4	4	11	1	0	20
NW	1	4	11	8	3	1	28
NNW	0	5	7	18	9	4	43
Variable	0	0	0	0	0	0	0
Total	11	108	203	263	147	36	768

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 0

LaSalle County Generating Station

Period of Record: July - September 2021  
 Stability Class - Moderately Stable - 375Ft-33Ft Delta-T (F)  
 Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	7	6	0	0	13
NNE	0	0	5	0	1	0	6
NE	0	1	0	3	0	0	4
ENE	0	2	0	0	1	0	3
E	1	0	1	7	11	0	20
ESE	1	1	2	16	7	0	27
SE	0	1	5	17	1	0	24
SSE	2	4	7	10	0	0	23
S	2	3	5	20	5	0	35
SSW	0	4	5	12	3	1	25
SW	2	7	9	26	7	4	55
WSW	0	6	0	9	4	7	26
W	2	8	6	6	0	0	22
WNW	2	3	12	9	0	0	26
NW	0	2	13	15	5	0	35
NNW	0	1	2	5	0	0	8
Variable	0	0	0	0	0	0	0
Total	12	43	79	161	45	12	352

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 0

LaSalle County Generating Station

Period of Record: July - September 2021

Stability Class - Extremely Stable - 375Ft-33Ft Delta-T (F)

Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	0	0	2	0	0	2
SE	0	0	0	6	0	0	6
SSE	0	0	1	3	1	0	5
S	0	0	2	2	2	0	6
SSW	0	0	2	0	0	0	2
SW	0	0	1	0	1	0	2
WSW	0	0	1	0	1	0	2
W	0	0	3	6	0	0	9
WNW	0	2	0	1	0	0	3
NW	0	1	0	1	0	0	2
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	3	10	21	5	0	39

Hours of calm in this stability class: 0

Hours of missing wind measurements in this stability class: 0

Hours of missing stability measurements in all stability classes: 0

LaSalle County Generating Station

Period of Record: October - December 2021  
 Stability Class - Extremely Unstable - 200Ft-33Ft Delta-T (F)  
 Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0
SSW	0	0	0	0	0	0	0
SW	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0
W	0	0	0	1	1	0	2
WNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	0	0	1	1	0	2

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 2

LaSalle County Generating Station

Period of Record: October - December 2021  
 Stability Class - Moderately Unstable - 200Ft-33Ft Delta-T (F)  
 Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	0	0	1	0	0	1
SE	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0
S	0	0	1	1	0	0	2
SSW	0	0	0	1	0	0	1
SW	0	0	0	1	0	0	1
WSW	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	0	1	4	0	0	5

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 2

LaSalle County Generating Station

Period of Record: October - December 2021  
 Stability Class - Slightly Unstable - 200Ft-33Ft Delta-T (F)  
 Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	1	0	0	1
E	0	0	0	0	0	0	0
ESE	0	0	0	3	0	0	3
SE	0	0	0	0	0	0	0
SSE	0	0	1	1	0	0	2
S	0	0	6	2	0	0	8
SSW	0	0	4	3	0	0	7
SW	0	0	2	9	1	0	12
WSW	0	0	1	0	0	0	1
W	0	0	0	1	0	2	3
WNW	0	0	4	4	0	0	8
NW	0	0	0	1	0	0	1
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	0	18	25	1	2	46

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 2

LaSalle County Generating Station

Period of Record: October - December 2021  
 Stability Class - Neutral - 200Ft-33Ft Delta-T (F)  
 Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	34	22	12	0	0	68
NNE	1	11	21	5	0	0	38
NE	0	7	16	4	2	0	29
ENE	0	5	31	34	12	2	84
E	1	5	24	13	1	0	44
ESE	0	6	8	10	3	0	27
SE	0	10	17	12	0	0	39
SSE	0	9	21	10	1	1	42
S	1	14	23	16	8	0	62
SSW	1	12	32	20	8	3	76
SW	0	12	16	15	2	0	45
WSW	0	9	5	17	16	3	50
W	1	11	28	36	18	2	96
WNW	0	12	36	42	15	0	105
NW	0	3	13	21	5	0	42
NNW	0	16	29	35	2	0	82
Variable	0	0	0	0	0	0	0
Total	5	176	342	302	93	11	929

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 2

LaSalle County Generating Station

Period of Record: October - December 2021  
 Stability Class - Slightly Stable - 200Ft-33Ft Delta-T (F)  
 Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	24	5	0	0	0	30
NNE	0	7	5	0	0	0	12
NE	1	1	7	0	0	0	9
ENE	2	2	13	1	0	0	18
E	0	10	27	12	0	0	49
ESE	0	8	5	5	0	0	18
SE	2	4	13	7	1	1	28
SSE	1	8	14	24	4	0	51
S	1	14	22	43	7	7	94
SSW	2	10	22	25	6	4	69
SW	1	7	10	17	2	0	37
WSW	0	11	10	12	1	1	35
W	1	11	34	16	9	7	78
WNW	0	12	43	17	10	19	101
NW	1	14	8	2	0	0	25
NNW	1	12	9	1	0	0	23
Variable	0	0	0	0	0	0	0
Total	14	155	247	182	40	39	677

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 2



LaSalle County Generating Station

Period of Record: October - December 2021

Stability Class - Moderately Stable - 200Ft-33Ft Delta-T (F)  
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	3	0	0	0	0	3
NNE	0	2	0	0	0	0	2
NE	1	1	0	0	0	0	2
ENE	2	1	3	0	0	0	6
E	1	14	14	0	0	0	29
ESE	0	9	2	0	0	0	11
SE	2	8	3	4	0	0	17
SSE	2	13	6	1	0	0	22
S	4	12	14	4	0	0	34
SSW	4	10	12	17	0	0	43
SW	1	5	16	14	0	0	36
WSW	1	7	10	10	0	0	28
W	1	14	23	0	0	0	38
WNW	1	14	18	0	0	0	33
NW	1	3	2	0	0	0	6
NNW	3	4	0	0	0	0	7
Variable	0	0	0	0	0	0	0
Total	24	120	123	50	0	0	317

