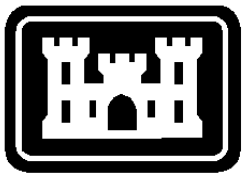

**US Army Corps of Engineers®**
**Buffalo District**

# TECHNICAL MEMORANDUM

## ESTIMATES OF AIR QUALITY IMPACTS OF RADON IN LANDFILL GAS SEAWAY SITE, AREAS A, B AND C

## TONAWANDA, NEW YORK

**JUNE 22, 2000**

# TECHNICAL MEMORANDUM

## ESTIMATES OF AIR QUALITY IMPACTS OF RADON IN LANDFILL GAS SEAWAY SITE, AREAS A, B AND C TONAWANDA, NEW YORK

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**Appendix**

## LIST OF ACRONYMS

| | |
|---|---|
| acfm | actual cubic feet per minute |
| BFGS | Browning-Ferris Gas Services, Inc. |
| BFI | Browning-Ferris Industries, Inc. |
| BNI | Bechtel National, Inc. |
| Ca | maximum actual annual impact |
| CAA | Clean Air Act |
| cm | centimeter |
| cy | cubic yard |
| DOE | Department of Energy |
| F | bouyancy flux factor |
| ft | foot/feet |
| FUSRAP | Formerly Utilized Sites Remedial Action Program |
| g | gram |
| GEP | good engineering practice |
| GZA | GZA GeoEnvironmental, Inc. |
| IC | institutional control(s) |
| K | methane generation constant |
| L | liter |
| LandGEM | Landfill Gas Emissions Model |
| Lo | methane generation potential |
| m | meters |
| $m^3$ | cubic meter |
| MED | Manhattan Engineer District |
| Mg | megagram |
| min | minute |
| MSW | municipal solid waste |
| n | porosity |
| NMOC | nonmethane organic compound |
| NSPS | new source performance standards |
| NYSDEC | New York State Department of Environmental Conservation |
| pCi | picocuries |
| Ra-226 | radium-226 |
| RI | Remedial Investigation |
| Rn-220 | radon-220 |
| Rn-222 | radon-222 |
| s | second |
| Th-230 | thorium-230 |
| U-238 | uranium-238 |
| UMTRCA | Uranium Mill Tailings Radiation Control Act |
| USACE | United States Army Corps of Engineers |
| USEPA | United States Environmental Protection Agency |
| USGS | United States Geological Survey |
| yr | year(s) |

# TECHNICAL MEMORANDUM

## ESTIMATES OF AIR QUALITY IMPACTS OF RADON IN LANDFILL GAS SEAWAY SITE, AREAS A, B AND C TONAWANDA, NEW YORK

### EXECUTIVE SUMMARY

## BACKGROUND AND PURPOSE

The United States Army Corps of Engineers (USACE) is evaluating alternatives for remediation of Manhattan Engineer District (MED) material containing low levels of residual radioactivity at the Seaway Site, Areas A, B and C under the Formerly Utilized Sites Remedial Action Program (FUSRAP). Two of the remedial alternatives being evaluated by USACE are referred to as Alternative 4, Partial Excavation with Off-Site Disposal and Alternative 6, Containment. Implementation of these remedial alternatives would involve capping Areas A, B and C (i.e., the FUSRAP area).

The FUSRAP area is located within a landfill and when landfills are capped, as envisioned under Alternatives 4 and 6, collection or venting of the landfill gas generated under the cap is typically required. MED contamination identified in the FUSRAP area includes radium-226 (Ra-226). When Ra-226 decays, radon-222 (Rn-222) gas is formed.

This memorandum evaluates the potential emissions of Rn-222 from the MED material in the FUSRAP area to landfill gas, if gas collection or gas venting is required in conjunction with capping of the FUSRAP area (i.e., if landfill gas collection or gas venting is required in conjunction with implementing of Alternatives 4 or 6). Resulting Rn-222 impacts on air quality are assessed and compared to the annual average 0.5 pCi/L standard of 40 CFR Part 192, Subpart A, which is considered by USACE, to be relevant and appropriate to decision-making on Seaway Site remediation.

## RADON IMPACT ASSESSMENT – LANDFILL GAS CONVEYED TO THE EXISTING FLARE

The air quality impact assessment estimated Rn-222 impact of landfill gas conveyed to the existing landfill gas flare used at the landfill. The assessment used the conservative sceening model, SCREEN3, and assessed potential impacts at and above the landfill property line nearest the flare.

Results of the assessment of Rn-222 air quality impacts of landfill gas conveyed to the existing landfill gas flare show that the 40 CFR Part 192, Subpart A standard of 0.5 pCi/L would not be exceeded under identified remediation scenarios.

## RADON IMPACT ASSESSMENT – PASSIVE VENTING

An assessment was conducted to evaluate potential air quality impacts of radon in landfill gas if passive venting of landfill gas is required in conjunction with capping the FUSRAP area. In the assessment, no gas collection system is assumed and any landfill gas generated in the FUSRAP area would be passively vented to the atmosphere through landfill gas vents.

The estimates of Rn-222 impacts of passive venting in the FUSRAP area also use the USEPA's conservative screening model and also a conservative means to address air quality impacts of multiple vents, assuming that the impacts from all vents in the FUSRAP area are additive.

The assessment shows that the 40 CFR 192, Subpart A standard of 0.5 pCi/L is not exceeded at the landfill property line if the design of the vents is such that vents are not any closer to the property line than about 80 meters (m).

## FINDINGS

The assessment concludes that the Rn-222 gas emitted from the MED-related Ra-226 would have no significant impact on landfill gas collection or venting.

Based on the assessment, the Rn-222 air quality impact standard of 40 CFR Part 192, Subpart A, is not exceeded in the year 2000 or in the year 2025 if landfill gas from the FUSRAP area is conveyed to the existing landfill gas flare. The assessment did not evaluate impacts of the flare beyond the year 2025 because estimated landfill gas flows beyond the year 2025 are very low and if landfill gas collection is required beyond the year 2025, it is likely that redesign of the blowers and flare would be required.

The assessment also showed that if the landfill gas from the FUSRAP area is passively vented, the Rn-222 air quality impact standard of 40 CFR Part 192, Subpart A is not exceeded in the year 2000 or in the next 100 years as long as the design of the vents include proper set back from the landfill property line. No gas venting would be required beyond 100 years and it is likely that gas venting would not be required much earlier.

# TECHNICAL MEMORANDUM

## ESTIMATES OF AIR QUALITY IMPACTS OF RADON IN LANDFILL GAS SEAWAY SITE, AREAS A, B AND C TONAWANDA, NEW YORK

## 1. BACKGROUND AND PURPOSE

The United States Army Corps of Engineers (USACE) is evaluating alternatives for remediation of the Seaway Site, Areas A, B and C, under the Formerly Utilized Sites Remedial Action Program (FUSRAP).

The Seaway Site, also known as the Niagara Landfill, was used as a landfill for more than 50 to 60 years and ceased taking landfill material in 1993. In 1974, approximately 6,000 cubic yards (cy) of Manhattan Engineer District (MED) material containing low levels of residual radioactivity were disposed of at the Seaway Site at locations referred to as Areas A, B and C. Subsequently, Areas B and C were covered with up to 40 feet (ft) of fill material and refuse and Area A was covered by fill material and refuse from 0 to 10 ft. Area A comprises about 9 acres and Areas B and C, together, comprise about 3 acres. Areas A, B and C, combined, are referred to as the FUSRAP area.

The results of soil sampling in Area A show thorium-230 (Th-230) to be the primary radioactive contaminant. In addition to Th-230, radium-226 (Ra-226) and uranium-238 (U-238) have been reported in soils in Areas A, B and C.

Two of the remedial alternatives being evaluated by USACE are referred to as Alternative 4, Partial Excavation with Off-Site Disposal and Alternative 6, Containment. Implementing these remedial alternatives would involve capping the FUSRAP area. Ensuring that institutional controls (ICs) are available to prevent future access to and disturbance of the MED-contaminated soils in these areas of the landfill is also part of Alternatives 4 and 6.

When Ra-226 decays, radon-222 (Rn-222) gas is formed. Limits for the emissions of Rn-222 from residual radioactive material to the atmosphere have been established by the USEPA under the Uranium Mill Tailings Radiation Control Act (UMTRCA) and UMTRCA's implementing regulations, 40 CFR Part 192. 40 CFR Part 192, Subpart A, requirements are not applicable to USACE's remediation of the Seaway Site because their applicability is limited to UMTRCA sites, but USACE considers the 40 CFR Part 192, Subpart A, requirements relevant and appropriate to Seaway Site remediation.

Compliance with 40 CFR Part 192, Subpart A, criteria requires reasonable assurance that Rn-222 emissions to the atmosphere from residual radioactive material:

- will not exceed an average release rate of 20 picocuries per square meter per second ($pCi/m^2/s$), and
- will not increase the annual average concentration of Rn-222 in air at or above any location outside the disposal site by more than one-half picocurie per liter (0.5 pCi/L).

Implementation of Alternatives 4 or 6 would include complying with these standards. This memorandum addresses compliance with the Rn-222 impact standard of 0.5 pCi/L. USACE has addressed compliance with the 20 $pCi/m^2/s$ standard in a separate technical memorandum (USACE 2000).

The purpose of this memorandum is to evaluate the potential increase in radon concentrations in ambient air from the FUSRAP portions of the Niagara Landfill. This evaluation is necessary, given that FUSRAP materials contain elevated concentrations of Ra-226, the parent (or source) of Rn-222 and landfill gas collection or venting may be required if the FUSRAP area is capped. To estimate potential radon releases, it is assumed that any gas venting/collection systems used to control the release of landfill gases would also provide an avenue for radon gas to reach the atmosphere. As the flow of landfill gases decreases over time, a landfill gas system will not be required and the gas collection wells or vents would be capped. At that time, the flow of any landfill gas or radon gas would be eliminated from the gas collection or venting system. Therefore, this evaluation assesses the quantity of radon that is emitted to and travels with the landfill gas until the collection/venting system is disabled. The assessment then estimates Rn-222 impacts on air quality while the collection system/venting system is active, for comparison to the 0.5 pCi/L standard of 40 CFR Part 192, Subpart A.

## 2. TECHNICAL APPROACH

The estimates described in this memorandum involved the following:

- Potential current and future landfill gas generation rates in the FUSRAP area and other areas of the northern portion of Niagara Landfill were estimated using a USEPA model. Estimates of future gas generation in the southern portion of the landfill, which is served by the existing gas collection system, were also required as part of the assessment.

- Potential current and future emission rates of radon to landfill gas that may be generated in the FUSRAP area and other areas of the landfill were estimated.

- Potential radon impacts on air quality were estimated, assuming that gas from the northern portion of the landfill is collected and conveyed to the existing gas collection system and landfill gas flare. Potential radon impacts were also estimated assuming landfill gas in Areas A, B and C is vented without gas collection. The results were compared to the 40 CFR Part 192, Subpart A, standard for Rn-222 impact (annual average concentration) of 0.5 pCi/L described in Section 1.

# 3. LANDFILL GAS GENERATION ESTIMATES

As a first step in assessing potential air quality impacts of radon in landfill gas, estimates of potential current and future gas generation rates in the landfill were necessary. The following sections describe these estimates.

The landfill gas generation estimates are not intended for the purpose of addressing compliance with any air quality regulations that may be applicable to the gas collection or venting system at the Niagara Landfill other than 40 CFR Part 192, Subpart A, requirements and use of the assessment is limited to the purposes stated herein.

## 3.1 Landfill Gas Generation

### 3.1.1 Overview

After refuse is placed in a municipal solid waste (MSW) landfill, decomposition of organic material produces gas, initially in the presence of oxygen (aerobic decomposition), followed by a long-term anaerobic decomposition phase when gas produced consists of approximately 50 percent methane and 50 percent carbon dioxide. Nonmethane organic compounds (NMOCs) comprise less than 1 percent of landfill gas (USEPA 1991). Radon has been measured in landfill gas from the closed portion of the Niagara Landfill (NYSDEC 1998).

Landfill gas production rates depend on a number of factors including the mass of the waste present, its composition (percent organic material), moisture, age, pH, and temperature.

Studies at landfills across the country by the USEPA indicate landfill gas production rates of 0.75 to 34 liters (L) per kilogram (kg) of landfilled wet refuse per year (USEPA 1991). USEPA models used in estimating landfill gas production assume gas generation is at its peak upon initial waste placement, with gas production assumed to decrease exponentially (i.e., first order decay) as the organic fraction of the refuse decreases. Using these assumptions, low levels of landfill gas production are estimated to persist for many years.

### 3.1.2 USEPA's LandGEM Model

The Landfill Gas Emissions Model or LandGEM (USEPA 1998a) was developed by the USEPA for use in estimating emissions rates for methane, carbon dioxide, NMOCs and individual pollutants in gas from landfills. It may be used by landfill owners and operators to determine if a landfill is subject to air pollution control requirements of the federal New Source Performance Standards (NSPS) for new municipal solid waste (MSW) landfills, 40 CFR Part 60 Subpart WWW. It may also be used to determine if existing landfills are subject to the emission guidelines for existing MSW landfills, 40 CFR Part 60 Subpart Cc (USEPA 1998b). Radon emissions are not regulated under 40 CFR Part 60 Subpart WWW or Subpart Cc.

As described in detail in the following sections, the LandGEM model was used in this assessment to estimate gas generation from the currently uncapped area of the Niagara Landfill, including the FUSRAP area and the capped areas in the northern portion of the landfill where gas collection is currently not installed.

## 3.2 Estimates of Landfill Gas Production Using LandGEM

Use of LandGEM requires the following to estimate landfill gas production:

- the design capacity of the landfill, megagrams (Mg);
- the amount of refuse in place or the annual acceptance rate, Mg or Mg/yr;
- the methane generation rate constant (k), $yr^{-1}$;
- the methane generation potential (Lo), cubic meters per megagram solid waste, $m^3/Mg$; and
- the years the landfill has been in operation or closed, yr.

The following sections describe how the model was used to estimate landfill gas generation rates in the northern portion of the Niagara Landfill.

### 3.2.1 Methane Generation Potential and Methane Generation Rate Default Values

Two default values for methane generation potential, Lo, and the methane generation constant, k, are available for use in the LandGEM model. These are the AP-42 default values and the Clean Air Act (CAA) default values. The AP-42 default values, Lo = 100 cubic meters per megagram ($m^3/Mg$) and k = 0.04/yr, are those that are found in the USEPA publication "Compilation of Air Pollutant Emission Factors, AP-42" (USEPA 1997). The AP-42 default values produce gas generation estimates for typical MSW landfills (USEPA 1998b).

The CAA defaults, Lo = 170 $m^3/Mg$ and k = 0.05/yr, provide estimates that reflect expected maximum emissions and generally would be used only for determining the applicability of the CAA regulations to a landfill (USEPA 1998b). As described below, both the AP-42 defaults and the CAA defaults were used in this memorandum to estimate gas generation rates in the northern portion of the Niagara Landfill.

The model estimates that about 50 percent of the landfill gas generated is methane and 50 percent is carbon dioxide (USEPA 1998b).

### 3.2.2 Existing Conditions and Assumptions

The Seaway property comprises about 100 acres, of which about 89 acres have been used for landfilling. As shown in Figure 3-1, the southern portion of the property has been landfilled, capped, and equipped with a landfill gas collection system. The northern portion of the

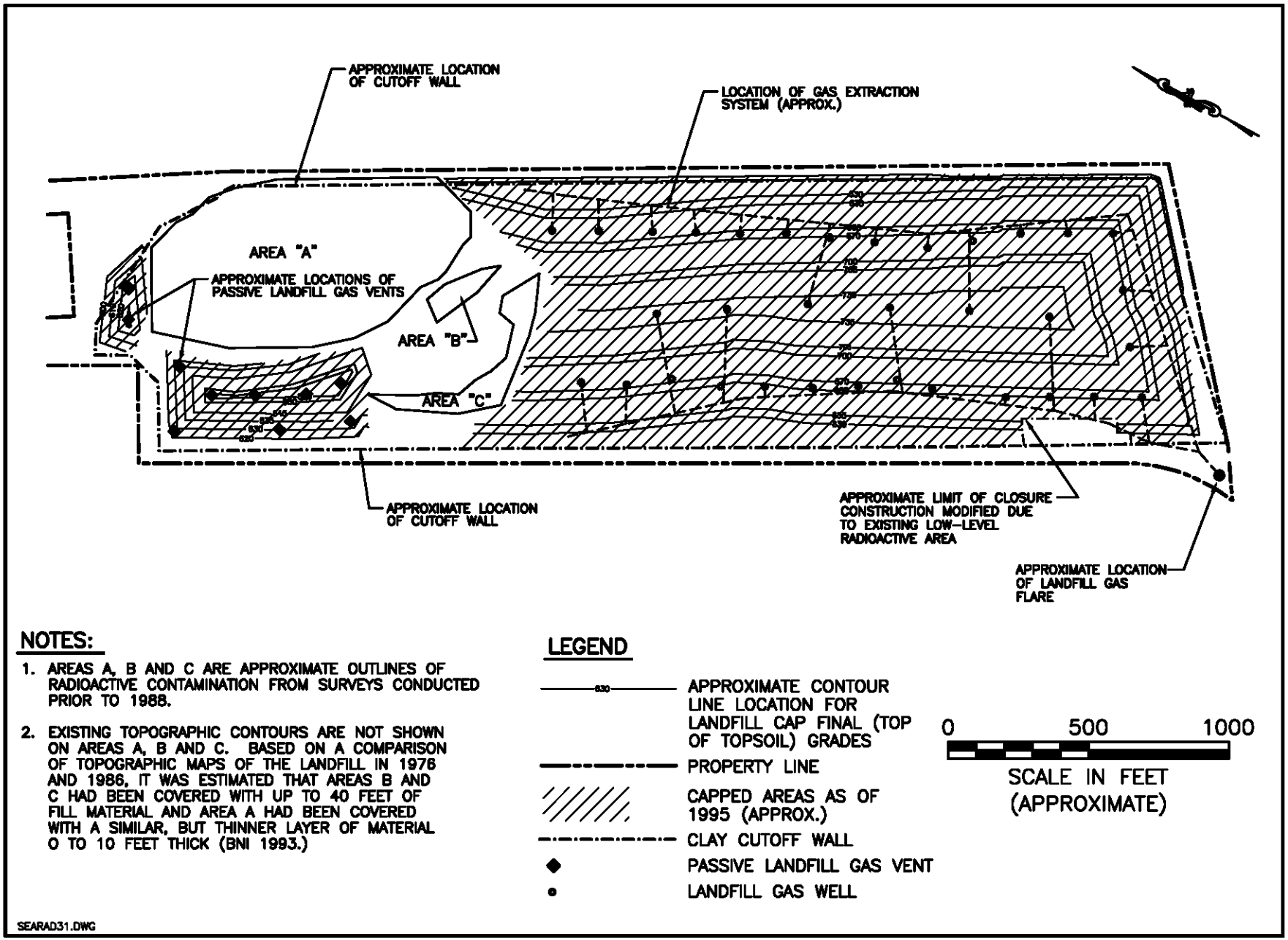


**FIGURE 3-1**
**NIAGARA LANDFILL CLOSURE CONDITIONS**

property has been partially capped in two areas that are not equipped with gas collection, but are passively vented. The remainder of the northern portion of the landfilled area is uncapped and includes the FUSRAP area and non-FUSRAP areas. The locations shown in Figure 3-1 are approximate.

Based on available information, it is estimated that the southern portion of the landfill, which is capped and equipped with gas collection, comprises about 60 acres including the berms that were constructed at the toe of the landfill slopes. In the northern portion of the landfill, it is estimated that: the currently capped and vented non-FUSRAP areas (gas collection system not installed) comprise about 8 acres; that the uncapped non-FUSRAP area is about 9 acres; and the uncapped FUSRAP area (Areas A, B and C) comprise about 12 acres. The actual extent of these site features may vary from the estimates. The estimates are considered to be appropriate, however, given the assumptions inherent in the estimates including potential gas generation rates, historical landfilling rates, etc. In summary, the existing landfill capping conditions assumed are:

- Southern Portion of the Landfill
  - 60 acres, currently capped and equipped with gas collection

- Northern Portion of the Landfill
  - 29 acres in total
  - Non-FUSRAP area of 8 acres, capped and vented but not equipped with gas collection
  - Non-FUSRAP area of 9 acres, uncapped
  - FUSRAP area of 12 acres (Areas A, B and C), uncapped

Based on information in the Remedial Investigation (RI) report (BNI 1993), it was assumed that landfilling in the FUSRAP area was initiated in 1974 and completed not later than 1978. Based on the topography in the FUSRAP area, a landfill depth of 40 feet was assumed. For the estimates, it was also assumed that landfilling to a depth of 40 feet has occurred in the non-FUSRAP areas, both capped and uncapped, of the northern portion of the landfill. The landfill material was assumed to be municipal solid waste (MSW), which will generally provide gas generation estimates higher than estimates that assume co-disposal of other inorganic wastes with MSW.

### 3.2.3 Gas Generation in the Year 2000 – Northern Portion of the Landfill

To facilitate the estimate, a 1-acre landfill area was assumed, with subsequent scaling up to reflect the actual sizes of the landfilled areas to be assessed. The refuse estimator utility available in the model was used to estimate the refuse in place for a 1-acre landfill, 40 feet deep. The 1978 refuse in place waste was estimated to be approximately 32,000 Mg per acre (35,300 tons per acre) in the FUSRAP area and in the other areas of the northern portion of the landfill.

#### 3.2.3.1 Estimates Using the AP-42 Default Values for Lo and k

Based on the model results using the AP-42 default values, total gas generation in the year 2000 is estimated at 6.7 cubic feet per minute ($ft^3$/min) per acre in the northern portion of the landfill. Total gas generation from the FUSRAP area combined (12 acres) is estimated at 81 $ft^3$/min in the year 2000.

As described above, about 8 acres in the northern portion of the landfill are capped and vented, but not equipped with a gas collection system and another 9 acres in the non-FUSRAP portion of the landfill are uncapped. Total gas generation from these 17 acres is estimated at about 114 $ft^3$/min in the year 2000. Table 1A shows the landfill gas generation estimates using the AP-42 default values in LandGEM.

#### 3.2.3.2 Estimates Using the CAA Default Values for Lo and k

Table 1B summarizes the results of the estimates using the CAA default values in LandGEM for Lo and k. As shown in Table 1B, using the CAA defaults, gas generation in the year 2000 in the northern portion of the landfill is estimated at approximately 11.3 $ft^3$/min per acre and total gas generation from the FUSRAP area is estimated at about 136 $ft^3$/min.

### 3.2.4 Gas Generation in the Future – Northern Portion of the Landfill

NYSDEC solid waste regulations for landfills, 6 NYCRR Part 360, require post closure monitoring for a period of at least 30 years. Capping of the southern portion and part of the northern portion of the Niagara Landfill was completed in 1995. In the current assessment it was assumed that post closure monitoring will continue under NYSDEC regulations for a period of at least 30 years beyond 1995, which would be the year 2025. Accordingly, the year 2025 was considered to be appropriate for estimating future landfill gas generation and potential radon impacts. The year 2100, 100 years in the future, was also selected for assessment.

Using the LandGEM model and the AP-42 defaults, landfill gas generation in the northern portion of the landfill in the year 2025 is estimated to be 2.5 $ft^3$/min per acre and 0.1 $ft^3$/min per acre in the year 2100.

Using the CAA defaults, landfill gas generation in the northern portion of the landfill is estimated at about 3.2 $ft^3$/min per acre in the year 2025 and 0.1 $ft^3$/min per acre in the year 2100.[1]

[1] The gas flow estimates for the year 2100 are extremely low. For perspective, in assessing potential radiological exposures at the Seaway Site, an inhalation rate of 8400 $m^3$/yr or 0.56 $ft^3$/min is assumed for an adult (USACE 2000). Thus, the inhalation rate for an adult is about 5 times greater than the estimated gas generation rate per acre in 2100. Measurement of gas flow at 0.1 $ft^3$/min in the field is considered impracticable.

**TABLE 1A**
**LANDFILL GAS GENERATION ESTIMATES USING USEPA's LandGEM MODEL AND AP-42 DEFAULT VALUES**
**NIARAGA LANDFILL - SEAWAY SITE**

| YEAR | REFUSE IN PLACE PER ACRE (NORTHERN PORTION OF THE LANDFILL) Mg | TOTAL GAS GENERATION PER ACRE (NORTHERN PORTION OF THE LANDFILL) ft3/min | FUSRAP AREA ACREAGE (AREAS A, B and C, COMBINED) Acre | TOTAL GAS GENERATION FUSRAP AREA ft3/min | NON FUSRAP AREA ACREAGE (NORTHERN PORTION OF THE LANDFILL) Acre | TOTAL GAS GENERATION NON FUSRAP AREA (NORTHERN PORTION OF THE LANDFILL) ft3/min | TOTAL GAS GENERATION (SOUTHERN PORTION OF THE LANDFILL - SEE TEXT) ft3/min | TOTAL GAS GENERATION NIAGARA LANDFILL ft3/min |
|---|---|---|---|---|---|---|---|---|
| 1975 | 8.00E+03 | 4.3 | 12 | 52 | 17 | 73 | | |
| 1976 | 1.60E+04 | 8.4 | 12 | 101 | 17 | 143 | | |
| 1977 | 2.40E+04 | 12.4 | 12 | 149 | 17 | 211 | | |
| 1978 | 3.20E+04 | 16.2 | 12 | 195 | 17 | 276 | | |
| 1979 | 3.20E+04 | 15.6 | 12 | 187 | 17 | 265 | | |
| 1980 | 3.20E+04 | 15.0 | 12 | 180 | 17 | 254 | | |
| 1990 | 3.20E+04 | 10.0 | 12 | 120 | 17 | 171 | | |
| 1995 | 3.20E+04 | 8.2 | 12 | 99 | 17 | 140 | | |
| 1996 | 3.20E+04 | 7.9 | 12 | 95 | 17 | 134 | 1,200 | |
| 1997 | 3.20E+04 | 7.6 | 12 | 91 | 17 | 129 | 860 | |
| 1998 | 3.20E+04 | 7.3 | 12 | 87 | 17 | 124 | 733 | |
| 1999 | 3.20E+04 | 7.0 | 12 | 84 | 17 | 119 | 704 | 907 |
| 2000 | 3.20E+04 | 6.7 | 12 | 81 | 17 | 114 | 677 | 872 |
| 2005 | 3.20E+04 | 5.5 | 12 | 66 | 17 | 94 | 554 | 714 |
| 2010 | 3.20E+04 | 4.5 | 12 | 54 | 17 | 77 | 454 | 584 |
| 2025 | 3.20E+04 | 2.5 | 12 | 30 | 17 | 42 | 249 | 321 |
| 2050 | 3.20E+04 | 0.9 | 12 | 11 | 17 | 15 | 92 | 118 |
| 2100 | 3.20E+04 | 0.1 | 12 | 1 | 17 | 2 | 12 | 16 |

**TABLE 1B**
**LANDFILL GAS GENERATION ESTIMATES USING USEPA's LandGEM MODEL AND CLEAN AIR ACT DEFAULT VALUES**
**NIAGARA LANDFILL - SEAWAY SITE**

| YEAR | REFUSE IN PLACE PER ACRE (NORTHERN PORTION OF THE LANDFILL) Mg | TOTAL GAS GENERATION PER ACRE (NORTHERN PORTION OF THE LANDFILL) ft3/min | FUSRAP AREA ACREAGE (AREAS A, B and C, COMBINED) Acre | TOTAL GAS GENERATION FUSRAP AREA ft3/min | NON FUSRAP AREA ACREAGE (NORTHERN PORTION OF THE LANDFILL) Acre | TOTAL GAS GENERATION NON FUSRAP AREA (NORTHERN PORTION OF THE LANDFILL) ft3/min | TOTAL GAS GENERATION (SOUTHERN PORTION OF THE LANDFILL - SEE TEXT) ft3/min | TOTAL GAS GENERATION NIAGARA LANDFILL ft3/min |
|---|---|---|---|---|---|---|---|---|
| 1975 | 8.00E+03 | 9.1 | 12 | 109.6 | 17 | 155.3 | | |
| 1976 | 1.60E+04 | 17.8 | 12 | 214.0 | 17 | 303.1 | | |
| 1977 | 2.40E+04 | 26.1 | 12 | 313.1 | 17 | 443.6 | | |
| 1978 | 3.20E+04 | 34.0 | 12 | 407.4 | 17 | 577.2 | | |
| 1979 | 3.20E+04 | 32.3 | 12 | 387.6 | 17 | 549.1 | | |
| 1980 | 3.20E+04 | 30.7 | 12 | 368.7 | 17 | 522.4 | | |
| 1990 | 3.20E+04 | 18.6 | 12 | 223.6 | 17 | 316.8 | | |
| 1995 | 3.20E+04 | 14.5 | 12 | 174.1 | 17 | 246.7 | | |
| 1996 | 3.20E+04 | 13.8 | 12 | 165.7 | 17 | 234.8 | 1,200 | |
| 1997 | 3.20E+04 | 13.1 | 12 | 157.6 | 17 | 223.3 | 860 | |
| 1998 | 3.20E+04 | 12.5 | 12 | 149.9 | 17 | 212.4 | 733 | |
| 1999 | 3.20E+04 | 11.9 | 12 | 142.6 | 17 | 202.0 | 697 | 1,042 |
| 2000 | 3.20E+04 | 11.3 | 12 | 135.6 | 17 | 192.2 | 663 | 991 |
| 2005 | 3.20E+04 | 8.8 | 12 | 105.6 | 17 | 149.7 | 517 | 772 |
| 2010 | 3.20E+04 | 6.9 | 12 | 82.3 | 17 | 116.6 | 402 | 601 |
| 2025 | 3.20E+04 | 3.2 | 12 | 38.9 | 17 | 55.0 | 190.0 | 284 |
| 2050 | 3.20E+04 | 0.9 | 12 | 11.1 | 17 | 15.8 | 54 | 81 |
| 2100 | 3.20E+04 | 0.1 | 12 | 0.9 | 17 | 1.3 | 4 | 7 |

Total gas flow from the FUSRAP area is estimated at approximately 30 $ft^3$/min in the year 2025 and 1 $ft^3$/min in the year 2100 using the AP-42 defaults. Using the CAA defaults, total gas flow from the FUSRAP area is estimated to be about 39 $ft^3$/min in the year 2025 and 1 $ft^3$/min in the year 2100. Tables 1A and 1B summarize these estimates.

### 3.2.5 Gas Generation Beyond the Year 2025

As described above, gas generation rates from the FUSRAP area and from the landfill as a whole are estimated to be reduced to levels about one third of year 2000 levels by 2025 and are almost negligible by the year 2100. It is highly unlikely that gas venting would be required in the FUSRAP area in the years beyond the year 2100 and, in fact, gas venting may actually not be required much earlier than the year 2100. Accordingly, Rn-222 generated in the FUSRAP area would not be afforded a pathway for emission to the atmosphere through a vent or a gas collection system equipped with a flare in the years after 2100 and estimates of Rn-222 impacts were not conducted for years beyond 2100. The capping system's effectiveness in limiting emissions of Rn-222 to the 40 CFR Part 192, Subpart A standard of 20 $pCi/m^2/s$ is addressed in USACE 2000 (USACE 2000).

### 3.2.6 Existing and Future Gas Generation – Southern Portion of the Niagara Landfill

In the assessment of potential radon impacts of landfill gas conveyed to the landfill gas flare, estimates of potential gas generation in the southern, capped portion of the Niagara Landfill were required. These estimates are described below.

In October 1996, NYSDEC conducted sampling of landfill gas from the closed (southern) portion of the landfill and reported a total gas flow of 1,200 $ft^3$/min (NYSDEC 1996). During subsequent sampling by NYSDEC in January, April and July 1997, the gas flow rate was reported to be reduced, with the July 1997 gas flow rate about 860 $ft^3$/min (NYSDEC 1998). Based on data available from Browning-Ferris Industries (BFI) (BFI 1999), 1998 gas flow from the southern portion of the landfill averaged about 733 $ft^3$/min, as shown in Table 1C. In the current estimate, a gas flow rate of 733 $ft^3$/min from the southern portion of the landfill was assumed for 1998 conditions.

Gas generation in the southern portion of the landfill was assumed to decrease in proportion to the decrease in gas flow from the northern portion as determined in the LandGEM estimates. Using this relationship and the AP-42 defaults, it was approximated that the gas generation from the southern portion of the landfill would be 677 $ft^3$/min in the year 2000, 249 $ft^3$/min in the year 2025 and about 12 $ft^3$/min in the year 2100. Table 1A shows the landfill gas generation estimates using the AP-42 default values in LandGEM.

**TABLE 1C**
**1998 AND 1999 ACTUAL LANDFILL GAS GENERATION**
**SOUTHERN PORTION ON THE LANDFILL**
**NIAGARA LANDFILL - SEAWAY SITE**

**1998 LANDFILL GAS GENERATION**

| Month | Reported Gas Flow ft3/mon. | Reported Operating Time hr/mon. | Operating Time min./mon. | Average Gas Flow ft3/min |
|---|---|---|---|---|
| Jan. | 36,738,720 | 794 | 47,640 | 771 |
| Feb. | 32,901,120 | 672 | 40,320 | 816 |
| Mar. | 32,054,646 | 673.7 | 40,422 | 793 |
| Apr. | Not operating | | | |
| May | 17,637,024 | 343.4 | 20,604 | 856 |
| June | 28,193,508 | 585.9 | 35,154 | 802 |
| July | 29,476,980 | 642.2 | 38,532 | 765 |
| Aug. | 25,741,056 | 609.4 | 36,564 | 704 |
| Sept. | 22,317,426 | 600.9 | 36,054 | 619 |
| Oct. | 28,221,354 | 720.3 | 43,218 | 653 |
| Nov. | 23,965,530 | 593.6 | 35,616 | 673 |
| Dec. | 22,326,030 | 576.9 | 34,614 | 645 |
| TOTALS | 299,573,394 | | 408,738 | 733 |

**1999 LANDFILL GAS GENERATION**

| Month | Reported Gas Flow ft3/mon. | Reported Operating Time hr/mon. | Operating Time min./mon. | Average Gas Flow ft3/min |
|---|---|---|---|---|
| Jan. | 29,454,600 | 701.3 | 42,078 | 700 |
| Feb. | 31,626,360 | 744.5 | 44,670 | 708 |
| Mar. | 16,236,396 | 380.6 | 22,836 | 711 |
| Apr. | 29,933,904 | 700.7 | 42,042 | 712 |
| May | 30,283,992 | 712.9 | 42,774 | 708 |
| June | 28,967,400 | 689.7 | 41,382 | 700 |
| July | 7,067,808 | 151.7 | 9,102 | 777 |
| Aug. | 1,096,410 | 22.7 | 1,362 | 805 |
| Sept. | 0 | 0 | 0 | 0 |
| Oct. | 35,231,136 | 895.1 | 53,706 | 656 |
| Nov. | 32,529,600 | 720 | 43,200 | 753 |
| Dec. | 13,877,280 | 335.2 | 20,112 | 690 |
| TOTALS | 256,304,886 | | 363,264 | 706 |

Using the CAA defaults and assuming that the generation of gas flow from the southern portion of the landfill decreases in proportion to decreases in gas flow from the northern portion, it was estimated that gas generation from the southern portion of the landfill would be 633 $ft^3$/min in the year 2000, 190 $ft^3$/min in the year 2025, and 4 $ft^3$/min in the year 2100. (See Table 1B.)

Actual 1999 gas flow rates from the southern portion of the Niagara Landfill are also shown in Table 1C (BFI 2000). These estimates indicate a 1999 average of about 706 $ft^3$/min, which is in line with the estimates shown in Tables 1A and 1B. The 1999 data was available after the projections described above were made, but since the actuals are well within the accuracy anticipated given the assumptions that are necessary, the estimates in Tables 1A and 1B, which use the 1998 actual gas flows as the basis for projections, are considered to be appropriate.

## 3.3 Landfill Gas Collection

### 3.3.1 Existing Gas Collection System

Landfill gas in the closed (southern) portion of the Niagara Landfill is collected in 34 vertical gas extraction wells and conveyed through headers and pipelines equipped with blowers to an enclosed landfill gas flare with a stack 40 ft high. The gas wells include 6-inch diameter perforated pipe surrounded by crushed stone or gravel. A 3-foot diameter gas collection area (crushed stone plus perforated pipe) is provided at each well location, extending into the landfilled material to depths of up to 90 ft, depending on location. For the 12 acres of the FUSRAP area and the 17 Non-FUSRAP related acres in the northern portion of the landfill, a similar gas collection system is assumed, with well depths assumed to be 40 ft.

### 3.3.2 Gas Extraction Well Spacing

In designing extraction wells or passive vents, the spacing between wells is of primary importance. The area of influence of an extraction well (i.e., the area of the landfill through which gas will move toward a given extraction well) depends on the negative pressure applied in the extraction well, the conductivity of the landfilled material, and other factors. If gas wells are installed without a gas collection system (i.e., passive vents), the area of influence depends on the pressure of the gas created as it is generated, the conductivity of the landfill material, the prevailing atmospheric pressure at the vent, and other factors. Spacing of the gas extraction wells in the closed portion of the Niagara Landfill varies. In the closed (southern) section of the Niagara Landfill thirty-four (34) wells are used to collect gas from about 60 acres or an average of about 1.75 acres per well (or an average radius of influence of 155 ft). USEPA reports a typical landfill gas well spacing of 260 ft, with a radius of influence of 150 ft (USEPA 1991). For the current estimates, it was assumed that 1 well would be installed per acre with a corresponding radius of influence of about 118 ft. Closer spacing of the extraction wells or passive vents is addressed in Appendix A.

### 3.3.3 Gas Flow Summary

The depth of extraction wells are assumed to be 40 ft. Based on these assumptions, collection of landfill gas in a one-acre area of the northern portion of the Niagara Landfill, including the FUSRAP area, may be viewed as a cylinder 236 ft in diameter and 40 ft deep with a 3-ft diameter and 40 ft deep gas collection pipe at its center, collecting landfill gas flow radially inward from the landfill area within the area of influence.

Based on estimated year 2000 gas generation rates using the AP-42 defaults, each vertical foot of an extraction well in the northern portion of the landfill would collect gas at a rate of 0.17 $ft^3$/min and each well would extract 6.7 $ft^3$/min. In the year 2025, each well would extract 2.5 $ft^3$/min and in the year 2100, 0.1 $ft^3$/min. (See Table 1A).

Based on estimated year 2000 gas generation rates using the CAA defaults, each vertical foot of an extraction well in the northern portion of the landfill would collect gas at a rate of 0.28 $ft^3$/min and each well would extract gas at 11.3 $ft^3$/min. In the year 2025, each well would extract 3.2 $ft^3$/min and in the year 2100, 0.1 $ft^3$/min. (See Table 1B).