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 2

LaSalle County Generating Station

Period of Record: October - December 2021  
 Stability Class - Extremely Stable - 200Ft-33Ft Delta-T (F)  
 Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	2	0	0	0	0	0	2
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	1	8	5	0	0	0	14
ESE	0	18	4	0	0	0	22
SE	0	23	3	0	0	0	26
SSE	0	8	2	0	0	0	10
S	1	28	15	0	0	0	44
SSW	1	15	23	0	0	0	39
SW	0	9	4	3	0	0	16
WSW	0	6	13	0	0	0	19
W	0	22	6	1	0	0	29
WNW	0	4	0	0	0	0	4
NW	1	2	0	0	0	0	3
NNW	0	2	0	0	0	0	2
Variable	0	0	0	0	0	0	0
Total	6	145	75	4	0	0	230

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 2

LaSalle County Generating Station

Period of Record: October - December 2021

Stability Class - Extremely Unstable - 375Ft-33Ft Delta-T (F)  
Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0
SSW	0	0	0	0	0	0	0
SW	0	0	0	0	0	0	0
WSW	0	0	0	1	0	0	1
W	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	0	0	1	0	0	1

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 2

LaSalle County Generating Station

Period of Record: October - December 2021

Stability Class - Moderately Unstable - 375Ft-33Ft Delta-T (F)  
Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0
SSW	0	0	0	0	0	0	0
SW	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0
W	0	0	0	0	1	0	1
WNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	0	0	0	1	0	1

Hours of calm in this stability class: 0  
Hours of missing wind measurements in this stability class: 0  
Hours of missing stability measurements in all stability classes: 2

LaSalle County Generating Station

Period of Record: October - December 2021

Stability Class - Slightly Unstable - 375Ft-33Ft Delta-T (F)  
Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0
SSW	0	0	0	0	0	0	0
SW	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 2

LaSalle County Generating Station

Period of Record: October - December 2021  
 Stability Class - Neutral - 375Ft-33Ft Delta-T (F)  
 Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	11	14	16	19	5	65
NNE	0	6	18	26	1	4	55
NE	1	9	6	14	8	3	41
ENE	0	3	11	33	22	13	82
E	0	3	12	19	12	6	52
ESE	0	3	6	10	5	4	28
SE	0	6	6	16	8	0	36
SSE	0	2	10	24	8	3	47
S	1	6	14	24	16	23	84
SSW	0	4	23	15	23	12	77
SW	0	9	22	21	17	6	75
WSW	0	3	7	9	13	21	53
W	0	3	11	25	23	25	87
WNW	0	6	25	38	28	15	112
NW	0	3	9	18	28	21	79
NNW	1	7	8	19	10	6	51
Variable	0	0	0	0	0	0	0
Total	3	84	202	327	241	167	1024

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 2

LaSalle County Generating Station

Period of Record: October - December 2021  
 Stability Class - Slightly Stable - 375Ft-33Ft Delta-T (F)  
 Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	4	12	7	6	0	30
NNE	0	2	5	14	1	0	22
NE	1	5	3	6	2	0	17
ENE	0	2	2	7	4	0	15
E	0	2	8	9	17	8	44
ESE	0	2	6	9	14	2	33
SE	1	0	5	3	5	9	23
SSE	0	2	3	12	15	21	53
S	0	6	7	24	21	42	100
SSW	0	8	14	12	37	37	108
SW	1	4	12	12	25	26	80
WSW	2	6	5	8	11	13	45
W	0	3	9	9	13	25	59
WNW	1	0	10	40	42	44	137
NW	0	1	11	20	18	4	54
NNW	0	2	4	9	4	0	19
Variable	0	0	0	0	0	0	0
Total	7	49	116	201	235	231	839

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 2

LaSalle County Generating Station

Period of Record: October - December 2021  
 Stability Class - Moderately Stable - 375Ft-33Ft Delta-T (F)  
 Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	1	3	0	0	5
NNE	0	1	4	1	2	0	8
NE	0	2	4	0	0	0	6
ENE	0	3	1	1	1	0	6
E	1	1	1	5	7	1	16
ESE	0	1	2	6	2	0	11
SE	0	1	4	8	3	0	16
SSE	1	1	2	2	6	1	13
S	0	3	8	15	8	3	37
SSW	0	4	5	9	14	4	36
SW	0	10	2	4	13	9	38
WSW	1	2	5	0	4	4	16
W	0	3	6	5	7	0	21
WNW	0	2	7	16	11	1	37
NW	0	1	3	6	2	0	12
NNW	0	0	4	0	1	0	5
Variable	0	0	0	0	0	0	0
Total	3	36	59	81	81	23	283

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 0  
 Hours of missing stability measurements in all stability classes: 2



LaSalle County Generating Station

Period of Record: October - December 2021

Stability Class - Extremely Stable - 375Ft-33Ft Delta-T (F)

Winds Measured at 375 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	0	6	5	1	0	12
SSE	0	2	3	4	1	0	10
S	0	0	3	2	1	0	6
SSW	0	0	4	7	2	0	13
SW	0	0	1	4	0	0	5
WSW	0	0	4	1	2	0	7
W	0	0	5	0	0	0	5
WNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	2	26	23	7	0	58

Hours of calm in this stability class: 0

Hours of missing wind measurements in this stability class: 0

Hours of missing stability measurements in all stability classes: 2

## **APPENDIX G**

## **ERRATA DATA**

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**There is no errata data for 2021.**