In the estimates, it was assumed that the gas collected would be conveyed to the existing gas collection system serving the closed (southern) portion of the Niagara Landfill. As shown in Table 1A, total gas flow to the gas system is estimated to be 872 $ft^3$/min in the year 2000, 321 $ft^3$/min in the year 2025 and 16 $ft^3$/min in the year 2100, based on the assumptions described above and the LandGEM AP-42 default values. Based on the assumptions described above and the LandGEM CAA default values, total gas flow to the gas collection system is estimated at 991 $ft^3$/min in the year 2000, 284 $ft^3$/min in the year 2025, and 7 $ft^3$/min in the year 2100. (See Table 1B.)

## 4. RADON FLUX TO LANDFILL GAS

### 4.1 Use of USACE Technical Memorandum to Estimate Radon Flux to Landfill Gas

USACE has provided estimates of Rn-222 and radon-220 (Rn-220) emissions (radon emanation) in the FUSRAP area (USACE 2000). Rn-220 was not considered in the estimates of air quality impact because of its short half life (less than 1 minute). See Appendix A. Of the potential exposure scenarios evaluated, the highest levels of Rn-222 emissions for Area A are identified under the no action, no cover scenario. The estimates for the no action, no cover scenario for Areas A, B and C are summarized below:

| FUSRAP Area | Rn-222 (pCi/$m^2$/s) | | |
|---|---|---|---|
| | Time = 0 | Time = 30 years | Time = 100 years |
| Area A | 6.5 | 8.0 | 11.3 |

As shown above, the Rn-222 flux from Area A is estimated at 6.5 pCi/$m^2$/s for current conditions (time = 0), 7.6 pCi/$m^2$/s in 30 years and 10.7 pCi/$m^2$/s in 100 years. In the estimates of potential radon emissions to landfill gas from Area A, these Rn-222 estimates were used.

USACE (USACE 2000), estimates that the highest levels of radon emissions from Areas B and C would occur in Area C under a scenario where the top 4 feet of soils are removed. The estimates for the scenario where the top 4 feet of soils are removed are summarized below:

| FUSRAP Area | Rn-222 (pCi/$m^2$/s) | | |
|---|---|---|---|
| | Time = 0 | Time = 30 years | Time = 100 years |
| Area B | 0.2 | 0.2 | 0.2 |
| Area C | 1.6 | 2.3 | 3.9 |

As shown above, the Rn-222 flux from Areas B and C is highest in Area C, where the current flux rate is estimated at 1.6 pCi/$m^2$/s, 2.3 pCi/$m^2$/s in 30 years and 3.9 pCi/$m^2$/s in 100 years. These flux rates were used in the estimates of radon emissions to landfill gas from Areas B and C.

## 4.2 Assumptions Concerning Configuration of MED Material Containing Low Levels of Radioactivity in the FUSRAP Area

To estimate the Rn-222 emissions to landfill gas, it was assumed that MED material containing low levels of residual radioactivity is present in a horizontal layer, 3 ft thick in the entire FUSRAP area. Each gas extraction well would handle a 1-acre area and as landfill gas is generated and moves across this horizontal surface, the radon flux is assumed to be entrained[2] in the landfill gas and moves with the landfill gas to the gas extraction well. It is further assumed that gas flow occurs both above and below the horizontal layer of MED material containing low levels of residual radioactivity.

## 4.3 Rn-222 Decay

As Rn-222 is produced from the decay of Ra-226, the Rn-222 also decays. The Rn-222 has a half life of approximately 3.8 days [i.e. after 3.8 days only 50% of the Rn-222 remains and after 38 days (10 half lives) the Rn-222 is reduced by more than 3 orders of magnitude.] Appendix A of this memorandum describes Rn-222 decay in detail and provides estimates of Rn-222 decay that would occur in landfill gas generated within the FUSRAP area prior to reaching a landfill gas extraction well or vent.

As detailed in Appendix A, the time of travel of landfill gas within Areas A, B and C prior to reaching a gas well is prolonged, resulting in only a small fraction of the Rn-222 emitted to the landfill gas remaining by the time the landfill gas reaches the well. The estimates detailed in

[2] Entrained as used in this memorandum means that Rn-222 gas is released to and is then tranported with the landfill gas.

Appendix A: consider gas well spacing at one per acre, two per acre and four per acre; address several landfill material porosity assumptions; assume that gas generation rates are those that occur using the CAA defaults, which produce estimated gas flows higher than the estimates using the AP-42 defaults; and provide estimates of Rn-222 decay for the years 2000, 2025 and 2100. As further detailed in Appendix A, the most conservative results of these estimates were used in accounting for Rn-222 decay in landfill gas prior to reaching a gas well in the FUSRAP area. Based on the analysis detailed in Appendix A, Rn-222 flux rates in landfill gas prior to a gas well are reduced as follows:

- Year 2000 – 65% reduction
- Year 2025 – 85% reduction
- Year 2100 – 99% reduction

## 4.4 Rn-222 Emissions to Landfill Gas from the FUSRAP Area in the Year 2000

The estimates of Rn-222 emissions to landfill gas from the FUSRAP area in the year 2000 are shown in Tables 2A and 2B.

These emissions are from the horizontal surfaces of the MED-contaminated layer described above, and it was also assumed that Rn-222 is emitted directly to landfill gas in the extraction wells as they pass through the layer of MED-contaminated material. In addition, the Rn-222 background concentrations in landfill gas measured by NYSDEC in 1996 was considered to be present.

In NYSDEC's report of the October 1996 landfill gas sampling (NYSDEC 1996), NYSDEC measured Rn-222 in the range of up to about 200 pCi/L in the gas from the Niagara Landfill. In this Technical Memorandum, it is assumed that an Rn-222 background level of 200 pCi/L would exist in any landfill gas collected at the Niagara Landfill. This background level is added to the estimates of potential Rn-222 flux in landfill gas from the FUSRAP area.

The presence of radon in the landfill gas collection system, which does not service the FUSRAP area of the Niagara Landfill, may be attributed to naturally occurring radon emissions and other sources. These sources include soil used as landfill cover material and materials that have been disposed in the landfill including gypsum board, coal ash and other wastes known to be sources of radon emissions. For a perspective on the presence of 200 pCi/L of Rn-222 in the landfill gas from the Niagara Landfill versus typical levels of radon gas in soil, USACE reviewed information from the United States Geological Survey (USGS). The USGS has reported that most soils in the United States contain between 200 and 2,000 pCi of radon per liter of soil air (the air that occupies the pores in soil) (USGS 2000). The USGS also reports that radon levels in soil air could range from 20 to more than 100,000 pCi/L (USGS 2000).

As shown in Tables 2A and 2B, total Rn-222 flux in landfill gas from the FUSRAP area in the year 2000 is estimated at $1.1224 \times 10^7$ pCi/min using the AP-42 defaults and $1.1537 \times 10^7$ pCi/min using the CAA defaults.

An example of how these Rn-222 Flux rates were determined is provided in Appendix B.

## 4.5 Estimated Total Rn-222 Flux in Landfill Gas in the Year 2000

For the current estimate, it was assumed that if the FUSRAP area is capped (12 acres) and landfill gas collection is required, then the remainder of the northern uncapped portion of the landfill (9 acres) would be capped and landfill gas collection would be required in the entire 29-acre northern portion of the landfill, including the 8 acres that are currently capped and vented.

### 4.5.1 Rn-222 Flux in Landfill Gas in the Year 2000 – Gas Generation Estimated Using AP-42 Default Values

Table 2A summarizes the results of the assessment of total Rn-222 in landfill gas in the year 2000 using the AP-42 default values in LandGEM to estimate landfill gas generation rates. As shown in Table 1A, total gas flow to the flare in the year 2000 is estimated at about 871 $ft^3$/min. The Rn-222 flux in the gas conveyed to the flare is estimated at $1.5703 \times 10^7$ pCi/min.

### 4.5.2 Rn-222 Flux in Landfill Gas Conveyed to the Flare in the Year 2000 – Gas Generation Estimated Using CAA Default Values

Table 2B summarizes the results of the assessment of total Rn-222 flux in landfill gas in the year 2000 using the CAA default values in LandGEM to estimate landfill gas generation values. As shown in Table 1B, total gas flow to the flare in 2000 is estimated at about 991 $ft^3$/min. The Rn-222 flux in the gas conveyed to the flare is estimated at $1.6379 \times 10^7$ pCi/min.

## 4.6 Estimated Total Rn-222 Flux in Landfill Gas Conveyed to the Flare in the Year 2025

Table 2C summarizes the results of the assessment of total Rn-222 flux in landfill gas in the year 2025, using the AP-42 default values in LandGEM to estimate landfill gas generation rates. As shown in Table 1A, total gas flow to the flare in the year 2025 is estimated at about 321 $ft^3$/min. The Rn-222 flux in the gas conveyed to the flare is estimated at $7.5774 \times 10^6$ pCi/min.

Table 2D summarizes the results of the assessment of total Rn-222 flux in landfill gas in the year 2025 using the CAA default values in LandGEM to estimate landfill gas generation rates.

**TABLE 2A**
**LANDFILL GAS RADON-222 ESTIMATES**
**LANDFILL GAS GENERATION BASED ON LandGEM MODEL AP-42 DEFAULT VALUES**
**2000**
**SEAWAY SITE**

| **RADON-222 FLUX RATES** | | | | |
|---|---|---|---|---|
| **FUSRAP AREA** | **AREA A** | | **AREA B and C** | |
| Year | 2000 | | 2000 | |
| Radon Flux | 6.5 | pCi/m2/s | 1.6 | pCi/m2/s |
| Radon Flux | 390 | pCi/m2/min | 96 | pCi/m2/min |
| Conversion | 10.76 | ft2/m2 | 10.76 | ft2/m2 |
| Radon Flux | 36 | pCi/ft2/min | 9 | pCi/ft2/min |
| Conversion | 43,560 | Ft2/acre | 43,560 | Ft2/acre |
| Radon Flux | 1.578E+06 | pCi/acre/min | 3.885E+05 | pCi/acre/min |
| **RADON FLUX FROM HORIZONTAL SURFACES** | | | | |
| Landfilled Area | 1 | Acres | 1 | Acres |
| Radon Flux to Gas from Horizontal Surface | 1.578E+06 | pCi/min | 3.885E+05 | pCi/min |
| Number of Surfaces | 2 | | 2 | |
| Total Radon Flux to Gas from Horizontal Surfaces - 1 Acre Area - Decay Not Considered | 3.157E+06 | pCi/min | 7.770E+05 | pCi/min |
| Multiplier to Account for Radon-222 Decay Prior to Gas Well | 0.35 | | 0.35 | |
| Total Rn-222 Flux Reaching Gas Well from Horizontal Surfaces, Decay Considered | 1.105E+06 | pCi/min | 2.720E+05 | pCi/min |
| **RADON FLUX DIRECTLY TO EXTRACTION WELL** | | | | |
| Well Diamater (including stone collection area) | 3 | ft | 3 | ft |
| Well Perimeter | 9.4 | ft | 9.4 | ft |
| Well Depth in Contact with MED Material | 3 | ft | 3 | ft |
| MED Contact Area per Well | 28 | ft2 | 28 | ft2 |
| Wells per Acre | 1 | | 1 | |
| Total MED Contact Area | 28 | ft2 | 28 | ft2 |
| Radon Flux Directly to Extraction Well 1 Acre Area | 1.024E+03 | pCi/min | 2.522E+02 | pCi/min |
| Total Landfil Gas Flow 1 Acre | 6.7 | ft3/min | 6.7 | ft3/min |
| Background Radon Concentration in Landfill Gas | 200 | pCi/L | 200 | pCi/L |
| Background Radon Concentration in Landfill Gas | 5,662 | pCi/ft3 | 5,662 | pCi/ft3 |
| Background Radon Flux in Landfill Gas | 3.794E+04 | pCi/min | 3.794E+04 | pCi/min |
| **Radon Flux to Landfill Gas fron FUSRAP Area - 1 Acre Area** | 1.1438E+06 | pCi/min | 3.1014E+05 | pCi/min |
| **TOTAL RADON FLUX** | **Totals** | | **Totals** | |
| FUSRAP Area Size | 9 | Acres | 3 | Acres |
| Total Radon Flux from FUSRAP Areas | 1.0294E+07 | pCi/min | 9.3043E+05 | pCi/min |
| **Total Radon Flux from the FUSRAP Area (Areas A, B and C, Combined, including Background)** | 1.1224E+07 | pCi/min | | |
| Landfill Gas Flow from Non-FUSRAP Area - Northern Portion of Landfill | 114.0 | ft3/min | | |
| Background Radon Concentration in Landfill Gas | 5,662 | pCi/ft3 | | |
| **Background Radon Flux in Gas Flow from Non-FUSRAP Area - Northern Portion of Landfill** | 6.4547E+05 | pCi/min | | |
| Landfill Gas Flow from Southern Portion of the Landfill | 677.0 | ft3/min | | |
| Background Radon Concentration in Landfill Gas | 5,662 | pCi/ft3 | | |
| **Background Radon Flux Landfill in Gas Flow from Southern Portion of Landfill** | 3.8332E+06 | pCi/min | | |
| **Total Radon Flux in Landfill Gas Conveyed to the Flare** | 1.5703E+07 | pCi/min | | |

**TABLE 2B**
**LANDFILL GAS RADON-222 ESTIMATES**
**LANDFILL GAS GENERATION BASED ON LandGEM CAA DEFAULT VALUES**
**2000**
**SEAWAY SITE**

| **RADON-222 FLUX RATES** | | | | |
|---|---|---|---|---|
| **FUSRAP AREA** | **AREA A** | | **AREA B and C** | |
| Year | 2000 | | 2000 | |
| Radon Flux | 6.5 | pCi/m2/s | 1.6 | pCi/m2/s |
| Radon Flux | 390 | pCi/m2/min | 96 | pCi/m2/min |
| Conversion | 10.76 | ft2/m2 | 10.76 | ft2/m2 |
| Radon Flux | 36 | pCi/ft2/min | 9 | pCi/ft2/min |
| Conversion | 43,560 | Ft2/acre | 43,560 | Ft2/acre |
| Radon Flux | 1.578E+06 | pCi/acre/min | 3.885E+05 | pCi/acre/min |
| **RADON FLUX FROM HORIZONTAL SURFACES** | | | | |
| Landfilled Area | 1 | Acres | 1 | Acres |
| Radon Flux to Gas from Horizontal Surface | 1.578E+06 | pCi/min | 3.885E+05 | pCi/min |
| Number of Surfaces | 2 | | 2 | |
| Total Radon Flux to Gas from Horizontal Surfaces - 1 Acre Area - Decay Not Considered | 3.157E+06 | pCi/min | 7.770E+05 | pCi/min |
| Multiplier to Account for Radon-222 Decay Prior to Gas Well | 0.35 | | 0.35 | |
| Total Rn-222 Flux Reaching Gas Well from Horizontal Surfaces, Decay Considered | 1.105E+06 | pCi/min | 2.720E+05 | pCi/min |
| **RADON FLUX DIRECTLY TO EXTRACTION WELL** | | | | |
| Well Diamater (including stone collection area) | 3 | ft | 3 | ft |
| Well Perimeter | 9.4 | ft | 9.4 | ft |
| Well Depth in Contact with MED Material | 3 | ft | 3 | ft |
| MED Contact Area per Well | 28 | ft2 | 28 | ft2 |
| Wells per Acre | 1 | | 1 | |
| Total MED Contact Area | 28 | ft2 | 28 | ft2 |
| Radon Flux Directly to Extraction Well 1 Acre Area | 1.024E+03 | pCi/min | 2.522E+02 | pCi/min |
| Total Landfil Gas Flow 1 Acre | 11.3 | ft3/min | 11.3 | ft3/min |
| Background Radon Concentration in Landfill Gas | 200 | pCi/L | 200 | pCi/L |
| Background Radon Concentration in Landfill Gas | 5,662 | pCi/ft3 | 5,662 | pCi/ft3 |
| Background Radon Flux in Landfill Gas | 6.398E+04 | pCi/min | 6.398E+04 | pCi/min |
| **Radon Flux to Landfill Gas fron FUSRAP Area - 1 Acre Area** | 1.1698E+06 | pCi/min | 3.3619E+05 | pCi/min |
| **TOTAL RADON FLUX** | **Totals** | | **Totals** | |
| FUSRAP Area Size | 9 | Acres | 3 | Acres |
| Total Radon Flux from FUSRAP Areas | 1.0528E+07 | pCi/min | 1.0086E+06 | pCi/min |
| **Total Radon Flux from the FUSRAP Area (Areas A, B and C, Combined, including Background)** | 1.1537E+07 | pCi/min | | |
| Landfill Gas Flow from Non-FUSRAP Area - Northern Portion of Landfill | 192.2 | ft3/min | | |
| Background Radon Concentration in Landfill Gas | 5,662 | pCi/ft3 | | |
| **Background Radon Flux in Gas Flow from Non-FUSRAP Area - Northern Portion of Landfill** | 1.0882E+06 | pCi/min | | |
| Landfill Gas Flow from Southern Portion of the Landfill | 663.0 | ft3/min | | |
| Background Radon Concentration in Landfill Gas | 5,662 | pCi/ft3 | | |
| **Background Radon Flux Landfill in Gas Flow from Southern Portion of Landfill** | 3.7539E+06 | pCi/min | | |
| **Total Radon Flux in Landfill Gas Conveyed to the Flare** | 1.6379E+07 | pCi/min | | |

**TABLE 2C**
**LANDFILL GAS RADON-222 ESTIMATES**
**LANDFILL GAS GENERATION BASED ON LandGEM MODEL AP-42 DEFAULT VALUES**
**2025**
**SEAWAY SITE**

| **RADON-222 FLUX RATES** | | | | |
|---|---|---|---|---|
| **FUSRAP AREA** | **AREA A** | | **AREA B and C** | |
| Year | 2025 | | 2025 | |
| Radon Flux | 8 | pCi/m2/s | 2.3 | pCi/m2/s |
| Radon Flux | 480 | pCi/m2/min | 138 | pCi/m2/min |
| Conversion | 10.76 | ft2/m2 | 10.76 | ft2/m2 |
| Radon Flux | 45 | pCi/ft2/min | 13 | pCi/ft2/min |
| Conversion | 43,560 | Ft2/acre | 43,560 | Ft2/acre |
| Radon Flux | 1.943E+06 | pCi/acre/min | 5.585E+05 | pCi/acre/min |
| **RADON FLUX FROM HORIZONTAL SURFACES** | | | | |
| Landfilled Area | 1 | Acres | 1 | Acres |
| Radon Flux to Gas from Horizontal Surface | 1.943E+06 | pCi/min | 5.585E+05 | pCi/min |
| Number of Surfaces | 2 | | 2 | |
| Total Radon Flux to Gas from Horizontal Surfaces - 1 Acre Area - Decay Not Considered | 3.885E+06 | pCi/min | 1.117E+06 | pCi/min |
| Multiplier to Account for Radon-222 Decay Prior to Gas Well | 0.15 | | 0.15 | |
| Total Rn-222 Flux Reaching Gas Well from Horizontal Surfaces, Decay Considered | 5.828E+05 | pCi/min | 1.675E+05 | pCi/min |
| **RADON FLUX DIRECTLY TO EXTRACTION WELL** | | | | |
| Well Diamater (including stone collection area) | 3 | ft | 3 | ft |
| Well Perimeter | 9.4 | ft | 9.4 | ft |
| Well Depth in Contact with MED Material | 3 | ft | 3 | ft |
| MED Contact Area per Well | 28 | ft2 | 28 | ft2 |
| Wells per Acre | 1 | | 1 | |
| Total MED Contact Area | 28 | ft2 | 28 | ft2 |
| Radon Flux Directly to Extraction Well 1 Acre Area | 1.261E+03 | pCi/min | 3.625E+02 | pCi/min |
| Total Landfil Gas Flow 1 Acre | 2.5 | ft3/min | 2.5 | ft3/min |
| Background Radon Concentration in Landfill Gas | 200 | pCi/L | 200 | pCi/L |
| Background Radon Concentration in Landfill Gas | 5,662 | pCi/ft3 | 5,662 | pCi/ft3 |
| Background Radon Flux in Landfill Gas | 1.416E+04 | pCi/min | 1.416E+04 | pCi/min |
| **Radon Flux to Landfill Gas fron FUSRAP Area - 1 Acre Area** | 5.9818E+05 | pCi/min | 1.8206E+05 | pCi/min |
| **TOTAL RADON FLUX** | **Totals** | | **Totals** | |
| FUSRAP Area Size | 9 | Acres | 3 | Acres |
| Total Radon Flux from FUSRAP Areas | 5.3836E+06 | pCi/min | 5.4618E+05 | pCi/min |
| **Total Radon Flux from the FUSRAP Area (Areas A, B and C, Combined, including Background)** | 5.9298E+06 | pCi/min | | |
| Landfill Gas Flow from Non-FUSRAP Area - Northern Portion of Landfill | 42.0 | ft3/min | | |
| Background Radon Concentration in Landfill Gas | 5,662 | pCi/ft3 | | |
| **Background Radon Flux in Gas Flow from Non-FUSRAP Area - Northern Portion of Landfill** | 2.3780E+05 | pCi/min | | |
| Landfill Gas Flow from Southern Portion of the Landfill | 249.0 | ft3/min | | |
| Background Radon Concentration in Landfill Gas | 5,662 | pCi/ft3 | | |
| **Background Radon Flux Landfill in Gas Flow from Southern Portion of Landfill** | 1.4098E+06 | pCi/min | | |
| **Total Radon Flux in Landfill Gas Conveyed to the Flare** | 7.5774E+06 | pCi/min | | |

**TABLE 2D**
**LANDFILL GAS RADON-222 ESTIMATES**
**LANDFILL GAS GENERATION BASED ON LandGEM MODEL CAA DEFAULT VALUES**
**2025**
**SEAWAY SITE**

| **RADON-222 FLUX RATES** | | | | |
|---|---|---|---|---|
| **FUSRAP AREA** | **AREA A** | | **AREA B and C** | |
| Year | 2025 | | 2025 | |
| Radon Flux | 8 | pCi/m2/s | 2.3 | pCi/m2/s |
| Radon Flux | 480 | pCi/m2/min | 138 | pCi/m2/min |
| Conversion | 10.76 | ft2/m2 | 10.76 | ft2/m2 |
| Radon Flux | 45 | pCi/ft2/min | 13 | pCi/ft2/min |
| Conversion | 43,560 | Ft2/acre | 43,560 | Ft2/acre |
| Radon Flux | 1.943E+06 | pCi/acre/min | 5.585E+05 | pCi/acre/min |
| **RADON FLUX FROM HORIZONTAL SURFACES** | | | | |
| Landfilled Area | 1 | Acres | 1 | Acres |
| Radon Flux to Gas from Horizontal Surface | 1.943E+06 | pCi/min | 5.585E+05 | pCi/min |
| Number of Surfaces | 2 | | 2 | |
| Total Radon Flux to Gas from Horizontal Surfaces - 1 Acre Area - Decay Not Considered | 3.885E+06 | pCi/min | 1.117E+06 | pCi/min |
| Multiplier to Account for Radon-222 Decay Prior to Gas Well | 0.15 | | 0.15 | |
| Total Rn-222 Flux Reaching Gas Well from Horizontal Surfaces, Decay Considered | 5.828E+05 | pCi/min | 1.675E+05 | pCi/min |
| **RADON FLUX DIRECTLY TO EXTRACTION WELL** | | | | |
| Well Diamater (including stone collection area) | 3 | ft | 3 | ft |
| Well Perimeter | 9.4 | ft | 9.4 | ft |
| Well Depth in Contact with MED Material | 3 | ft | 3 | ft |
| MED Contact Area per Well | 28 | ft2 | 28 | ft2 |
| Wells per Acre | 1 | | 1 | |
| Total MED Contact Area | 28 | ft2 | 28 | ft2 |
| Radon Flux Directly to Extraction Well 1 Acre Area | 1.261E+03 | pCi/min | 3.625E+02 | pCi/min |
| Total Landfil Gas Flow 1 Acre | 3.2 | ft3/min | 3.2 | ft3/min |
| Background Radon Concentration in Landfill Gas | 200 | pCi/L | 200 | pCi/L |
| Background Radon Concentration in Landfill Gas | 5,662 | pCi/ft3 | 5,662 | pCi/ft3 |
| Background Radon Flux in Landfill Gas | 1.812E+04 | pCi/min | 1.812E+04 | pCi/min |
| **Radon Flux to Landfill Gas fron FUSRAP Area - 1 Acre Area** | 6.0214E+05 | pCi/min | 1.8602E+05 | pCi/min |
| **TOTAL RADON FLUX** | **Totals** | | **Totals** | |
| FUSRAP Area Size | 9 | Acres | 3 | Acres |
| Total Radon Flux from FUSRAP Areas | 5.4193E+06 | pCi/min | 5.5807E+05 | pCi/min |
| **Total Radon Flux from the FUSRAP Area (Areas A, B and C, Combined, including Background)** | 5.9773E+06 | pCi/min | | |
| Landfill Gas Flow from Non-FUSRAP Area - Northern Portion of Landfill | 55.0 | ft3/min | | |
| Background Radon Concentration in Landfill Gas | 5,662 | pCi/ft3 | | |
| **Background Radon Flux in Gas Flow from Non-FUSRAP Area - Northern Portion of Landfill** | 3.1141E+05 | pCi/min | | |
| Landfill Gas Flow from Southern Portion of the Landfill | 190.0 | ft3/min | | |
| Background Radon Concentration in Landfill Gas | 5,662 | pCi/ft3 | | |
| **Background Radon Flux Landfill in Gas Flow from Southern Portion of Landfill** | 1.0758E+06 | pCi/min | | |
| **Total Radon Flux in Landfill Gas Conveyed to the Flare** | 7.3645E+06 | pCi/min | | |

As shown in Table 1B, total gas flow to the flare in the year 2025 is estimated at about 284 $ft^3$/min. The Rn-222 flux in the gas conveyed to the flare is estimated to be 7.3645 X $10^6$ pci/min.

### 4.7 Estimated Rn-222 Flux in Landfill Gas Conveyed to the Flare Beyond the Year 2025

In the gas generation estimates summarized in Tables 1A and 1B, total gas generation from the Niagara Landfill in the year 2025 is reduced to about one third of year 2000 rates and by 2100 these rates are almost negligible. It is likely that a redesign of the gas collection system and flare would be required by 2025 to effectively handle those flows. Tables 2E and 2F summarize the year 2100 estimates. As described in Section 5, the potential Rn-222 impact in gas handled by the flare is not estimated for the year 2100.

## 5. RADON IMPACT ASSESSMENT – LANDFILL GAS CONVEYED TO THE FLARE

If a means to release landfill gas is required as part of the design for capping the FUSRAP area, two basic options are available: landfill gas collection; and landfill gas passive venting. If landfill gas collection is required, one option would be to direct the collected gas to the existing gas collection system and then to the existing landfill gas flare located at the southwest corner of the landfill. Another option would be to construct a new landfill gas flare designed specifically to handle the gas from the FUSRAP area.

In this section, the Rn-222 flux rates and concentrations estimated in Section 4 are used to evaluate potential ambient air quality impacts of radon in landfill gas collected from the Niagara Landfill and conveyed to the existing landfill gas flare. It was assumed that the northern portion of the landfill is entirely capped in the year 2000, including the FUSRAP area, and that the entire landfill is equipped with a gas collection system that conveys the landfill gas to the existing landfill gas flare.

The air quality impact assessment used the conservative SCREEN3 model developed by the USEPA. The following sections describe how SCREEN3 was used in the assessment and assessment findings.

### 5.1 Overview of the SCREEN3 Model

The USEPA SCREEN3 model facilitates estimates of air quality impacts from continuous emission sources based on source-related and meteorological factors. A condensed explanation of the model is provided in *SCREEN3 Model User's Guide* (USEPA 1995a) and additional information on the technical basis for screening of sources and modeling is provided in *Screening Procedures for Estimating the Air Quality Impact of Stationary Sources* (USEPA 1995b). For a point source of emission, such as a stack, the key emission source parameters

**TABLE 2E**
**LANDFILL GAS RADON-222 ESTIMATES**
**LANDFILL GAS GENERATION BASED ON LandGEM MODEL AP-42 DEFAULT VALUES**
**2100**
**SEAWAY SITE**

| **RADON-222 FLUX RATES** | | | | |
|---|---|---|---|---|
| **FUSRAP AREA** | **AREA A** | | **AREA B and C** | |
| Year | 2100 | | 2100 | |
| Radon Flux | 11.3 | pCi/m2/s | 3.9 | pCi/m2/s |
| Radon Flux | 678 | pCi/m2/min | 234 | pCi/m2/min |
| Conversion | 10.76 | ft2/m2 | 10.76 | ft2/m2 |
| Radon Flux | 63 | pCi/ft2/min | 22 | pCi/ft2/min |
| Conversion | 43,560 | Ft2/acre | 43,560 | Ft2/acre |
| Radon Flux | 2.744E+06 | pCi/acre/min | 9.470E+05 | pCi/acre/min |
| **RADON FLUX FROM HORIZONTAL SURFACES** | | | | |
| Landfilled Area | 1 | Acres | 1 | Acres |
| Radon Flux to Gas from Horizontal Surface | 2.744E+06 | pCi/min | 9.470E+05 | pCi/min |
| Number of Surfaces | 2 | | 2 | |
| Total Radon Flux to Gas from Horizontal Surfaces - 1 Acre Area - Decay Not Considered | 5.488E+06 | pCi/min | 1.894E+06 | pCi/min |
| Multiplier to Account for Radon-222 Decay Prior to Gas Well | 0.01 | | 0.01 | |
| Total Rn-222 Flux Reaching Gas Well from Horizontal Surfaces, Decay Considered | 5.488E+04 | pCi/min | 1.894E+04 | pCi/min |
| **RADON FLUX DIRECTLY TO EXTRACTION WELL** | | | | |
| Well Diamater (including stone collection area) | 3 | ft | 3 | ft |
| Well Perimeter | 9.4 | ft | 9.4 | ft |
| Well Depth in Contact with MED Material | 3 | ft | 3 | ft |
| MED Contact Area per Well | 28 | ft2 | 28 | ft2 |
| Wells per Acre | 1 | | 1 | |
| Total MED Contact Area | 28 | ft2 | 28 | ft2 |
| Radon Flux Directly to Extraction Well 1 Acre Area | 1.781E+03 | pCi/min | 6.147E+02 | pCi/min |
| Total Landfil Gas Flow 1 Acre | 0.1 | ft3/min | 0.1 | ft3/min |
| Background Radon Concentration in Landfill Gas | 200 | pCi/L | 200 | pCi/L |
| Background Radon Concentration in Landfill Gas | 5,662 | pCi/ft3 | 5,662 | pCi/ft3 |
| Background Radon Flux in Landfill Gas | 5.662E+02 | pCi/min | 5.662E+02 | pCi/min |
| **Radon Flux to Landfill Gas fron FUSRAP Area - 1 Acre Area** | 5.7224E+04 | pCi/min | 2.0121E+04 | pCi/min |
| **TOTAL RADON FLUX** | **Totals** | | **Totals** | |
| FUSRAP Area Size | 9 | Acres | 3 | Acres |
| Total Radon Flux from FUSRAP Areas | 5.1502E+05 | pCi/min | 6.0362E+04 | pCi/min |
| **Total Radon Flux from the FUSRAP Area (Areas A, B and C, Combined, including Background)** | 5.7538E+05 | pCi/min | | |
| Landfill Gas Flow from Non-FUSRAP Area - Northern Portion of Landfill | 2.0 | ft3/min | | |
| Background Radon Concentration in Landfill Gas | 5,662 | pCi/ft3 | | |
| **Background Radon Flux in Gas Flow from Non-FUSRAP Area - Northern Portion of Landfill** | 1.1324E+04 | pCi/min | | |
| Landfill Gas Flow from Southern Portion of the Landfill | 12.0 | ft3/min | | |
| Background Radon Concentration in Landfill Gas | 5,662 | pCi/ft3 | | |
| **Background Radon Flux Landfill in Gas Flow from Southern Portion of Landfill** | 6.7944E+04 | pCi/min | | |
| **Total Radon Flux in Landfill Gas Conveyed to the Flare** | 6.5465E+05 | pCi/min | | |

**TABLE 2F**
**LANDFILL GAS RADON-222 ESTIMATES**
**LANDFILL GAS GENERATION BASED ON LandGEM MODEL CAA DEFAULT VALUES**
**2100**
**SEAWAY SITE**

| **RADON-222 FLUX RATES** | | | | |
|---|---|---|---|---|
| **FUSRAP AREA** | **AREA A** | | **AREA B and C** | |
| Year | 2100 | | 2100 | |
| Radon Flux | 11.3 | pCi/m2/s | 3.9 | pCi/m2/s |
| Radon Flux | 678 | pCi/m2/min | 234 | pCi/m2/min |
| Conversion | 10.76 | ft2/m2 | 10.76 | ft2/m2 |
| Radon Flux | 63 | pCi/ft2/min | 22 | pCi/ft2/min |
| Conversion | 43,560 | Ft2/acre | 43,560 | Ft2/acre |
| Radon Flux | 2.744E+06 | pCi/acre/min | 9.470E+05 | pCi/acre/min |
| **RADON FLUX FROM HORIZONTAL SURFACES** | | | | |
| Landfilled Area | 1 | Acres | 1 | Acres |
| Radon Flux to Gas from Horizontal Surface | 2.744E+06 | pCi/min | 9.470E+05 | pCi/min |
| Number of Surfaces | 2 | | 2 | |
| Total Radon Flux to Gas from Horizontal Surfaces - 1 Acre Area - Decay Not Considered | 5.488E+06 | pCi/min | 1.894E+06 | pCi/min |
| Multiplier to Account for Radon-222 Decay Prior to Gas Well | 0.01 | | 0.01 | |
| Total Rn-222 Flux Reaching Gas Well from Horizontal Surfaces, Decay Considered | 5.488E+04 | pCi/min | 1.894E+04 | pCi/min |
| **RADON FLUX DIRECTLY TO EXTRACTION WELL** | | | | |
| Well Diamater (including stone collection area) | 3 | ft | 3 | ft |
| Well Perimeter | 9.4 | ft | 9.4 | ft |
| Well Depth in Contact with MED Material | 3 | ft | 3 | ft |
| MED Contact Area per Well | 28 | ft2 | 28 | ft2 |
| Wells per Acre | 1 | | 1 | |
| Total MED Contact Area | 28 | ft2 | 28 | ft2 |
| Radon Flux Directly to Extraction Well 1 Acre Area | 1.781E+03 | pCi/min | 6.147E+02 | pCi/min |
| Total Landfil Gas Flow 1 Acre | 0.1 | ft3/min | 0.1 | ft3/min |
| Background Radon Concentration in Landfill Gas | 200 | pCi/L | 200 | pCi/L |
| Background Radon Concentration in Landfill Gas | 5,662 | pCi/ft3 | 5,662 | pCi/ft3 |
| Background Radon Flux in Landfill Gas | 5.662E+02 | pCi/min | 5.662E+02 | pCi/min |
| **Radon Flux to Landfill Gas fron FUSRAP Area - 1 Acre Area** | 5.7224E+04 | pCi/min | 2.0121E+04 | pCi/min |
| **TOTAL RADON FLUX** | **Totals** | | **Totals** | |
| FUSRAP Area Size | 9 | Acres | 3 | Acres |
| Total Radon Flux from FUSRAP Areas | 5.1502E+05 | pCi/min | 6.0362E+04 | pCi/min |
| **Total Radon Flux from the FUSRAP Area (Areas A, B and C, Combined, including Background)** | 5.7538E+05 | pCi/min | | |
| Landfill Gas Flow from Non-FUSRAP Area - Northern Portion of Landfill | 1.3 | ft3/min | | |
| Background Radon Concentration in Landfill Gas | 5,662 | pCi/ft3 | | |
| **Background Radon Flux in Gas Flow from Non-FUSRAP Area - Northern Portion of Landfill** | 7.3606E+03 | pCi/min | | |
| Landfill Gas Flow from Southern Portion of the Landfill | 4.0 | ft3/min | | |
| Background Radon Concentration in Landfill Gas | 5,662 | pCi/ft3 | | |
| **Background Radon Flux Landfill in Gas Flow from Southern Portion of Landfill** | 2.2648E+04 | pCi/min | | |
| **Total Radon Flux in Landfill Gas Conveyed to the Flare** | 6.0539E+05 | pCi/min | | |

(factors) used in SCREEN3 are: the pollutant emission rate (normally in grams per sec (g/s); the height of the stack above ground level; the diameter of the stack; the gas exit velocity from the stack (which can be calculated based on the volumetric flow rate of gas in the stack); the temperature of the gas in the stack; and the ambient air temperature.

The key atmospheric parameters (factors) used in the model include wind speed and atmospheric stability classes, which range from Class A (unstable) to Class F (very stable).

In the modeling, the gas containing a given pollutant rises out of the stack to a height determined by the exit velocity, the gas temperature as it leaves the stack, and the ambient temperature, forming a plume that is transported and dispersed in response to meteorologic conditions. As the plume moves, the pollutant concentration in the plume decreases. The degree to which the pollutant concentration decreases varies with the atmospheric conditions and the pollutant concentration potentially impacting a receptor varies with the distance and height of the receptor in relationship to the stack.

Given the input of source-related factors into the SCREEN3 model, the model calculates impacts by examining a range of meteorological conditions, including all stability classes and range of wind speeds, to find maximum impacts (USEPA 1995a). The maximum impact and the distance to the maximum impact at ground level and at any other specified level above ground level may be found.

## 5.2 Application of SCREEN3 at Seaway

The SCREEN3 model used in the estimates at the Seaway Site has a Windows 95 user interface which directly incorporates the USEPA version of the SCREEN model dated 96043 (Bee-Line Software, Asheville, NC). In all of the modeling conducted, the regulatory default for mixing height and anemometer height were used and full meteorology and simple terrain options were selected.

The 40 CFR Part 192, Subpart A standard for Rn-222 impact limits the Rn-222 impact to 0.5 pCi/L in air at or above any location outside the disposal site. In assessing compliance with this standard at the Seaway Site, the property line was used as the nearest location where compliance is required. In assessing potential impacts from the flare, the distance to the property line from the flare was assumed to be 10 meters (m). [From Drawing No. 19, Landfill Gas Extraction System, Niagara Sanitary Landfill (BFGS 1995), the distance from the side of the flare to the property line fence is 35 feet (ft) ± or 10.6 m ± .]

To assess the potential Rn-222 impacts in landfill gas released from the flare, ground level impacts at 10 m from the flare were determined using SCREEN3. Then, SCREEN3 was used to assess impacts above the property line in 10 ft increments up to heights where impacts were determined to be minimal. Five-foot intervals were assessed at points above and below the 10-ft intervals where impacts were determined to be the highest. In the SCREEN3 model, heights above ground level that may be selected for assessment are referred to as flagpole

receptor heights. Thus, in the modeling, impacts at varying flagpole heights were assessed at a distance of 10 m.