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## **APPENDIX H**

# **ANNUAL RADIOLOGICAL GROUNDWATER PROTECTION PROGRAM REPORT (ARGPPR)**

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Docket No: 50-373  
50-374

# **LASALLE COUNTY STATION UNITS 1 and 2**

Annual Radiological  
Groundwater Protection Program Report

1 January through 31 December 2021

**Prepared By**  
Teledyne Brown Engineering  
Environmental Services



LaSalle County Station  
Marseilles, IL 61341

**May 2022**



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## Appendices

### Appendix A Location Designation

#### Tables

Table A-1 LaSalle County Station Groundwater Monitoring Sample Point List, 2021

#### Figures

Figure A-1 LaSalle County Station Map of Groundwater Monitoring Sampling Locations, 2021

### Appendix B Data Tables

#### Tables

Table B-I.1 Concentrations of Tritium, Strontium, Gross Alpha, and Gross Beta in Groundwater Samples Collected in the Vicinity of LaSalle County Station, 2021

Table B-I.2 Concentrations of Gamma Emitters in Groundwater Samples Collected in the Vicinity of LaSalle County Station, 2021

Table B-I.3 Concentrations of Hard-to-Detects in Groundwater Samples Collected as Part of the Radiological Groundwater Protection Program, LaSalle County Station, 2021

## I. Summary and Conclusions

In 2006, Exelon instituted a comprehensive program to evaluate the impact of station operations on groundwater and surface water in the vicinity of LaSalle County Station. This evaluation involved numerous station personnel and contractor support personnel. Following baseline sampling and subsequent recommendations, LaSalle's Radiological Groundwater Protection Program (RGPP) program now consists of the four surface water and twenty groundwater well sampling locations. The results for LaSalle's RGPP sampling efforts in 2021 are included in this report.

This is the sixteenth in a series of annual reports on the status of the RGPP conducted at LaSalle County Station. This report covers groundwater and surface water samples, collected from the environment, both on and off station property in 2021. During that time period, 190 analyses were performed on 59 samples from 19 groundwater locations. The monitoring was conducted by station personnel.

In assessing all the data gathered for this report, it was concluded that the operation of LaSalle County Station had no adverse radiological impact on the environment, and there are no known active releases into the groundwater at LaSalle County Station.

Strontium-89 (Sr-89) and strontium-90 (Sr-90) were not detected in any groundwater samples during 2021.

No gamma emitting radionuclides attributable to licensed plant operations were detected in any of the groundwater or surface water samples.

In the case of tritium, Exelon specified that its laboratories achieve a lower limit of detection (LLD) 100 times lower than that required by federal regulation. The United States Environmental Protection Agency (USEPA) drinking water standard (and the Nuclear Regulatory Commission Reporting Limit) is 20,000 pCi/L.

Tritium levels were detected at concentrations greater than the LLD of 200 pCi/L in 19 of 59 groundwater samples analyzed. The tritium concentrations ranged from <LLD to 5,000 ± 560 pCi/L. The elevated tritium levels (>200 pCi/L) being observed in groundwater are associated with the U1 CY tank leak that occurred in the June/July 2010 timeframe, as documented in the Station's 10 CFR 50.75(g) report. Chemistry performed weekly pump downs of Well 118S during October and November, which resulted in the tritium concentration for the fourth quarter moving from about 5,000 pCi/L to < LLD.

Gross alpha analysis in the dissolved and suspended fractions was performed for 12 locations during the 1<sup>st</sup> quarter of 2021. Gross alpha (dissolved) was detected in 1 of 12 samples with a concentration of 3.4 pCi/L. Gross alpha (suspended) was detected in 5 of 12 samples. The concentrations ranged from 3.5 to 17.2 pCi/L.

Hard-to-detect analyses were performed on 12 of the groundwater sampling locations in accordance with the LaSalle RGPP and to aid in establishing background levels. The analyses included Fe-55, Ni-63, Am-241, Cm-242, Cm-243/244, Pu-238, Pu-239/240, U-234, U-235, and U-238. U-234 was detected in 4 samples, affecting 4 of 12 groundwater locations. The U-234 concentrations ranged from 0.49 to 1.12 pCi/L. U-238 was detected in 3 samples, affecting 3 of 12 groundwater locations. The U-238 concentrations ranged from 0.71 to 0.98 pCi/L. U-234 and U-238 are commonly found in groundwater at low concentrations due to the naturally occurring Radium (Uranium) Decay Series.

## II. Introduction

The LaSalle County Station (LSCS), consisting of two boiling water reactors, each rated for 3,546 MWt, owned and operated by Exelon Corporation, is located in LaSalle County, Illinois. Unit 1 went critical on March 16, 1982. Unit 2 went critical on December 2, 1983. The site is located in northern Illinois, approximately 75 miles southwest of Chicago, Illinois.

This report covers those analyses performed by Teledyne Brown Engineering (TBE) on samples collected in 2021.

### A. Objectives of the RGPP

The long-term objectives of the RGPP are as follows:

1. Identify suitable locations to monitor and evaluate potential impacts from station operations before significant radiological impact to the environment and potential drinking water sources.
2. Understand the local hydrogeologic regime in the vicinity of the station and maintain up-to-date knowledge of flow patterns on the surface and shallow subsurface.
3. Perform routine water sampling and radiological analysis of water from selected locations.
4. Report new leaks, spills, or other detections with potential radiological significance to stakeholders in a timely manner.
5. Regularly assess analytical results to identify adverse trends.
6. Take necessary corrective actions to protect groundwater resources.

### B. Implementation of the Objectives

The objectives identified have been implemented at LaSalle County Station as discussed below:

1. Exelon and its consultant identified locations as described in the 2006 Phase 1 study. Phase 1 studies were conducted by Conestoga Rovers and Associates (CRA) and the results and conclusions were made available to state and federal regulators.
2. The LaSalle County Station reports describe the local hydrogeologic regime. Periodically, the flow patterns on the surface and shallow subsurface are updated based on ongoing measurements.
3. LaSalle County Station will continue to perform routine sampling and radiological analysis of water from selected locations.
4. LaSalle County Station has implemented procedures to identify and report new leaks, spills, or other detections with potential radiological significance in a timely manner.
5. LaSalle County Station staff and consulting hydrogeologist assess analytical results on an ongoing basis to identify adverse trends.

C. Program Description

1. Sample Collection

Sample locations can be found in Figure A-1, Appendix A.

Groundwater and Surface Water

Samples of water are collected, managed, transported and analyzed in accordance with approved procedures following EPA methods. Both groundwater and surface samples water are collected. Sample locations, sample collection frequencies and analytical frequencies are controlled in accordance with approved station procedures. Contractor and/or station personnel are trained in the collection, preservation management, and shipment of samples, as well as in documentation of sampling events. Analytical laboratories are subject to internal quality assurance programs, industry cross-check programs, as well as nuclear industry audits. Station personnel review and evaluate all analytical data deliverables as data are received.

Analytical data results are reviewed by both station personnel and an independent hydrogeologist for adverse trends or changes to hydrogeologic conditions.

D. Characteristics of Tritium (H-3)

Tritium (chemical symbol H-3) is a radioactive isotope of hydrogen. The most common form of tritium is tritium oxide, which is also called "tritiated water." The chemical properties of tritium are essentially those of ordinary hydrogen.

Tritiated water behaves the same as ordinary water in both the environment and the body. Tritium can be taken into the body by drinking water, breathing air, eating food, or absorption through skin. Once tritium enters the body, it disperses quickly and is uniformly distributed throughout the body. Tritium is excreted primarily through urine with a clearance rate characterized by an effective biological half-life of about 14 days. Within one month or so after ingestion, essentially all tritium is cleared. Organically bound tritium (tritium that is incorporated in organic compounds) can remain in the body for a longer period.

Tritium is produced naturally in the upper atmosphere when cosmic rays strike air molecules. Tritium is also produced during nuclear weapons explosions, as a by-product in reactors producing electricity, and in special production reactors, where the isotopes lithium-7 and/or boron-10 are activated to produce tritium. Like normal water, tritiated water is colorless and odorless. Tritiated water behaves chemically and physically like non-tritiated water in the subsurface, and therefore tritiated water will travel at the same velocity as the average groundwater velocity.

Tritium has a half-life of approximately 12.3 years. It decays spontaneously to helium-3 ( ${}^3\text{He}$ ). This radioactive decay releases a beta particle (low-energy electron). The radioactive decay of tritium is the source of the health risk from exposure to tritium. Tritium is one of the least dangerous radionuclides because it emits very weak radiation and leaves the body relatively quickly. Since tritium is almost always found as water, it goes directly into soft tissues and organs. The associated dose to these tissues is generally uniform and is dependent on the water content of the specific tissue.



### III. Program Description

#### A. Sample Analysis

This section describes the general analytical methodologies used by TBE to analyze the environmental samples for radioactivity for the LaSalle County Station RGPP in 2021. Sample and analysis and frequency is based upon well location, assessed risk and site hydrogeology as described in the RGPP.

In order to achieve the stated objectives, the current program includes the following analyses:

1. Concentrations of gamma emitters in groundwater
2. Concentrations of strontium in groundwater
3. Concentrations of tritium in groundwater
4. Concentrations of gross alpha (dissolved and suspended) in groundwater
5. Concentrations of Am-241 in groundwater
6. Concentrations of Cm-242 and Cm-243/244 in groundwater
7. Concentrations of Pu-238 and Pu-239/240 in groundwater
8. Concentrations of U-234, U-235 and U-238 in groundwater
9. Concentrations of Fe-55 in groundwater
10. Concentrations of Ni-63 in groundwater

#### B. Data Interpretation

The radiological data collected prior to LaSalle County Station becoming operational were used as a baseline with which these operational data were compared. For the purpose of this report, LaSalle County Station was considered operational at initial criticality. Several factors were important in the interpretation of the data:

1. Lower Limit of Detection and Minimum Detectable Concentration

The lower limit of detection (LLD) is specified by federal regulation as a minimum sensitivity value that must be achieved routinely by the analytical parameter.

2. Laboratory Measurements Uncertainty

The estimated uncertainty in measurement of tritium in environmental samples is frequently on the order of 50% of the measurement value.

Statistically, the exact value of a measurement is expressed as a range with a stated level of confidence. The convention is to report results with a 95% level of confidence. The uncertainty comes from calibration standards, sample volume or weight measurements,

sampling uncertainty and other factors. Exelon reports the uncertainty of a measurement created by statistical process (counting error) as well as all sources of error (Total Propagated Uncertainty or TPU). Each result has two values calculated. Exelon reports the TPU by following the result with plus or minus  $\pm$  the estimated sample standard deviation, as TPU, that is obtained by propagating all sources of analytical uncertainty in measurements.

Analytical uncertainties are reported at the 95% confidence level in this report for reporting consistency with the AREOR.

### C. Background Analysis

A pre-operational radiological environmental monitoring program (pre-operational REMP) was conducted to establish background radioactivity levels prior to operation of the Station. The environmental media sampled and analyzed during the pre-operational REMP were atmospheric radiation, fall-out, domestic water, surface water, precipitation, marine life, and foodstuffs. The results of the monitoring were detailed in the report entitled, Environmental Radiological Monitoring for LaSalle County Nuclear Power Station, Commonwealth Edison Company, Annual Reports for the years 1979 and 1981. The pre-operational REMP contained analytical results from samples collected from the surface water and groundwater.