## 5.3 SCREEN3 Modeling – Landfill Gas Flare

### 5.3.1 Stack Conditions

#### 5.3.1.1 Year 2000 and Year 2025 Estimates

The existing landfill gas flare at the Niagara Landfill has a stack diameter of 9 feet. In the analysis of the flare conducted by NYSDEC in 1996 (NYSDEC 1996) a landfill gas flow rate prior to the flare of 1,200 $ft^3$/min was reported and a gas flow rate of 52,000 $ft^3$/min was reported for the stack, reflecting the rise in gas temperature created by the flare [1,400 degrees Fahrenheit (°F)] and the addition of combustion air. This reflects an increase in gas flow by a multiple of 43.33.

In the current assessment using the LandGEM AP-42 default values, the total year 2000 landfill gas flow rate prior to the flare was estimated to be 872 $ft^3$/min. Using the CAA default values, the total year 2000 landfill gas flow rate prior to the flare was estimated to be 991 $ft^3$/min. It was assumed that this gas flow rate increases by a multiple of 43.33 as it passes through the flare and enters the stack due to the rise in gas temperature created by the flare and the addition of combustion air. Based on this assumption, the gas flow in the stack from the flare is estimated to be 37,786 $ft^3$/min in the year 2000 using the AP-42 defaults, and 42,943 $ft^3$/min using the CAA defaults. The stack gas temperature is assumed to be 1,400°F.

In the year 2025, total gas flow prior to the flare is estimated to be 321 $ft^3$/min using the AP-42 defaults (see Table 1A) and 284 $ft^3$/min using the CAA defaults (see Table 1B). As in the case of the year 2000 estimates, it was assumed that the gas flow in the flare stack is increased by a multiple of 43.33 as it increases in temperature and is combined with combustion air. Based on this assumption, the gas flow in the stack from the flare is estimated to be 13,910 $ft^3$/min in the year 2025 using AP-42 defaults and 12,307 $ft^3$/min in the year 2025, using CAA defaults. As in the case of the year 2000 estimates, the stack gas temperature is assumed to be 1,400°F.

### 5.3.2 Rn-222 in Stack Gas

The estimates of Rn-222 present in landfill gas conveyed to the flare are described in Section 4. The estimates, summarized from Tables 2A, 2B, 2C and 2D, are:

- Year 2000, AP-42 defaults, 1,5703 x $10^7$ pCi/min
- Year 2000, CAA defaults, 1.6379 x $10^7$ pCi/min
- Year 2025, AP-42 defaults, 7.5774 x $10^6$ pCi/min
- Year 2025, CAA defaults, 7.3645 x $10^6$ pCi/min

### 5.3.3 Modeling Details

#### 5.3.3.1 Example

To facilitate the modeling, the SCREEN3 modeling runs were conducted assuming a unit emission rate of 1 gram per second (g/s). In the SCREEN3 model, an emission rate input in g/s results in an air quality impact given in micrograms per cubic meter ($\mu g/m^3$). To illustrate how the subsequent calculations were conducted, the following example is provided.

**Inputs to SCREEN3 for Year 2000 – AP-42 Defaults – Example**

Source Inputs:

- Emission Rate: 1 g/s
- Stack Height: 40 ft (12.19 m)
- Stack Diameter: 9 ft (2.743 m)
- Stack Gas Flow: 37,786 $ft^3$/min (17.832 $m^3$/s)
- Stack Gas Exit Velocity: 9.899 ft/s (3.0173 m/s)
- Exit Temperature 1,400°F (1033.15 degrees Kelvin, °K)
- Air Ambient Temperature: 293°K
- Receptor Height: 215 ft (65.53 m) (The height of the receptor used was determined after multiple SCREEN3 runs at varying flagpole receptor heights at a distance of 10 m. At a height of 215 ft, the maximum impact was shown at 10 m.)

**Results of SCREEN3 Modeling for Year 2000 – AP-42 Defaults – Example**

Given the input parameters listed above, and a 1 g/s emission rate, the SCREEN3 model results indicate an impact of 12,781 $\mu g/m^3$ at point 215 ft (65.53 m) above ground level at a distance of 10 m from the flare. This impact of 12,781 $\mu g/m^3$ is equivalent to an impact of $1.12781 \times 10^{-2}$ $g/m^3$. Thus, 1 g/s emission would result in an impact of $1.2781 \times 10^{-2}$ $g/m^3$ or $1.2781 \times 10^{-5}$ g/L.

**Calculation to Determine Impact in pCi/L - Example**

As summarized in Section 5.3.2, above, the Rn-222 in gas from the flare in the year 2000 (AP-42 defaults) is emitted at a rate of $1.5703 \times 10^7$ pCi/min or $2.6172 \times 10^5$ pCi/s. From above, if an emission of 1 g/s results in an impact of $1.2781 \times 10^{-5}$ g/L, then by proportion, an emission of Rn-222 at $2.6172 \times 10^5$ pCi/s would result in an Rn-222 impact of 3.3450 pCi/L. The SCREEN3 model predicts maximum 1-hour impacts. To convert maximum 1-hour impacts to annual impacts, the SCREEN3 model results are multiplied by a factor of 0.1 (USEPA 1995b). In this case, the annual impact for the Rn-222 is calculated to be (3.345)(.1) = 0.335 pCi/L.

Table 3 summarizes the results of the SCREEN3 modeling of Rn-222 impacts from the flare. As shown in Table 3, in the Year 2000, the maximum property line impacts (10 m from the

**TABLE 3**
**ESTIMATES OF Rn-222 IMPACTS AT PROPERTY LINE- LANDFILL GAS FLARE**
**SEAWAY SITE**

| Screen3 Model Run | Scenario | Default | Year | Receptor Height ft | Screen3 Emission g/s | Screen3 Max. 1-Hr Conc. ug/m3 | Screen3 Max. 1-Hr Conc. g/m3 | Screen3 Max. 1-Hr Conc. g/L | Rn-222 Flux pCi/min | Rn-222 Flux pCi/s | Rn-222 Max. 1-Hr Conc. pCi/L | Annual Impact Multiplier | Rn-222 Max. Annual Conc. pCi/L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SFLR1215 | Flare | AP-42 | 2000 | 215 | 1 | 1.2781E+04 | 1.2781E-02 | 1.2781E-05 | 1.5703E+07 | 2.6172E+05 | 3.3450E+00 | 0.1 | 0.335 |
| SFLR2225 | Flare | CAA | 2000 | 225 | 1 | 1.1691E+04 | 1.1691E-02 | 1.1691E-05 | 1.6379E+07 | 2.7298E+05 | 3.1914E+00 | 0.1 | 0.319 |
| SFLR3120 | Flare | AP-42 | 2025 | 120 | 1 | 2.0183E+04 | 2.0183E-02 | 2.0183E-05 | 7.5774E+06 | 1.2629E+05 | 2.5489E+00 | 0.1 | 0.255 |
| SFLR4140 | Flare | CAA | 2025 | 140 | 1 | 2.0992E+04 | 2.0992E-02 | 2.0992E-05 | 7.3645E+06 | 1.2274E+05 | 2.5766E+00 | 0.1 | 0.258 |

flare) are shown at about 220-225 feet above ground level. In the year 2025, the maximum impacts occur at 120-140 feet above the property line.

The 40 CFR Part 192, Subpart A, annual average limitation of 0.5 pCi/L is not exceeded in any of the modeling runs.

# 6. RADON IMPACT ASSESSMENT – PASSIVE VENTING

An assessment was conducted to evaluate potential air quality impacts of radon in landfill gas if passive venting of landfill gas is required in conjunction with capping the FUSRAP area. In the assessment, no gas collection system is assumed and any landfill gas generated in the FUSRAP area would be passively vented to the atmosphere through landfill gas vents. The assessment is described below.

## 6.1 Estimated Radon Impacts – Passive Landfill Gas Vent for a One-Acre Area in the FUSRAP Area

### 6.1.1 Gas Vent Construction Assumptions

For the assessment, it was assumed that a passive landfill gas vent constructed in the FUSRAP area would be similar to the gas extraction well described in Section 3.3. A 6-inch diameter perforated pipe would be placed in a 3-foot diameter crushed stone gas collection area extending 40 feet deep into the landfill. The 6-inch diameter pipe would be solid above the crushed stone gas collection area, and would be sealed with bentonite as it extends upward through the landfill cap. As described in Section 3.3, it was assumed that one passive gas vent would serve a landfilled area of one acre.

The vents are assumed to be 10 ft above the surface of the capped area. This places the vent outlets about 50 ft above the property line at most locations in the FUSRAP area because most of the FUSRAP area has been filled to a height of about 40 ft. In the assessment of air quality impacts, it was conservatively assumed that the vents are only 10 ft high.

### 6.1.2 Stack Conditions Used in the Assessment of Rn-222 Impacts from Passive Venting

In the assessment of Rn-222 impacts from passive venting of landfill gas the landfill gas estimates provided in Tables 1A and 1B and the Rn-222 flux estimates in Tables 2A through 2F were used. These estimates are summarized in Table 4. Table 4 also lists the stack parameters used in the SCREEN3 modeling of Rn-222 impacts from passive venting.

**TABLE 4**
**STACK PARAMETERS AND Rn-222 EMISSION RATES**
**PASSIVE VENTING - ONE VENT PER ACRE**
**SEAWAY SITE - FUSRAP AREA**

| Year | 2000 | 2000 | 2000 | 2000 | 2025 | 2025 | 2025 | 2025 | 2100 | 2100 | 2100 | 2100 | Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Basis | AP-42 | AP-42 | CAA | CAA | AP-42 | AP-42 | CAA | CAA | AP-42 | AP-42 | CAA | CAA | |
| Seaway Area | A | B and C | A | B and C | A | B and C | A | B and C | A | B and C | A | B and C | |
| Stack Diameter | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | ft |
| Stack Area | 0.196 | 0.196 | 0.196 | 0.196 | 0.196 | 0.196 | 0.196 | 0.196 | 0.196 | 0.196 | 0.196 | 0.196 | sf |
| Stack Gas Flow Rate | 6.7 | 6.7 | 11.3 | 11.3 | 2.5 | 2.5 | 3.2 | 3.2 | 0.1 | 0.1 | 0.1 | 0.1 | acfm |
| Stack Gas Velocity | 34.12 | 34.12 | 57.55 | 57.55 | 12.73 | 12.73 | 16.30 | 16.30 | 0.51 | 0.51 | 0.51 | 0.51 | fpm |
| Rn-222 Flux Rate | 1.1438E+06 | 3.1014E+05 | 1.1698E+06 | 3.3619E+05 | 5.9818E+05 | 1.8206E+05 | 6.0214E+05 | 1.8602E+05 | 5.7224E+04 | 2.0121E+04 | 5.7224E+04 | 2.0121E+04 | pCi/min |

### 6.1.3 Modeling Details and Results

Since there are no landfill gas vents in the FUSRAP area currently, the SCREEN3 modeling was conducted to determine the minimum distance from the property line that a vent could be placed and meet the 40 CFR Part 192, Subpart A impact limitation of 0.5 pCi/L. The SCREEN3 modeling was conducted as described below.

First, SCREEN3 modeling was conducted for the year 2000 using the stack parameters and Rn-222 emission rates shown in Table 4. The modeling included assessing impacts at flagpole receptor heights from ground level to heights were only slight impact is seen. This modeling proceeded in 2 ft increments of flagpole receptor heights and impacts at discrete locations of 10 m, 20 m, 50 m, 70 m, 80 m, and 100 m were recorded. From these modeling runs for year 2000 conditions, maximum impacts using the AP-42 defaults were seen to occur at a height of 14 feet and using the CAA defaults, maximum impacts were seen to occur at a height of 16 ft.

Next, the maximum 1-hour impacts for an emission rate of 1 g/s were converted to annual impacts in pCi/L as described in Section 5.3.3.1, above. This assessment showed that at a receptor distance (in this case, the property line) of 80 m (260 ft), the 0.5 pCi/L impact limit could be met.

As shown in Table 5, the annual impact (using the AP-42 defaults) at a point 80 m from a stack and 14 feet above ground level is 0.0455 pCi/L for a vent serving one acre placed in Area A and 0.0123 pCi/L for a vent serving one acre placed in Areas B and C. As a conservative estimate, it was assumed that the impacts of all vents placed in Area A and Areas B and C are additive. As shown in Table 5, the total additive impact of all vents (using AP-42 defaults) is 0.4460 pCi/L, just below the 0.5 pCi/L limit. As also shown in Table 5, at a height of 16 ft above ground level and a receptor distance of 80 m, the additive impact using the CAA defaults in the year 2000 is also below the 0.5 pCi/L standard.

Similar modeling of year 2025 conditions shows maximum impacts at 12 feet above ground level. As shown in Table 5, the additive impacts using both the AP-42 and CAA defaults, are less than 0.5 pCi/L standard.

Finally, the modeling for the year 2100 showed maximum impacts occurring at 8 ft above ground level. At the 80 m distance, the additive impacts are substantially less than the 0.5 pCi/L standard, as shown in Table 5.

## 6.2 Summary of Findings – Impacts of Rn-222 in Landfill Gas Vented in the FUSRAP Area

The assessment of potential Rn-222 impacts of landfill gas vented in the FUSRAP area was based on SCREEN3 modeling, which is considered to be conservative. Other conservative

**TABLE 5**
**RESULTS OF SCREEN3 MODELING OF Rn-222 IMPACTS**
**PASSIVE VENTING - ONE VENT PER ACRE**
**SEAWAY SITE - FUSRAP AREA**

| Screen3 Model Run | Scenario | Default | Receptor Height ft | Receptor Distance m | Year | Screen3 Emission g/s | Screen3 Max. 1-Hr Conc. 10 M ug/m3 | Screen3 Max. 1-Hr Conc. g/m3 | Screen3 Max. 1-Hr Conc. g/L | Rn-222 Flux pCi/min | Rn-222 Flux pCi/s | Rn-222 Max. 1-Hr Conc. pCi/L | Annual Impact Multiplier | Rn-222 Max. Annual Conc. pCi/L | Area | Acres | Rn-222 Max. Annual Conc. pC/L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Svt114 | Vent | AP-42 | 14 | 80 | 2000 | 1 | 2.3842E+04 | 2.3842E-02 | 2.3842E-05 | 1.1438E+06 | 1.9063E+04 | 4.5451E-01 | 0.1 | 0.0455 | A | 9 | 0.4091 |
| Svt114 | Vent | AP-42 | 14 | 80 | 2000 | 1 | 2.3842E+04 | 2.3842E-02 | 2.3842E-05 | 3.1014E+05 | 5.1690E+03 | 1.2324E-01 | 0.1 | 0.0123 | B&C | 3 | 0.0370 |
| | | | | | | | | | | | | | Total Additive Impact | | | | 0.4460 |
| Svt216 | Vent | CAA | 16 | 80 | 2000 | 1 | 2.3346E+04 | 2.3346E-02 | 2.3346E-05 | 1.1698E+06 | 1.9497E+04 | 4.5517E-01 | 0.1 | 0.0455 | A | 9 | 0.4097 |
| Svt216 | Vent | CAA | 16 | 80 | 2000 | 1 | 2.3346E+04 | 2.3346E-02 | 2.3346E-05 | 3.3619E+05 | 5.6032E+03 | 1.3081E-01 | 0.1 | 0.0131 | B&C | 3 | 0.0392 |
| | | | | | | | | | | | | | Total Additive Impact | | | | 0.4489 |
| Svt312 | Vent | AP-42 | 12 | 80 | 2025 | 1 | 2.4240E+04 | 2.4240E-02 | 2.4240E-05 | 5.9818E+05 | 9.9697E+03 | 2.4166E-01 | 0.1 | 0.0242 | A | 9 | 0.2175 |
| Svt312 | Vent | AP-42 | 12 | 80 | 2025 | 1 | 2.4240E+04 | 2.4240E-02 | 2.4240E-05 | 1.8207E+05 | 3.0344E+03 | 7.3554E-02 | 0.1 | 0.0074 | B&C | 3 | 0.0221 |
| | | | | | | | | | | | | | Total Additive Impact | | | | 0.2396 |
| Svt412 | Vent | CAA | 12 | 80 | 2025 | 1 | 2.4031E+04 | 2.4031E-02 | 2.4031E-05 | 6.0214E+05 | 1.0036E+04 | 2.4117E-01 | 0.1 | 0.0241 | A | 9 | 0.2171 |
| Svt412 | Vent | CAA | 12 | 80 | 2025 | 1 | 2.4031E+04 | 2.4031E-02 | 2.4031E-05 | 1.8602E+05 | 3.1003E+03 | 7.4504E-02 | 0.1 | 0.0075 | B&C | 3 | 0.0224 |
| | | | | | | | | | | | | | Total Additive Impact | | | | 0.2394 |
| Sevt508 | Vent | AP-42/CAA | 8 | 80 | 2100 | 1 | 2.5446E+04 | 2.5446E-02 | 2.5446E-05 | 5.7224E+04 | 9.5373E+02 | 2.4269E-02 | 0.1 | 0.0024 | A | 9 | 0.0218 |
| Sevt508 | Vent | AP-42/CAA | 8 | 80 | 2100 | 1 | 2.5446E+04 | 2.5446E-02 | 2.5446E-05 | 2.0121E+04 | 3.3535E+02 | 8.5333E-03 | 0.1 | 0.0009 | B&C | 3 | 0.0026 |
| | | | | | | | | | | | | | Total Additive Impact | | | | 0.0244 |

assumptions included in the assessment included: the assumption that the top of the vents are 10 ft above ground level, while in fact the vents would be about 50 ft above ground level, since the FUSRAP area has been filled to a level of about 40 ft in most locations; and the assumption that the impacts of all the vents are additive. Based on these conservative assumptions, if 10 ft high vents are placed in the FUSRAP area, they should be positioned to be a distance of 80 m from the property line to ensure compliance with the Rn-222 impact standard of 40 CFR Part 192, Subpart A.

## 7. SUMMARY OF FINDINGS

This memorandum evaluates the potential emissions of radon to landfill gas if gas collection or gas venting is required in conjunction with capping the FUSRAP area of the Niagara Landfill, which is also known as the Seaway Site. Resulting Rn-222 impacts on air quality are also assessed and compared to the 0.5 pCi/L standard of 40 CFR Part 192, Subpart A.

### 7.1 Landfill Gas Generation Rates

As an initial step in the evaluation, potential and future landfill gas generation rates in the FUSRAP area and other areas of the northern portion of the Niagara Landfill were estimated using USEPA's LandGEM model. Estimates of future gas generation in the southern portion of the landfill, which is served by the existing gas collection system, were also made as part of the assessment.

Based on estimated year 2000 gas generation rates using the LandGEM's AP-42 defaults, an extraction well or vent in the northern portion of the landfill would collect gas from a one-acre area at a rate of approximately 6.7 $ft^3$/min. In the year 2025, each well would collect gas at 2.5 ft/$^3$ min and in the year 2100, 0.1 $ft^3$/min.

Based on estimated year 2000 gas generation rates using LandGEM's CAA defaults, an extraction well or vent in the northern portion of the landfill would collect gas from a one-acre area at a rate of approximately 11.3 $ft^3$ min. In the year 2025, each well would collect gas at 3.2 $ft^3$/min and in the year 2100, 0.1 $ft^3$/min.

As one part of the assessment, it was assumed that the gas collected would be conveyed to the existing gas collection system serving the closed (southern) portion of the Niagara Landfill. Total gas flow to the gas system was estimated to be 872 $ft^3$/min in the year 2000, 321 $ft^3$/min in the year 2025, and 16 $ft^3$/min in the year 2100, using LandGEM AP-42 default values. Using the LandGEM CAA default values, total gas flow to the gas collection system was estimated at 991 $ft^3$/min in the year 2000, 284 $ft^3$/min in the year 2025, and 7 $ft^3$/min in the year 2100.

If no gas collection system is installed and the landfill gas from the FUSRAP area is passively vented, each vent collecting landfill gas from a one-acre area is estimated to release the gas at rates ranging from 11.3 $ft^3$/min to 0.1 $ft^3$/min as described above.

## 7.2 Rn-222 Flux to Landfill Gas

Estimates of Rn-222 flux to landfill gas were made based on USACE's *Technical Memorandum: Modeling of Radiological Risks from Residual Radioactive Materials Following Implementation of Remedial Alternatives for Seaway Landfill Areas A, B and C, Rev. 2* (USACE 2000). As detailed in Appendix A, the estimates of Rn-222 flux considered decay of Rn-222 as it is carried along within the landfill gas to a gas well. These estimates, including Rn-222 decay, were used in the assessment of Rn-222 impacts described below.

## 7.3 Radon Impact Assessment – Landfill Gas Conveyed To The Existing Flare

The air quality impact assessment estimated Rn-222 impact of landfill gas conveyed to the existing landfill gas flare used at the landfill. The assessment used the USEPA's conservative screening model, SCREEN3, and assessed potential impacts at and above the landfill property line nearest the flare.

Results of the assessment of Rn-222 air quality impacts of landfill gas conveyed to the existing landfill gas flare show that the 40 CFR Part 192, Subpart A, annual average standard of 0.5 pCi/L is not exceeded.

## 7.4 Radon Impact Assessment – Passive Venting

An assessment was conducted to evaluate potential air quality impacts of radon landfill gas if passive venting of landfill gas is required in conjunction with capping the FUSRAP area. In the assessment, no gas collection system is assumed and any landfill gas generated in the FUSRAP area would be passively vented to the atmosphere through landfill gas vents.

The estimates of Rn-222 impacts of passive venting in the FUSRAP area also use the USEPA's conservative screening model and also a conservative means to address air quality impacts of multiple vents, assuming that the impacts from all vents in the FUSRAP area are additive.

The assessment shows that the 40 CFR 192, Subpart A, annual average standard of 0.5 pCi/L is not exceeded at the landfill property line if the design of the vents is such that vents are not any closer to the property line than about 80 m.

## 7.5 Findings

The assessment concludes that the Rn-222 gas emitted from the MED-related Ra-226 would have no significant impact on landfill gas collection or venting.

Based on the assessment, the Rn-222 air quality impact standard of 40 CFR Part 192, Subpart A, is not exceeded in the year 2000 or in the year 2025 if landfill gas from the FUSRAP area is conveyed to the existing landfill gas flare. The assessment did not evaluate impacts of the flare beyond the year 2025 because estimated landfill gas flows beyond the year 2025 are very low and if landfill gas collection is required beyond the year 2025, it is likely that redesign of the blowers and flare would be required.

The assessment also showed that if the landfill gas from the FUSRAP area is passively vented, the Rn-222 air quality impact standard of 40 CFR Part 192, Subpart A is not exceeded in the year 2000 or in the next 100 years as long as the design of the vents include a proper setback from the landfill property line. No gas venting would be required beyond 100 years and it is likely that gas venting would not be required much earlier.

## 8. REFERENCES


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# APPENDIX A

# DECAY OF RADON EMITTED TO LANDFILL GAS

# APPENDIX A
# DECAY OF RADON EMITTED TO LANDFILL GAS

## A.1 Overview

As described in the text, when the Ra-226 present in the MED material disposed in Seaway Areas A, B and C decays, radon gas is formed. This radon gas may be emitted to landfill gas being generated in the landfilled area and may be present in the landfill gas collection system or passive vents if such systems are required for Areas A, B and C.

The estimates of potential radon gas emanation from Areas A, B and C are detailed in the text and show potential Rn-222 and Rn-220 emissions for the current year ($t = 0$) in 30 years ($t = 30$) and in 100 years ($t = 100$). The increases in potential Rn-222 emissions over time results from the decay of the Th-230 present in the MED material to Ra-226 and the decay of this Ra-226 to Rn-222. The Rn-220 is part of the Th-232 decay series. Th-232 is not considered to be a MED-related contaminant, but it was considered in the assessment described below.

## A.2 Decay of Rn-222 and Rn-220

The Rn-222 emitted from the MED material has a half life of 3.8 days. Table A-1 shows the reduction in Rn-222 emitted due to decay. As shown in Table A-1, after 38 days the original Rn-222 present is reduced to less than 0.1% (more than 3 orders of magnitude reduction). The Rn-220 has a half life of only 55.6 seconds. As shown in Table A-1, within less than 10 minutes, the original Rn-220 present is reduced by more than 3 orders of magnitude. (All of the tables and the figure referred to in this Appendix are located behind the text.)

## A.3 Decay of Rn-222 and Rn-220 After Emission to Landfill Gas – General

In the estimates of potential Rn-222 and Rn-220 emissions to landfill gas, it was assumed that landfill gas generated in the northern portion of the Niagara Landfill, including Areas A, B and C, is withdrawn or is passively vented through gas wells. Each gas well has an area of influence of 1 acre and it was further assumed that the gas extraction rate for each gas well is equal to the gas generation rate within the area of influence of each well. In the analysis presented in Section 5, the gas extracted at each well location is assumed to be conveyed via the existing gas system piping to the flare at the southwestern corner of the landfill. In the analysis presented in Section 6, it is assumed that the gas is vented directly to the atmosphere at each gas well location.

As the gas containing the Rn-222 and Rn-220 is traversing the landfilled area with the landfill gas prior to collection or venting, decay would occur. The magnitude of the decay is time dependent, and the time of travel from emission to the landfill gas in the landfilled area to the emission of gas at the flare or vent will determine the Rn-222 and Rn-220 actually present.

As part of the assessment of potential radon impacts of landfill gas collected or vented in Areas A, B and C, the time of travel of landfill gas generated in the northern portion of the landfill, within the landfill and with the gas collection system, was estimated as described below.

## A.4 Decay of Rn-222 and Rn-220 Prior to an Extraction Well in Areas A, B and C

An approximate method was used to estimate potential radon decay after emission to landfill gas within the landfill, prior to gas collection or venting at a typical gas well in Areas A, B and C. Figure A-1 is a schematic, in plan view, of a 1-acre landfilled area with a gas well at its center. The gas well is assumed to have a 3-foot diameter gas collection zone and the well is assumed to be 40 feet deep.

### A.4.1 Decay Estimate for 2000 Conditions

To facilitate the estimate, a one foot thick slice of the landfill was assumed to contribute gas flow radially inward toward the well. Landfill gas generation was assumed to occur within the 59 concentric areas, with each area defined as the area between circles with radii from 118 ft to 1.5 ft, decreasing from 118 ft at 2 ft intervals. Figure A-1 is a schematic of conditions assumed.

From Table 1B in the text (the estimate using CAA default values) gas generation in Areas A, B and C is estimated to be 11.3 $ft^3$/min per acre in 2000. Using this gas generation rate and assuming a well depth of 40 feet, each 1-foot thick slice of a 1-acre landfill area would generate gas at a rate of 0.283 $ft^3$/min. Based on this estimate and the assumed radius of influence for the gas well (118 feet to service a 1-acre area), the landfill gas generation rate in the area of influence of the well is estimated to be about $6.485 \times 10^{-6}$ $ft^3$/min per $ft^3$ of landfill volume.

Table A-2 summarizes the estimates of the time of travel for landfill gas to a gas well based on an estimated gas generation rate of 6.485 to $10^{-6}$ $ft^3$/min per $ft^3$ of landfill volume. Landfill gas generation rates in each of the areas in the area of influence of the well (Figure A-1) are shown in Table A-2. For example, as shown in Table A-2, the landfill gas generation rate from Area 1 (between a radii of 117.75 and 116 ft) is 0.0094 $ft^3$/min and from Area 2 (between radii 116 and 114 ft) is 0.0094 $ft^3$/min. The cumulative landfill gas flow as gas progresses toward the well is also shown in Table A-2. In this example, the cumulative landfill gas flow from Areas 1 and 2 is 0.018 $ft^3$/min. See Figure A-1.

The gross cross sectional area for a 1-ft thick slice of the landfill at radial distances increasing at 2 ft intervals out from the gas well is calculated in the table and the effective cross sectional area at each radial distance out from the extraction well is determined assuming that the effective cross section is proportional to the porosity (n) of the landfilled material. For the estimate, it was assumed that the landfilled material through which the landfill gas passes has a porosity of 0.3. [Soils characterized as mixed-grain dense sand would have a porosity of 0.3 (Terzaghi and Peck, 1967).]

The velocity of the landfill gas at each radial section was calculated based on the cumulative landfill gas flow at the section and the effective cross sectional area. It was assumed that the calculated velocity at each section is constant throughout the area. For example, at a radial distance out of 114 ft, the cumulative landfill gas flow is 0.018 $ft^3$/min, the effective cross section area is 215 $ft^2$, the landfill gas velocity is calculated to be 0.12 feet per day and the velocity of the landfill gas throughout Area 2 is assumed to be 0.12 feet per day. Using radial distances between sections and the calculated gas velocities, the time of travel between cross sections was determined. Using the time of travel between cross sections, the cumulative time of travel from each area to the gas well was then calculated by adding the time of travel for the area of interest to the times of travel for all areas closer to the gas wells, as shown in Table A-2. For example, the time of travel for the landfill gas in Area 2 (a distance of 2 ft, from a radius of 116 ft to a radius of 114 ft) is calculated to be 16.86 days. The time of travel for landfill gas generated in Area 2 to reach the gas well is 16.86 days plus the sum of all of the times of travel for Areas 3 through 59 or 98.1 days.

Table A-2 also shows the relationship between the area of influence of the well and the radial distance out from the well. For example, Area 1 (the area beyond 116 ft) comprises 1,285 $ft^2$ or 2.95% of the total area of influence and the area beyond 114 ft (the total of Areas 1 and 2) comprises 2,730 $ft^2$ or 6.27% of the total. These totals are used in the subsequent calculations. (By geometry, the area beyond 82 ft comprises 50% of the total area of influence.)

To account for the decay of Rn-222 with time, a decay constant for Rn-222 of 0.1824 was applied in the decay equation, $\text{Rn-222}(t) = e^{-kt}$, where k is approximately 0.1824 and t is given in days. Using this relationship, the unit Rn-222 flux is 1 at 0 days, 0.5 at 3.8 days, 0.25 at 7.6 days, etc. as shown in Table A-1. In Table A-2, these unit flux rates are referred to as the decay multiplier and are calculated for the times of travel for each of the 59 areas within the area of influence of the well. As illustrated in Figure A-1, any Rn-222 emitted to landfill gas generated beyond a radius of about 98 ft from the well would undergo 10 half-lives of decay prior to release at the gas well and Rn-222 is reduced by more than three orders of magnitude.

To complete the estimate, the Rn-222 flux estimate for one acre in FUSRAP Area A from Table 2B in the text, was entered in Table A-2. (The Rn-222 flux is $3.011 \times 10^6$ pCi/min/acre assuming 2 surfaces, each an acre in size, are emitting Rn-222, with no decay.)

The Rn-222 flux reaching the gas well was estimated for each of the areas, Areas 1 through 59, by multiplying the Rn-222 emission rate per acre without decay, times the decay multiplier, times the percentage of the total area comprised by each area. The calculated flux rates from each area were summed and compared to the flux rate calculated when Rn-222 decay is not considered. As shown in Table A-2, a reduction in Rn-222 flux of 85.41% is estimated as landfill gas containing Rn-222 moves within the landfill when Rn-222 decay is considered.

### A.4.2 Decay Estimates for Year 2025 and 2100 Conditions

Tables A-3 and A-4 provide estimates for Rn-222 decay in landfill gas collected or vented in the years 2025 and 2100, respectively. The methods used in the estimates are those described above, except the gas generation rates are those estimated for the years 2025 and 2100 using the CAA defaults and the Rn-222 emission rates without decay are those estimated for those years.

As shown in Table A-3, when Rn-222 decay is considered in the year 2025, a reduction in Rn-222 flux of 95.38% is estimated. As shown in Table A-4, when Rn-222 decay is considered in the year 2100, a reduction in Rn-222 flux of 99.84 is estimated.

### A.4.3 Relationships Between Distance From the Gas Well, Time of Travel, Decay and Area of Influence

The following is shown in Tables A-2, A-3 and A-4:

- In 2000, gas originating at a distance of more than approximately 98 ft from the well shows a time of travel in excess of 38 days, more than 10 half lives of Rn-222 decay and Rn-222 flux to the well is reduced by about three orders of magnitude during the time landfill gas travels from areas beyond about 98 ft and over 30% of the area of influence is beyond 98 ft.

- In the year 2025, landfill gas originating at a distance of approximately 62 ft from the well undergoes about three orders of magnitude of decay and over 72% of the area of influence is beyond 62 ft.

- In the year 2100, landfill gas originating at a distance of approximately 12 ft from the well undergoes about three orders of magnitude of decay and over 98% of the area of influence is beyond 12 ft.

### A.4.4 Rn-222 Decay If Wells are More Closely Spaced

In the foregoing assessment, it was assumed that each well would handle landfill gas from one acre (i.e., the area of influence of the well is one acre or 43,560 $ft^2$). To assess potential Rn-222 decay if wells are more closely spaced, assessments were conducted assuming that one well serves 0.5 acres and also assuming that one well serves 0.25 acres.

The assessments assuming that one well serves 0.5 acres are shown in Tables A-5, A-6 and A-7. The area of influence of this well is 0.5 acres or 21,780 $ft^2$ and by geometry would have a radius of influence of about 82.3 ft and wells are assumed to be placed about 165 ft apart. In the assessment, the area of influence of a well serving 0.5 acre is assumed to consist of concentric circles at radii from 1.5 ft to 82 ft increasing at 1 ft intervals. The gas flow to the well would be one-half of the gas flow estimated for a well serving one acre or about 5.65

$ft^3$/min in 2000 (assuming the CAA defaults), 1.6 $ft^3$/min in the year 2025, and 0.05 $ft^3$/min in the year 2100. As shown in Tables A-5, A-6 and A-7, the reductions in Rn-222 are estimated at 85.42%, 95.38%, and 99.84%, respectively, for the years 2000, 2025 and 2100. The Rn-222 decay is essentially the same as estimated for the case where one well serves one acre.

The assessments assuming that one well serves 0.25 acres are shown in Tables A-8, A-9 and A-10, respectively, for the years 2000, 2025 and 2100. The area of influence of this well is 0.25 acres or 10,890 $ft^2$ and by geometry would have a radius of influence of approximately 59 ft and wells are assumed to be placed about 118 ft apart. The area of influence of a well serving a 0.25 acre area is assumed to consist of concentric circles with radii from 1.5 ft to 59 ft, increasing at 1 ft intervals. The gas flow to the well would be one-quarter of the gas flow estimated for a well serving 1 acre or 2.83 $ft^3$/min in 2000, 0.8 $ft^3$/min in the year 2025 and 0.025 $ft^3$/min in the year 2100. As shown in Tables A-8, A-9, and A-10, the Rn-222 reductions are 85.50%, 95.40%, and 99.82%, respectively for the years 2000, 2025 and 2100, essentially the same as the estimates for the 1-acre and 0.5-acre area of influence.

### A.4.5 Rn-222 Decay Assuming Landfill Material Has a Porosity (n) of 0.2 or 0.1

In the foregoing assessment, a porosity (n) of 0.3 was assumed for the landfilled material through which the landfill gas must pass to reach a gas well. Additional assessments were conducted assuming that the landfilled material has a porosity of 0.2, which is described as a glacial till, very mixed-grain soil (Terzaghi and Peck 1967); and also assuming that the landfilled material has a porosity of 0.1, Hough (Hough 1957) reports that mixed soil, characterized as a well graded gravel, sand, silt and clay mixture could have a porosity in a dense condition, as low as 11% or $n = 0.11$. A porosity of 0.1 was used in the assessment to represent the low end of porosity that would be encountered in landfilled material. In the assessments, porosity is assumed to be proportional to the cross sectional area of the landfilled material and, thus, reducing the assumed porosity, reduces the effective cross sectional area through which the gas passes and has the effect of increasing the gas velocity and reducing the time of travel and reducing the Rn-222 decay. At higher porosities, the velocity of the landfill gas is reduced, the time of travel is increased, and the Rn-222 decay is greater.

Table A-11 through A-19 present the assessments of Rn-222 decay and Rn-222 reductions for the years 2000, 2025 and 2100 for gas wells with areas of influence of 1 acre, 0.5 acre, and 0.25 acre, assuming that the porosity of the landfilled material is 0.2. These estimates show a 79.61% reduction in Rn-222 for a 1-acre acre in 2000 (Table A-11), a 93.23% reduction for a 1-acre area in the year 2025 (Table A-12), and a 99.76% reduction for a 1-acre area in the year 2100 (Table A-13). The results of the estimates for 0.5-acre and 0.25-acre areas are shown in Tables A-14 through A-19.

Tables A-20 through A-28 present the assessments of Rn-222 decay and Rn-222 reductions for the years 2000, 2025 and 2100 for gas wells with areas of influence of 1 acre, 0.5 acre, and 0.25 acre, assuming that the landfilled material has a porosity of 0.1. These estimates show a 66.12% reduction in Rn-222 for a 1-acre area in 2000 (Table A-20), an 87.32% reduction for

a 1-acre area in the year 2025 (Table A-21), and a 99.54% reduction in Rn-222 for a 1-acre area in the year 2100 (Table A-22). The results of the estimates for 0.5-acre and 0.25-acre areas of influence are shown in Tables A-23 through A-28.

### A.4.6 Summary

The estimates of Rn-222 reduction in landfill gas traversing through landfilled material to a gas well in Seaway Areas A, B and C are summarized in Table A-29. As shown in Table A-29, the lowest reduction in Rn-222 is estimated as follows:

- 66.12% reduction in the year 2000, 1-acre area of influence, porosity = 0.1;
- 87.32% reduction in the year 2025, 1-acre area of influence, porosity = 0.1;
- 99.53% reduction in the year 2100, 0.25-acre area of influence, porosity = 0.1

### A.4.7 Rn-222 Reduction Used in the Estimates of Air Quality Impacts

Based on the findings of the estimates of Rn-222 reduction in landfill gas, as summarized in Table A-29 and Section A.4.6, above, the following factors were used in the estimates of Rn-222 flux estimates to account for Rn-222 decay:

- The year 2000 estimates show a reduction in Rn-222 of approximately 66% using worst case assumptions. All Rn-222 flux rates from horizontal surfaces in the landfill for the year 2000 (Tables 2A and 2B in the text) were reduced by 65%.

- The year 2025 estimates show a reduction of Rn-222 of approximately 87% using worst case assumptions. All Rn-222 flux rates from horizontal surfaces in the landfill for the year 2025 (Tables 2C and 2D in the text) were reduced by 85%.

- The year 2100 estimates show a reduction of Rn-222 of approximately 99.5% using worst case assumptions. All Rn-222 flux rates from horizontal surfaces in the landfill for the year 2100 (Tables 2E and 2F in the text) were reduced by 99%.

These reductions in Rn-222 are included in the text in Tables 2A through 2F.

### A.4.8 Decay of Rn-220

Since the time of travel exceeds 10 minutes for all of the areas, the Rn-220 reaching the gas extraction well would be expected to be negligible and limited to the area of emission that exists in close proximity to the well.

## A.5 Decay of Rn-222 and Rn-220 in the Gas Collection/Conveyance System

The existing gas collection system in the southern portion of the landfill consists of two (2) headers, one on the east and south side of the landfill, the other on the west side of the landfill. The east/south header consists of 470 feet of 8-inch diameter pipe and 2,545 feet of 10-inch diameter pipe and is designed to handle approximately 800 actual cubic feet per minute (acfm) at the point of juncture with the west header, at the southwest corner of the landfill. The west header is made up of 1,540 feet of 8-inch diameter pipe and 760 feet of 10-inch diameter pipe, designed to handle approximately 875 acfm at its juncture with the east/south header (BFGS 1995). Design velocities in the header pipelines range from 105 ft/min to over 1,600 ft/min based on actual gas flow volumes.

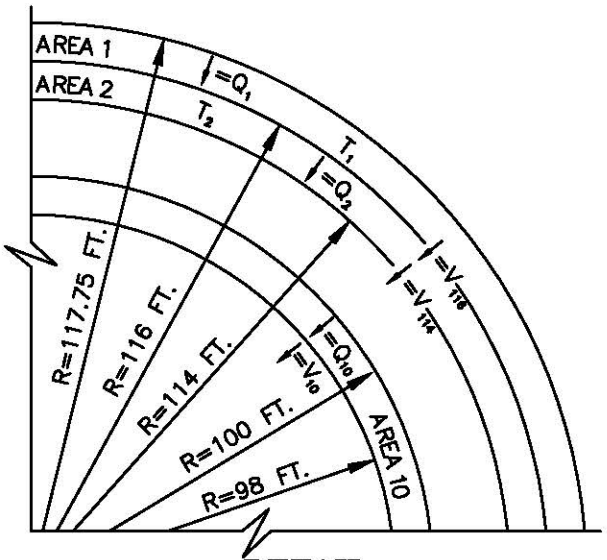
In the current assessment it is assumed that gas from the northern portion of the landfill could be collected, if required, and conveyed to the headers described above. No engineering analysis of the existing header system was conducted, but given the design capacity of the headers, and the actual gas flow in 1998, it is presumed that capacity would exist in the existing headers to handle, if required, the additional gas flow from the northern portion of the landfill. The time of travel of gas conveyed from the northern portion of the landfill to the headers and to the flare is expected to be relatively short, given the size of the pipelines in place. Accordingly, decay of Rn-222 in gas collected from Areas A, B and C is expected to be minimal in the headers.

## A.6 Summary of Findings

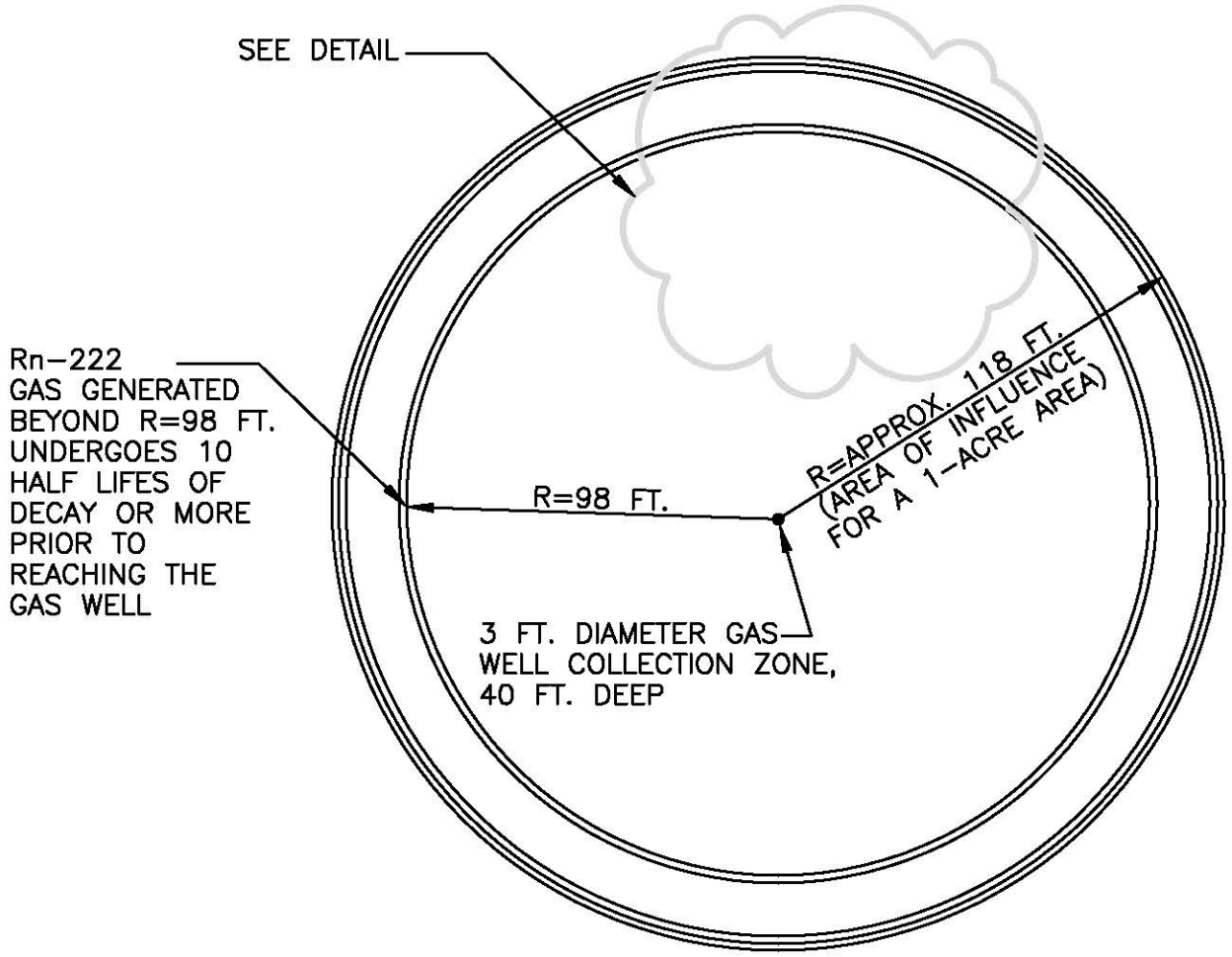
Rn-222 and Rn-220 emitted from Areas A, B and C to landfill gas in the area of influence of a gas extraction well would undergo decay and the actual amount of Rn-222 and Rn-220 in the gas extracted depends on the time of travel from the point of emission to the point of extraction. Based on the assumptions and the estimates detailed in the foregoing sections of this Appendix, the Rn-222 in landfill gas at an extraction well was estimated to be reduced, compared to the Rn-222 emitted to landfill gas at its point of origin, by 65% in the year 2000, 85% in the year 2025, and 99% in the year 2100. These reductions in Rn-222 are used in the estimates of impacts of Rn-222 in landfill gas. Due to the extended time of travel of most of the landfill gas extracted from Areas A, B and C, and the short half life of Rn-220, the Rn-220 in landfill gas from Areas A, B and C is expected to be negligible at a landfill gas extraction well or vent. If landfill gas is collected in Areas A, B and C and is conveyed to the existing landfill gas flare, decay of radon in the gas collection headers would be minimal.

Q= GAS FLOW (FT.$^3$/MIN.)
V= VELOCITY OF GAS (FT./DAY)
T= CUMULATIVE TIME OF TRAVEL (DAYS)

$Q_1$ =0.008
$Q_2$ =0.018
$Q_{10}$ =0.087
$V_{116}$ =0.05
$V_{114}$ =0.12
$V_{98}$ =0.68
$T_1$ =130.0
$T_2$ =98.1
$T_{10}$ =39.4




**DETAIL**
NOT TO SCALE




# FIGURE A−1
# LANDFILL GAS WELL − YEAR 2000 CONDITIONS
# SCHEMATIC PLAN VIEW
## 1−ACRE AREA − SEAWAY SITE
## AREAS A, B AND C

FIGA−1.DWG

**TABLE A-1**
**DECAY OF Rn-222 and Rn-220**

| Rn-222 | | | Rn-220 | | |
|---|---|---|---|---|---|
| Half Life Periods | Days after Emission | Rn-222 Remaining (per cent) | Seconds after Emission | Minutes after Emission | Rn-220 Remaining (per cent) |
| 1 | 3.8 | 50 | 55.6 | 0.9 | 50 |
| 2 | 7.6 | 25 | 111.2 | 1.9 | 25 |
| 3 | 11.4 | 12.5 | 166.8 | 2.8 | 12.5 |
| 4 | 15.2 | 6.25 | 222.4 | 3.7 | 6.25 |
| 5 | 19 | 3.125 | 278 | 4.6 | 3.125 |
| 6 | 22.8 | 1.563 | 333.6 | 5.6 | 1.563 |
| 7 | 26.6 | 0.781 | 389.2 | 6.5 | 0.781 |
| 8 | 30.4 | 0.391 | 444.8 | 7.4 | 0.391 |
| 9 | 34.2 | 0.195 | 500.4 | 8.3 | 0.195 |
| 10 | 38 | 0.098 | 556 | 9.3 | 0.098 |
| 11 | 41.8 | 0.049 | 611.6 | 10.2 | 0.049 |
| 12 | 45.6 | 0.024 | 667.2 | 11.1 | 0.024 |
| 13 | 49.4 | 0.012 | 722.8 | 12.0 | 0.012 |
| 14 | 53.2 | 0.006 | 778.4 | 13.0 | 0.006 |
| 15 | 57 | 0.003 | 834 | 13.9 | 0.003 |

**TABLE A-2**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA A - ONE ACRE AREA - ESTIMATE YEAR 2000 - LANDFILL POROSITY = 0.3**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multilier (e^-kt) | Rn-222 Flux Rate from FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-22 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| | 117.75 | 43,558 | | | | | 0 | | | | 0 | 0 | | | | | | | | | |
| 1 | | | 1,285 | 0.283 | 6.485E-06 | 0.0083 | | | | | | | | | 130.0 | 1,285 | 2.95 | 5.0125E-11 | 3.011E+06 | 2.95 | 4.45E-06 |
| | 116 | 42,273 | | | | | 0.008 | 729 | 0.3 | 219 | 3.81E-05 | 0.05 | 1.75 | 31.88 | | | | | | | |
| 2 | | | 1,445 | 0.283 | 6.485E-06 | 0.0094 | | | | | | | | | 98.1 | 2,730 | 6.27 | 1.6815E-08 | 3.011E+06 | 3.32 | 1.68E-03 |
| | 114 | 40,828 | | | | | 0.018 | 716 | 0.3 | 215 | 8.24E-05 | 0.12 | 2.00 | 16.86 | | | | | | | |
| 3 | | | 1,420 | 0.283 | 6.485E-06 | 0.0092 | | | | | | | | | 81.3 | 4,150 | 9.53 | 3.6385E-07 | 3.011E+06 | 3.26 | 3.57E-02 |
| | 112 | 39,408 | | | | | 0.027 | 704 | 0.3 | 211 | 1.27E-04 | 0.18 | 2.00 | 10.89 | | | | | | | |
| 4 | | | 1,395 | 0.283 | 6.485E-06 | 0.0090 | | | | | | | | | 70.4 | 5,545 | 12.73 | 2.6539E-06 | 3.011E+06 | 3.20 | 2.56E-01 |
| | 110 | 38,013 | | | | | 0.036 | 691 | 0.3 | 207 | 1.73E-04 | 0.25 | 2.00 | 8.01 | | | | | | | |
| 5 | | | 1,370 | 0.283 | 6.485E-06 | 0.0089 | | | | | | | | | 62.4 | 6,915 | 15.87 | 1.1435E-05 | 3.011E+06 | 3.14 | 1.08E+00 |
| | 108 | 36,644 | | | | | 0.045 | 679 | 0.3 | 204 | 2.20E-04 | 0.32 | 2.00 | 6.30 | | | | | | | |
| 6 | | | 1,345 | 0.283 | 6.485E-06 | 0.0087 | | | | | | | | | 56.1 | 8,259 | 18.96 | 3.6114E-05 | 3.011E+06 | 3.09 | 3.36E+00 |
| | 106 | 35,299 | | | | | 0.054 | 666 | 0.3 | 200 | 2.68E-04 | 0.39 | 2.00 | 5.18 | | | | | | | |
| 7 | | | 1,319 | 0.283 | 6.485E-06 | 0.0086 | | | | | | | | | 50.9 | 9,579 | 21.99 | 9.2913E-05 | 3.011E+06 | 3.03 | 8.47E+00 |
| | 104 | 33,980 | | | | | 0.062 | 653 | 0.3 | 196 | 3.17E-04 | 0.46 | 2.00 | 4.38 | | | | | | | |
| 8 | | | 1,294 | 0.283 | 6.485E-06 | 0.0084 | | | | | | | | | 46.5 | 10,873 | 24.96 | 2.0666E-04 | 3.011E+06 | 2.97 | 1.85E+01 |
| | 102 | 32,685 | | | | | 0.071 | 641 | 0.3 | 192 | 3.67E-04 | 0.53 | 2.00 | 3.79 | | | | | | | |
| 9 | | | 1,269 | 0.283 | 6.485E-06 | 0.0082 | | | | | | | | | 42.7 | 12,142 | 27.88 | 4.1232E-04 | 3.011E+06 | 2.91 | 3.62E+01 |
| | 100 | 31,416 | | | | | 0.079 | 628 | 0.3 | 188 | 4.18E-04 | 0.60 | 2.00 | 3.32 | | | | | | | |
| 10 | | | 1,244 | 0.283 | 6.485E-06 | 0.0081 | | | | | | | | | 39.4 | 13,387 | 30.73 | 7.5613E-04 | 3.011E+06 | 2.86 | 6.50E+01 |
| | 98 | 30,172 | | | | | 0.087 | 616 | 0.3 | 185 | 4.70E-04 | 0.68 | 2.00 | 2.96 | | | | | | | |
| 11 | | | 1,219 | 0.283 | 6.485E-06 | 0.0079 | | | | | | | | | 36.4 | 14,605 | 33.53 | 1.2963E-03 | 3.011E+06 | 2.80 | 1.09E+02 |
| | 96 | 28,953 | | | | | 0.095 | 603 | 0.3 | 181 | 5.23E-04 | 0.75 | 2.00 | 2.65 | | | | | | | |
| 12 | | | 1,194 | 0.283 | 6.485E-06 | 0.0077 | | | | | | | | | 33.8 | 15,799 | 36.27 | 2.1032E-03 | 3.011E+06 | 2.74 | 1.74E+02 |
| | 94 | 27,759 | | | | | 0.102 | 591 | 0.3 | 177 | 5.78E-04 | 0.83 | 2.00 | 2.40 | | | | | | | |
| 13 | | | 1,169 | 0.283 | 6.485E-06 | 0.0076 | | | | | | | | | 31.4 | 16,968 | 38.95 | 3.2594E-03 | 3.011E+06 | 2.68 | 2.63E+02 |
| | 92 | 26,591 | | | | | 0.110 | 578 | 0.3 | 173 | 6.35E-04 | 0.91 | 2.00 | 2.19 | | | | | | | |
| 14 | | | 1,144 | 0.283 | 6.485E-06 | 0.0074 | | | | | | | | | 29.2 | 18,112 | 41.58 | 4.8587E-03 | 3.011E+06 | 2.63 | 3.84E+02 |
| | 90 | 25,447 | | | | | 0.117 | 565 | 0.3 | 170 | 6.92E-04 | 1.00 | 2.00 | 2.01 | | | | | | | |
| 15 | | | 1,118 | 0.283 | 6.485E-06 | 0.0073 | | | | | | | | | 27.2 | 19,230 | 44.15 | 7.0053E-03 | 3.011E+06 | 2.57 | 5.42E+02 |
| | 88 | 24,329 | | | | | 0.125 | 553 | 0.3 | 166 | 7.52E-04 | 1.08 | 2.00 | 1.85 | | | | | | | |
| 16 | | | 1,093 | 0.283 | 6.485E-06 | 0.0071 | | | | | | | | | 25.4 | 20,323 | 46.66 | 9.8121E-03 | 3.011E+06 | 2.51 | 7.42E+02 |
| | 86 | 23,235 | | | | | 0.132 | 540 | 0.3 | 162 | 8.13E-04 | 1.17 | 2.00 | 1.71 | | | | | | | |
| 17 | | | 1,068 | 0.283 | 6.485E-06 | 0.0069 | | | | | | | | | 23.6 | 21,391 | 49.11 | 1.3399E-02 | 3.011E+06 | 2.45 | 9.89E+02 |
| | 84 | 22,167 | | | | | 0.139 | 528 | 0.3 | 158 | 8.76E-04 | 1.26 | 2.00 | 1.59 | | | | | | | |
| 18 | | | 1,043 | 0.283 | 6.485E-06 | 0.0068 | | | | | | | | | 22.1 | 22,434 | 51.50 | 1.7892E-02 | 3.011E+06 | 2.39 | 1.29E+03 |
| | 82 | 21,124 | | | | | 0.145 | 515 | 0.3 | 155 | 9.41E-04 | 1.36 | 2.00 | 1.48 | | | | | | | |
| 19 | | | 1,018 | 0.283 | 6.485E-06 | 0.0066 | | | | | | | | | 20.6 | 23,452 | 53.84 | 2.3417E-02 | 3.011E+06 | 2.34 | 1.65E+03 |
| | 80 | 20,106 | | | | | 0.152 | 503 | 0.3 | 151 | 1.01E-03 | 1.45 | 2.00 | 1.38 | | | | | | | |
| 20 | | | 993 | 0.283 | 6.485E-06 | 0.0064 | | | | | | | | | 19.2 | 24,445 | 56.12 | 3.0103E-02 | 3.011E+06 | 2.28 | 2.07E+03 |
| | 78 | 19,113 | | | | | 0.159 | 490 | 0.3 | 147 | 1.08E-03 | 1.55 | 2.00 | 1.29 | | | | | | | |
| 21 | | | 968 | 0.283 | 6.485E-06 | 0.0063 | | | | | | | | | 17.9 | 25,413 | 58.34 | 3.8076E-02 | 3.011E+06 | 2.22 | 2.55E+03 |
| | 76 | 18,146 | | | | | 0.165 | 478 | 0.3 | 143 | 1.15E-03 | 1.66 | 2.00 | 1.21 | | | | | | | |
| 22 | | | 942 | 0.283 | 6.485E-06 | 0.0061 | | | | | | | | | 16.7 | 26,355 | 60.50 | 4.7455E-02 | 3.011E+06 | 2.16 | 3.09E+03 |
| | 74 | 17,203 | | | | | 0.171 | 465 | 0.3 | 139 | 1.23E-03 | 1.76 | 2.00 | 1.13 | | | | | | | |
| 23 | | | 917 | 0.283 | 6.485E-06 | 0.0059 | | | | | | | | | 15.6 | 27,272 | 62.61 | 5.8354E-02 | 3.011E+06 | 2.11 | 3.70E+03 |
| | 72 | 16,286 | | | | | 0.177 | 452 | 0.3 | 136 | 1.30E-03 | 1.88 | 2.00 | 1.07 | | | | | | | |
| 24 | | | 892 | 0.283 | 6.485E-06 | 0.0058 | | | | | | | | | 14.5 | 28,165 | 64.66 | 7.0875E-02 | 3.011E+06 | 2.05 | 4.37E+03 |
| | 70 | 15,394 | | | | | 0.183 | 440 | 0.3 | 132 | 1.38E-03 | 1.99 | 2.00 | 1.00 | | | | | | | |
| 25 | | | 867 | 0.283 | 6.485E-06 | 0.0056 | | | | | | | | | 13.5 | 29,032 | 66.65 | 8.5108E-02 | 3.011E+06 | 1.99 | 5.10E+03 |
| | 68 | 14,527 | | | | | 0.188 | 427 | 0.3 | 128 | 1.47E-03 | 2.12 | 2.00 | 0.95 | | | | | | | |
| 26 | | | 842 | 0.283 | 6.485E-06 | 0.0055 | | | | | | | | | 12.6 | 29,874 | 68.58 | 1.0113E-01 | 3.011E+06 | 1.93 | 5.89E+03 |
| | 66 | 13,685 | | | | | 0.194 | 415 | 0.3 | 124 | 1.56E-03 | 2.24 | 2.00 | 0.89 | | | | | | | |
| 27 | | | 817 | 0.283 | 6.485E-06 | 0.0053 | | | | | | | | | 11.7 | 30,690 | 70.46 | 1.1899E-01 | 3.011E+06 | 1.88 | 6.72E+03 |
| | 64 | 12,868 | | | | | 0.199 | 402 | 0.3 | 121 | 1.65E-03 | 2.38 | 2.00 | 0.84 | | | | | | | |
| 28 | | | 792 | 0.283 | 6.485E-06 | 0.0051 | | | | | | | | | 10.8 | 31,482 | 72.27 | 1.3874E-01 | 3.011E+06 | 1.82 | 7.59E+03 |
| | 62 | 12,076 | | | | | 0.204 | 390 | 0.3 | 117 | 1.75E-03 | 2.52 | 2.00 | 0.79 | | | | | | | |
| 29 | | | 767 | 0.283 | 6.485E-06 | 0.0050 | | | | | | | | | 10.0 | 32,249 | 74.03 | 1.6039E-01 | 3.011E+06 | 1.76 | 8.50E+03 |
| | 60 | 11,310 | | | | | 0.209 | 377 | 0.3 | 113 | 1.85E-03 | 2.66 | 2.00 | 0.75 | | | | | | | |
| 30 | | | 741 | 0.283 | 6.485E-06 | 0.0048 | | | | | | | | | 9.3 | 32,990 | 75.73 | 1.8394E-01 | 3.011E+06 | 1.70 | 9.43E+03 |
| | 58 | 10,568 | | | | | 0.214 | 364 | 0.3 | 109 | 1.96E-03 | 2.82 | 2.00 | 0.71 | | | | | | | |

**TABLE A-2 (CONTINUED)**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA A - ONE ACRE AREA - ESTIMATE YEAR 2000 - LANDFILL POROSITY = 0.3**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multilier (e^-kt) | Rn-222 Flux Rate from FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-22 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| 31 | | | 716 | 0.283 | 6.485E-06 | 0.0046 | | | | | | | | | 8.6 | 33,706 | 77.38 | 2.0936E-01 | 3.011E+06 | 1.64 | 1.04E+04 |
| | 56 | 9,852 | | | | | 0.219 | 352 | 0.3 | 106 | 2.07E-03 | 2.98 | 2.00 | 0.67 | | | | | | | |
| 32 | | | 691 | 0.283 | 6.485E-06 | 0.0045 | | | | | | | | | 7.9 | 34,398 | 78.97 | 2.3661E-01 | 3.011E+06 | 1.59 | 1.13E+04 |
| | 54 | 9,161 | | | | | 0.223 | 339 | 0.3 | 102 | 2.19E-03 | 3.16 | 2.00 | 0.63 | | | | | | | |
| 33 | | | 666 | 0.283 | 6.485E-06 | 0.0043 | | | | | | | | | 7.3 | 35,064 | 80.49 | 2.6560E-01 | 3.011E+06 | 1.53 | 1.22E+04 |
| | 52 | 8,495 | | | | | 0.227 | 327 | 0.3 | 98 | 2.32E-03 | 3.34 | 2.00 | 0.60 | | | | | | | |
| 34 | | | 641 | 0.283 | 6.485E-06 | 0.0042 | | | | | | | | | 6.7 | 35,704 | 81.97 | 2.9624E-01 | 3.011E+06 | 1.47 | 1.31E+04 |
| | 50 | 7,854 | | | | | 0.232 | 314 | 0.3 | 94 | 2.46E-03 | 3.54 | 2.00 | 0.57 | | | | | | | |
| 35 | | | 616 | 0.283 | 6.485E-06 | 0.0040 | | | | | | | | | 6.1 | 36,320 | 83.38 | 3.2842E-01 | 3.011E+06 | 1.41 | 1.40E+04 |
| | 48 | 7,238 | | | | | 0.236 | 302 | 0.3 | 90 | 2.60E-03 | 3.75 | 2.00 | 0.53 | | | | | | | |
| 36 | | | 591 | 0.283 | 6.485E-06 | 0.0038 | | | | | | | | | 5.6 | 36,911 | 84.74 | 3.6199E-01 | 3.011E+06 | 1.36 | 1.48E+04 |
| | 46 | 6,648 | | | | | 0.239 | 289 | 0.3 | 87 | 2.76E-03 | 3.98 | 2.00 | 0.50 | | | | | | | |
| 37 | | | 565 | 0.283 | 6.485E-06 | 0.0037 | | | | | | | | | 5.1 | 37,476 | 86.03 | 3.9677E-01 | 3.011E+06 | 1.30 | 1.55E+04 |
| | 44 | 6,082 | | | | | 0.243 | 276 | 0.3 | 83 | 2.93E-03 | 4.22 | 2.00 | 0.47 | | | | | | | |
| 38 | | | 540 | 0.283 | 6.485E-06 | 0.0035 | | | | | | | | | 4.6 | 38,017 | 87.27 | 4.3260E-01 | 3.011E+06 | 1.24 | 1.62E+04 |
| | 42 | 5,542 | | | | | 0.247 | 264 | 0.3 | 79 | 3.11E-03 | 4.48 | 2.00 | 0.45 | | | | | | | |
| 39 | | | 515 | 0.283 | 6.485E-06 | 0.0033 | | | | | | | | | 4.1 | 38,532 | 88.46 | 4.6926E-01 | 3.011E+06 | 1.18 | 1.67E+04 |
| | 40 | 5,027 | | | | | 0.250 | 251 | 0.3 | 75 | 3.31E-03 | 4.77 | 2.00 | 0.42 | | | | | | | |
| 40 | | | 490 | 0.283 | 6.485E-06 | 0.0032 | | | | | | | | | 3.7 | 39,022 | 89.58 | 5.0654E-01 | 3.011E+06 | 1.13 | 1.72E+04 |
| | 38 | 4,536 | | | | | 0.253 | 239 | 0.3 | 72 | 3.53E-03 | 5.09 | 2.00 | 0.39 | | | | | | | |
| 41 | | | 465 | 0.283 | 6.485E-06 | 0.0030 | | | | | | | | | 3.3 | 39,487 | 90.65 | 5.4419E-01 | 3.011E+06 | 1.07 | 1.75E+04 |
| | 36 | 4,072 | | | | | 0.256 | 226 | 0.3 | 68 | 3.77E-03 | 5.43 | 2.00 | 0.37 | | | | | | | |
| 42 | | | 440 | 0.283 | 6.485E-06 | 0.0029 | | | | | | | | | 3.0 | 39,927 | 91.66 | 5.8198E-01 | 3.011E+06 | 1.01 | 1.77E+04 |
| | 34 | 3,632 | | | | | 0.259 | 214 | 0.3 | 64 | 4.04E-03 | 5.82 | 2.00 | 0.34 | | | | | | | |
| 43 | | | 415 | 0.283 | 6.485E-06 | 0.0027 | | | | | | | | | 2.6 | 40,341 | 92.61 | 6.1964E-01 | 3.011E+06 | 0.95 | 1.78E+04 |
| | 32 | 3,217 | | | | | 0.262 | 201 | 0.3 | 60 | 4.34E-03 | 6.25 | 2.00 | 0.32 | | | | | | | |
| 44 | | | 390 | 0.283 | 6.485E-06 | 0.0025 | | | | | | | | | 2.3 | 40,731 | 93.51 | 6.5691E-01 | 3.011E+06 | 0.89 | 1.77E+04 |
| | 30 | 2,827 | | | | | 0.264 | 188 | 0.3 | 57 | 4.67E-03 | 6.73 | 2.00 | 0.30 | | | | | | | |
| 45 | | | 364 | 0.283 | 6.485E-06 | 0.0024 | | | | | | | | | 2.0 | 41,095 | 94.34 | 6.9352E-01 | 3.011E+06 | 0.84 | 1.75E+04 |
| | 28 | 2,463 | | | | | 0.267 | 176 | 0.3 | 53 | 5.05E-03 | 7.27 | 2.00 | 0.28 | | | | | | | |
| 46 | | | 339 | 0.283 | 6.485E-06 | 0.0022 | | | | | | | | | 1.7 | 41,435 | 95.12 | 7.2920E-01 | 3.011E+06 | 0.78 | 1.71E+04 |
| | 26 | 2,124 | | | | | 0.269 | 163 | 0.3 | 49 | 5.48E-03 | 7.90 | 2.00 | 0.25 | | | | | | | |
| 47 | | | 314 | 0.283 | 6.485E-06 | 0.0020 | | | | | | | | | 1.5 | 41,749 | 95.84 | 7.6368E-01 | 3.011E+06 | 0.72 | 1.66E+04 |
| | 24 | 1,810 | | | | | 0.271 | 151 | 0.3 | 45 | 5.98E-03 | 8.62 | 2.00 | 0.23 | | | | | | | |
| 48 | | | 289 | 0.283 | 6.485E-06 | 0.0019 | | | | | | | | | 1.2 | 42,038 | 96.51 | 7.9670E-01 | 3.011E+06 | 0.66 | 1.59E+04 |
| | 22 | 1,521 | | | | | 0.273 | 138 | 0.3 | 41 | 6.57E-03 | 9.47 | 2.00 | 0.21 | | | | | | | |
| 49 | | | 264 | 0.283 | 6.485E-06 | 0.0017 | | | | | | | | | 1.0 | 42,302 | 97.11 | 8.2800E-01 | 3.011E+06 | 0.61 | 1.51E+04 |
| | 20 | 1,257 | | | | | 0.274 | 126 | 0.3 | 38 | 7.28E-03 | 10.48 | 2.00 | 0.19 | | | | | | | |
| 50 | | | 239 | 0.283 | 6.485E-06 | 0.0015 | | | | | | | | | 0.8 | 42,541 | 97.66 | 8.5733E-01 | 3.011E+06 | 0.55 | 1.41E+04 |
| | 18 | 1,018 | | | | | 0.276 | 113 | 0.3 | 34 | 8.13E-03 | 11.71 | 2.00 | 0.17 | | | | | | | |
| 51 | | | 214 | 0.283 | 6.485E-06 | 0.0014 | | | | | | | | | 0.7 | 42,754 | 98.15 | 8.8446E-01 | 3.011E+06 | 0.49 | 1.31E+04 |
| | 16 | 804 | | | | | 0.277 | 101 | 0.3 | 30 | 9.19E-03 | 13.24 | 2.00 | 0.15 | | | | | | | |
| 52 | | | 188 | 0.283 | 6.485E-06 | 0.0012 | | | | | | | | | 0.5 | 42,943 | 98.58 | 9.0917E-01 | 3.011E+06 | 0.43 | 1.18E+04 |
| | 14 | 616 | | | | | 0.278 | 88 | 0.3 | 26 | 1.06E-02 | 15.20 | 2.00 | 0.13 | | | | | | | |
| 53 | | | 163 | 0.283 | 6.485E-06 | 0.0011 | | | | | | | | | 0.4 | 43,106 | 98.96 | 9.3126E-01 | 3.011E+06 | 0.38 | 1.05E+04 |
| | 12 | 452 | | | | | 0.280 | 75 | 0.3 | 23 | 1.24E-02 | 17.80 | 2.00 | 0.11 | | | | | | | |
| 54 | | | 138 | 0.283 | 6.485E-06 | 0.0009 | | | | | | | | | 0.3 | 43,244 | 99.28 | 9.5054E-01 | 3.011E+06 | 0.32 | 9.08E+03 |
| | 10 | 314 | | | | | 0.280 | 63 | 0.3 | 19 | 1.49E-02 | 21.42 | 2.00 | 0.09 | | | | | | | |
| 55 | | | 113 | 0.283 | 6.485E-06 | 0.0007 | | | | | | | | | 0.2 | 43,357 | 99.53 | 9.6687E-01 | 3.011E+06 | 0.26 | 7.56E+03 |
| | 8 | 201 | | | | | 0.281 | 50 | 0.3 | 15 | 1.86E-02 | 26.85 | 2.00 | 0.07 | | | | | | | |
| 56 | | | 88 | 0.283 | 6.485E-06 | 0.0006 | | | | | | | | | 0.1 | 43,445 | 99.74 | 9.8009E-01 | 3.011E+06 | 0.20 | 5.96E+03 |
| | 6 | 113 | | | | | 0.282 | 38 | 0.3 | 11 | 2.49E-02 | 35.87 | 2.00 | 0.06 | | | | | | | |
| 57 | | | 63 | 0.283 | 6.485E-06 | 0.0004 | | | | | | | | | 0.1 | 43,508 | 99.88 | 9.9011E-01 | 3.011E+06 | 0.14 | 4.30E+03 |
| | 4 | 50 | | | | | 0.282 | 25 | 0.3 | 8 | 3.74E-02 | 53.89 | 2.00 | 0.04 | | | | | | | |
| 58 | | | 43 | 0.283 | 6.485E-06 | 0.0003 | | | | | | | | | 0.0 | 43,551 | 99.98 | 9.9683E-01 | 3.011E+06 | 0.10 | 2.98E+03 |
| | 1.5 | 7 | | | | | 0.282 | 9 | 0.3 | 3 | 9.99E-02 | 143.85 | 2.50 | 0.02 | | | | | | | |
| 59 | | | 7 | 0.283 | 6.485E-06 | 0.0000 | | | | | | | | | 0.0 | 43,558 | 100.00 | 1.0000E+00 | 3.011E+06 | 0.02 | 4.89E+02 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Considered | pCi/min | 4.393E+05 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Not Considered | pCi/min | 3.011E+06 |