#### 1. Background Concentrations of Tritium

The purpose of the following discussion is to summarize background measurements of tritium in various media performed by others. Additional detail may be found by consulting references (CRA 2006).

##### a. Tritium Production

Tritium is created in the environment from naturally occurring processes both cosmic and subterranean, as well as from anthropogenic (i.e., man-made) sources. In the upper atmosphere, "Cosmogenic" tritium is produced from the bombardment of stable nuclides and combines with oxygen to form tritiated water, which will then enter the hydrologic cycle. Below ground, "lithogenic" tritium is produced by the bombardment of natural lithium present in crystalline rocks by neutrons produced by the radioactive decay of naturally abundant uranium and thorium. Lithogenic production of tritium is usually negligible compared to other sources due to the limited abundance of lithium in rock. The lithogenic tritium is introduced directly to groundwater.

A major anthropogenic source of tritium and strontium-90 comes from the former atmospheric testing of thermonuclear weapons. Levels of tritium in precipitation increased significantly during the 1950s and early 1960s, and later with additional testing, resulting

in the release of significant amounts of tritium to the atmosphere. The Canadian heavy water nuclear power reactors, other commercial power reactors, nuclear research and weapons production continue to influence tritium concentrations in the environment.

b. Precipitation Data

Precipitation samples are routinely collected at stations around the world for the analysis of tritium and other radionuclides. Two publicly available databases that provide tritium concentrations in precipitation are Global Network of Isotopes in Precipitation (GNIP) and USEPA's RadNet database. GNIP provides tritium precipitation concentration data for samples collected worldwide from 1960 to 2006. RadNet provides tritium precipitation concentration data for samples collected at stations throughout the U.S. from 1960 up to and including 2006. Based on GNIP data for sample stations located in the U.S. Midwest, tritium concentrations peaked around 1963. This peak, which approached 10,000 pCi/L for some stations, coincided with the atmospheric testing of thermonuclear weapons.

Tritium concentrations in surface water showed a sharp decline up until 1975 followed by a gradual decline since that time. Tritium concentrations in Midwest precipitation have typically been below 100 pCi/L since around 1980. LaSalle's 1979 or 1981 pre-operational REMP showed precipitation tritium concentrations >300 pCi/L. Tritium concentrations in wells may still be above the 200 pCi/L detection limit from the external causes described above. Water from previous years and decades is naturally captured in groundwater, so some well water sources today are affected by the surface water from the 1960s that was elevated in tritium.

c. Surface Water Data

Tritium concentrations are routinely measured in large surface water bodies, including Lake Michigan and the Mississippi River. Illinois surface water data were typically less than 100 pCi/L. Illinois River H-3 results have shown >200 pCi/L, as evidenced in LaSalle's REMP program sample results. This is attributable to releases from Braidwood and Dresden upstream.

The USEPA RadNet surface water data typically has a reported 'Combined Standard Uncertainty' of 35 to 50 pCi/L. According to USEPA, this corresponds to a  $\pm 70$  to 100 pCi/L 95% confidence bound on each given measurement. Therefore, the typical background data provided may be subject to measurement uncertainty of approximately  $\pm 70$  to 100 pCi/L.

The radio-analytical laboratory is counting tritium results to an Exelon specified LLD of 200 pCi/L. Typically, the lowest positive measurement will be reported within a range of 40 – 240 pCi/L or  $140 \pm 100$  pCi/L. Clearly, these sample results cannot be distinguished as different from background at this concentration.

#### IV. Results and Discussion

##### A. Groundwater Results

Samples were collected from onsite wells throughout the year in accordance with the station radiological groundwater protection program. Analytical results and anomalies are discussed below.

##### Tritium

Samples from 19 locations were analyzed for tritium activity. Tritium values ranged from <LLD to 5,000 pCi/L. The highest tritium activity was found at well TW-LS-118S. The well is located predominantly in clay till. Chemistry performed weekly pump downs of the well during October and November to support localized remediation. The pumping resulted in the tritium concentration for the fourth quarter moving from about 5,000 pCi/L to < LLD. Based on the hydrogeological study conducted at LaSalle, there is no feasible pathway into a drinking water supply. Based on established aquifer flow paths the location most representative of potential offsite release into groundwater was also less than the detection limit. (Table B-I.1, Appendix B)

##### Strontium

A total of 12 samples from 12 groundwater locations were analyzed for Sr-89 and Sr-90. The results were less than the required detection limit of 10 pCi/L for Sr-89 and less than the required detection limit of 1.0 pCi/liter for Sr-90. (Table B-I.1, Appendix B)

##### Gross Alpha (dissolved and suspended)

Gross alpha in the dissolved and suspended fractions were performed on groundwater samples in the 1<sup>st</sup> quarter of 2021. Gross alpha (dissolved) was detected in 1 of 12 samples affecting 1 of 12 groundwater locations analyzed. The concentrations was 3.4 pCi/L. Gross alpha (suspended) was detected in 4 of 12 samples affecting 4 of 12 groundwater locations analyzed. The concentrations ranged from 3.5 to 17.2 pCi/L.

The concentrations of gross alpha which are slightly above detectable levels are considered to be background and are not the result of plant effluents. (Table B-I.1, Appendix B)

##### Gamma Emitters

No gamma emitting nuclides were detected in any of the samples analyzed. (Table B-I.2, Appendix B)

##### Hard-To-Detect

Hard-to-detect analyses were performed on 12 of the groundwater sampling locations in accordance with the LaSalle RGPP and to aid in establishing background levels. The analyses included Fe-55, Ni-63, Am-241, Cm-242, Cm-243/244, Pu-238, Pu-239/240, U-234, U-235, and

U-238. U-234 was detected in 4 of 12 samples, affecting 4 of 12 groundwater locations. U-234 concentrations ranged from 0.49 to 1.12 pCi/L. U-238 was detected in 3 of 12 samples, affecting 3 of 12 groundwater locations. The U-238 concentrations ranged from 0.71 to 0.98 pCi/L. U-234 and U-238 are commonly found in groundwater at low concentrations due to the naturally occurring Radium (Uranium) Decay Series. The concentrations of U-234 and U-238 discussed above are considered to be background and are not the result of plant effluents. (Table B-1.3, Appendix B)

All other hard-to-detect nuclides were not detected at concentrations greater than their respective minimum detectable concentrations.

B. Surface Water Results

No surface water samples were collected in 2021.

C. Drinking Water Well Survey

A drinking water well survey was conducted during the summer 2006 by CRA (CRA 2006) around the LaSalle County Station. This survey concluded that no residents in the vicinity of the plant utilize the shallow water aquifer as a drinking water supply. Site hydrological studies of aquifer flow and permeation rates from the shallow aquifer to the deep aquifer concluded that there is no feasible dose receptor via a ground water pathway at LaSalle.

D. Summary of Results – Inter-Laboratory Comparison Program

Inter-Laboratory Comparison Program results for TBE and Environmental Inc. (Midwest Labs) are presented in the AREOR.

E. Leaks, Spills, and Releases

There were no new leaks identified at LaSalle Station during the reporting period.

F. Trends

Analysis results from samples continue to be trended in order to assess impact to groundwater at LaSalle Station. There were no new leaks identified in the reporting period. Sample data from the plume arising from the historic 2010 U1 CY tank leak is being trended per the LaSalle RGPP. The plume had been dispersing with groundwater flow, and extraction wells have been installed to provide additional control of the plume migration (see Section H.3. below). Currently, no tritium has migrated offsite, and tritium migration offsite is not expected.

G. Investigations

No new investigations were carried out during the reporting period.

## H. Actions Taken

### 1. Compensatory Actions

No compensatory actions were taken during the reporting period.

### 2. Installation of Monitoring Wells

No new monitoring wells have been installed during the reporting period.

### 3. Actions to Recover/Reverse Plumes

Two (2) extraction wells (RW-LS-100S and RW-LS-101S) were installed to control the migration of the tritium plume near U1 CY tank. RW-LS-100S became operational in October 2012. RW-LS-101S became operational in April 2014.

## **APPENDIX A**

### **LOCATION DESIGNATION**



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**TABLE A-1 LaSalle County Station Groundwater Monitoring Sample Point List, 2021**

Site	Site Type
HP-2	Monitoring Well
HP-5	Monitoring Well
HP-7	Monitoring Well
HP-10	Monitoring Well
MW-LS-101S	Monitoring Well
MW-LS-102S	Monitoring Well
MW-LS-103S	Monitoring Well
MW-LS-104S	Monitoring Well
MW-LS-105S	Monitoring Well
MW-LS-106S	Monitoring Well
MW-LS-107S	Monitoring Well
MW-LS-108S	Monitoring Well
MW-LS-109S	Monitoring Well
MW-LS-110S	Monitoring Well
MW-LS-111S	Monitoring Well
MW-LS-112S	Monitoring Well
MW-LS-113S	Monitoring Well
RW-LS-100S	Extraction Well
RW-LS-101S	Extraction Well
SW-LS-101	Surface Water
SW-LS-102	Surface Water
SW-LS-103	Surface Water
SW-LS-106	Surface Water
TW-LS-114S	Monitoring Well
TW-LS-115S	Monitoring Well
TW-LS-116S	Monitoring Well
TW-LS-117S	Monitoring Well
TW-LS-118S	Monitoring Well
TW-LS-119S	Monitoring Well
TW-LS-120S	Monitoring Well
TW-LS-121S	Monitoring Well