| | | |
|---|---|---|
| Reduction in Rn-222 Flux Due to Decay | % | 85.41 |

**TABLE A-3**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA A - ONE ACRE AREA - ESTIMATE YEAR 2025 LANDFILL POROSITY = 0.3**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multilier ($e^{-\lambda t}$) | Rn-222 Flux Rate from FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-22 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| | 117.75 | 43,558 | | | | | 0 | | | | 0 | 0 | | | | | | | | | |
| 1 | | | 1,285 | 0.080 | 1.837E-06 | 0.0024 | | | | | | | | | 459.1 | 1,285 | 2.95 | 4.2492E-37 | 3.691E+06 | 2.95 | 4.63E-32 |
| | 116 | 42,273 | | | | | 0.002 | 729 | 0.3 | 219 | 1.08E-05 | 0.02 | 1.75 | 112.59 | | | | | | | |
| 2 | | | 1,445 | 0.080 | 1.837E-06 | 0.0027 | | | | | | | | | 346.6 | 2,730 | 6.27 | 3.5239E-28 | 3.691E+06 | 3.32 | 4.32E-23 |
| | 114 | 40,828 | | | | | 0.005 | 716 | 0.3 | 215 | 2.33E-05 | 0.03 | 2.00 | 59.52 | | | | | | | |
| 3 | | | 1,420 | 0.080 | 1.837E-06 | 0.0026 | | | | | | | | | 287.0 | 4,150 | 9.53 | 1.8281E-23 | 3.691E+06 | 3.26 | 2.20E-18 |
| | 112 | 39,408 | | | | | 0.008 | 704 | 0.3 | 211 | 3.61E-05 | 0.05 | 2.00 | 38.47 | | | | | | | |
| 4 | | | 1,395 | 0.080 | 1.837E-06 | 0.0026 | | | | | | | | | 248.6 | 5,545 | 12.73 | 2.0386E-20 | 3.691E+06 | 3.20 | 2.41E-15 |
| | 110 | 38,013 | | | | | 0.010 | 691 | 0.3 | 207 | 4.91E-05 | 0.07 | 2.00 | 28.28 | | | | | | | |
| 5 | | | 1,370 | 0.080 | 1.837E-06 | 0.0025 | | | | | | | | | 220.3 | 6,915 | 15.87 | 3.5431E-18 | 3.691E+06 | 3.14 | 4.11E-13 |
| | 108 | 36,644 | | | | | 0.013 | 679 | 0.3 | 204 | 6.24E-05 | 0.09 | 2.00 | 22.26 | | | | | | | |
| 6 | | | 1,345 | 0.080 | 1.837E-06 | 0.0025 | | | | | | | | | 198.0 | 8,259 | 18.96 | 2.0562E-16 | 3.691E+06 | 3.09 | 2.34E-11 |
| | 106 | 35,299 | | | | | 0.015 | 666 | 0.3 | 200 | 7.59E-05 | 0.11 | 2.00 | 18.29 | | | | | | | |
| 7 | | | 1,319 | 0.080 | 1.837E-06 | 0.0024 | | | | | | | | | 179.7 | 9,579 | 21.99 | 5.7845E-15 | 3.691E+06 | 3.03 | 6.47E-10 |
| | 104 | 33,980 | | | | | 0.018 | 653 | 0.3 | 196 | 8.97E-05 | 0.13 | 2.00 | 15.48 | | | | | | | |
| 8 | | | 1,294 | 0.080 | 1.837E-06 | 0.0024 | | | | | | | | | 164.3 | 10,873 | 24.96 | 9.7335E-14 | 3.691E+06 | 2.97 | 1.07E-08 |
| | 102 | 32,685 | | | | | 0.020 | 641 | 0.3 | 192 | 1.04E-04 | 0.15 | 2.00 | 13.37 | | | | | | | |
| 9 | | | 1,269 | 0.080 | 1.837E-06 | 0.0023 | | | | | | | | | 150.9 | 12,142 | 27.88 | 1.1157E-12 | 3.691E+06 | 2.91 | 1.20E-07 |
| | 100 | 31,416 | | | | | 0.022 | 628 | 0.3 | 188 | 1.18E-04 | 0.17 | 2.00 | 11.74 | | | | | | | |
| 10 | | | 1,244 | 0.080 | 1.837E-06 | 0.0023 | | | | | | | | | 139.1 | 13,387 | 30.73 | 9.4959E-12 | 3.691E+06 | 2.86 | 1.00E-06 |
| | 98 | 30,172 | | | | | 0.025 | 616 | 0.3 | 185 | 1.33E-04 | 0.19 | 2.00 | 10.44 | | | | | | | |
| 11 | | | 1,219 | 0.080 | 1.837E-06 | 0.0022 | | | | | | | | | 128.7 | 14,605 | 33.53 | 6.3710E-11 | 3.691E+06 | 2.80 | 6.58E-06 |
| | 96 | 28,953 | | | | | 0.027 | 603 | 0.3 | 181 | 1.48E-04 | 0.21 | 2.00 | 9.37 | | | | | | | |
| 12 | | | 1,194 | 0.080 | 1.837E-06 | 0.0022 | | | | | | | | | 119.3 | 15,799 | 36.27 | 3.5191E-10 | 3.691E+06 | 2.74 | 3.56E-05 |
| | 94 | 27,759 | | | | | 0.029 | 591 | 0.3 | 177 | 1.64E-04 | 0.24 | 2.00 | 8.48 | | | | | | | |
| 13 | | | 1,169 | 0.080 | 1.837E-06 | 0.0021 | | | | | | | | | 110.9 | 16,968 | 38.95 | 1.6530E-09 | 3.691E+06 | 2.68 | 1.64E-04 |
| | 92 | 26,591 | | | | | 0.031 | 578 | 0.3 | 173 | 1.80E-04 | 0.26 | 2.00 | 7.73 | | | | | | | |
| 14 | | | 1,144 | 0.080 | 1.837E-06 | 0.0021 | | | | | | | | | 103.1 | 18,112 | 41.58 | 6.7690E-09 | 3.691E+06 | 2.63 | 6.56E-04 |
| | 90 | 25,447 | | | | | 0.033 | 565 | 0.3 | 170 | 1.96E-04 | 0.28 | 2.00 | 7.08 | | | | | | | |
| 15 | | | 1,118 | 0.080 | 1.837E-06 | 0.0021 | | | | | | | | | 96.0 | 19,230 | 44.15 | 2.4641E-08 | 3.691E+06 | 2.57 | 2.34E-03 |
| | 88 | 24,329 | | | | | 0.035 | 553 | 0.3 | 166 | 2.13E-04 | 0.31 | 2.00 | 6.52 | | | | | | | |
| 16 | | | 1,093 | 0.080 | 1.837E-06 | 0.0020 | | | | | | | | | 89.5 | 20,323 | 46.66 | 8.0986E-08 | 3.691E+06 | 2.51 | 7.50E-03 |
| | 86 | 23,235 | | | | | 0.037 | 540 | 0.3 | 162 | 2.30E-04 | 0.33 | 2.00 | 6.03 | | | | | | | |
| 17 | | | 1,068 | 0.080 | 1.837E-06 | 0.0020 | | | | | | | | | 83.5 | 21,391 | 49.11 | 2.4336E-07 | 3.691E+06 | 2.45 | 2.20E-02 |
| | 84 | 22,167 | | | | | 0.039 | 528 | 0.3 | 158 | 2.48E-04 | 0.36 | 2.00 | 5.60 | | | | | | | |
| 18 | | | 1,043 | 0.080 | 1.837E-06 | 0.0019 | | | | | | | | | 77.9 | 22,434 | 51.50 | 6.7557E-07 | 3.691E+06 | 2.39 | 5.97E-02 |
| | 82 | 21,124 | | | | | 0.041 | 515 | 0.3 | 155 | 2.67E-04 | 0.38 | 2.00 | 5.21 | | | | | | | |
| 19 | | | 1,018 | 0.080 | 1.837E-06 | 0.0019 | | | | | | | | | 72.7 | 23,452 | 53.84 | 1.7475E-06 | 3.691E+06 | 2.34 | 1.51E-01 |
| | 80 | 20,106 | | | | | 0.043 | 503 | 0.3 | 151 | 2.86E-04 | 0.41 | 2.00 | 4.86 | | | | | | | |
| 20 | | | 993 | 0.080 | 1.837E-06 | 0.0018 | | | | | | | | | 67.8 | 24,445 | 56.12 | 4.2424E-06 | 3.691E+06 | 2.28 | 3.57E-01 |
| | 78 | 19,113 | | | | | 0.045 | 490 | 0.3 | 147 | 3.05E-04 | 0.44 | 2.00 | 4.55 | | | | | | | |
| 21 | | | 968 | 0.080 | 1.837E-06 | 0.0018 | | | | | | | | | 63.3 | 25,413 | 58.34 | 9.7257E-06 | 3.691E+06 | 2.22 | 7.97E-01 |
| | 76 | 18,146 | | | | | 0.047 | 478 | 0.3 | 143 | 3.26E-04 | 0.47 | 2.00 | 4.26 | | | | | | | |
| 22 | | | 942 | 0.080 | 1.837E-06 | 0.0017 | | | | | | | | | 59.0 | 26,355 | 60.50 | 2.1166E-05 | 3.691E+06 | 2.16 | 1.69E+00 |
| | 74 | 17,203 | | | | | 0.048 | 465 | 0.3 | 139 | 3.47E-04 | 0.50 | 2.00 | 4.00 | | | | | | | |
| 23 | | | 917 | 0.080 | 1.837E-06 | 0.0017 | | | | | | | | | 55.0 | 27,272 | 62.61 | 4.3923E-05 | 3.691E+06 | 2.11 | 3.41E+00 |
| | 72 | 16,286 | | | | | 0.050 | 452 | 0.3 | 136 | 3.69E-04 | 0.53 | 2.00 | 3.76 | | | | | | | |
| 24 | | | 892 | 0.080 | 1.837E-06 | 0.0016 | | | | | | | | | 51.2 | 28,165 | 64.66 | 8.7259E-05 | 3.691E+06 | 2.05 | 6.60E+00 |
| | 70 | 15,394 | | | | | 0.052 | 440 | 0.3 | 132 | 3.92E-04 | 0.56 | 2.00 | 3.54 | | | | | | | |
| 25 | | | 867 | 0.080 | 1.837E-06 | 0.0016 | | | | | | | | | 47.7 | 29,032 | 66.65 | 1.6652E-04 | 3.691E+06 | 1.99 | 1.22E+01 |
| | 68 | 14,527 | | | | | 0.053 | 427 | 0.3 | 128 | 4.16E-04 | 0.60 | 2.00 | 3.34 | | | | | | | |
| 26 | | | 842 | 0.080 | 1.837E-06 | 0.0015 | | | | | | | | | 44.4 | 29,874 | 68.58 | 3.0616E-04 | 3.691E+06 | 1.93 | 2.18E+01 |
| | 66 | 13,685 | | | | | 0.055 | 415 | 0.3 | 124 | 4.41E-04 | 0.64 | 2.00 | 3.15 | | | | | | | |
| 27 | | | 817 | 0.080 | 1.837E-06 | 0.0015 | | | | | | | | | 41.2 | 30,690 | 70.46 | 5.4379E-04 | 3.691E+06 | 1.88 | 3.76E+01 |
| | 64 | 12,868 | | | | | 0.056 | 402 | 0.3 | 121 | 4.67E-04 | 0.67 | 2.00 | 2.97 | | | | | | | |
| 28 | | | 792 | 0.080 | 1.837E-06 | 0.0015 | | | | | | | | | 38.2 | 31,482 | 72.27 | 9.3521E-04 | 3.691E+06 | 1.82 | 6.27E+01 |
| | 62 | 12,076 | | | | | 0.058 | 390 | 0.3 | 117 | 4.95E-04 | 0.71 | 2.00 | 2.81 | | | | | | | |
| 29 | | | 767 | 0.080 | 1.837E-06 | 0.0014 | | | | | | | | | 35.4 | 32,249 | 74.03 | 1.5606E-03 | 3.691E+06 | 1.76 | 1.01E+02 |
| | 60 | 11,310 | | | | | 0.059 | 377 | 0.3 | 113 | 5.24E-04 | 0.75 | 2.00 | 2.65 | | | | | | | |
| 30 | | | 741 | 0.080 | 1.837E-06 | 0.0014 | | | | | | | | | 32.8 | 32,990 | 75.73 | 2.5316E-03 | 3.691E+06 | 1.70 | 1.59E+02 |
| | 58 | 10,568 | | | | | 0.061 | 364 | 0.3 | 109 | 5.54E-04 | 0.80 | 2.00 | 2.51 | | | | | | | |

**TABLE A-3 (CONTINUED)**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA A - ONE ACRE AREA - ESTIMATE YEAR 2025 LANDFILL POROSITY = 0.3**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multilier ($e^{-\lambda t}$) | Rn-222 Flux Rate from FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-22 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| 31 | | | 716 | 0.080 | 1.837E-06 | 0.0013 | | | | | | | | | 30.3 | 33,706 | 77.38 | 3.9987E-03 | 3.691E+06 | 1.64 | 2.43E+02 |
| | 56 | 9,852 | | | | | 0.062 | 352 | 0.3 | 106 | 5.86E-04 | 0.84 | 2.00 | 2.37 | | | | | | | |
| 32 | | | 691 | 0.080 | 1.837E-06 | 0.0013 | | | | | | | | | 27.9 | 34,398 | 78.97 | 6.1592E-03 | 3.691E+06 | 1.59 | 3.61E+02 |
| | 54 | 9,161 | | | | | 0.063 | 339 | 0.3 | 102 | 6.21E-04 | 0.89 | 2.00 | 2.24 | | | | | | | |
| 33 | | | 666 | 0.080 | 1.837E-06 | 0.0012 | | | | | | | | | 25.7 | 35,064 | 80.49 | 9.2640E-03 | 3.691E+06 | 1.53 | 5.23E+02 |
| | 52 | 8,495 | | | | | 0.064 | 327 | 0.3 | 98 | 6.57E-04 | 0.95 | 2.00 | 2.11 | | | | | | | |
| 34 | | | 641 | 0.080 | 1.837E-06 | 0.0012 | | | | | | | | | 23.6 | 35,704 | 81.97 | 1.3623E-02 | 3.691E+06 | 1.47 | 7.40E+02 |
| | 50 | 7,854 | | | | | 0.066 | 314 | 0.3 | 94 | 6.96E-04 | 1.00 | 2.00 | 2.00 | | | | | | | |
| 35 | | | 616 | 0.080 | 1.837E-06 | 0.0011 | | | | | | | | | 21.6 | 36,320 | 83.38 | 1.9606E-02 | 3.691E+06 | 1.41 | 1.02E+03 |
| | 48 | 7,238 | | | | | 0.067 | 302 | 0.3 | 90 | 7.37E-04 | 1.06 | 2.00 | 1.88 | | | | | | | |
| 36 | | | 591 | 0.080 | 1.837E-06 | 0.0011 | | | | | | | | | 19.7 | 36,911 | 84.74 | 2.7646E-02 | 3.691E+06 | 1.36 | 1.38E+03 |
| | 46 | 6,648 | | | | | 0.068 | 289 | 0.3 | 87 | 7.82E-04 | 1.13 | 2.00 | 1.78 | | | | | | | |
| 37 | | | 565 | 0.080 | 1.837E-06 | 0.0010 | | | | | | | | | 17.9 | 37,476 | 86.03 | 3.8226E-02 | 3.691E+06 | 1.30 | 1.83E+03 |
| | 44 | 6,082 | | | | | 0.069 | 276 | 0.3 | 83 | 8.30E-04 | 1.19 | 2.00 | 1.67 | | | | | | | |
| 38 | | | 540 | 0.080 | 1.837E-06 | 0.0010 | | | | | | | | | 16.2 | 38,017 | 87.27 | 5.1873E-02 | 3.691E+06 | 1.24 | 2.38E+03 |
| | 42 | 5,542 | | | | | 0.070 | 264 | 0.3 | 79 | 8.82E-04 | 1.27 | 2.00 | 1.57 | | | | | | | |
| 39 | | | 515 | 0.080 | 1.837E-06 | 0.0009 | | | | | | | | | 14.6 | 38,532 | 88.46 | 6.9134E-02 | 3.691E+06 | 1.18 | 3.02E+03 |
| | 40 | 5,027 | | | | | 0.071 | 251 | 0.3 | 75 | 9.39E-04 | 1.35 | 2.00 | 1.48 | | | | | | | |
| 40 | | | 490 | 0.080 | 1.837E-06 | 0.0009 | | | | | | | | | 13.2 | 39,022 | 89.58 | 9.0555E-02 | 3.691E+06 | 1.13 | 3.76E+03 |
| | 38 | 4,536 | | | | | 0.072 | 239 | 0.3 | 72 | 1.00E-03 | 1.44 | 2.00 | 1.39 | | | | | | | |
| 41 | | | 465 | 0.080 | 1.837E-06 | 0.0009 | | | | | | | | | 11.8 | 39,487 | 90.65 | 1.1665E-01 | 3.691E+06 | 1.07 | 4.60E+03 |
| | 36 | 4,072 | | | | | 0.073 | 226 | 0.3 | 68 | 1.07E-03 | 1.54 | 2.00 | 1.30 | | | | | | | |
| 42 | | | 440 | 0.080 | 1.837E-06 | 0.0008 | | | | | | | | | 10.5 | 39,927 | 91.66 | 1.4785E-01 | 3.691E+06 | 1.01 | 5.51E+03 |
| | 34 | 3,632 | | | | | 0.073 | 214 | 0.3 | 64 | 1.14E-03 | 1.65 | 2.00 | 1.21 | | | | | | | |
| 43 | | | 415 | 0.080 | 1.837E-06 | 0.0008 | | | | | | | | | 9.3 | 40,341 | 92.61 | 1.8450E-01 | 3.691E+06 | 0.95 | 6.48E+03 |
| | 32 | 3,217 | | | | | 0.074 | 201 | 0.3 | 60 | 1.23E-03 | 1.77 | 2.00 | 1.13 | | | | | | | |
| 44 | | | 390 | 0.080 | 1.837E-06 | 0.0007 | | | | | | | | | 8.1 | 40,731 | 93.51 | 2.2676E-01 | 3.691E+06 | 0.89 | 7.48E+03 |
| | 30 | 2,827 | | | | | 0.075 | 188 | 0.3 | 57 | 1.32E-03 | 1.90 | 2.00 | 1.05 | | | | | | | |
| 45 | | | 364 | 0.080 | 1.837E-06 | 0.0007 | | | | | | | | | 7.1 | 41,095 | 94.34 | 2.7462E-01 | 3.691E+06 | 0.84 | 8.48E+03 |
| | 28 | 2,463 | | | | | 0.075 | 176 | 0.3 | 53 | 1.43E-03 | 2.06 | 2.00 | 0.97 | | | | | | | |
| 46 | | | 339 | 0.080 | 1.837E-06 | 0.0006 | | | | | | | | | 6.1 | 41,435 | 95.12 | 3.2785E-01 | 3.691E+06 | 0.78 | 9.43E+03 |
| | 26 | 2,124 | | | | | 0.076 | 163 | 0.3 | 49 | 1.55E-03 | 2.24 | 2.00 | 0.89 | | | | | | | |
| 47 | | | 314 | 0.080 | 1.837E-06 | 0.0006 | | | | | | | | | 5.2 | 41,749 | 95.84 | 3.8595E-01 | 3.691E+06 | 0.72 | 1.03E+04 |
| | 24 | 1,810 | | | | | 0.077 | 151 | 0.3 | 45 | 1.69E-03 | 2.44 | 2.00 | 0.82 | | | | | | | |
| 48 | | | 289 | 0.080 | 1.837E-06 | 0.0005 | | | | | | | | | 4.4 | 42,038 | 96.51 | 4.4817E-01 | 3.691E+06 | 0.66 | 1.10E+04 |
| | 22 | 1,521 | | | | | 0.077 | 138 | 0.3 | 41 | 1.86E-03 | 2.68 | 2.00 | 0.75 | | | | | | | |
| 49 | | | 264 | 0.080 | 1.837E-06 | 0.0005 | | | | | | | | | 3.7 | 42,302 | 97.11 | 5.1350E-01 | 3.691E+06 | 0.61 | 1.15E+04 |
| | 20 | 1,257 | | | | | 0.078 | 126 | 0.3 | 38 | 2.06E-03 | 2.97 | 2.00 | 0.67 | | | | | | | |
| 50 | | | 239 | 0.080 | 1.837E-06 | 0.0004 | | | | | | | | | 3.0 | 42,541 | 97.66 | 5.8066E-01 | 3.691E+06 | 0.55 | 1.17E+04 |
| | 18 | 1,018 | | | | | 0.078 | 113 | 0.3 | 34 | 2.30E-03 | 3.32 | 2.00 | 0.60 | | | | | | | |
| 51 | | | 214 | 0.080 | 1.837E-06 | 0.0004 | | | | | | | | | 2.4 | 42,754 | 98.15 | 6.4819E-01 | 3.691E+06 | 0.49 | 1.17E+04 |
| | 16 | 804 | | | | | 0.079 | 101 | 0.3 | 30 | 2.60E-03 | 3.75 | 2.00 | 0.53 | | | | | | | |
| 52 | | | 188 | 0.080 | 1.837E-06 | 0.0003 | | | | | | | | | 1.8 | 42,943 | 98.58 | 7.1444E-01 | 3.691E+06 | 0.43 | 1.14E+04 |
| | 14 | 616 | | | | | 0.079 | 88 | 0.3 | 26 | 2.99E-03 | 4.30 | 2.00 | 0.46 | | | | | | | |
| 53 | | | 163 | 0.080 | 1.837E-06 | 0.0003 | | | | | | | | | 1.4 | 43,106 | 98.96 | 7.7764E-01 | 3.691E+06 | 0.38 | 1.08E+04 |
| | 12 | 452 | | | | | 0.079 | 75 | 0.3 | 23 | 3.50E-03 | 5.04 | 2.00 | 0.40 | | | | | | | |
| 54 | | | 138 | 0.080 | 1.837E-06 | 0.0003 | | | | | | | | | 1.0 | 43,244 | 99.28 | 8.3601E-01 | 3.691E+06 | 0.32 | 9.79E+03 |
| | 10 | 314 | | | | | 0.079 | 63 | 0.3 | 19 | 4.21E-03 | 6.07 | 2.00 | 0.33 | | | | | | | |
| 55 | | | 113 | 0.080 | 1.837E-06 | 0.0002 | | | | | | | | | 0.7 | 43,357 | 99.53 | 8.8782E-01 | 3.691E+06 | 0.26 | 8.51E+03 |
| | 8 | 201 | | | | | 0.080 | 50 | 0.3 | 15 | 5.28E-03 | 7.60 | 2.00 | 0.26 | | | | | | | |
| 56 | | | 88 | 0.080 | 1.837E-06 | 0.0002 | | | | | | | | | 0.4 | 43,445 | 99.74 | 9.3145E-01 | 3.691E+06 | 0.20 | 6.94E+03 |
| | 6 | 113 | | | | | 0.080 | 38 | 0.3 | 11 | 7.05E-03 | 10.16 | 2.00 | 0.20 | | | | | | | |
| 57 | | | 63 | 0.080 | 1.837E-06 | 0.0001 | | | | | | | | | 0.2 | 43,508 | 99.88 | 9.6551E-01 | 3.691E+06 | 0.14 | 5.14E+03 |
| | 4 | 50 | | | | | 0.080 | 25 | 0.3 | 8 | 1.06E-02 | 15.26 | 2.00 | 0.13 | | | | | | | |
| 58 | | | 43 | 0.080 | 1.837E-06 | 0.0001 | | | | | | | | | 0.1 | 43,551 | 99.98 | 9.8887E-01 | 3.691E+06 | 0.10 | 3.62E+03 |
| | 1.5 | 7 | | | | | 0.080 | 9 | 0.3 | 3 | 2.83E-02 | 40.74 | 2.50 | 0.06 | | | | | | | |
| 59 | | | 7 | 0.080 | 1.837E-06 | 0.0000 | | | | | | | | | 0.0 | 43,558 | 100.00 | 1.0000E+00 | 3.691E+06 | 0.02 | 5.99E+02 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Considered | pCi/min | 1.706E+05 |
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Not Considered | pCi/min | 3.691E+06 |
| Reduction in Rn-222 Flux Due to Decay | % | 95.38 |

**TABLE A-4**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA A - ONE ACRE AREA - ESTIMATE YEAR 2100-LANDFILL POROSITY = 0.3**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multilier ($e^{-\lambda t}$) | Rn-222 Flux Rate from FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-22 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| | 117.75 | 43,558 | | | | | 0 | | | | 0 | 0 | | | | | | | | | |
| 1 | | | 1,285 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 14692.8 | 1,285 | 2.95 | 0.0000E+00 | 5.196E+06 | 2.95 | 0.00E+00 |
| | 116 | 42,273 | | | | | 0.000 | 729 | 0.3 | 219 | 3.37E-07 | 0.00 | 1.75 | 3602.82 | | | | | | | |
| 2 | | | 1,445 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 11090.0 | 2,730 | 6.27 | 0.0000E+00 | 5.196E+06 | 3.32 | 0.00E+00 |
| | 114 | 40,828 | | | | | 0.000 | 716 | 0.3 | 215 | 7.29E-07 | 0.00 | 2.00 | 1904.67 | | | | | | | |
| 3 | | | 1,420 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 9185.3 | 4,150 | 9.53 | 0.0000E+00 | 5.196E+06 | 3.26 | 0.00E+00 |
| | 112 | 39,408 | | | | | 0.000 | 704 | 0.3 | 211 | 1.13E-06 | 0.00 | 2.00 | 1231.01 | | | | | | | |
| 4 | | | 1,395 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 7954.3 | 5,545 | 12.73 | 0.0000E+00 | 5.196E+06 | 3.20 | 0.00E+00 |
| | 110 | 38,013 | | | | | 0.000 | 691 | 0.3 | 207 | 1.53E-06 | 0.00 | 2.00 | 904.90 | | | | | | | |
| 5 | | | 1,370 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 7049.4 | 6,915 | 15.87 | 0.0000E+00 | 5.196E+06 | 3.14 | 0.00E+00 |
| | 108 | 36,644 | | | | | 0.000 | 679 | 0.3 | 204 | 1.95E-06 | 0.00 | 2.00 | 712.46 | | | | | | | |
| 6 | | | 1,345 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 6336.9 | 8,259 | 18.96 | 0.0000E+00 | 5.196E+06 | 3.09 | 0.00E+00 |
| | 106 | 35,299 | | | | | 0.000 | 666 | 0.3 | 200 | 2.37E-06 | 0.00 | 2.00 | 585.43 | | | | | | | |
| 7 | | | 1,319 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 5751.5 | 9,579 | 21.99 | 0.0000E+00 | 5.196E+06 | 3.03 | 0.00E+00 |
| | 104 | 33,980 | | | | | 0.001 | 653 | 0.3 | 196 | 2.80E-06 | 0.00 | 2.00 | 495.26 | | | | | | | |
| 8 | | | 1,294 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 5256.2 | 10,873 | 24.96 | 0.0000E+00 | 5.196E+06 | 2.97 | 0.00E+00 |
| | 102 | 32,685 | | | | | 0.001 | 641 | 0.3 | 192 | 3.25E-06 | 0.00 | 2.00 | 427.91 | | | | | | | |
| 9 | | | 1,269 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 4828.3 | 12,142 | 27.88 | 0.0000E+00 | 5.196E+06 | 2.91 | 0.00E+00 |
| | 100 | 31,416 | | | | | 0.001 | 628 | 0.3 | 188 | 3.70E-06 | 0.01 | 2.00 | 375.67 | | | | | | | |
| 10 | | | 1,244 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 4452.7 | 13,387 | 30.73 | 0.0000E+00 | 5.196E+06 | 2.86 | 0.00E+00 |
| | 98 | 30,172 | | | | | 0.001 | 616 | 0.3 | 185 | 4.16E-06 | 0.01 | 2.00 | 333.94 | | | | | | | |
| 11 | | | 1,219 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 4118.7 | 14,605 | 33.53 | 0.0000E+00 | 5.196E+06 | 2.80 | 0.00E+00 |
| | 96 | 28,953 | | | | | 0.001 | 603 | 0.3 | 181 | 4.63E-06 | 0.01 | 2.00 | 299.83 | | | | | | | |
| 12 | | | 1,194 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 3818.9 | 15,799 | 36.27 | 3.0595E-303 | 5.196E+06 | 2.74 | 4.36E-298 |
| | 94 | 27,759 | | | | | 0.001 | 591 | 0.3 | 177 | 5.12E-06 | 0.01 | 2.00 | 271.40 | | | | | | | |
| 13 | | | 1,169 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 3547.5 | 16,968 | 38.95 | 9.6508E-282 | 5.196E+06 | 2.68 | 1.35E-276 |
| | 92 | 26,591 | | | | | 0.001 | 578 | 0.3 | 173 | 5.62E-06 | 0.01 | 2.00 | 247.33 | | | | | | | |
| 14 | | | 1,144 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 3300.2 | 18,112 | 41.58 | 3.7741E-262 | 5.196E+06 | 2.63 | 5.15E-257 |
| | 90 | 25,447 | | | | | 0.001 | 565 | 0.3 | 170 | 6.13E-06 | 0.01 | 2.00 | 226.68 | | | | | | | |
| 15 | | | 1,118 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 3073.5 | 19,230 | 44.15 | 3.4120E-244 | 5.196E+06 | 2.57 | 4.55E-239 |
| | 88 | 24,329 | | | | | 0.001 | 553 | 0.3 | 166 | 6.65E-06 | 0.01 | 2.00 | 208.75 | | | | | | | |
| 16 | | | 1,093 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 2864.7 | 20,323 | 46.66 | 1.1723E-227 | 5.196E+06 | 2.51 | 1.53E-222 |
| | 86 | 23,235 | | | | | 0.001 | 540 | 0.3 | 162 | 7.20E-06 | 0.01 | 2.00 | 193.03 | | | | | | | |
| 17 | | | 1,068 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 2671.7 | 21,391 | 49.11 | 2.2906E-212 | 5.196E+06 | 2.45 | 2.92E-207 |
| | 84 | 22,167 | | | | | 0.001 | 528 | 0.3 | 158 | 7.75E-06 | 0.01 | 2.00 | 179.13 | | | | | | | |
| 18 | | | 1,043 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 2492.6 | 22,434 | 51.50 | 3.5438E-198 | 5.196E+06 | 2.39 | 4.41E-193 |
| | 82 | 21,124 | | | | | 0.001 | 515 | 0.3 | 155 | 8.33E-06 | 0.01 | 2.00 | 166.73 | | | | | | | |
| 19 | | | 1,018 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 2325.8 | 23,452 | 53.84 | 5.7168E-185 | 5.196E+06 | 2.34 | 6.94E-180 |
| | 80 | 20,106 | | | | | 0.001 | 503 | 0.3 | 151 | 8.93E-06 | 0.01 | 2.00 | 155.60 | | | | | | | |
| 20 | | | 993 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 2170.2 | 24,445 | 56.12 | 1.2118E-172 | 5.196E+06 | 2.28 | 1.44E-167 |
| | 78 | 19,113 | | | | | 0.001 | 490 | 0.3 | 147 | 9.54E-06 | 0.01 | 2.00 | 145.55 | | | | | | | |
| 21 | | | 968 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 2024.7 | 25,413 | 58.34 | 4.1068E-161 | 5.196E+06 | 2.22 | 4.74E-156 |
| | 76 | 18,146 | | | | | 0.001 | 478 | 0.3 | 143 | 1.02E-05 | 0.01 | 2.00 | 136.42 | | | | | | | |
| 22 | | | 942 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 1888.3 | 26,355 | 60.50 | 2.6312E-150 | 5.196E+06 | 2.16 | 2.96E-145 |
| | 74 | 17,203 | | | | | 0.002 | 465 | 0.3 | 139 | 1.08E-05 | 0.02 | 2.00 | 128.08 | | | | | | | |
| 23 | | | 917 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 1760.2 | 27,272 | 62.61 | 3.6824E-140 | 5.196E+06 | 2.11 | 4.03E-135 |
| | 72 | 16,286 | | | | | 0.002 | 452 | 0.3 | 136 | 1.15E-05 | 0.02 | 2.00 | 120.43 | | | | | | | |
| 24 | | | 892 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 1639.8 | 28,165 | 64.66 | 1.2760E-130 | 5.196E+06 | 2.05 | 1.36E-125 |
| | 70 | 15,394 | | | | | 0.002 | 440 | 0.3 | 132 | 1.23E-05 | 0.02 | 2.00 | 113.37 | | | | | | | |
| 25 | | | 867 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 1526.4 | 29,032 | 66.65 | 1.2211E-121 | 5.196E+06 | 1.99 | 1.26E-116 |
| | 68 | 14,527 | | | | | 0.002 | 427 | 0.3 | 128 | 1.30E-05 | 0.02 | 2.00 | 106.84 | | | | | | | |
| 26 | | | 842 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 1419.5 | 29,874 | 68.58 | 3.5523E-113 | 5.196E+06 | 1.93 | 3.57E-108 |
| | 66 | 13,685 | | | | | 0.002 | 415 | 0.3 | 124 | 1.38E-05 | 0.02 | 2.00 | 100.78 | | | | | | | |
| 27 | | | 817 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 1318.8 | 30,690 | 70.46 | 3.4182E-105 | 5.196E+06 | 1.88 | 3.33E-100 |
| | 64 | 12,868 | | | | | 0.002 | 402 | 0.3 | 121 | 1.46E-05 | 0.02 | 2.00 | 95.12 | | | | | | | |
| 28 | | | 792 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 1223.6 | 31,482 | 72.27 | 1.1726E-97 | 5.196E+06 | 1.82 | 1.11E-92 |
| | 62 | 12,076 | | | | | 0.002 | 390 | 0.3 | 117 | 1.55E-05 | 0.02 | 2.00 | 89.83 | | | | | | | |
| 29 | | | 767 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 1133.8 | 32,249 | 74.03 | 1.5326E-90 | 5.196E+06 | 1.76 | 1.40E-85 |
| | 60 | 11,310 | | | | | 0.002 | 377 | 0.3 | 113 | 1.64E-05 | 0.02 | 2.00 | 84.87 | | | | | | | |
| 30 | | | 741 | 0.003 | 5.739E-08 | 0.00004 | | | | | | | | | 1048.9 | 32,990 | 75.73 | 8.0997E-84 | 5.196E+06 | 1.70 | 7.16E-79 |
| | 58 | 10,568 | | | | | 0.002 | 364 | 0.3 | 109 | 1.73E-05 | 0.02 | 2.00 | 80.20 | | | | | | | |

**TABLE A-4 (CONTINUED)**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA A - ONE ACRE AREA - ESTIMATE YEAR 2100-LANDFILL POROSITY = 0.3**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multiplier ($e^{-\lambda t}$) | Rn-222 Flux Rate from FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-222 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| 31 | | | 716 | 0.003 | 5.739E-08 | 0.00004 | | | | | | | | | 968.7 | 33,706 | 77.38 | 1.8253E-77 | 5.196E+06 | 1.64 | 1.56E-72 |
| | 56 | 9,852 | | | | | 0.002 | 352 | 0.3 | 106 | 1.83E-05 | 0.03 | 2.00 | 75.79 | | | | | | | |
| 32 | | | 691 | 0.003 | 5.739E-08 | 0.00004 | | | | | | | | | 892.9 | 34,398 | 78.97 | 1.8400E-71 | 5.196E+06 | 1.59 | 1.52E-66 |
| | 54 | 9,161 | | | | | 0.002 | 339 | 0.3 | 102 | 1.94E-05 | 0.03 | 2.00 | 71.61 | | | | | | | |
| 33 | | | 666 | 0.003 | 5.739E-08 | 0.00004 | | | | | | | | | 821.3 | 35,064 | 80.49 | 8.6606E-66 | 5.196E+06 | 1.53 | 6.88E-61 |
| | 52 | 8,495 | | | | | 0.002 | 327 | 0.3 | 98 | 2.05E-05 | 0.03 | 2.00 | 67.65 | | | | | | | |
| 34 | | | 641 | 0.003 | 5.739E-08 | 0.00004 | | | | | | | | | 753.7 | 35,704 | 81.97 | 1.9789E-60 | 5.196E+06 | 1.47 | 1.51E-55 |
| | 50 | 7,854 | | | | | 0.002 | 314 | 0.3 | 94 | 2.17E-05 | 0.03 | 2.00 | 63.88 | | | | | | | |
| 35 | | | 616 | 0.003 | 5.739E-08 | 0.00004 | | | | | | | | | 689.8 | 36,320 | 83.38 | 2.2735E-55 | 5.196E+06 | 1.41 | 1.67E-50 |
| | 48 | 7,238 | | | | | 0.002 | 302 | 0.3 | 90 | 2.30E-05 | 0.03 | 2.00 | 60.29 | | | | | | | |
| 36 | | | 591 | 0.003 | 5.739E-08 | 0.00003 | | | | | | | | | 629.5 | 36,911 | 84.74 | 1.3558E-50 | 5.196E+06 | 1.36 | 9.55E-46 |
| | 46 | 6,648 | | | | | 0.002 | 289 | 0.3 | 87 | 2.44E-05 | 0.04 | 2.00 | 56.85 | | | | | | | |
| 37 | | | 565 | 0.003 | 5.739E-08 | 0.00003 | | | | | | | | | 572.7 | 37,476 | 86.03 | 4.3201E-46 | 5.196E+06 | 1.30 | 2.91E-41 |
| | 44 | 6,082 | | | | | 0.002 | 276 | 0.3 | 83 | 2.59E-05 | 0.04 | 2.00 | 53.56 | | | | | | | |
| 38 | | | 540 | 0.003 | 5.739E-08 | 0.00003 | | | | | | | | | 519.1 | 38,017 | 87.27 | 7.5509E-42 | 5.196E+06 | 1.24 | 4.87E-37 |
| | 42 | 5,542 | | | | | 0.002 | 264 | 0.3 | 79 | 2.76E-05 | 0.04 | 2.00 | 50.40 | | | | | | | |
| 39 | | | 515 | 0.003 | 5.739E-08 | 0.00003 | | | | | | | | | 468.7 | 38,532 | 88.46 | 7.4148E-38 | 5.196E+06 | 1.18 | 4.56E-33 |
| | 40 | 5,027 | | | | | 0.002 | 251 | 0.3 | 75 | 2.93E-05 | 0.04 | 2.00 | 47.35 | | | | | | | |
| 40 | | | 490 | 0.003 | 5.739E-08 | 0.00003 | | | | | | | | | 421.4 | 39,022 | 89.58 | 4.1808E-34 | 5.196E+06 | 1.13 | 2.44E-29 |
| | 38 | 4,536 | | | | | 0.002 | 239 | 0.3 | 72 | 3.13E-05 | 0.05 | 2.00 | 44.42 | | | | | | | |
| 41 | | | 465 | 0.003 | 5.739E-08 | 0.00003 | | | | | | | | | 376.9 | 39,487 | 90.65 | 1.3807E-30 | 5.196E+06 | 1.07 | 7.66E-26 |
| | 36 | 4,072 | | | | | 0.002 | 226 | 0.3 | 68 | 3.34E-05 | 0.05 | 2.00 | 41.59 | | | | | | | |
| 42 | | | 440 | 0.003 | 5.739E-08 | 0.00003 | | | | | | | | | 335.4 | 39,927 | 91.66 | 2.7196E-27 | 5.196E+06 | 1.01 | 1.43E-22 |
| | 34 | 3,632 | | | | | 0.002 | 214 | 0.3 | 64 | 3.58E-05 | 0.05 | 2.00 | 38.84 | | | | | | | |
| 43 | | | 415 | 0.003 | 5.739E-08 | 0.00002 | | | | | | | | | 296.5 | 40,341 | 92.61 | 3.2479E-24 | 5.196E+06 | 0.95 | 1.61E-19 |
| | 32 | 3,217 | | | | | 0.002 | 201 | 0.3 | 60 | 3.84E-05 | 0.06 | 2.00 | 36.18 | | | | | | | |
| 44 | | | 390 | 0.003 | 5.739E-08 | 0.00002 | | | | | | | | | 260.3 | 40,731 | 93.51 | 2.3874E-21 | 5.196E+06 | 0.89 | 1.11E-16 |
| | 30 | 2,827 | | | | | 0.002 | 188 | 0.3 | 57 | 4.13E-05 | 0.06 | 2.00 | 33.60 | | | | | | | |
| 45 | | | 364 | 0.003 | 5.739E-08 | 0.00002 | | | | | | | | | 226.7 | 41,095 | 94.34 | 1.0950E-18 | 5.196E+06 | 0.84 | 4.76E-14 |
| | 28 | 2,463 | | | | | 0.002 | 176 | 0.3 | 53 | 4.47E-05 | 0.06 | 2.00 | 31.08 | | | | | | | |
| 46 | | | 339 | 0.003 | 5.739E-08 | 0.00002 | | | | | | | | | 195.7 | 41,435 | 95.12 | 3.1726E-16 | 5.196E+06 | 0.78 | 1.28E-11 |
| | 26 | 2,124 | | | | | 0.002 | 163 | 0.3 | 49 | 4.85E-05 | 0.07 | 2.00 | 28.62 | | | | | | | |
| 47 | | | 314 | 0.003 | 5.739E-08 | 0.00002 | | | | | | | | | 167.0 | 41,749 | 95.84 | 5.8728E-14 | 5.196E+06 | 0.72 | 2.20E-09 |
| | 24 | 1,810 | | | | | 0.002 | 151 | 0.3 | 45 | 5.30E-05 | 0.08 | 2.00 | 26.22 | | | | | | | |
| 48 | | | 289 | 0.003 | 5.739E-08 | 0.00002 | | | | | | | | | 140.8 | 42,038 | 96.51 | 7.0164E-12 | 5.196E+06 | 0.66 | 2.42E-07 |
| | 22 | 1,521 | | | | | 0.002 | 138 | 0.3 | 41 | 5.82E-05 | 0.08 | 2.00 | 23.87 | | | | | | | |
| 49 | | | 264 | 0.003 | 5.739E-08 | 0.00002 | | | | | | | | | 116.9 | 42,302 | 97.11 | 5.4599E-10 | 5.196E+06 | 0.61 | 1.72E-05 |
| | 20 | 1,257 | | | | | 0.002 | 126 | 0.3 | 38 | 6.44E-05 | 0.09 | 2.00 | 21.57 | | | | | | | |
| 50 | | | 239 | 0.003 | 5.739E-08 | 0.00001 | | | | | | | | | 95.4 | 42,541 | 97.66 | 2.7901E-08 | 5.196E+06 | 0.55 | 7.95E-04 |
| | 18 | 1,018 | | | | | 0.002 | 113 | 0.3 | 34 | 7.20E-05 | 0.10 | 2.00 | 19.30 | | | | | | | |
| 51 | | | 214 | 0.003 | 5.739E-08 | 0.00001 | | | | | | | | | 76.1 | 42,754 | 98.15 | 9.4314E-07 | 5.196E+06 | 0.49 | 2.40E-02 |
| | 16 | 804 | | | | | 0.002 | 101 | 0.3 | 30 | 8.14E-05 | 0.12 | 2.00 | 17.07 | | | | | | | |
| 52 | | | 188 | 0.003 | 5.739E-08 | 0.00001 | | | | | | | | | 59.0 | 42,943 | 98.58 | 2.1226E-05 | 5.196E+06 | 0.43 | 4.77E-01 |
| | 14 | 616 | | | | | 0.002 | 88 | 0.3 | 26 | 9.34E-05 | 0.13 | 2.00 | 14.87 | | | | | | | |
| 53 | | | 163 | 0.003 | 5.739E-08 | 0.00001 | | | | | | | | | 44.1 | 43,106 | 98.96 | 3.1983E-04 | 5.196E+06 | 0.38 | 6.23E+00 |
| | 12 | 452 | | | | | 0.002 | 75 | 0.3 | 23 | 1.09E-04 | 0.16 | 2.00 | 12.70 | | | | | | | |
| 54 | | | 138 | 0.003 | 5.739E-08 | 0.00001 | | | | | | | | | 31.4 | 43,244 | 99.28 | 3.2422E-03 | 5.196E+06 | 0.32 | 5.35E+01 |
| | 10 | 314 | | | | | 0.002 | 63 | 0.3 | 19 | 1.32E-04 | 0.19 | 2.00 | 10.55 | | | | | | | |
| 55 | | | 113 | 0.003 | 5.739E-08 | 0.00001 | | | | | | | | | 20.9 | 43,357 | 99.53 | 2.2205E-02 | 5.196E+06 | 0.26 | 3.00E+02 |
| | 8 | 201 | | | | | 0.002 | 50 | 0.3 | 15 | 1.65E-04 | 0.24 | 2.00 | 8.42 | | | | | | | |
| 56 | | | 88 | 0.003 | 5.739E-08 | 0.00001 | | | | | | | | | 12.5 | 43,445 | 99.74 | 1.0308E-01 | 5.196E+06 | 0.20 | 1.08E+03 |
| | 6 | 113 | | | | | 0.002 | 38 | 0.3 | 11 | 2.20E-04 | 0.32 | 2.00 | 6.30 | | | | | | | |
| 57 | | | 63 | 0.003 | 5.739E-08 | 0.00000 | | | | | | | | | 6.2 | 43,508 | 99.88 | 3.2525E-01 | 5.196E+06 | 0.14 | 2.44E+03 |
| | 4 | 50 | | | | | 0.002 | 25 | 0.3 | 8 | 3.31E-04 | 0.48 | 2.00 | 4.19 | | | | | | | |
| 58 | | | 43 | 0.003 | 5.739E-08 | 0.00000 | | | | | | | | | 2.0 | 43,551 | 99.98 | 6.9892E-01 | 5.196E+06 | 0.10 | 3.60E+03 |
| | 1.5 | 7 | | | | | 0.002 | 9 | 0.3 | 3 | 8.84E-04 | 1.27 | 2.50 | 1.96 | | | | | | | |
| 59 | | | 7 | 0.003 | 5.739E-08 | 0.00000 | | | | | | | | | 0.0 | 43,558 | 100.00 | 1.0000E+00 | 5.196E+06 | 0.02 | 8.43E+02 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Considered | pCi/min | 8.324E+03 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Not Considered | pCi/min | 5.196E+06 |