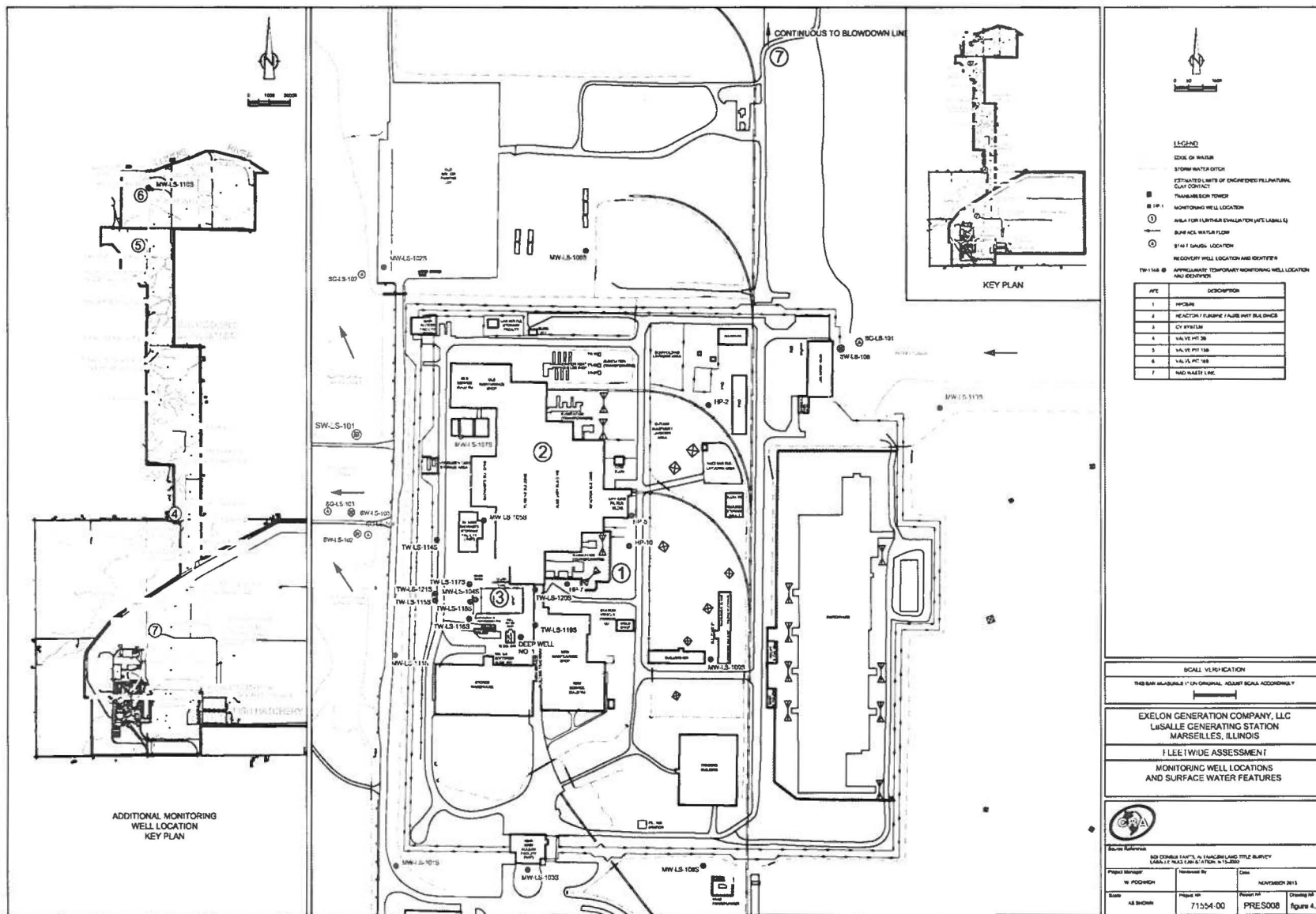


Figure A-1  
Ground Water and Surface Water Locations  
LaSalle County Station, 2021

## **APPENDIX B**

### **DATA TABLES**

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**TABLE B-1.1 CONCENTRATIONS OF TRITIUM, STRONTIUM AND GROSS ALPHA IN GROUNDWATER  
 SAMPLES COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2021  
 RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA**

SITE	COLLECTION DATE	H-3	Sr-89	Sr-90	Gr-A (Dis)	Gr-A (Sus)
HP-2	03/09/21	< 175				
HP-5	03/09/21	< 175				
HP-7	03/09/21	< 178	< 6.6	< 0.8	< 0.8	3.5 ± 1.4
HP-7	06/05/21	< 178				
HP-7	08/25/21	< 184				
HP-7	11/30/21	< 194				
HP-10	03/09/21	< 178				
MW-LS-104S	03/08/21	2150 ± 282	< 6.1	< 0.9	< 1.0	< 0.7
MW-LS-104S	06/05/21	1200 ± 189				
MW-LS-104S	08/24/21	1490 ± 219				
MW-LS-104S	12/01/21	1290 ± 202				
MW-LS-105S	03/08/21	< 178	< 6.2	< 0.8	< 0.8	< 1.4
MW-LS-105S	06/05/21	< 179				
MW-LS-105S	08/24/21	< 178				
MW-LS-105S	11/30/21	< 181				
MW-LS-106S	03/09/21	< 185				
MW-LS-107S	03/08/21	< 186	< 7.3	< 0.9	<b>&lt; 4.5</b>	4.3 ± 1.1
MW-LS-107S	06/05/21	< 178				
MW-LS-107S	08/24/21	< 184				
MW-LS-107S	11/30/21	< 198				
MW-LS-111S	03/09/21	< 185				
OIL SEPARATOR	03/08/21	< 185	< 6.4	< 0.8	<b>&lt; 3.8</b>	< 1.1
OIL SEPARATOR	06/05/21	< 186				
OIL SEPARATOR	08/23/21	< 187				
OIL SEPARATOR	11/30/21	< 175				
RW-LS-100S	03/08/21	655 ± 146	< 6.1	< 0.9	< 1.1	< 0.7
RW-LS-100S	06/05/21	1490 ± 219				
RW-LS-100S	08/24/21	1160 ± 188				
RW-LS-100S	11/30/21	935 ± 168				
RW-LS-101S	03/09/21	2360 ± 302	< 7.8	< 0.9	< 1.0	15.3 ± 3.7
RW-LS-101S	06/05/21	1070 ± 181				
RW-LS-101S	08/24/21	1320 ± 201				
RW-LS-101S	11/30/21	1960 ± 269				
TW-LS-114S	03/09/21	< 190				
TW-LS-114S	06/05/21	< 186				
TW-LS-114S	08/24/21	< 179				
TW-LS-114S	12/01/21	< 184				
TW-LS-116S	03/08/21	4420 ± 506	< 6.2	< 0.9	< 0.8	< 0.7
TW-LS-116S	06/05/21	3080 ± 371				
TW-LS-116S	08/24/21	3910 ± 453				
TW-LS-116S	12/01/21	2860 ± 354				
TW-LS-117S	03/08/21	< 190	< 6.8	< 0.8	3.4 ± 1.1	< 1.1
TW-LS-117S	06/05/21	< 183				
TW-LS-117S	08/24/21	< 180				
TW-LS-117S	11/30/21	< 191				
TW-LS-118S	03/08/21	4710 ± 533	< 7.6	< 0.9	< 0.8	< 0.7
TW-LS-118S	06/05/21	3710 ± 435				
TW-LS-118S	08/23/21	5000 ± 560				
TW-LS-118S	11/29/21	< 191				
TW-LS-119S	03/08/21	< 188	< 5.7	< 0.9	<b>&lt; 3.9</b>	17.2 ± 2.3
TW-LS-119S	06/05/21	< 179				
TW-LS-119S	08/23/21	< 187				
TW-LS-119S	12/01/21	< 181				
TW-LS-120S	03/08/21	< 194	< 5	< 1.0	<b>&lt; 3.1</b>	6.64 ± 4.0
TW-LS-120S	06/05/21	< 179				
TW-LS-120S	08/23/21	< 188				
TW-LS-120S	11/29/21	< 174				
TW-LS-121S	03/08/21	< 185				
TW-LS-121S	08/23/21	< 189				