| | | |
|---|---|---|
| Reduction in Rn-222 Flux Due to Decay | % | 99.84 |

**TABLE A-5**

**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA - ONE HALF ACRE AREA - ESTIMATE YEAR 2000- LANDFILL POROSITY = 0.3**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multilier ($e^{-kt}$) | Rn-222 Flux Rate from FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-22 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| | 83.25 | 21,773 | | | | | 0 | | | | 0 | 0 | | | | | | | | | |
| 1 | | | 131 | 0.1413 | 6.485E-06 | 8.468E-04 | | | | | | | | | 159.3 | 131 | 0.60 | 2.4015E-13 | 3.011E+06 | 0.60 | 4.33E-09 |
| | 83 | 21,642 | | | | | 8.468E-04 | 522 | 0.3 | 156 | 5.41E-06 | 0.01 | 0.25 | 32.08 | | | | | | | |
| 2 | | | 518 | 0.1413 | 6.485E-06 | 3.362E-03 | | | | | | | | | 127.2 | 649 | 2.98 | 8.3437E-11 | 3.011E+06 | 2.38 | 5.98E-06 |
| | 82 | 21,124 | | | | | 4.209E-03 | 515 | 0.3 | 155 | 2.72E-05 | 0.04 | 1.00 | 25.50 | | | | | | | |
| 3 | | | 512 | 0.1413 | 6.485E-06 | 3.321E-03 | | | | | | | | | 101.7 | 1,161 | 5.33 | 8.7442E-09 | 3.011E+06 | 2.35 | 6.19E-04 |
| | 81 | 20,612 | | | | | 7.530E-03 | 509 | 0.3 | 153 | 4.93E-05 | 0.07 | 1.00 | 14.08 | | | | | | | |
| 4 | | | 506 | 0.1413 | 6.485E-06 | 3.280E-03 | | | | | | | | | 87.6 | 1,667 | 7.65 | 1.1408E-07 | 3.011E+06 | 2.32 | 7.98E-03 |
| | 80 | 20,106 | | | | | 1.081E-02 | 503 | 0.3 | 151 | 7.17E-05 | 0.10 | 1.00 | 9.69 | | | | | | | |
| 5 | | | 500 | 0.1413 | 6.485E-06 | 3.240E-03 | | | | | | | | | 78.0 | 2,166 | 9.95 | 6.6774E-07 | 3.011E+06 | 2.29 | 4.61E-02 |
| | 79 | 19,607 | | | | | 1.405E-02 | 496 | 0.3 | 149 | 9.43E-05 | 0.14 | 1.00 | 7.36 | | | | | | | |
| 6 | | | 493 | 0.1413 | 6.485E-06 | 3.199E-03 | | | | | | | | | 70.6 | 2,660 | 12.21 | 2.5567E-06 | 3.011E+06 | 2.26 | 1.74E-01 |
| | 78 | 19,113 | | | | | 1.725E-02 | 490 | 0.3 | 147 | 1.17E-04 | 0.17 | 1.00 | 5.92 | | | | | | | |
| 7 | | | 487 | 0.1413 | 6.485E-06 | 3.158E-03 | | | | | | | | | 64.7 | 3,147 | 14.45 | 7.5267E-06 | 3.011E+06 | 2.24 | 5.07E-01 |
| | 77 | 18,627 | | | | | 2.041E-02 | 484 | 0.3 | 145 | 1.41E-04 | 0.20 | 1.00 | 4.94 | | | | | | | |
| 8 | | | 481 | 0.1413 | 6.485E-06 | 3.117E-03 | | | | | | | | | 59.7 | 3,627 | 16.65 | 1.8530E-05 | 3.011E+06 | 2.21 | 1.23E+00 |
| | 76 | 18,146 | | | | | 2.352E-02 | 478 | 0.3 | 143 | 1.64E-04 | 0.24 | 1.00 | 4.23 | | | | | | | |
| 9 | | | 474 | 0.1413 | 6.485E-06 | 3.077E-03 | | | | | | | | | 55.5 | 4,102 | 18.83 | 4.0076E-05 | 3.011E+06 | 2.18 | 2.63E+00 |
| | 75 | 17,672 | | | | | 2.660E-02 | 471 | 0.3 | 141 | 1.88E-04 | 0.27 | 1.00 | 3.69 | | | | | | | |
| 10 | | | 468 | 0.1413 | 6.485E-06 | 3.036E-03 | | | | | | | | | 51.8 | 4,570 | 20.98 | 7.8570E-05 | 3.011E+06 | 2.15 | 5.08E+00 |
| | 74 | 17,203 | | | | | 2.964E-02 | 465 | 0.3 | 139 | 2.12E-04 | 0.31 | 1.00 | 3.27 | | | | | | | |
| 11 | | | 462 | 0.1413 | 6.485E-06 | 2.995E-03 | | | | | | | | | 48.5 | 5,031 | 23.10 | 1.4262E-04 | 3.011E+06 | 2.12 | 9.11E+00 |
| | 73 | 16,742 | | | | | 3.263E-02 | 459 | 0.3 | 138 | 2.37E-04 | 0.34 | 1.00 | 2.93 | | | | | | | |
| 12 | | | 456 | 0.1413 | 6.485E-06 | 2.954E-03 | | | | | | | | | 45.6 | 5,487 | 25.19 | 2.4331E-04 | 3.011E+06 | 2.09 | 1.53E+01 |
| | 72 | 16,286 | | | | | 3.558E-02 | 452 | 0.3 | 136 | 2.62E-04 | 0.38 | 1.00 | 2.65 | | | | | | | |
| 13 | | | 449 | 0.1413 | 6.485E-06 | 2.914E-03 | | | | | | | | | 43.0 | 5,936 | 27.26 | 3.9442E-04 | 3.011E+06 | 2.06 | 2.45E+01 |
| | 71 | 15,837 | | | | | 3.850E-02 | 446 | 0.3 | 134 | 2.88E-04 | 0.41 | 1.00 | 2.41 | | | | | | | |
| 14 | | | 443 | 0.1413 | 6.485E-06 | 2.873E-03 | | | | | | | | | 40.6 | 6,379 | 29.29 | 6.1263E-04 | 3.011E+06 | 2.03 | 3.75E+01 |
| | 70 | 15,394 | | | | | 4.137E-02 | 440 | 0.3 | 132 | 3.14E-04 | 0.45 | 1.00 | 2.21 | | | | | | | |
| 15 | | | 437 | 0.1413 | 6.485E-06 | 2.832E-03 | | | | | | | | | 38.3 | 6,816 | 31.29 | 9.1758E-04 | 3.011E+06 | 2.00 | 5.54E+01 |
| | 69 | 14,957 | | | | | 4.420E-02 | 434 | 0.3 | 130 | 3.40E-04 | 0.49 | 1.00 | 2.04 | | | | | | | |
| 16 | | | 430 | 0.1413 | 6.485E-06 | 2.791E-03 | | | | | | | | | 36.3 | 7,246 | 33.27 | 1.3320E-03 | 3.011E+06 | 1.98 | 7.93E+01 |
| | 68 | 14,527 | | | | | 4.699E-02 | 427 | 0.3 | 128 | 3.67E-04 | 0.53 | 1.00 | 1.89 | | | | | | | |
| 17 | | | 424 | 0.1413 | 6.485E-06 | 2.751E-03 | | | | | | | | | 34.4 | 7,670 | 35.22 | 1.8817E-03 | 3.011E+06 | 1.95 | 1.10E+02 |
| | 67 | 14,103 | | | | | 4.974E-02 | 421 | 0.3 | 126 | 3.94E-04 | 0.57 | 1.00 | 1.76 | | | | | | | |
| 18 | | | 418 | 0.1413 | 6.485E-06 | 2.710E-03 | | | | | | | | | 32.6 | 8,088 | 37.14 | 2.5954E-03 | 3.011E+06 | 1.92 | 1.50E+02 |
| | 66 | 13,685 | | | | | 5.245E-02 | 415 | 0.3 | 124 | 4.22E-04 | 0.61 | 1.00 | 1.65 | | | | | | | |
| 19 | | | 412 | 0.1413 | 6.485E-06 | 2.669E-03 | | | | | | | | | 31.0 | 8,500 | 39.03 | 3.5049E-03 | 3.011E+06 | 1.89 | 1.99E+02 |
| | 65 | 13,273 | | | | | 5.512E-02 | 408 | 0.3 | 123 | 4.50E-04 | 0.65 | 1.00 | 1.54 | | | | | | | |
| 20 | | | 405 | 0.1413 | 6.485E-06 | 2.628E-03 | | | | | | | | | 29.5 | 8,905 | 40.89 | 4.6446E-03 | 3.011E+06 | 1.86 | 2.60E+02 |
| | 64 | 12,868 | | | | | 5.775E-02 | 402 | 0.3 | 121 | 4.79E-04 | 0.69 | 1.00 | 1.45 | | | | | | | |
| 21 | | | 399 | 0.1413 | 6.485E-06 | 2.588E-03 | | | | | | | | | 28.0 | 9,304 | 42.72 | 6.0514E-03 | 3.011E+06 | 1.83 | 3.34E+02 |
| | 63 | 12,469 | | | | | 6.034E-02 | 396 | 0.3 | 119 | 5.08E-04 | 0.73 | 1.00 | 1.37 | | | | | | | |
| 22 | | | 393 | 0.1413 | 6.485E-06 | 2.547E-03 | | | | | | | | | 26.6 | 9,697 | 44.52 | 7.7647E-03 | 3.011E+06 | 1.80 | 4.22E+02 |
| | 62 | 12,076 | | | | | 6.289E-02 | 390 | 0.3 | 117 | 5.38E-04 | 0.77 | 1.00 | 1.29 | | | | | | | |
| 23 | | | 386 | 0.1413 | 6.485E-06 | 2.506E-03 | | | | | | | | | 25.3 | 10,083 | 46.30 | 9.8255E-03 | 3.011E+06 | 1.77 | 5.25E+02 |
| | 61 | 11,690 | | | | | 6.539E-02 | 383 | 0.3 | 115 | 5.69E-04 | 0.82 | 1.00 | 1.22 | | | | | | | |
| 24 | | | 380 | 0.1413 | 6.485E-06 | 2.465E-03 | | | | | | | | | 24.1 | 10,463 | 48.04 | 1.2277E-02 | 3.011E+06 | 1.75 | 6.45E+02 |
| | 60 | 11,310 | | | | | 6.786E-02 | 377 | 0.3 | 113 | 6.00E-04 | 0.86 | 1.00 | 1.16 | | | | | | | |
| 25 | | | 374 | 0.1413 | 6.485E-06 | 2.425E-03 | | | | | | | | | 23.0 | 10,837 | 49.76 | 1.5162E-02 | 3.011E+06 | 1.72 | 7.84E+02 |
| | 59 | 10,936 | | | | | 7.028E-02 | 371 | 0.3 | 111 | 6.32E-04 | 0.91 | 1.00 | 1.10 | | | | | | | |
| 26 | | | 368 | 0.1413 | 6.485E-06 | 2.384E-03 | | | | | | | | | 21.9 | 11,205 | 51.44 | 1.8527E-02 | 3.011E+06 | 1.69 | 9.41E+02 |
| | 58 | 10,568 | | | | | 7.267E-02 | 364 | 0.3 | 109 | 6.65E-04 | 0.96 | 1.00 | 1.04 | | | | | | | |
| 27 | | | 361 | 0.1413 | 6.485E-06 | 2.343E-03 | | | | | | | | | 20.8 | 11,566 | 53.10 | 2.2417E-02 | 3.011E+06 | 1.66 | 1.12E+03 |
| | 57 | 10,207 | | | | | 7.501E-02 | 358 | 0.3 | 107 | 6.98E-04 | 1.01 | 1.00 | 0.99 | | | | | | | |
| 28 | | | 355 | 0.1413 | 6.485E-06 | 2.302E-03 | | | | | | | | | 19.8 | 11,921 | 54.73 | 2.6877E-02 | 3.011E+06 | 1.63 | 1.32E+03 |
| | 56 | 9,852 | | | | | 7.731E-02 | 352 | 0.3 | 106 | 7.32E-04 | 1.05 | 1.00 | 0.95 | | | | | | | |
| 29 | | | 349 | 0.1413 | 6.485E-06 | 2.262E-03 | | | | | | | | | 18.9 | 12,270 | 56.33 | 3.1951E-02 | 3.011E+06 | 1.60 | 1.54E+03 |
| | 55 | 9,503 | | | | | 7.957E-02 | 346 | 0.3 | 104 | 7.68E-04 | 1.11 | 1.00 | 0.90 | | | | | | | |
| 30 | | | 342 | 0.1413 | 6.485E-06 | 2.221E-03 | | | | | | | | | 18.0 | 12,612 | 57.91 | 3.7684E-02 | 3.011E+06 | 1.57 | 1.78E+03 |
| | 54 | 9,161 | | | | | 8.179E-02 | 339 | 0.3 | 102 | 8.04E-04 | 1.16 | 1.00 | 0.86 | | | | | | | |
| 31 | | | 336 | 0.1413 | 6.485E-06 | 2.180E-03 | | | | | | | | | 17.1 | 12,948 | 59.45 | 4.4118E-02 | 3.011E+06 | 1.54 | 2.05E+03 |
| | 53 | 8,825 | | | | | 8.397E-02 | 333 | 0.3 | 100 | 8.41E-04 | 1.21 | 1.00 | 0.83 | | | | | | | |
| 32 | | | 330 | 0.1413 | 6.485E-06 | 2.139E-03 | | | | | | | | | 16.3 | 13,278 | 60.96 | 5.1293E-02 | 3.011E+06 | 1.51 | 2.34E+03 |
| | 52 | 8,495 | | | | | 8.611E-02 | 327 | 0.3 | 98 | 8.79E-04 | 1.27 | 1.00 | 0.79 | | | | | | | |
| 33 | | | 324 | 0.1413 | 6.485E-06 | 2.099E-03 | | | | | | | | | 15.5 | 13,602 | 62.45 | 5.9248E-02 | 3.011E+06 | 1.49 | 2.65E+03 |
| | 51 | 8,171 | | | | | 8.821E-02 | 320 | 0.3 | 96 | 9.18E-04 | 1.32 | 1.00 | 0.76 | | | | | | | |
| 34 | | | 317 | 0.1413 | 6.485E-06 | 2.058E-03 | | | | | | | | | 14.7 | 13,919 | 63.91 | 6.8019E-02 | 3.011E+06 | 1.46 | 2.98E+03 |
| | 50 | 7,854 | | | | | 9.027E-02 | 314 | 0.3 | 94 | 9.58E-04 | 1.38 | 1.00 | 0.73 | | | | | | | |
| 35 | | | 311 | 0.1413 | 6.485E-06 | 2.017E-03 | | | | | | | | | 14.0 | 14,230 | 65.34 | 7.7636E-02 | 3.011E+06 | 1.43 | 3.34E+03 |
| | 49 | 7,543 | | | | | 9.229E-02 | 308 | 0.3 | 92 | 9.99E-04 | 1.44 | 1.00 | 0.70 | | | | | | | |
| 36 | | | 305 | 0.1413 | 6.485E-06 | 1.976E-03 | | | | | | | | | 13.3 | 14,535 | 66.73 | 8.8129E-02 | 3.011E+06 | 1.40 | 3.71E+03 |
| | 48 | 7,238 | | | | | 9.426E-02 | 302 | 0.3 | 90 | 1.04E-03 | 1.50 | 1.00 | 0.67 | | | | | | | |
| 37 | | | 298 | 0.1413 | 6.485E-06 | 1.936E-03 | | | | | | | | | 12.7 | 14,833 | 68.10 | 9.9522E-02 | 3.011E+06 | 1.37 | 4.11E+03 |
| | 47 | 6,940 | | | | | 9.620E-02 | 295 | 0.3 | 89 | 1.09E-03 | 1.56 | 1.00 | 0.64 | | | | | | | |
| 38 | | | 292 | 0.1413 | 6.485E-06 | 1.895E-03 | | | | | | | | | 12.0 | 15,125 | 69.45 | 1.1184E-01 | 3.011E+06 | 1.34 | 4.52E+03 |
| | 46 | 6,648 | | | | | 9.809E-02 | 289 | 0.3 | 87 | 1.13E-03 | 1.63 | 1.00 | 0.61 | | | | | | | |
| 39 | | | 286 | 0.1413 | 6.485E-06 | 1.854E-03 | | | | | | | | | 11.4 | 15,411 | 70.76 | 1.2509E-01 | 3.011E+06 | 1.31 | 4.94E+03 |
| | 45 | 6,362 | | | | | 9.995E-02 | 283 | 0.3 | 85 | 1.18E-03 | 1.70 | 1.00 | 0.59 | | | | | | | |
| 40 | | | 280 | 0.1413 | 6.485E-06 | 1.813E-03 | | | | | | | | | 10.8 | 15,691 | 72.04 | 1.3928E-01 | 3.011E+06 | 1.28 | 5.38E+03 |
| | 44 | 6,082 | | | | | 1.018E-01 | 276 | 0.3 | 83 | 1.23E-03 | 1.77 | 1.00 | 0.57 | | | | | | | |
| 41 | | | 273 | 0.1413 | 6.485E-06 | 1.773E-03 | | | | | | | | | 10.2 | 15,964 | 73.30 | 1.5443E-01 | 3.011E+06 | 1.25 | 5.84E+03 |
| | 43 | 5,809 | | | | | 1.035E-01 | 270 | 0.3 | 81 | 1.28E-03 | 1.84 | 1.00 | 0.54 | | | | | | | |
| 42 | | | 267 | 0.1413 | 6.485E-06 | 1.732E-03 | | | | | | | | | 9.7 | 16,231 | 74.52 | 1.7053E-01 | 3.011E+06 | 1.23 | 6.30E+03 |
| | 42 | 5,542 | | | | | 1.053E-01 | 264 | 0.3 | 79 | 1.33E-03 | 1.91 | 1.00 | 0.52 | | | | | | | |

**TABLE A-5 (CONTINUED)**

**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA - ONE HALF ACRE AREA - ESTIMATE YEAR 2000- LANDFILL POROSITY = 0.3**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multiliier (e^-kt) | Rn-222 Flux Rate from FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-222 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| 43 | | | 261 | 0.1413 | 6.485E-06 | 1.691E-03 | | | | | | | | | 9.2 | 16,492 | 75.72 | 1.8757E-01 | 3.011E+06 | 1.20 | 6.76E+03 |
| | 41 | 5,281 | | | | | 1.070E-01 | 258 | 0.3 | 77 | 1.38E-03 | 1.99 | 1.00 | 0.50 | | | | | | | |
| 44 | | | 254 | 0.1413 | 6.485E-06 | 1.650E-03 | | | | | | | | | 8.7 | 16,746 | 76.89 | 2.0555E-01 | 3.011E+06 | 1.17 | 7.23E+03 |
| | 40 | 5,027 | | | | | 1.086E-01 | 251 | 0.3 | 75 | 1.44E-03 | 2.07 | 1.00 | 0.48 | | | | | | | |
| 45 | | | 248 | 0.1413 | 6.485E-06 | 1.610E-03 | | | | | | | | | 8.2 | 16,995 | 78.03 | 2.2444E-01 | 3.011E+06 | 1.14 | 7.70E+03 |
| | 39 | 4,778 | | | | | 1.102E-01 | 245 | 0.3 | 74 | 1.50E-03 | 2.16 | 1.00 | 0.46 | | | | | | | |
| 46 | | | 242 | 0.1413 | 6.485E-06 | 1.569E-03 | | | | | | | | | 7.7 | 17,237 | 79.14 | 2.4423E-01 | 3.011E+06 | 1.11 | 8.17E+03 |
| | 38 | 4,536 | | | | | 1.118E-01 | 239 | 0.3 | 72 | 1.56E-03 | 2.25 | 1.00 | 0.44 | | | | | | | |
| 47 | | | 236 | 0.1413 | 6.485E-06 | 1.528E-03 | | | | | | | | | 7.3 | 17,472 | 80.22 | 2.6488E-01 | 3.011E+06 | 1.08 | 8.63E+03 |
| | 37 | 4,301 | | | | | 1.133E-01 | 232 | 0.3 | 70 | 1.62E-03 | 2.34 | 1.00 | 0.43 | | | | | | | |
| 48 | | | 229 | 0.1413 | 6.485E-06 | 1.487E-03 | | | | | | | | | 6.9 | 17,702 | 81.27 | 2.8636E-01 | 3.011E+06 | 1.05 | 9.08E+03 |
| | 36 | 4,072 | | | | | 1.148E-01 | 226 | 0.3 | 68 | 1.69E-03 | 2.44 | 1.00 | 0.41 | | | | | | | |
| 49 | | | 223 | 0.1413 | 6.485E-06 | 1.447E-03 | | | | | | | | | 6.4 | 17,925 | 82.30 | 3.0862E-01 | 3.011E+06 | 1.02 | 9.52E+03 |
| | 35 | 3,848 | | | | | 1.162E-01 | 220 | 0.3 | 66 | 1.76E-03 | 2.54 | 1.00 | 0.39 | | | | | | | |
| 50 | | | 217 | 0.1413 | 6.485E-06 | 1.406E-03 | | | | | | | | | 6.1 | 18,141 | 83.29 | 3.3162E-01 | 3.011E+06 | 1.00 | 9.94E+03 |
| | 34 | 3,632 | | | | | 1.177E-01 | 214 | 0.3 | 64 | 1.84E-03 | 2.64 | 1.00 | 0.38 | | | | | | | |
| 51 | | | 210 | 0.1413 | 6.485E-06 | 1.365E-03 | | | | | | | | | 5.7 | 18,352 | 84.26 | 3.5531E-01 | 3.011E+06 | 0.97 | 1.03E+04 |
| | 33 | 3,421 | | | | | 1.190E-01 | 207 | 0.3 | 62 | 1.91E-03 | 2.76 | 1.00 | 0.36 | | | | | | | |
| 52 | | | 204 | 0.1413 | 6.485E-06 | 1.324E-03 | | | | | | | | | 5.3 | 18,556 | 85.20 | 3.7963E-01 | 3.011E+06 | 0.94 | 1.07E+04 |
| | 32 | 3,217 | | | | | 1.203E-01 | 201 | 0.3 | 60 | 2.00E-03 | 2.87 | 1.00 | 0.35 | | | | | | | |
| 53 | | | 198 | 0.1413 | 6.485E-06 | 1.284E-03 | | | | | | | | | 5.0 | 18,754 | 86.11 | 4.0452E-01 | 3.011E+06 | 0.91 | 1.11E+04 |
| | 31 | 3,019 | | | | | 1.216E-01 | 195 | 0.3 | 58 | 2.08E-03 | 3.00 | 1.00 | 0.33 | | | | | | | |
| 54 | | | 192 | 0.1413 | 6.485E-06 | 1.243E-03 | | | | | | | | | 4.6 | 18,946 | 86.99 | 4.2990E-01 | 3.011E+06 | 0.88 | 1.14E+04 |
| | 30 | 2,827 | | | | | 1.229E-01 | 188 | 0.3 | 57 | 2.17E-03 | 3.13 | 1.00 | 0.32 | | | | | | | |
| 55 | | | 185 | 0.1413 | 6.485E-06 | 1.202E-03 | | | | | | | | | 4.3 | 19,131 | 87.84 | 4.5570E-01 | 3.011E+06 | 0.85 | 1.17E+04 |
| | 29 | 2,642 | | | | | 1.241E-01 | 182 | 0.3 | 55 | 2.27E-03 | 3.27 | 1.00 | 0.31 | | | | | | | |
| 56 | | | 179 | 0.1413 | 6.485E-06 | 1.161E-03 | | | | | | | | | 4.0 | 19,310 | 88.66 | 4.8186E-01 | 3.011E+06 | 0.82 | 1.19E+04 |
| | 28 | 2,463 | | | | | 1.252E-01 | 176 | 0.3 | 53 | 2.37E-03 | 3.42 | 1.00 | 0.29 | | | | | | | |
| 57 | | | 173 | 0.1413 | 6.485E-06 | 1.121E-03 | | | | | | | | | 3.7 | 19,483 | 89.45 | 5.0828E-01 | 3.011E+06 | 0.79 | 1.21E+04 |
| | 27 | 2,290 | | | | | 1.264E-01 | 170 | 0.3 | 51 | 2.48E-03 | 3.58 | 1.00 | 0.28 | | | | | | | |
| 58 | | | 167 | 0.1413 | 6.485E-06 | 1.039E-03 | | | | | | | | | 3.4 | 19,649 | 90.22 | 5.3489E-01 | 3.011E+06 | 0.76 | 1.23E+04 |
| | 26 | 2,124 | | | | | 1.274E-01 | 163 | 0.3 | 49 | 2.60E-03 | 3.74 | 1.00 | 0.27 | | | | | | | |
| 59 | | | 160 | 0.1413 | 6.485E-06 | 9.983E-04 | | | | | | | | | 3.2 | 19,810 | 90.95 | 5.6160E-01 | 3.011E+06 | 0.74 | 1.24E+04 |
| | 25 | 1,964 | | | | | 1.284E-01 | 157 | 0.3 | 47 | 2.72E-03 | 3.92 | 1.00 | 0.25 | | | | | | | |
| 60 | | | 154 | 0.1413 | 6.485E-06 | 9.983E-04 | | | | | | | | | 2.9 | 19,963 | 91.66 | 5.8832E-01 | 3.011E+06 | 0.71 | 1.25E+04 |
| | 24 | 1,810 | | | | | 1.294E-01 | 151 | 0.3 | 45 | 2.86E-03 | 4.12 | 1.00 | 0.24 | | | | | | | |
| 61 | | | 148 | 0.1413 | 6.485E-06 | 9.576E-04 | | | | | | | | | 2.7 | 20,111 | 92.34 | 6.1497E-01 | 3.011E+06 | 0.68 | 1.26E+04 |
| | 23 | 1,662 | | | | | 1.303E-01 | 145 | 0.3 | 43 | 3.01E-03 | 4.33 | 1.00 | 0.23 | | | | | | | |
| 62 | | | 141 | 0.1413 | 6.485E-06 | 9.168E-04 | | | | | | | | | 2.4 | 20,253 | 92.99 | 6.4143E-01 | 3.011E+06 | 0.65 | 1.25E+04 |
| | 22 | 1,521 | | | | | 1.313E-01 | 138 | 0.3 | 41 | 3.17E-03 | 4.56 | 1.00 | 0.22 | | | | | | | |
| 63 | | | 135 | 0.1413 | 6.485E-06 | 8.761E-04 | | | | | | | | | 2.2 | 20,388 | 93.61 | 6.6762E-01 | 3.011E+06 | 0.62 | 1.25E+04 |
| | 21 | 1,385 | | | | | 1.321E-01 | 132 | 0.3 | 40 | 3.34E-03 | 4.81 | 1.00 | 0.21 | | | | | | | |
| 64 | | | 129 | 0.1413 | 6.485E-06 | 8.353E-04 | | | | | | | | | 2.0 | 20,516 | 94.20 | 6.9344E-01 | 3.011E+06 | 0.59 | 1.23E+04 |
| | 20 | 1,257 | | | | | 1.330E-01 | 126 | 0.3 | 38 | 3.53E-03 | 5.08 | 1.00 | 0.20 | | | | | | | |
| 65 | | | 123 | 0.1413 | 6.485E-06 | 7.946E-04 | | | | | | | | | 1.8 | 20,639 | 94.76 | 7.1879E-01 | 3.011E+06 | 0.56 | 1.22E+04 |
| | 19 | 1,134 | | | | | 1.338E-01 | 119 | 0.3 | 36 | 3.74E-03 | 5.38 | 1.00 | 0.19 | | | | | | | |
| 66 | | | 116 | 0.1413 | 6.485E-06 | 7.538E-04 | | | | | | | | | 1.6 | 20,755 | 95.29 | 7.4359E-01 | 3.011E+06 | 0.53 | 1.19E+04 |
| | 18 | 1,018 | | | | | 1.345E-01 | 113 | 0.3 | 34 | 3.96E-03 | 5.71 | 1.00 | 0.18 | | | | | | | |
| 67 | | | 110 | 0.1413 | 6.485E-06 | 7.131E-04 | | | | | | | | | 1.4 | 20,865 | 95.80 | 7.6772E-01 | 3.011E+06 | 0.50 | 1.17E+04 |
| | 17 | 908 | | | | | 1.352E-01 | 107 | 0.3 | 32 | 4.22E-03 | 6.08 | 1.00 | 0.16 | | | | | | | |
| 68 | | | 104 | 0.1413 | 6.485E-06 | 6.724E-04 | | | | | | | | | 1.3 | 20,969 | 96.28 | 7.9112E-01 | 3.011E+06 | 0.48 | 1.13E+04 |
| | 16 | 804 | | | | | 1.359E-01 | 101 | 0.3 | 30 | 4.51E-03 | 6.49 | 1.00 | 0.15 | | | | | | | |
| 69 | | | 97 | 0.1413 | 6.485E-06 | 6.316E-04 | | | | | | | | | 1.1 | 21,066 | 96.72 | 8.1367E-01 | 3.011E+06 | 0.45 | 1.10E+04 |
| | 15 | 707 | | | | | 1.365E-01 | 94 | 0.3 | 28 | 4.83E-03 | 6.95 | 1.00 | 0.14 | | | | | | | |
| 70 | | | 91 | 0.1413 | 6.485E-06 | 5.909E-04 | | | | | | | | | 1.0 | 21,157 | 97.14 | 8.3529E-01 | 3.011E+06 | 0.42 | 1.05E+04 |
| | 14 | 616 | | | | | 1.371E-01 | 88 | 0.3 | 26 | 5.20E-03 | 7.48 | 1.00 | 0.13 | | | | | | | |
| 71 | | | 85 | 0.1413 | 6.485E-06 | 5.501E-04 | | | | | | | | | 0.9 | 21,242 | 97.53 | 8.5591E-01 | 3.011E+06 | 0.39 | 1.00E+04 |
| | 13 | 531 | | | | | 1.377E-01 | 82 | 0.3 | 25 | 5.62E-03 | 8.09 | 1.00 | 0.12 | | | | | | | |
| 72 | | | 79 | 0.1413 | 6.485E-06 | 5.094E-04 | | | | | | | | | 0.7 | 21,321 | 97.89 | 8.7542E-01 | 3.011E+06 | 0.36 | 9.51E+03 |
| | 12 | 452 | | | | | 1.382E-01 | 75 | 0.3 | 23 | 6.11E-03 | 8.80 | 1.00 | 0.11 | | | | | | | |
| 73 | | | 72 | 0.1413 | 6.485E-06 | 4.686E-04 | | | | | | | | | 0.6 | 21,393 | 98.22 | 8.9376E-01 | 3.011E+06 | 0.33 | 8.93E+03 |
| | 11 | 380 | | | | | 1.387E-01 | 69 | 0.3 | 21 | 6.69E-03 | 9.63 | 1.00 | 0.10 | | | | | | | |
| 74 | | | 66 | 0.1413 | 6.485E-06 | 4.279E-04 | | | | | | | | | 0.5 | 21,459 | 98.53 | 9.1085E-01 | 3.011E+06 | 0.30 | 8.31E+03 |
| | 10 | 314 | | | | | 1.391E-01 | 63 | 0.3 | 19 | 7.38E-03 | 10.63 | 1.00 | 0.09 | | | | | | | |
| 75 | | | 60 | 0.1413 | 6.485E-06 | 3.871E-04 | | | | | | | | | 0.4 | 21,519 | 98.80 | 9.2662E-01 | 3.011E+06 | 0.27 | 7.65E+03 |
| | 9 | 254 | | | | | 1.395E-01 | 57 | 0.3 | 17 | 8.22E-03 | 11.84 | 1.00 | 0.08 | | | | | | | |
| 76 | | | 53 | 0.1413 | 6.485E-06 | 3.464E-04 | | | | | | | | | 0.3 | 21,572 | 99.04 | 9.4101E-01 | 3.011E+06 | 0.25 | 6.95E+03 |
| | 8 | 201 | | | | | 1.398E-01 | 50 | 0.3 | 15 | 9.27E-03 | 13.35 | 1.00 | 0.07 | | | | | | | |
| 77 | | | 47 | 0.1413 | 6.485E-06 | 3.056E-04 | | | | | | | | | 0.3 | 21,619 | 99.26 | 9.5395E-01 | 3.011E+06 | 0.22 | 6.21E+03 |
| | 7 | 154 | | | | | 1.401E-01 | 44 | 0.3 | 13 | 1.06E-02 | 15.29 | 1.00 | 0.07 | | | | | | | |
| 78 | | | 41 | 0.1413 | 6.485E-06 | 2.649E-04 | | | | | | | | | 0.2 | 21,660 | 99.45 | 9.6540E-01 | 3.011E+06 | 0.19 | 5.45E+03 |
| | 6 | 113 | | | | | 1.404E-01 | 38 | 0.3 | 11 | 1.24E-02 | 17.87 | 1.00 | 0.06 | | | | | | | |
| 79 | | | 35 | 0.1413 | 6.485E-06 | 2.241E-04 | | | | | | | | | 0.1 | 21,695 | 99.61 | 9.7530E-01 | 3.011E+06 | 0.16 | 4.66E+03 |
| | 5 | 79 | | | | | 1.406E-01 | 31 | 0.3 | 9 | 1.49E-02 | 21.48 | 1.00 | 0.05 | | | | | | | |
| 80 | | | 28 | 0.1413 | 6.485E-06 | 1.834E-04 | | | | | | | | | 0.1 | 21,723 | 99.74 | 9.8362E-01 | 3.011E+06 | 0.13 | 3.84E+03 |
| | 4 | 50 | | | | | 1.408E-01 | 25 | 0.3 | 8 | 1.87E-02 | 26.89 | 1.00 | 0.04 | | | | | | | |
| 81 | | | 22 | 0.1413 | 6.485E-06 | 1.426E-04 | | | | | | | | | 0.1 | 21,745 | 99.84 | 9.9031E-01 | 3.011E+06 | 0.10 | 3.01E+03 |
| | 3 | 28 | | | | | 1.409E-01 | 19 | 0.3 | 6 | 2.49E-02 | 35.89 | 1.00 | 0.03 | | | | | | | |
| 82 | | | 16 | 0.1413 | 6.485E-06 | 1.019E-04 | | | | | | | | | 0.026 | 21,760 | 99.91 | 9.9536E-01 | 3.011E+06 | 0.07 | 2.16E+03 |
| | 2 | 13 | | | | | 1.410E-01 | 13 | 0.3 | 4 | 3.74E-02 | 53.87 | 1.00 | 0.02 | | | | | | | |
| 83 | | | 5 | 0.1413 | 6.485E-06 | 3.565E-05 | | | | | | | | | 0.007 | 21,766 | 99.94 | 9.9873E-01 | 3.011E+06 | 0.03 | 7.59E+02 |
| | 1.5 | 7 | | | | | 1.411E-01 | 9 | 0.3 | 3 | 4.99E-02 | 71.85 | 0.50 | 0.01 | | | | | | | |
| 84 | | | 7 | 0.1413 | 6.485E-06 | 4.584E-05 | | | | | | | | | 0.000 | 21,773 | 99.97 | 1.0000E+00 | 3.011E+06 | 0.03 | 9.77E+02 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Considered | pCi/min | 4.390E+05 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Not Considered | pCi/min | 3.011E+06 |