**BOLD** values = Unable to meet detection limits due to high solids content

TABLE B-I.2

**CONCENTRATIONS OF GAMMA EMITTERS IN GROUNDWATER  
 SAMPLES COLLECTED IN THE VICINITY OF LASALLE COUNTY STATION, 2021  
 RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA**

SITE	COLLECTION	Be-7	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
	DATE														
HP-2	03/09/21	< 15	< 16	< 2	< 2	< 4	< 2	< 4	< 2	< 3	< 4	< 2	< 2	< 10	< 3
HP-5	03/09/21	< 18	< 31	< 2	< 2	< 5	< 2	< 4	< 2	< 3	< 4	< 2	< 2	< 11	< 4
HP-7	03/09/21	< 15	< 13	< 1	< 1	< 3	< 2	< 3	< 2	< 3	< 4	< 1	< 1	< 10	< 4
HP-10	03/09/21	< 19	< 20	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 6	< 2	< 2	< 14	< 4
MW-LS-104S	03/08/21	< 18	< 33	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 5	< 2	< 2	< 12	< 4
MW-LS-105S	03/08/21	< 14	< 31	< 2	< 2	< 4	< 2	< 3	< 2	< 3	< 4	< 2	< 2	< 10	< 3
MW-LS-106S	03/09/21	< 17	< 18	< 2	< 2	< 4	< 2	< 4	< 2	< 4	< 4	< 2	< 2	< 11	< 3
MW-LS-107S	03/08/21	< 11	< 13	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 4	< 1	< 1	< 8	< 3
MW-LS-111S	03/09/21	< 18	< 35	< 2	< 2	< 4	< 2	< 4	< 2	< 4	< 6	< 2	< 2	< 13	< 5
OIL SEPARAT	03/08/21	< 18	< 37	< 2	< 2	< 4	< 2	< 4	< 2	< 4	< 5	< 2	< 2	< 12	< 4
RW-LS-100S	03/08/21	< 18	< 21	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 5	< 2	< 2	< 11	< 4
RW-LS-101S	03/09/21	< 20	< 20	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 5	< 2	< 2	< 12	< 4
TW-LS-114S	03/09/21	< 17	< 17	< 2	< 2	< 4	< 2	< 4	< 2	< 3	< 5	< 2	< 2	< 12	< 3
TW-LS-116S	03/08/21	< 18	< 39	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 5	< 2	< 2	< 12	< 4
TW-LS-117S	03/08/21	< 13	< 22	< 1	< 1	< 3	< 1	< 3	< 2	< 3	< 4	< 2	< 1	< 9	< 3
TW-LS-118S	03/08/21	< 12	< 20	< 1	< 1	< 3	< 1	< 3	< 1	< 3	< 3	< 1	< 1	< 7	< 3
TW-LS-119S	03/08/21	< 20	< 36	< 2	< 2	< 5	< 3	< 4	< 2	< 4	< 5	< 2	< 2	< 12	< 4
TW-LS-120S	03/08/21	< 16	< 33	< 2	< 2	< 4	< 2	< 4	< 2	< 3	< 6	< 2	< 2	< 12	< 4
TW-LS-121S	03/08/21	< 16	< 17	< 2	< 2	< 4	< 2	< 3	< 2	< 4	< 4	< 2	< 2	< 10	< 3

B-2

TABLE B-I.3

**CONCENTRATIONS OF HARD-TO-DETECTS IN GROUNDWATER SAMPLES COLLECTED AS PART OF  
THE GROUNDWATER PROTECTION PROGRAM, LASALLE COUNTY STATION, 2021  
RESULTS IN UNITS OF PC/LITER  $\pm$  2 SIGMA**

SITE	COLLECTION		Am-241	Cm-242	Cm-243/244	Pu-238	Pu-239/240	U-234	U-235	U-238	Fe-55	Ni-63
	DATE											
HP-7	03/09/21										< 118	< 4.2
MW-LS-104S	03/08/21	< 0.13	< 0.02	< 0.09	< 0.16	< 0.09	0.93 $\pm$ 0.28	< 0.10	0.96 $\pm$ 0.28		< 73	< 4.7
MW-LS-105S	03/08/21										< 170	< 4.7
MW-LS-107S	03/08/21										< 116	< 4.0
OIL SEPARATOR	03/08/21	< 0.19	< 0.08	< 0.13	< 0.09	< 0.19	0.91 $\pm$ 0.27	< 0.08	0.71 $\pm$ 0.24		< 109	< 4.6
RW-LS-100S	03/08/21	< 0.05	< 0.03	< 0.03	< 0.15	< 0.17	< 0.14	< 0.07	< 0.05		< 178	< 4.2
RW-LS-101S	03/09/21	< 0.17	< 0.03	< 0.06	< 0.09	< 0.15	0.49 $\pm$ 0.27	< 0.16	< 0.20		< 141	< 5.0
TW-LS-116S	03/08/21										< 107	< 4.5
TW-LS-117S	03/08/21										< 199	< 4.3
TW-LS-118S	03/08/21	< 0.15	< 0.04	< 0.04	< 0.05	< 0.05	1.12 $\pm$ 0.33	< 0.07	0.98 $\pm$ 0.30		< 145	< 4.5
TW-LS-119S	03/08/21										< 183	< 4.1
TW-LS-120S	03/08/21										< 123	< 4.5



Intentionally left blank