| | | |
|---|---|---|
| Reduction in Rn-222 Flux Due to Decay | % | 85.42 |

**TABLE A-6**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA - ONE HALF ACRE AREA - ESTIMATE YEAR 2025 - LANDFILL POROSITY = 0.3**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multilier (e^-kt) | Rn-222 Flux Rate from FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-22 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| | 83.25 | 21,773 | | | | | 0 | | | | 0 | 0 | | | | | | | | | |
| 1 | | | 131 | 0.0400 | 1.837E-06 | 2.398E-04 | | | | | | | | | 562.6 | 131 | 0.60 | 2.7373E-45 | 3.691E+06 | 0.60 | 6.06E-41 |
| | 83 | 21,642 | | | | | 2.398E-04 | 522 | 0.3 | 156 | 1.53E-06 | 0.00 | 0.25 | 113.27 | | | | | | | |
| 2 | | | 518 | 0.0400 | 1.837E-06 | 9.520E-04 | | | | | | | | | 449.3 | 649 | 2.98 | 2.5692E-36 | 3.691E+06 | 2.38 | 2.26E-31 |
| | 82 | 21,124 | | | | | 1.192E-03 | 515 | 0.3 | 155 | 7.71E-06 | 0.01 | 1.00 | 90.06 | | | | | | | |
| 3 | | | 512 | 0.0400 | 1.837E-06 | 9.405E-04 | | | | | | | | | 359.2 | 1,161 | 5.33 | 3.5011E-29 | 3.691E+06 | 2.35 | 3.04E-24 |
| | 81 | 20,612 | | | | | 2.132E-03 | 509 | 0.3 | 153 | 1.40E-05 | 0.02 | 1.00 | 49.73 | | | | | | | |
| 4 | | | 506 | 0.0400 | 1.837E-06 | 9.289E-04 | | | | | | | | | 309.5 | 1,667 | 7.65 | 3.0428E-25 | 3.691E+06 | 2.32 | 2.61E-20 |
| | 80 | 20,106 | | | | | 3.061E-03 | 503 | 0.3 | 151 | 2.03E-05 | 0.03 | 1.00 | 34.21 | | | | | | | |
| 5 | | | 500 | 0.0400 | 1.837E-06 | 9.174E-04 | | | | | | | | | 275.3 | 2,166 | 9.95 | 1.5601E-22 | 3.691E+06 | 2.29 | 1.32E-17 |
| | 79 | 19,607 | | | | | 3.979E-03 | 496 | 0.3 | 149 | 2.67E-05 | 0.04 | 1.00 | 25.99 | | | | | | | |
| 6 | | | 493 | 0.0400 | 1.837E-06 | 9.058E-04 | | | | | | | | | 249.3 | 2,660 | 12.21 | 1.7869E-20 | 3.691E+06 | 2.26 | 1.49E-15 |
| | 78 | 19,113 | | | | | 4.884E-03 | 490 | 0.3 | 147 | 3.32E-05 | 0.05 | 1.00 | 20.90 | | | | | | | |
| 7 | | | 487 | 0.0400 | 1.837E-06 | 8.943E-04 | | | | | | | | | 228.4 | 3,147 | 14.45 | 8.0910E-19 | 3.691E+06 | 2.24 | 6.68E-14 |
| | 77 | 18,627 | | | | | 5.779E-03 | 484 | 0.3 | 145 | 3.98E-05 | 0.06 | 1.00 | 17.44 | | | | | | | |
| 8 | | | 481 | 0.0400 | 1.837E-06 | 8.828E-04 | | | | | | | | | 210.9 | 3,627 | 16.65 | 1.9484E-17 | 3.691E+06 | 2.21 | 1.59E-12 |
| | 76 | 18,146 | | | | | 6.661E-03 | 478 | 0.3 | 143 | 4.65E-05 | 0.07 | 1.00 | 14.93 | | | | | | | |
| 9 | | | 474 | 0.0400 | 1.837E-06 | 8.712E-04 | | | | | | | | | 196.0 | 4,102 | 18.83 | 2.9696E-16 | 3.691E+06 | 2.18 | 2.39E-11 |
| | 75 | 17,672 | | | | | 7.533E-03 | 471 | 0.3 | 141 | 5.33E-05 | 0.08 | 1.00 | 13.03 | | | | | | | |
| 10 | | | 468 | 0.0400 | 1.837E-06 | 8.597E-04 | | | | | | | | | 183.0 | 4,570 | 20.98 | 3.1999E-15 | 3.691E+06 | 2.15 | 2.54E-10 |
| | 74 | 17,203 | | | | | 8.392E-03 | 465 | 0.3 | 139 | 6.02E-05 | 0.09 | 1.00 | 11.54 | | | | | | | |
| 11 | | | 462 | 0.0400 | 1.837E-06 | 8.481E-04 | | | | | | | | | 171.4 | 5,031 | 23.10 | 2.6269E-14 | 3.691E+06 | 2.12 | 2.06E-09 |
| | 73 | 16,742 | | | | | 9.241E-03 | 459 | 0.3 | 138 | 6.72E-05 | 0.10 | 1.00 | 10.34 | | | | | | | |
| 12 | | | 456 | 0.0400 | 1.837E-06 | 8.366E-04 | | | | | | | | | 161.1 | 5,487 | 25.19 | 1.7323E-13 | 3.691E+06 | 2.09 | 1.34E-08 |
| | 72 | 16,286 | | | | | 1.008E-02 | 452 | 0.3 | 136 | 7.43E-05 | 0.11 | 1.00 | 9.35 | | | | | | | |
| 13 | | | 449 | 0.0400 | 1.837E-06 | 8.251E-04 | | | | | | | | | 151.7 | 5,936 | 27.26 | 9.5387E-13 | 3.691E+06 | 2.06 | 7.26E-08 |
| | 71 | 15,837 | | | | | 1.090E-02 | 446 | 0.3 | 134 | 8.15E-05 | 0.12 | 1.00 | 8.52 | | | | | | | |
| 14 | | | 443 | 0.0400 | 1.837E-06 | 8.135E-04 | | | | | | | | | 143.2 | 6,379 | 29.29 | 4.5163E-12 | 3.691E+06 | 2.03 | 3.39E-07 |
| | 70 | 15,394 | | | | | 1.172E-02 | 440 | 0.3 | 132 | 8.88E-05 | 0.13 | 1.00 | 7.82 | | | | | | | |
| 15 | | | 437 | 0.0400 | 1.837E-06 | 8.020E-04 | | | | | | | | | 135.4 | 6,816 | 31.29 | 1.8808E-11 | 3.691E+06 | 2.00 | 1.39E-06 |
| | 69 | 14,957 | | | | | 1.252E-02 | 434 | 0.3 | 130 | 9.62E-05 | 0.14 | 1.00 | 7.22 | | | | | | | |
| 16 | | | 430 | 0.0400 | 1.837E-06 | 7.904E-04 | | | | | | | | | 128.2 | 7,246 | 33.27 | 7.0131E-11 | 3.691E+06 | 1.98 | 5.12E-06 |
| | 68 | 14,527 | | | | | 1.331E-02 | 427 | 0.3 | 128 | 1.04E-04 | 0.15 | 1.00 | 6.69 | | | | | | | |
| 17 | | | 424 | 0.0400 | 1.837E-06 | 7.789E-04 | | | | | | | | | 121.5 | 7,670 | 35.22 | 2.3754E-10 | 3.691E+06 | 1.95 | 1.71E-05 |
| | 67 | 14,103 | | | | | 1.409E-02 | 421 | 0.3 | 126 | 1.12E-04 | 0.16 | 1.00 | 6.23 | | | | | | | |
| 18 | | | 418 | 0.0400 | 1.837E-06 | 7.674E-04 | | | | | | | | | 115.3 | 8,088 | 37.14 | 7.3947E-10 | 3.691E+06 | 1.92 | 5.24E-05 |
| | 66 | 13,685 | | | | | 1.485E-02 | 415 | 0.3 | 124 | 1.19E-04 | 0.17 | 1.00 | 5.82 | | | | | | | |
| 19 | | | 412 | 0.0400 | 1.837E-06 | 7.558E-04 | | | | | | | | | 109.5 | 8,500 | 39.03 | 2.1362E-09 | 3.691E+06 | 1.89 | 1.49E-04 |
| | 65 | 13,273 | | | | | 1.561E-02 | 408 | 0.3 | 123 | 1.27E-04 | 0.18 | 1.00 | 5.45 | | | | | | | |
| 20 | | | 405 | 0.0400 | 1.837E-06 | 7.443E-04 | | | | | | | | | 104.0 | 8,905 | 40.89 | 5.7731E-09 | 3.691E+06 | 1.86 | 3.96E-04 |
| | 64 | 12,868 | | | | | 1.635E-02 | 402 | 0.3 | 121 | 1.36E-04 | 0.20 | 1.00 | 5.12 | | | | | | | |
| 21 | | | 399 | 0.0400 | 1.837E-06 | 7.328E-04 | | | | | | | | | 98.9 | 9,304 | 42.72 | 1.4696E-08 | 3.691E+06 | 1.83 | 9.94E-04 |
| | 63 | 12,469 | | | | | 1.709E-02 | 396 | 0.3 | 119 | 1.44E-04 | 0.21 | 1.00 | 4.83 | | | | | | | |
| 22 | | | 393 | 0.0400 | 1.837E-06 | 7.212E-04 | | | | | | | | | 94.1 | 9,697 | 44.52 | 3.5440E-08 | 3.691E+06 | 1.80 | 2.36E-03 |
| | 62 | 12,076 | | | | | 1.781E-02 | 390 | 0.3 | 117 | 1.52E-04 | 0.22 | 1.00 | 4.56 | | | | | | | |
| 23 | | | 386 | 0.0400 | 1.837E-06 | 7.097E-04 | | | | | | | | | 89.5 | 10,083 | 46.30 | 8.1377E-08 | 3.691E+06 | 1.77 | 5.33E-03 |
| | 61 | 11,690 | | | | | 1.852E-02 | 383 | 0.3 | 115 | 1.61E-04 | 0.23 | 1.00 | 4.31 | | | | | | | |
| 24 | | | 380 | 0.0400 | 1.837E-06 | 6.981E-04 | | | | | | | | | 85.2 | 10,463 | 48.04 | 1.7868E-07 | 3.691E+06 | 1.75 | 1.15E-02 |
| | 60 | 11,310 | | | | | 1.922E-02 | 377 | 0.3 | 113 | 1.70E-04 | 0.24 | 1.00 | 4.09 | | | | | | | |
| 25 | | | 374 | 0.0400 | 1.837E-06 | 6.866E-04 | | | | | | | | | 81.1 | 10,837 | 49.76 | 3.7656E-07 | 3.691E+06 | 1.72 | 2.39E-02 |
| | 59 | 10,936 | | | | | 1.990E-02 | 371 | 0.3 | 111 | 1.79E-04 | 0.26 | 1.00 | 3.88 | | | | | | | |
| 26 | | | 368 | 0.0400 | 1.837E-06 | 6.751E-04 | | | | | | | | | 77.2 | 11,205 | 51.44 | 7.6422E-07 | 3.691E+06 | 1.69 | 4.76E-02 |
| | 58 | 10,568 | | | | | 2.058E-02 | 364 | 0.3 | 109 | 1.88E-04 | 0.27 | 1.00 | 3.69 | | | | | | | |
| 27 | | | 361 | 0.0400 | 1.837E-06 | 6.635E-04 | | | | | | | | | 73.5 | 11,566 | 53.10 | 1.4979E-06 | 3.691E+06 | 1.66 | 9.17E-02 |
| | 57 | 10,207 | | | | | 2.124E-02 | 358 | 0.3 | 107 | 1.98E-04 | 0.28 | 1.00 | 3.51 | | | | | | | |
| 28 | | | 355 | 0.0400 | 1.837E-06 | 6.520E-04 | | | | | | | | | 70.0 | 11,921 | 54.73 | 2.8427E-06 | 3.691E+06 | 1.63 | 1.71E-01 |
| | 56 | 9,852 | | | | | 2.189E-02 | 352 | 0.3 | 106 | 2.07E-04 | 0.30 | 1.00 | 3.35 | | | | | | | |
| 29 | | | 349 | 0.0400 | 1.837E-06 | 6.404E-04 | | | | | | | | | 66.7 | 12,270 | 56.33 | 5.2356E-06 | 3.691E+06 | 1.60 | 3.09E-01 |
| | 55 | 9,503 | | | | | 2.253E-02 | 346 | 0.3 | 104 | 2.17E-04 | 0.31 | 1.00 | 3.19 | | | | | | | |
| 30 | | | 342 | 0.0400 | 1.837E-06 | 6.289E-04 | | | | | | | | | 63.5 | 12,612 | 57.91 | 9.3768E-06 | 3.691E+06 | 1.57 | 5.44E-01 |
| | 54 | 9,161 | | | | | 2.316E-02 | 339 | 0.3 | 102 | 2.28E-04 | 0.33 | 1.00 | 3.05 | | | | | | | |
| 31 | | | 336 | 0.0400 | 1.837E-06 | 6.174E-04 | | | | | | | | | 60.4 | 12,948 | 59.45 | 1.6361E-05 | 3.691E+06 | 1.54 | 9.32E-01 |
| | 53 | 8,825 | | | | | 2.378E-02 | 333 | 0.3 | 100 | 2.38E-04 | 0.34 | 1.00 | 2.92 | | | | | | | |
| 32 | | | 330 | 0.0400 | 1.837E-06 | 6.058E-04 | | | | | | | | | 57.5 | 13,278 | 60.96 | 2.7855E-05 | 3.691E+06 | 1.51 | 1.56E+00 |
| | 52 | 8,495 | | | | | 2.439E-02 | 327 | 0.3 | 98 | 2.49E-04 | 0.36 | 1.00 | 2.79 | | | | | | | |
| 33 | | | 324 | 0.0400 | 1.837E-06 | 5.943E-04 | | | | | | | | | 54.7 | 13,602 | 62.45 | 4.6346E-05 | 3.691E+06 | 1.49 | 2.54E+00 |
| | 51 | 8,171 | | | | | 2.498E-02 | 320 | 0.3 | 96 | 2.60E-04 | 0.37 | 1.00 | 2.67 | | | | | | | |
| 34 | | | 317 | 0.0400 | 1.837E-06 | 5.827E-04 | | | | | | | | | 52.0 | 13,919 | 63.91 | 7.5460E-05 | 3.691E+06 | 1.46 | 4.06E+00 |
| | 50 | 7,854 | | | | | 2.556E-02 | 314 | 0.3 | 94 | 2.71E-04 | 0.39 | 1.00 | 2.56 | | | | | | | |
| 35 | | | 311 | 0.0400 | 1.837E-06 | 5.712E-04 | | | | | | | | | 49.5 | 14,230 | 65.34 | 1.2037E-04 | 3.691E+06 | 1.43 | 6.34E+00 |
| | 49 | 7,543 | | | | | 2.613E-02 | 308 | 0.3 | 92 | 2.83E-04 | 0.41 | 1.00 | 2.45 | | | | | | | |
| 36 | | | 305 | 0.0400 | 1.837E-06 | 5.597E-04 | | | | | | | | | 47.0 | 14,535 | 66.73 | 1.8834E-04 | 3.691E+06 | 1.40 | 9.73E+00 |
| | 48 | 7,238 | | | | | 2.669E-02 | 302 | 0.3 | 90 | 2.95E-04 | 0.42 | 1.00 | 2.35 | | | | | | | |
| 37 | | | 298 | 0.0400 | 1.837E-06 | 5.481E-04 | | | | | | | | | 44.7 | 14,833 | 68.10 | 2.8934E-04 | 3.691E+06 | 1.37 | 1.46E+01 |
| | 47 | 6,940 | | | | | 2.724E-02 | 295 | 0.3 | 89 | 3.07E-04 | 0.44 | 1.00 | 2.26 | | | | | | | |
| 38 | | | 292 | 0.0400 | 1.837E-06 | 5.366E-04 | | | | | | | | | 42.4 | 15,125 | 69.45 | 4.3682E-04 | 3.691E+06 | 1.34 | 2.16E+01 |
| | 46 | 6,648 | | | | | 2.778E-02 | 289 | 0.3 | 87 | 3.20E-04 | 0.46 | 1.00 | 2.17 | | | | | | | |
| 39 | | | 286 | 0.0400 | 1.837E-06 | 5.250E-04 | | | | | | | | | 40.2 | 15,411 | 70.76 | 6.4866E-04 | 3.691E+06 | 1.31 | 3.14E+01 |
| | 45 | 6,362 | | | | | 2.830E-02 | 283 | 0.3 | 85 | 3.34E-04 | 0.48 | 1.00 | 2.08 | | | | | | | |
| 40 | | | 280 | 0.0400 | 1.837E-06 | 5.135E-04 | | | | | | | | | 38.2 | 15,691 | 72.04 | 9.4815E-04 | 3.691E+06 | 1.28 | 4.49E+01 |
| | 44 | 6,082 | | | | | 2.882E-02 | 276 | 0.3 | 83 | 3.47E-04 | 0.50 | 1.00 | 2.00 | | | | | | | |
| 41 | | | 273 | 0.0400 | 1.837E-06 | 5.020E-04 | | | | | | | | | 36.2 | 15,964 | 73.30 | 1.3652E-03 | 3.691E+06 | 1.25 | 6.32E+01 |
| | 43 | 5,809 | | | | | 2.932E-02 | 270 | 0.3 | 81 | 3.62E-04 | 0.52 | 1.00 | 1.92 | | | | | | | |
| 42 | | | 267 | 0.0400 | 1.837E-06 | 4.904E-04 | | | | | | | | | 34.2 | 16,231 | 74.52 | 1.9377E-03 | 3.691E+06 | 1.23 | 8.77E+01 |
| | 42 | 5,542 | | | | | 2.981E-02 | 264 | 0.3 | 79 | 3.77E-04 | 0.54 | 1.00 | 1.84 | | | | | | | |

**TABLE A-6 (CONTINUED)**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA - ONE HALF ACRE AREA - ESTIMATE YEAR 2025 - LANDFILL POROSITY = 0.3**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Cross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multiliier ($e^{-kt}$) | Rn-222 Flux Rate from FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-22 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| 43 | | | 261 | 0.0400 | 1.837E-06 | 4.789E-04 | | | | | | | | | 32.4 | 16,492 | 75.72 | 2.7126E-03 | 3.691E+06 | 1.20 | 1.20E+02 |
| | 41 | 5,281 | | | | | 3.029E-02 | 258 | 0.3 | 77 | 3.92E-04 | 0.56 | 1.00 | 1.77 | | | | | | | |
| 44 | | | 254 | 0.0400 | 1.837E-06 | 4.673E-04 | | | | | | | | | 30.6 | 16,746 | 76.89 | 3.7475E-03 | 3.691E+06 | 1.17 | 1.62E+02 |
| | 40 | 5,027 | | | | | 3.076E-02 | 251 | 0.3 | 75 | 4.08E-04 | 0.59 | 1.00 | 1.70 | | | | | | | |
| 45 | | | 248 | 0.0400 | 1.837E-06 | 4.558E-04 | | | | | | | | | 28.9 | 16,995 | 78.03 | 5.1122E-03 | 3.691E+06 | 1.14 | 2.15E+02 |
| | 39 | 4,778 | | | | | 3.121E-02 | 245 | 0.3 | 74 | 4.25E-04 | 0.61 | 1.00 | 1.64 | | | | | | | |
| 46 | | | 242 | 0.0400 | 1.837E-06 | 4.443E-04 | | | | | | | | | 27.3 | 17,237 | 79.14 | 6.8893E-03 | 3.691E+06 | 1.11 | 2.82E+02 |
| | 38 | 4,536 | | | | | 3.166E-02 | 239 | 0.3 | 72 | 4.42E-04 | 0.64 | 1.00 | 1.57 | | | | | | | |
| 47 | | | 236 | 0.0400 | 1.837E-06 | 4.327E-04 | | | | | | | | | 25.7 | 17,472 | 80.22 | 9.1759E-03 | 3.691E+06 | 1.08 | 3.66E+02 |
| | 37 | 4,301 | | | | | 3.209E-02 | 232 | 0.3 | 70 | 4.60E-04 | 0.66 | 1.00 | 1.51 | | | | | | | |
| 48 | | | 229 | 0.0400 | 1.837E-06 | 4.212E-04 | | | | | | | | | 24.2 | 17,702 | 81.27 | 1.2084E-02 | 3.691E+06 | 1.05 | 4.70E+02 |
| | 36 | 4,072 | | | | | 3.251E-02 | 226 | 0.3 | 68 | 4.79E-04 | 0.69 | 1.00 | 1.45 | | | | | | | |
| 49 | | | 223 | 0.0400 | 1.837E-06 | 4.096E-04 | | | | | | | | | 22.8 | 17,925 | 82.30 | 1.5741E-02 | 3.691E+06 | 1.02 | 5.95E+02 |
| | 35 | 3,848 | | | | | 3.292E-02 | 220 | 0.3 | 66 | 4.99E-04 | 0.72 | 1.00 | 1.39 | | | | | | | |
| 50 | | | 217 | 0.0400 | 1.837E-06 | 3.981E-04 | | | | | | | | | 21.4 | 18,141 | 83.29 | 2.0290E-02 | 3.691E+06 | 1.00 | 7.45E+02 |
| | 34 | 3,632 | | | | | 3.332E-02 | 214 | 0.3 | 64 | 5.20E-04 | 0.75 | 1.00 | 1.34 | | | | | | | |
| 51 | | | 210 | 0.0400 | 1.837E-06 | 3.866E-04 | | | | | | | | | 20.0 | 18,352 | 84.26 | 2.5888E-02 | 3.691E+06 | 0.97 | 9.23E+02 |
| | 33 | 3,421 | | | | | 3.370E-02 | 207 | 0.3 | 62 | 5.42E-04 | 0.78 | 1.00 | 1.28 | | | | | | | |
| 52 | | | 204 | 0.0400 | 1.837E-06 | 3.750E-04 | | | | | | | | | 18.8 | 18,556 | 85.20 | 3.2706E-02 | 3.691E+06 | 0.94 | 1.13E+03 |
| | 32 | 3,217 | | | | | 3.408E-02 | 201 | 0.3 | 60 | 5.65E-04 | 0.81 | 1.00 | 1.23 | | | | | | | |
| 53 | | | 198 | 0.0400 | 1.837E-06 | 3.635E-04 | | | | | | | | | 17.5 | 18,754 | 86.11 | 4.0925E-02 | 3.691E+06 | 0.91 | 1.37E+03 |
| | 31 | 3,019 | | | | | 3.444E-02 | 195 | 0.3 | 58 | 5.89E-04 | 0.85 | 1.00 | 1.18 | | | | | | | |
| 54 | | | 192 | 0.0400 | 1.837E-06 | 3.520E-04 | | | | | | | | | 16.3 | 18,946 | 86.99 | 5.0737E-02 | 3.691E+06 | 0.88 | 1.65E+03 |
| | 30 | 2,827 | | | | | 3.479E-02 | 188 | 0.3 | 57 | 6.15E-04 | 0.89 | 1.00 | 1.13 | | | | | | | |
| 55 | | | 185 | 0.0400 | 1.837E-06 | 3.404E-04 | | | | | | | | | 15.2 | 19,131 | 87.84 | 6.2334E-02 | 3.691E+06 | 0.85 | 1.96E+03 |
| | 29 | 2,642 | | | | | 3.513E-02 | 182 | 0.3 | 55 | 6.43E-04 | 0.93 | 1.00 | 1.08 | | | | | | | |
| 56 | | | 179 | 0.0400 | 1.837E-06 | 3.289E-04 | | | | | | | | | 14.1 | 19,310 | 88.66 | 7.5912E-02 | 3.691E+06 | 0.82 | 2.30E+03 |
| | 28 | 2,463 | | | | | 3.546E-02 | 176 | 0.3 | 53 | 6.72E-04 | 0.97 | 1.00 | 1.03 | | | | | | | |
| 57 | | | 173 | 0.0400 | 1.837E-06 | 3.173E-04 | | | | | | | | | 13.1 | 19,483 | 89.45 | 9.1661E-02 | 3.691E+06 | 0.79 | 2.68E+03 |
| | 27 | 2,290 | | | | | 3.578E-02 | 170 | 0.3 | 51 | 7.03E-04 | 1.01 | 1.00 | 0.99 | | | | | | | |
| 58 | | | 167 | 0.0400 | 1.837E-06 | 2.943E-04 | | | | | | | | | 12.1 | 19,649 | 90.22 | 1.0976E-01 | 3.691E+06 | 0.76 | 3.10E+03 |
| | 26 | 2,124 | | | | | 3.608E-02 | 163 | 0.3 | 49 | 7.36E-04 | 1.06 | 1.00 | 0.94 | | | | | | | |
| 59 | | | 160 | 0.0400 | 1.837E-06 | 2.827E-04 | | | | | | | | | 11.2 | 19,810 | 90.95 | 1.3036E-01 | 3.691E+06 | 0.74 | 3.54E+03 |
| | 25 | 1,964 | | | | | 3.636E-02 | 157 | 0.3 | 47 | 7.72E-04 | 1.11 | 1.00 | 0.90 | | | | | | | |
| 60 | | | 154 | 0.0400 | 1.837E-06 | 2.827E-04 | | | | | | | | | 10.3 | 19,963 | 91.66 | 1.5362E-01 | 3.691E+06 | 0.71 | 4.01E+03 |
| | 24 | 1,810 | | | | | 3.664E-02 | 151 | 0.3 | 45 | 8.10E-04 | 1.17 | 1.00 | 0.86 | | | | | | | |
| 61 | | | 148 | 0.0400 | 1.837E-06 | 2.712E-04 | | | | | | | | | 9.4 | 20,111 | 92.34 | 1.7963E-01 | 3.691E+06 | 0.68 | 4.49E+03 |
| | 23 | 1,662 | | | | | 3.691E-02 | 145 | 0.3 | 43 | 8.51E-04 | 1.23 | 1.00 | 0.82 | | | | | | | |
| 62 | | | 141 | 0.0400 | 1.837E-06 | 2.596E-04 | | | | | | | | | 8.6 | 20,253 | 92.99 | 2.0844E-01 | 3.691E+06 | 0.65 | 4.99E+03 |
| | 22 | 1,521 | | | | | 3.717E-02 | 138 | 0.3 | 41 | 8.96E-04 | 1.29 | 1.00 | 0.77 | | | | | | | |
| 63 | | | 135 | 0.0400 | 1.837E-06 | 2.481E-04 | | | | | | | | | 7.8 | 20,388 | 93.61 | 2.4008E-01 | 3.691E+06 | 0.62 | 5.50E+03 |
| | 21 | 1,385 | | | | | 3.742E-02 | 132 | 0.3 | 40 | 9.45E-04 | 1.36 | 1.00 | 0.73 | | | | | | | |
| 64 | | | 129 | 0.0400 | 1.837E-06 | 2.366E-04 | | | | | | | | | 7.1 | 20,516 | 94.20 | 2.7451E-01 | 3.691E+06 | 0.59 | 5.99E+03 |
| | 20 | 1,257 | | | | | 3.766E-02 | 126 | 0.3 | 38 | 9.99E-04 | 1.44 | 1.00 | 0.70 | | | | | | | |
| 65 | | | 123 | 0.0400 | 1.837E-06 | 2.250E-04 | | | | | | | | | 6.4 | 20,639 | 94.76 | 3.1162E-01 | 3.691E+06 | 0.56 | 6.47E+03 |
| | 19 | 1,134 | | | | | 3.788E-02 | 119 | 0.3 | 36 | 1.06E-03 | 1.52 | 1.00 | 0.66 | | | | | | | |
| 66 | | | 116 | 0.0400 | 1.837E-06 | 2.135E-04 | | | | | | | | | 5.7 | 20,755 | 95.29 | 3.5127E-01 | 3.691E+06 | 0.53 | 6.92E+03 |
| | 18 | 1,018 | | | | | 3.809E-02 | 113 | 0.3 | 34 | 1.12E-03 | 1.62 | 1.00 | 0.62 | | | | | | | |
| 67 | | | 110 | 0.0400 | 1.837E-06 | 2.019E-04 | | | | | | | | | 5.1 | 20,865 | 95.80 | 3.9322E-01 | 3.691E+06 | 0.50 | 7.33E+03 |
| | 17 | 908 | | | | | 3.830E-02 | 107 | 0.3 | 32 | 1.20E-03 | 1.72 | 1.00 | 0.58 | | | | | | | |
| 68 | | | 104 | 0.0400 | 1.837E-06 | 1.904E-04 | | | | | | | | | 4.5 | 20,969 | 96.28 | 4.3718E-01 | 3.691E+06 | 0.48 | 7.68E+03 |
| | 16 | 804 | | | | | 3.849E-02 | 101 | 0.3 | 30 | 1.28E-03 | 1.84 | 1.00 | 0.54 | | | | | | | |
| 69 | | | 97 | 0.0400 | 1.837E-06 | 1.789E-04 | | | | | | | | | 4.0 | 21,066 | 96.72 | 4.8280E-01 | 3.691E+06 | 0.45 | 7.97E+03 |
| | 15 | 707 | | | | | 3.867E-02 | 94 | 0.3 | 28 | 1.37E-03 | 1.97 | 1.00 | 0.51 | | | | | | | |
| 70 | | | 91 | 0.0400 | 1.837E-06 | 1.673E-04 | | | | | | | | | 3.5 | 21,157 | 97.14 | 5.2966E-01 | 3.691E+06 | 0.42 | 8.18E+03 |
| | 14 | 616 | | | | | 3.883E-02 | 88 | 0.3 | 26 | 1.47E-03 | 2.12 | 1.00 | 0.47 | | | | | | | |
| 71 | | | 85 | 0.0400 | 1.837E-06 | 1.558E-04 | | | | | | | | | 3.0 | 21,242 | 97.53 | 5.7727E-01 | 3.691E+06 | 0.39 | 8.30E+03 |
| | 13 | 531 | | | | | 3.899E-02 | 82 | 0.3 | 25 | 1.59E-03 | 2.29 | 1.00 | 0.44 | | | | | | | |
| 72 | | | 79 | 0.0400 | 1.837E-06 | 1.442E-04 | | | | | | | | | 2.6 | 21,321 | 97.89 | 6.2510E-01 | 3.691E+06 | 0.36 | 8.32E+03 |
| | 12 | 452 | | | | | 3.913E-02 | 75 | 0.3 | 23 | 1.73E-03 | 2.49 | 1.00 | 0.40 | | | | | | | |
| 73 | | | 72 | 0.0400 | 1.837E-06 | 1.327E-04 | | | | | | | | | 2.2 | 21,393 | 98.22 | 6.7259E-01 | 3.691E+06 | 0.33 | 8.24E+03 |
| | 11 | 380 | | | | | 3.927E-02 | 69 | 0.3 | 21 | 1.89E-03 | 2.73 | 1.00 | 0.37 | | | | | | | |
| 74 | | | 66 | 0.0400 | 1.837E-06 | 1.212E-04 | | | | | | | | | 1.8 | 21,459 | 98.53 | 7.1911E-01 | 3.691E+06 | 0.30 | 8.04E+03 |
| | 10 | 314 | | | | | 3.939E-02 | 63 | 0.3 | 19 | 2.09E-03 | 3.01 | 1.00 | 0.33 | | | | | | | |
| 75 | | | 60 | 0.0400 | 1.837E-06 | 1.096E-04 | | | | | | | | | 1.5 | 21,519 | 98.80 | 7.6405E-01 | 3.691E+06 | 0.27 | 7.73E+03 |
| | 9 | 254 | | | | | 3.950E-02 | 57 | 0.3 | 17 | 2.33E-03 | 3.35 | 1.00 | 0.30 | | | | | | | |
| 76 | | | 53 | 0.0400 | 1.837E-06 | 9.808E-05 | | | | | | | | | 1.2 | 21,572 | 99.04 | 8.0677E-01 | 3.691E+06 | 0.25 | 7.30E+03 |
| | 8 | 201 | | | | | 3.959E-02 | 50 | 0.3 | 15 | 2.63E-03 | 3.78 | 1.00 | 0.26 | | | | | | | |
| 77 | | | 47 | 0.0400 | 1.837E-06 | 8.655E-05 | | | | | | | | | 0.9 | 21,619 | 99.26 | 8.4665E-01 | 3.691E+06 | 0.22 | 6.76E+03 |
| | 7 | 154 | | | | | 3.968E-02 | 44 | 0.3 | 13 | 3.01E-03 | 4.33 | 1.00 | 0.23 | | | | | | | |
| 78 | | | 41 | 0.0400 | 1.837E-06 | 7.501E-05 | | | | | | | | | 0.7 | 21,660 | 99.45 | 8.8307E-01 | 3.691E+06 | 0.19 | 6.11E+03 |
| | 6 | 113 | | | | | 3.976E-02 | 38 | 0.3 | 11 | 3.52E-03 | 5.06 | 1.00 | 0.20 | | | | | | | |
| 79 | | | 35 | 0.0400 | 1.837E-06 | 6.347E-05 | | | | | | | | | 0.5 | 21,695 | 99.61 | 9.1547E-01 | 3.691E+06 | 0.16 | 5.36E+03 |
| | 5 | 79 | | | | | 3.982E-02 | 31 | 0.3 | 9 | 4.23E-03 | 6.08 | 1.00 | 0.16 | | | | | | | |
| 80 | | | 28 | 0.0400 | 1.837E-06 | 5.193E-05 | | | | | | | | | 0.3 | 21,723 | 99.74 | 9.4333E-01 | 3.691E+06 | 0.13 | 4.52E+03 |
| | 4 | 50 | | | | | 3.987E-02 | 25 | 0.3 | 8 | 5.29E-03 | 7.61 | 1.00 | 0.13 | | | | | | | |
| 81 | | | 22 | 0.0400 | 1.837E-06 | 4.039E-05 | | | | | | | | | 0.2 | 21,745 | 99.84 | 9.6620E-01 | 3.691E+06 | 0.10 | 3.60E+03 |
| | 3 | 28 | | | | | 3.991E-02 | 19 | 0.3 | 6 | 7.06E-03 | 10.16 | 1.00 | 0.10 | | | | | | | |
| 82 | | | 16 | 0.0400 | 1.837E-06 | 2.885E-05 | | | | | | | | | 0.090 | 21,760 | 99.91 | 9.8370E-01 | 3.691E+06 | 0.07 | 2.62E+03 |
| | 2 | 13 | | | | | 3.994E-02 | 13 | 0.3 | 4 | 1.06E-02 | 15.26 | 1.00 | 0.07 | | | | | | | |
| 83 | | | 5 | 0.0400 | 1.837E-06 | 1.010E-05 | | | | | | | | | 0.025 | 21,766 | 99.94 | 9.9553E-01 | 3.691E+06 | 0.03 | 9.28E+02 |
| | 1.5 | 7 | | | | | 3.995E-02 | 9 | 0.3 | 3 | 1.41E-02 | 20.35 | 0.50 | 0.02 | | | | | | | |
| 84 | | | 7 | 0.0400 | 1.837E-06 | 1.298E-05 | | | | | | | | | 0.000 | 21,773 | 99.97 | 1.0000E+00 | 3.691E+06 | 0.03 | 1.20E+03 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Considered | pCi/min | 1.705E+05 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Not Considered | pCi/min | 3.691E+06 |

| | | |
|---|---|---|
| Reduction in Rn-222 Flux Due to Decay | % | 95.38 |

**TABLE A-7**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA - ONE HALF ACRE AREA - ESTIMATE YEAR 2100 - LANDFILL POROSITY = 0.3**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multiliter ($e^{-kt}$) | Rn-222 Flux Rate from FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-22 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| | 83.25 | 21,773 | | | | | 0 | | | | 0 | 0 | | | | | | | | | |
| 1 | | | 131 | 0.0013 | 5.739E-08 | 7.494E-06 | | | | | | | | | 18001.6 | 131 | 0.60 | 0.0000E+00 | 5.196E+06 | 0.60 | 0.00E+00 |
| | 83 | 21,642 | | | | | 7.494E-06 | 522 | 0.3 | 156 | 4.79E-08 | 0.00 | 0.25 | 3624.54 | | | | | | | |
| 2 | | | 518 | 0.0013 | 5.739E-08 | 2.975E-05 | | | | | | | | | 14377.1 | 649 | 2.98 | 0.0000E+00 | 5.196E+06 | 2.38 | 0.00E+00 |
| | 82 | 21,124 | | | | | 3.724E-05 | 515 | 0.3 | 155 | 2.41E-07 | 0.00 | 1.00 | 2882.03 | | | | | | | |
| 3 | | | 512 | 0.0013 | 5.739E-08 | 2.939E-05 | | | | | | | | | 11495.1 | 1,161 | 5.33 | 0.0000E+00 | 5.196E+06 | 2.35 | 0.00E+00 |
| | 81 | 20,612 | | | | | 6.663E-05 | 509 | 0.3 | 153 | 4.36E-07 | 0.00 | 1.00 | 1591.23 | | | | | | | |
| 4 | | | 506 | 0.0013 | 5.739E-08 | 2.903E-05 | | | | | | | | | 9903.8 | 1,667 | 7.65 | 0.0000E+00 | 5.196E+06 | 2.32 | 0.00E+00 |
| | 80 | 20,106 | | | | | 9.566E-05 | 503 | 0.3 | 151 | 6.34E-07 | 0.00 | 1.00 | 1094.69 | | | | | | | |
| 5 | | | 500 | 0.0013 | 5.739E-08 | 2.867E-05 | | | | | | | | | 8809.1 | 2,166 | 9.95 | 0.0000E+00 | 5.196E+06 | 2.29 | 0.00E+00 |
| | 79 | 19,607 | | | | | 1.243E-04 | 496 | 0.3 | 149 | 8.35E-07 | 0.00 | 1.00 | 831.74 | | | | | | | |
| 6 | | | 493 | 0.0013 | 5.739E-08 | 2.831E-05 | | | | | | | | | 7977.4 | 2,660 | 12.21 | 0.0000E+00 | 5.196E+06 | 2.26 | 0.00E+00 |
| | 78 | 19,113 | | | | | 1.526E-04 | 490 | 0.3 | 147 | 1.04E-06 | 0.00 | 1.00 | 668.92 | | | | | | | |
| 7 | | | 487 | 0.0013 | 5.739E-08 | 2.795E-05 | | | | | | | | | 7308.5 | 3,147 | 14.45 | 0.0000E+00 | 5.196E+06 | 2.24 | 0.00E+00 |
| | 77 | 18,627 | | | | | 1.806E-04 | 484 | 0.3 | 145 | 1.24E-06 | 0.00 | 1.00 | 558.15 | | | | | | | |
| 8 | | | 481 | 0.0013 | 5.739E-08 | 2.759E-05 | | | | | | | | | 6750.3 | 3,627 | 16.65 | 0.0000E+00 | 5.196E+06 | 2.21 | 0.00E+00 |
| | 76 | 18,146 | | | | | 2.082E-04 | 478 | 0.3 | 143 | 1.45E-06 | 0.00 | 1.00 | 477.90 | | | | | | | |
| 9 | | | 474 | 0.0013 | 5.739E-08 | 2.723E-05 | | | | | | | | | 6272.4 | 4,102 | 18.83 | 0.0000E+00 | 5.196E+06 | 2.18 | 0.00E+00 |
| | 75 | 17,672 | | | | | 2.354E-04 | 471 | 0.3 | 141 | 1.67E-06 | 0.00 | 1.00 | 417.06 | | | | | | | |
| 10 | | | 468 | 0.0013 | 5.739E-08 | 2.687E-05 | | | | | | | | | 5855.4 | 4,570 | 20.98 | 0.0000E+00 | 5.196E+06 | 2.15 | 0.00E+00 |
| | 74 | 17,203 | | | | | 2.623E-04 | 465 | 0.3 | 139 | 1.88E-06 | 0.00 | 1.00 | 369.35 | | | | | | | |
| 11 | | | 462 | 0.0013 | 5.739E-08 | 2.650E-05 | | | | | | | | | 5486.0 | 5,031 | 23.10 | 0.0000E+00 | 5.196E+06 | 2.12 | 0.00E+00 |
| | 73 | 16,742 | | | | | 2.888E-04 | 459 | 0.3 | 138 | 2.10E-06 | 0.00 | 1.00 | 330.91 | | | | | | | |
| 12 | | | 456 | 0.0013 | 5.739E-08 | 2.614E-05 | | | | | | | | | 5155.1 | 5,487 | 25.19 | 0.0000E+00 | 5.196E+06 | 2.09 | 0.00E+00 |
| | 72 | 16,286 | | | | | 3.149E-04 | 452 | 0.3 | 136 | 2.32E-06 | 0.00 | 1.00 | 299.29 | | | | | | | |
| 13 | | | 449 | 0.0013 | 5.739E-08 | 2.578E-05 | | | | | | | | | 4855.8 | 5,936 | 27.26 | 0.0000E+00 | 5.196E+06 | 2.06 | 0.00E+00 |
| | 71 | 15,837 | | | | | 3.407E-04 | 446 | 0.3 | 134 | 2.55E-06 | 0.00 | 1.00 | 272.79 | | | | | | | |
| 14 | | | 443 | 0.0013 | 5.739E-08 | 2.542E-05 | | | | | | | | | 4583.0 | 6,379 | 29.29 | 0.0000E+00 | 5.196E+06 | 2.03 | 0.00E+00 |
| | 70 | 15,394 | | | | | 3.661E-04 | 440 | 0.3 | 132 | 2.77E-06 | 0.00 | 1.00 | 250.28 | | | | | | | |
| 15 | | | 437 | 0.0013 | 5.739E-08 | 2.506E-05 | | | | | | | | | 4332.8 | 6,816 | 31.29 | 0.0000E+00 | 5.196E+06 | 2.00 | 0.00E+00 |
| | 69 | 14,957 | | | | | 3.912E-04 | 434 | 0.3 | 130 | 3.01E-06 | 0.00 | 1.00 | 230.89 | | | | | | | |
| 16 | | | 430 | 0.0013 | 5.739E-08 | 2.470E-05 | | | | | | | | | 4101.9 | 7,246 | 33.27 | 0.0000E+00 | 5.196E+06 | 1.98 | 0.00E+00 |
| | 68 | 14,527 | | | | | 4.159E-04 | 427 | 0.3 | 128 | 3.24E-06 | 0.00 | 1.00 | 214.03 | | | | | | | |
| 17 | | | 424 | 0.0013 | 5.739E-08 | 2.434E-05 | | | | | | | | | 3887.8 | 7,670 | 35.22 | 0.0000E-01 | 5.196E+06 | 1.95 | 1.07E-303 |
| | 67 | 14,103 | | | | | 4.402E-04 | 421 | 0.3 | 126 | 3.49E-06 | 0.01 | 1.00 | 199.22 | | | | | | | |
| 18 | | | 418 | 0.0013 | 5.739E-08 | 2.398E-05 | | | | | | | | | 3688.6 | 8,088 | 37.14 | 6.3885E-293 | 5.196E+06 | 1.92 | 6.37E-288 |
| | 66 | 13,685 | | | | | 4.642E-04 | 415 | 0.3 | 124 | 3.73E-06 | 0.01 | 1.00 | 186.11 | | | | | | | |
| 19 | | | 412 | 0.0013 | 5.739E-08 | 2.362E-05 | | | | | | | | | 3502.5 | 8,500 | 39.03 | 3.5352E-278 | 5.196E+06 | 1.89 | 3.47E-273 |
| | 65 | 13,273 | | | | | 4.878E-04 | 408 | 0.3 | 123 | 3.98E-06 | 0.01 | 1.00 | 174.42 | | | | | | | |
| 20 | | | 405 | 0.0013 | 5.739E-08 | 2.326E-05 | | | | | | | | | 3328.1 | 8,905 | 40.89 | 2.3175E-264 | 5.196E+06 | 1.86 | 2.24E-259 |
| | 64 | 12,868 | | | | | 5.111E-04 | 402 | 0.3 | 121 | 4.24E-06 | 0.01 | 1.00 | 163.92 | | | | | | | |
| 21 | | | 399 | 0.0013 | 5.739E-08 | 2.290E-05 | | | | | | | | | 3164.2 | 9,304 | 42.72 | 2.2385E-251 | 5.196E+06 | 1.83 | 2.13E-246 |
| | 63 | 12,469 | | | | | 5.340E-04 | 396 | 0.3 | 119 | 4.50E-06 | 0.01 | 1.00 | 154.44 | | | | | | | |
| 22 | | | 393 | 0.0013 | 5.739E-08 | 2.254E-05 | | | | | | | | | 3009.7 | 9,697 | 44.52 | 3.8359E-239 | 5.196E+06 | 1.80 | 3.59E-234 |
| | 62 | 12,076 | | | | | 5.565E-04 | 390 | 0.3 | 117 | 4.76E-06 | 0.01 | 1.00 | 145.83 | | | | | | | |
| 23 | | | 386 | 0.0013 | 5.739E-08 | 2.218E-05 | | | | | | | | | 2863.9 | 10,083 | 46.30 | 1.3678E-227 | 5.196E+06 | 1.77 | 1.26E-222 |
| | 61 | 11,690 | | | | | 5.787E-04 | 383 | 0.3 | 115 | 5.03E-06 | 0.01 | 1.00 | 137.98 | | | | | | | |
| 24 | | | 380 | 0.0013 | 5.739E-08 | 2.182E-05 | | | | | | | | | 2725.9 | 10,463 | 48.04 | 1.1648E-216 | 5.196E+06 | 1.75 | 1.06E-211 |
| | 60 | 11,310 | | | | | 6.005E-04 | 377 | 0.3 | 113 | 5.31E-06 | 0.01 | 1.00 | 130.79 | | | | | | | |
| 25 | | | 374 | 0.0013 | 5.739E-08 | 2.146E-05 | | | | | | | | | 2595.1 | 10,837 | 49.76 | 2.6713E-206 | 5.196E+06 | 1.72 | 2.38E-201 |
| | 59 | 10,936 | | | | | 6.220E-04 | 371 | 0.3 | 111 | 5.59E-06 | 0.01 | 1.00 | 124.17 | | | | | | | |
| 26 | | | 368 | 0.0013 | 5.739E-08 | 2.110E-05 | | | | | | | | | 2470.9 | 11,205 | 51.44 | 1.8326E-196 | 5.196E+06 | 1.69 | 1.61E-191 |
| | 58 | 10,568 | | | | | 6.431E-04 | 364 | 0.3 | 109 | 5.88E-06 | 0.01 | 1.00 | 118.06 | | | | | | | |
| 27 | | | 361 | 0.0013 | 5.739E-08 | 2.073E-05 | | | | | | | | | 2352.9 | 11,566 | 53.10 | 4.1256E-187 | 5.196E+06 | 1.66 | 3.56E-182 |
| | 57 | 10,207 | | | | | 6.638E-04 | 358 | 0.3 | 107 | 6.18E-06 | 0.01 | 1.00 | 112.40 | | | | | | | |
| 28 | | | 355 | 0.0013 | 5.739E-08 | 2.037E-05 | | | | | | | | | 2240.5 | 11,921 | 54.73 | 3.3079E-178 | 5.196E+06 | 1.63 | 2.80E-173 |
| | 56 | 9,852 | | | | | 6.842E-04 | 352 | 0.3 | 106 | 6.48E-06 | 0.01 | 1.00 | 107.14 | | | | | | | |
| 29 | | | 349 | 0.0013 | 5.739E-08 | 2.001E-05 | | | | | | | | | 2133.3 | 12,270 | 56.33 | 1.0160E-169 | 5.196E+06 | 1.60 | 8.45E-165 |
| | 55 | 9,503 | | | | | 7.042E-04 | 346 | 0.3 | 104 | 6.79E-06 | 0.01 | 1.00 | 102.24 | | | | | | | |
| 30 | | | 342 | 0.0013 | 5.739E-08 | 1.965E-05 | | | | | | | | | 2031.1 | 12,612 | 57.91 | 1.2758E-161 | 5.196E+06 | 1.57 | 1.04E-156 |
| | 54 | 9,161 | | | | | 7.238E-04 | 339 | 0.3 | 102 | 7.11E-06 | 0.01 | 1.00 | 97.65 | | | | | | | |
| 31 | | | 336 | 0.0013 | 5.739E-08 | 1.929E-05 | | | | | | | | | 1933.4 | 12,948 | 59.45 | 6.9424E-154 | 5.196E+06 | 1.54 | 5.57E-149 |
| | 53 | 8,825 | | | | | 7.431E-04 | 333 | 0.3 | 100 | 7.44E-06 | 0.01 | 1.00 | 93.36 | | | | | | | |
| 32 | | | 330 | 0.0013 | 5.739E-08 | 1.893E-05 | | | | | | | | | 1840.1 | 13,278 | 60.96 | 1.7253E-146 | 5.196E+06 | 1.51 | 1.36E-141 |
| | 52 | 8,495 | | | | | 7.621E-04 | 327 | 0.3 | 98 | 7.77E-06 | 0.01 | 1.00 | 89.32 | | | | | | | |
| 33 | | | 324 | 0.0013 | 5.739E-08 | 1.857E-05 | | | | | | | | | 1750.8 | 13,602 | 62.45 | 2.0533E-139 | 5.196E+06 | 1.49 | 1.59E-134 |
| | 51 | 8,171 | | | | | 7.806E-04 | 320 | 0.3 | 96 | 8.12E-06 | 0.01 | 1.00 | 85.52 | | | | | | | |
| 34 | | | 317 | 0.0013 | 5.739E-08 | 1.821E-05 | | | | | | | | | 1665.2 | 13,919 | 63.91 | 1.2214E-132 | 5.196E+06 | 1.46 | 9.25E-128 |
| | 50 | 7,854 | | | | | 7.988E-04 | 314 | 0.3 | 94 | 8.48E-06 | 0.01 | 1.00 | 81.93 | | | | | | | |
| 35 | | | 311 | 0.0013 | 5.739E-08 | 1.785E-05 | | | | | | | | | 1583.3 | 14,230 | 65.34 | 3.7762E-126 | 5.196E+06 | 1.43 | 2.80E-121 |
| | 49 | 7,543 | | | | | 8.167E-04 | 308 | 0.3 | 92 | 8.84E-06 | 0.01 | 1.00 | 78.54 | | | | | | | |
| 36 | | | 305 | 0.0013 | 5.739E-08 | 1.749E-05 | | | | | | | | | 1504.8 | 14,535 | 66.73 | 6.2866E-120 | 5.196E+06 | 1.40 | 4.57E-115 |
| | 48 | 7,238 | | | | | 8.342E-04 | 302 | 0.3 | 90 | 9.22E-06 | 0.01 | 1.00 | 75.32 | | | | | | | |
| 37 | | | 298 | 0.0013 | 5.739E-08 | 1.713E-05 | | | | | | | | | 1429.5 | 14,833 | 68.10 | 5.8216E-114 | 5.196E+06 | 1.37 | 4.15E-109 |
| | 47 | 6,940 | | | | | 8.513E-04 | 295 | 0.3 | 89 | 9.61E-06 | 0.01 | 1.00 | 72.27 | | | | | | | |
| 38 | | | 292 | 0.0013 | 5.739E-08 | 1.677E-05 | | | | | | | | | 1357.2 | 15,125 | 69.45 | 3.0889E-108 | 5.196E+06 | 1.34 | 2.15E-103 |
| | 46 | 6,648 | | | | | 8.681E-04 | 289 | 0.3 | 87 | 1.00E-05 | 0.01 | 1.00 | 69.36 | | | | | | | |
| 39 | | | 286 | 0.0013 | 5.739E-08 | 1.641E-05 | | | | | | | | | 1287.8 | 15,411 | 70.76 | 9.6503E-103 | 5.196E+06 | 1.31 | 6.58E-98 |
| | 45 | 6,362 | | | | | 8.845E-04 | 283 | 0.3 | 85 | 1.04E-05 | 0.02 | 1.00 | 66.60 | | | | | | | |
| 40 | | | 280 | 0.0013 | 5.739E-08 | 1.605E-05 | | | | | | | | | 1221.2 | 15,691 | 72.04 | 1.8202E-97 | 5.196E+06 | 1.28 | 1.21E-92 |
| | 44 | 6,082 | | | | | 9.005E-04 | 276 | 0.3 | 83 | 1.09E-05 | 0.02 | 1.00 | 63.96 | | | | | | | |
| 41 | | | 273 | 0.0013 | 5.739E-08 | 1.569E-05 | | | | | | | | | 1157.3 | 15,964 | 73.30 | 2.1210E-92 | 5.196E+06 | 1.25 | 1.38E-87 |
| | 43 | 5,809 | | | | | 9.162E-04 | 270 | 0.3 | 81 | 1.13E-05 | 0.02 | 1.00 | 61.43 | | | | | | | |
| 42 | | | 267 | 0.0013 | 5.739E-08 | 1.533E-05 | | | | | | | | | 1095.8 | 16,231 | 74.52 | 1.5597E-87 | 5.196E+06 | 1.23 | 9.94E-83 |
| | 42 | 5,542 | | | | | 9.315E-04 | 264 | 0.3 | 79 | 1.18E-05 | 0.02 | 1.00 | 59.02 | | | | | | | |

**TABLE A-7 (CONTINUED)**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA - ONE HALF ACRE AREA - ESTIMATE YEAR 2100 - LANDFILL POROSITY = 0.3**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multiplier ($e^{-kt}$) | Rn-222 Flux Rate from FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-22 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| 43 | | | 261 | 0.0013 | 5.739E-08 | 1.497E-05 | | | | | | | | | 1036.8 | 16,492 | 75.72 | 7.3818E-83 | 5.196E+06 | 1.20 | 4.59E-78 |
| | 41 | 5,281 | | | | | 9.465E-04 | 258 | 0.3 | 77 | 1.22E-05 | 0.02 | 1.00 | 56.70 | | | | | | | |
| 44 | | | 254 | 0.0013 | 5.739E-08 | 1.460E-05 | | | | | | | | | 980.1 | 16,746 | 76.89 | 2.2899E-78 | 5.196E+06 | 1.17 | 1.39E-73 |
| | 40 | 5,027 | | | | | 9.611E-04 | 251 | 0.3 | 75 | 1.27E-05 | 0.02 | 1.00 | 54.48 | | | | | | | |
| 45 | | | 248 | 0.0013 | 5.739E-08 | 1.424E-05 | | | | | | | | | 925.6 | 16,995 | 78.03 | 4.7351E-74 | 5.196E+06 | 1.14 | 2.80E-69 |
| | 39 | 4,778 | | | | | 9.754E-04 | 245 | 0.3 | 74 | 1.33E-05 | 0.02 | 1.00 | 52.34 | | | | | | | |
| 46 | | | 242 | 0.0013 | 5.739E-08 | 1.388E-05 | | | | | | | | | 873.3 | 17,237 | 79.14 | 6.6300E-70 | 5.196E+06 | 1.11 | 3.83E-65 |
| | 38 | 4,536 | | | | | 9.892E-04 | 239 | 0.3 | 72 | 1.38E-05 | 0.02 | 1.00 | 50.28 | | | | | | | |
| 47 | | | 236 | 0.0013 | 5.739E-08 | 1.352E-05 | | | | | | | | | 823.0 | 17,472 | 80.22 | 6.3780E-66 | 5.196E+06 | 1.08 | 3.59E-61 |
| | 37 | 4,301 | | | | | 1.003E-03 | 232 | 0.3 | 70 | 1.44E-05 | 0.02 | 1.00 | 48.30 | | | | | | | |
| 48 | | | 229 | 0.0013 | 5.739E-08 | 1.316E-05 | | | | | | | | | 774.7 | 17,702 | 81.27 | 4.2730E-62 | 5.196E+06 | 1.05 | 2.34E-57 |
| | 36 | 4,072 | | | | | 1.016E-03 | 226 | 0.3 | 68 | 1.50E-05 | 0.02 | 1.00 | 46.39 | | | | | | | |
| 49 | | | 223 | 0.0013 | 5.739E-08 | 1.280E-05 | | | | | | | | | 728.3 | 17,925 | 82.30 | 2.0191E-58 | 5.196E+06 | 1.02 | 1.07E-53 |
| | 35 | 3,848 | | | | | 1.029E-03 | 220 | 0.3 | 66 | 1.56E-05 | 0.02 | 1.00 | 44.54 | | | | | | | |
| 50 | | | 217 | 0.0013 | 5.739E-08 | 1.244E-05 | | | | | | | | | 683.8 | 18,141 | 83.29 | 6.8083E-55 | 5.196E+06 | 1.00 | 3.52E-50 |
| | 34 | 3,632 | | | | | 1.041E-03 | 214 | 0.3 | 64 | 1.62E-05 | 0.02 | 1.00 | 42.75 | | | | | | | |
| 51 | | | 210 | 0.0013 | 5.739E-08 | 1.208E-05 | | | | | | | | | 641.0 | 18,352 | 84.26 | 1.6565E-51 | 5.196E+06 | 0.97 | 8.32E-47 |
| | 33 | 3,421 | | | | | 1.053E-03 | 207 | 0.3 | 62 | 1.69E-05 | 0.02 | 1.00 | 41.01 | | | | | | | |
| 52 | | | 204 | 0.0013 | 5.739E-08 | 1.172E-05 | | | | | | | | | 600.0 | 18,556 | 85.20 | 2.9379E-48 | 5.196E+06 | 0.94 | 1.43E-43 |
| | 32 | 3,217 | | | | | 1.065E-03 | 201 | 0.3 | 60 | 1.77E-05 | 0.03 | 1.00 | 39.33 | | | | | | | |
| 53 | | | 198 | 0.0013 | 5.739E-08 | 1.136E-05 | | | | | | | | | 560.7 | 18,754 | 86.11 | 3.8351E-45 | 5.196E+06 | 0.91 | 1.81E-40 |
| | 31 | 3,019 | | | | | 1.076E-03 | 195 | 0.3 | 58 | 1.84E-05 | 0.03 | 1.00 | 37.70 | | | | | | | |
| 54 | | | 192 | 0.0013 | 5.739E-08 | 1.100E-05 | | | | | | | | | 523.0 | 18,946 | 86.99 | 3.7179E-42 | 5.196E+06 | 0.88 | 1.70E-37 |
| | 30 | 2,827 | | | | | 1.087E-03 | 188 | 0.3 | 57 | 1.92E-05 | 0.03 | 1.00 | 36.12 | | | | | | | |
| 55 | | | 185 | 0.0013 | 5.739E-08 | 1.064E-05 | | | | | | | | | 486.9 | 19,131 | 87.84 | 2.6992E-39 | 5.196E+06 | 0.85 | 1.19E-34 |
| | 29 | 2,642 | | | | | 1.098E-03 | 182 | 0.3 | 55 | 2.01E-05 | 0.03 | 1.00 | 34.57 | | | | | | | |
| 56 | | | 179 | 0.0013 | 5.739E-08 | 1.028E-05 | | | | | | | | | 452.3 | 19,310 | 88.66 | 1.4792E-36 | 5.196E+06 | 0.82 | 6.32E-32 |
| | 28 | 2,463 | | | | | 1.108E-03 | 176 | 0.3 | 53 | 2.10E-05 | 0.03 | 1.00 | 33.07 | | | | | | | |
| 57 | | | 173 | 0.0013 | 5.739E-08 | 9.917E-06 | | | | | | | | | 419.2 | 19,483 | 89.45 | 6.1638E-34 | 5.196E+06 | 0.79 | 2.54E-29 |
| | 27 | 2,290 | | | | | 1.118E-03 | 170 | 0.3 | 51 | 2.20E-05 | 0.03 | 1.00 | 31.61 | | | | | | | |
| 58 | | | 167 | 0.0013 | 5.739E-08 | 9.195E-06 | | | | | | | | | 387.6 | 19,649 | 90.22 | 1.9665E-31 | 5.196E+06 | 0.76 | 7.81E-27 |
| | 26 | 2,124 | | | | | 1.127E-03 | 163 | 0.3 | 49 | 2.30E-05 | 0.03 | 1.00 | 30.19 | | | | | | | |
| 59 | | | 160 | 0.0013 | 5.739E-08 | 8.835E-06 | | | | | | | | | 357.4 | 19,810 | 90.95 | 4.8433E-29 | 5.196E+06 | 0.74 | 1.85E-24 |
| | 25 | 1,964 | | | | | 1.136E-03 | 157 | 0.3 | 47 | 2.41E-05 | 0.03 | 1.00 | 28.80 | | | | | | | |
| 60 | | | 154 | 0.0013 | 5.739E-08 | 8.835E-06 | | | | | | | | | 328.6 | 19,963 | 91.66 | 9.2626E-27 | 5.196E+06 | 0.71 | 3.40E-22 |
| | 24 | 1,810 | | | | | 1.145E-03 | 151 | 0.3 | 45 | 2.53E-05 | 0.04 | 1.00 | 27.44 | | | | | | | |
| 61 | | | 148 | 0.0013 | 5.739E-08 | 8.474E-06 | | | | | | | | | 301.2 | 20,111 | 92.34 | 1.3809E-24 | 5.196E+06 | 0.68 | 4.86E-20 |
| | 23 | 1,662 | | | | | 1.153E-03 | 145 | 0.3 | 43 | 2.66E-05 | 0.04 | 1.00 | 26.10 | | | | | | | |
| 62 | | | 141 | 0.0013 | 5.739E-08 | 8.114E-06 | | | | | | | | | 275.1 | 20,253 | 92.99 | 1.6133E-22 | 5.196E+06 | 0.65 | 5.44E-18 |
| | 22 | 1,521 | | | | | 1.162E-03 | 138 | 0.3 | 41 | 2.80E-05 | 0.04 | 1.00 | 24.79 | | | | | | | |
| 63 | | | 135 | 0.0013 | 5.739E-08 | 7.753E-06 | | | | | | | | | 250.3 | 20,388 | 93.61 | 1.4845E-20 | 5.196E+06 | 0.62 | 4.78E-16 |
| | 21 | 1,385 | | | | | 1.169E-03 | 132 | 0.3 | 40 | 2.95E-05 | 0.04 | 1.00 | 23.51 | | | | | | | |
| 64 | | | 129 | 0.0013 | 5.739E-08 | 7.392E-06 | | | | | | | | | 226.8 | 20,516 | 94.20 | 1.0808E-18 | 5.196E+06 | 0.59 | 3.32E-14 |
| | 20 | 1,257 | | | | | 1.177E-03 | 126 | 0.3 | 38 | 3.12E-05 | 0.04 | 1.00 | 22.25 | | | | | | | |
| 65 | | | 123 | 0.0013 | 5.739E-08 | 7.032E-06 | | | | | | | | | 204.6 | 20,639 | 94.76 | 6.2530E-17 | 5.196E+06 | 0.56 | 1.83E-12 |
| | 19 | 1,134 | | | | | 1.184E-03 | 119 | 0.3 | 36 | 3.31E-05 | 0.05 | 1.00 | 21.01 | | | | | | | |
| 66 | | | 116 | 0.0013 | 5.739E-08 | 6.671E-06 | | | | | | | | | 183.5 | 20,755 | 95.29 | 2.8865E-15 | 5.196E+06 | 0.53 | 8.00E-11 |
| | 18 | 1,018 | | | | | 1.190E-03 | 113 | 0.3 | 34 | 3.51E-05 | 0.05 | 1.00 | 19.79 | | | | | | | |
| 67 | | | 110 | 0.0013 | 5.739E-08 | 6.311E-06 | | | | | | | | | 163.8 | 20,865 | 95.80 | 1.0672E-13 | 5.196E+06 | 0.50 | 2.80E-09 |
| | 17 | 908 | | | | | 1.197E-03 | 107 | 0.3 | 32 | 3.73E-05 | 0.05 | 1.00 | 18.59 | | | | | | | |
| 68 | | | 104 | 0.0013 | 5.739E-08 | 5.950E-06 | | | | | | | | | 145.2 | 20,969 | 96.28 | 3.1708E-12 | 5.196E+06 | 0.48 | 7.84E-08 |
| | 16 | 804 | | | | | 1.203E-03 | 101 | 0.3 | 30 | 3.99E-05 | 0.06 | 1.00 | 17.41 | | | | | | | |
| 69 | | | 97 | 0.0013 | 5.739E-08 | 5.589E-06 | | | | | | | | | 127.7 | 21,066 | 96.72 | 7.5965E-11 | 5.196E+06 | 0.45 | 1.76E-06 |
| | 15 | 707 | | | | | 1.208E-03 | 94 | 0.3 | 28 | 4.27E-05 | 0.06 | 1.00 | 16.25 | | | | | | | |
| 70 | | | 91 | 0.0013 | 5.739E-08 | 5.229E-06 | | | | | | | | | 111.5 | 21,157 | 97.14 | 1.4718E-09 | 5.196E+06 | 0.42 | 3.20E-05 |
| | 14 | 616 | | | | | 1.214E-03 | 88 | 0.3 | 26 | 4.60E-05 | 0.07 | 1.00 | 15.10 | | | | | | | |
| 71 | | | 85 | 0.0013 | 5.739E-08 | 4.868E-06 | | | | | | | | | 96.4 | 21,242 | 97.53 | 2.3126E-08 | 5.196E+06 | 0.39 | 4.68E-04 |
| | 13 | 531 | | | | | 1.218E-03 | 82 | 0.3 | 25 | 4.97E-05 | 0.07 | 1.00 | 13.97 | | | | | | | |
| 72 | | | 79 | 0.0013 | 5.739E-08 | 4.508E-06 | | | | | | | | | 82.4 | 21,321 | 97.89 | 2.9544E-07 | 5.196E+06 | 0.36 | 5.54E-03 |
| | 12 | 452 | | | | | 1.223E-03 | 75 | 0.3 | 23 | 5.41E-05 | 0.08 | 1.00 | 12.84 | | | | | | | |
| 73 | | | 72 | 0.0013 | 5.739E-08 | 4.147E-06 | | | | | | | | | 69.6 | 21,393 | 98.22 | 3.0759E-06 | 5.196E+06 | 0.33 | 5.30E-02 |
| | 11 | 380 | | | | | 1.227E-03 | 69 | 0.3 | 21 | 5.92E-05 | 0.09 | 1.00 | 11.73 | | | | | | | |
| 74 | | | 66 | 0.0013 | 5.739E-08 | 3.786E-06 | | | | | | | | | 57.8 | 21,459 | 98.53 | 2.6153E-05 | 5.196E+06 | 0.30 | 4.12E-01 |
| | 10 | 314 | | | | | 1.231E-03 | 63 | 0.3 | 19 | 6.53E-05 | 0.09 | 1.00 | 10.63 | | | | | | | |
| 75 | | | 60 | 0.0013 | 5.739E-08 | 3.426E-06 | | | | | | | | | 47.2 | 21,519 | 98.80 | 1.8196E-04 | 5.196E+06 | 0.27 | 2.59E+00 |
| | 9 | 254 | | | | | 1.234E-03 | 57 | 0.3 | 17 | 7.28E-05 | 0.10 | 1.00 | 9.54 | | | | | | | |
| 76 | | | 53 | 0.0013 | 5.739E-08 | 3.065E-06 | | | | | | | | | 37.7 | 21,572 | 99.04 | 1.0377E-03 | 5.196E+06 | 0.25 | 1.32E+01 |
| | 8 | 201 | | | | | 1.237E-03 | 50 | 0.3 | 15 | 8.21E-05 | 0.12 | 1.00 | 8.46 | | | | | | | |
| 77 | | | 47 | 0.0013 | 5.739E-08 | 2.705E-06 | | | | | | | | | 29.2 | 21,619 | 99.26 | 4.8585E-03 | 5.196E+06 | 0.22 | 5.46E+01 |
| | 7 | 154 | | | | | 1.240E-03 | 44 | 0.3 | 13 | 9.40E-05 | 0.14 | 1.00 | 7.39 | | | | | | | |
| 78 | | | 41 | 0.0013 | 5.739E-08 | 2.344E-06 | | | | | | | | | 21.8 | 21,660 | 99.45 | 1.8700E-02 | 5.196E+06 | 0.19 | 1.82E+02 |
| | 6 | 113 | | | | | 1.242E-03 | 38 | 0.3 | 11 | 1.10E-04 | 0.16 | 1.00 | 6.32 | | | | | | | |
| 79 | | | 35 | 0.0013 | 5.739E-08 | 1.983E-06 | | | | | | | | | 15.5 | 21,695 | 99.61 | 5.9240E-02 | 5.196E+06 | 0.16 | 4.88E+02 |
| | 5 | 79 | | | | | 1.244E-03 | 31 | 0.3 | 9 | 1.32E-04 | 0.19 | 1.00 | 5.26 | | | | | | | |
| 80 | | | 28 | 0.0013 | 5.739E-08 | 1.623E-06 | | | | | | | | | 10.2 | 21,723 | 99.74 | 1.5462E-01 | 5.196E+06 | 0.13 | 1.04E+03 |
| | 4 | 50 | | | | | 1.246E-03 | 25 | 0.3 | 8 | 1.65E-04 | 0.24 | 1.00 | 4.20 | | | | | | | |
| 81 | | | 22 | 0.0013 | 5.739E-08 | 1.262E-06 | | | | | | | | | 6.0 | 21,745 | 99.84 | 3.3277E-01 | 5.196E+06 | 0.10 | 1.75E+03 |
| | 3 | 28 | | | | | 1.247E-03 | 19 | 0.3 | 6 | 2.21E-04 | 0.32 | 1.00 | 3.15 | | | | | | | |
| 82 | | | 16 | 0.0013 | 5.739E-08 | 9.015E-07 | | | | | | | | | 2.884 | 21,760 | 99.91 | 5.9096E-01 | 5.196E+06 | 0.07 | 2.21E+03 |
| | 2 | 13 | | | | | 1.248E-03 | 13 | 0.3 | 4 | 3.31E-04 | 0.48 | 1.00 | 2.10 | | | | | | | |
| 83 | | | 5 | 0.0013 | 5.739E-08 | 3.155E-07 | | | | | | | | | 0.786 | 21,766 | 99.94 | 8.6638E-01 | 5.196E+06 | 0.03 | 1.14E+03 |
| | 1.5 | 7 | | | | | 1.248E-03 | 9 | 0.3 | 3 | 4.42E-04 | 0.64 | 0.50 | 0.79 | | | | | | | |
| 84 | | | 7 | 0.0013 | 5.739E-08 | 4.057E-07 | | | | | | | | | 0.000 | 21,773 | 99.97 | 1.0000E+00 | 5.196E+06 | 0.03 | 1.69E+03 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Considered | pCi/min | 8.568E+03 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Not Considered | pCi/min | 5.196E+06 |

| | | |
|---|---|---|
| Reduction in Rn-222 Flux Due to Decay | % | 99.84 |

**TABLE A-8**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA A - ONE QUARTER ACRE AREA - ESTIMATE YEAR 2000 - LANDFILL POROSITY = 0.3**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multilier (e^-kt) | Rn-222 Flux Rate from FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-22 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| | 58.80 | 10,862 | | | | | 0 | | | | 0 | 0 | | | | | | | | | |
| 1 | | | 294 | 0.07063 | 6.485E-06 | 1.904E-03 | | | | | | | | | 131.7 | 294 | 2.68 | 3.6857E-11 | 3.011E+06 | 2.68 | 2.98E-06 |
| | 58 | 10,568 | | | | | 1.904E-03 | 364 | 0.3 | 109 | 1.74E-05 | 0.03 | 0.80 | 31.90 | | | | | | | |
| 2 | | | 361 | 0.07063 | 6.485E-06 | 2.343E-03 | | | | | | | | | 99.8 | 655 | 5.99 | 1.2411E-08 | 3.011E+06 | 3.30 | 1.23E-03 |
| | 57 | 10,207 | | | | | 4.247E-03 | 358 | 0.3 | 107 | 3.95E-05 | 0.06 | 1.00 | 17.57 | | | | | | | |
| 3 | | | 355 | 0.07063 | 6.485E-06 | 2.302E-03 | | | | | | | | | 82.2 | 1,010 | 9.23 | 3.0588E-07 | 3.011E+06 | 3.25 | 2.99E-02 |
| | 56 | 9,852 | | | | | 6.549E-03 | 352 | 0.3 | 106 | 6.20E-05 | 0.09 | 1.00 | 11.19 | | | | | | | |
| 4 | | | 349 | 0.07063 | 6.485E-06 | 2.262E-03 | | | | | | | | | 71.0 | 1,359 | 12.42 | 2.3562E-06 | 3.011E+06 | 3.19 | 2.26E-01 |
| | 55 | 9,503 | | | | | 8.811E-03 | 346 | 0.3 | 104 | 8.50E-05 | 0.12 | 1.00 | 8.17 | | | | | | | |
| 5 | | | 342 | 0.07063 | 6.485E-06 | 2.221E-03 | | | | | | | | | 62.9 | 1,701 | 15.55 | 1.0459E-05 | 3.011E+06 | 3.13 | 9.86E-01 |
| | 54 | 9,161 | | | | | 1.103E-02 | 339 | 0.3 | 102 | 1.08E-04 | 0.16 | 1.00 | 6.41 | | | | | | | |
| 6 | | | 336 | 0.07063 | 6.485E-06 | 2.180E-03 | | | | | | | | | 56.5 | 2,037 | 18.63 | 3.3658E-05 | 3.011E+06 | 3.07 | 3.12E+00 |
| | 53 | 8,825 | | | | | 1.321E-02 | 333 | 0.3 | 100 | 1.32E-04 | 0.19 | 1.00 | 5.25 | | | | | | | |
| 7 | | | 330 | 0.07063 | 6.485E-06 | 2.139E-03 | | | | | | | | | 51.2 | 2,367 | 21.64 | 8.7714E-05 | 3.011E+06 | 3.02 | 7.97E+00 |
| | 52 | 8,495 | | | | | 1.535E-02 | 327 | 0.3 | 98 | 1.57E-04 | 0.23 | 1.00 | 4.43 | | | | | | | |
| 8 | | | 324 | 0.07063 | 6.485E-06 | 2.099E-03 | | | | | | | | | 46.8 | 2,691 | 24.60 | 1.9694E-04 | 3.011E+06 | 2.96 | 1.75E+01 |
| | 51 | 8,171 | | | | | 1.745E-02 | 320 | 0.3 | 96 | 1.82E-04 | 0.26 | 1.00 | 3.83 | | | | | | | |
| 9 | | | 317 | 0.07063 | 6.485E-06 | 2.058E-03 | | | | | | | | | 43.0 | 3,008 | 27.50 | 3.9573E-04 | 3.011E+06 | 2.90 | 3.46E+01 |
| | 50 | 7,854 | | | | | 1.951E-02 | 314 | 0.3 | 94 | 2.07E-04 | 0.30 | 1.00 | 3.36 | | | | | | | |
| 10 | | | 311 | 0.07063 | 6.485E-06 | 2.017E-03 | | | | | | | | | 39.6 | 3,319 | 30.35 | 7.2975E-04 | 3.011E+06 | 2.84 | 6.25E+01 |
| | 49 | 7,543 | | | | | 2.152E-02 | 308 | 0.3 | 92 | 2.33E-04 | 0.34 | 1.00 | 2.98 | | | | | | | |
| 11 | | | 305 | 0.00063 | 6.485E-06 | 1.976E-03 | | | | | | | | | 36.6 | 3,624 | 33.14 | 1.2567E-03 | 3.011E+06 | 2.79 | 1.05E+02 |
| | 48 | 7,238 | | | | | 2.350E-02 | 302 | 0.3 | 90 | 2.60E-04 | 0.37 | 1.00 | 2.67 | | | | | | | |
| 12 | | | 298 | 0.00063 | 6.485E-06 | 1.936E-03 | | | | | | | | | 33.9 | 3,922 | 35.86 | 2.0466E-03 | 3.011E+06 | 2.73 | 1.68E+02 |
| | 47 | 6,940 | | | | | 2.544E-02 | 295 | 0.3 | 89 | 2.87E-04 | 0.41 | 1.00 | 2.42 | | | | | | | |
| 13 | | | 292 | 0.00063 | 6.485E-06 | 1.895E-03 | | | | | | | | | 31.5 | 4,214 | 38.54 | 3.1815E-03 | 3.011E+06 | 2.67 | 2.56E+02 |
| | 46 | 6,648 | | | | | 2.733E-02 | 289 | 0.3 | 87 | 3.15E-04 | 0.45 | 1.00 | 2.20 | | | | | | | |
| 14 | | | 286 | 0.00063 | 6.485E-06 | 1.854E-03 | | | | | | | | | 29.3 | 4,500 | 41.15 | 4.7550E-03 | 3.011E+06 | 2.61 | 3.74E+02 |
| | 45 | 6,362 | | | | | 2.918E-02 | 283 | 0.3 | 85 | 3.44E-04 | 0.50 | 1.00 | 2.02 | | | | | | | |
| 15 | | | 280 | 0.00063 | 6.485E-06 | 1.813E-03 | | | | | | | | | 27.3 | 4,780 | 43.71 | 6.8712E-03 | 3.011E+06 | 2.56 | 5.29E+02 |
| | 44 | 6,082 | | | | | 3.100E-02 | 276 | 0.3 | 83 | 3.74E-04 | 0.54 | 1.00 | 1.86 | | | | | | | |
| 16 | | | 273 | 0.00063 | 6.485E-06 | 1.773E-03 | | | | | | | | | 25.4 | 5,053 | 46.21 | 9.6432E-03 | 3.011E+06 | 2.50 | 7.26E+02 |
| | 43 | 5,809 | | | | | 3.277E-02 | 270 | 0.3 | 81 | 4.04E-04 | 0.58 | 1.00 | 1.72 | | | | | | | |
| 17 | | | 267 | 0.00063 | 6.485E-06 | 1.732E-03 | | | | | | | | | 23.7 | 5,320 | 48.65 | 1.3191E-02 | 3.011E+06 | 2.44 | 9.70E+02 |
| | 42 | 5,542 | | | | | 3.450E-02 | 264 | 0.3 | 79 | 4.36E-04 | 0.63 | 1.00 | 1.59 | | | | | | | |
| 18 | | | 261 | 0.00063 | 6.485E-06 | 1.691E-03 | | | | | | | | | 22.1 | 5,581 | 51.03 | 1.7640E-02 | 3.011E+06 | 2.38 | 1.27E+03 |
| | 41 | 5,281 | | | | | 3.619E-02 | 258 | 0.3 | 77 | 4.68E-04 | 0.67 | 1.00 | 1.48 | | | | | | | |
| 19 | | | 254 | 0.00063 | 6.485E-06 | 1.650E-03 | | | | | | | | | 20.7 | 5,835 | 53.36 | 2.3119E-02 | 3.011E+06 | 2.33 | 1.62E+03 |
| | 40 | 5,027 | | | | | 3.784E-02 | 251 | 0.3 | 75 | 5.02E-04 | 0.72 | 1.00 | 1.38 | | | | | | | |
| 20 | | | 248 | 0.00063 | 6.485E-06 | 1.610E-03 | | | | | | | | | 19.3 | 6,084 | 55.63 | 2.9756E-02 | 3.011E+06 | 2.27 | 2.03E+03 |
| | 39 | 4,778 | | | | | 3.945E-02 | 245 | 0.3 | 74 | 5.37E-04 | 0.77 | 1.00 | 1.29 | | | | | | | |
| 21 | | | 242 | 0.00063 | 6.485E-06 | 1.569E-03 | | | | | | | | | 18.0 | 6,325 | 57.84 | 3.7677E-02 | 3.011E+06 | 2.21 | 2.51E+03 |
| | 38 | 4,536 | | | | | 4.102E-02 | 239 | 0.3 | 72 | 5.73E-04 | 0.82 | 1.00 | 1.21 | | | | | | | |
| 22 | | | 236 | 0.00063 | 6.485E-06 | 1.528E-03 | | | | | | | | | 16.8 | 6,561 | 59.99 | 4.7003E-02 | 3.011E+06 | 2.15 | 3.05E+03 |
| | 37 | 4,301 | | | | | 4.255E-02 | 232 | 0.3 | 70 | 6.10E-04 | 0.88 | 1.00 | 1.14 | | | | | | | |
| 23 | | | 229 | 0.00063 | 6.485E-06 | 1.487E-03 | | | | | | | | | 15.6 | 6,790 | 62.09 | 5.7848E-02 | 3.011E+06 | 2.10 | 3.65E+03 |
| | 36 | 4,072 | | | | | 4.404E-02 | 226 | 0.3 | 68 | 6.49E-04 | 0.93 | 1.00 | 1.07 | | | | | | | |
| 24 | | | 223 | 0.00063 | 6.485E-06 | 1.447E-03 | | | | | | | | | 14.6 | 7,013 | 64.13 | 7.0317E-02 | 3.011E+06 | 2.04 | 4.32E+03 |
| | 35 | 3,848 | | | | | 4.548E-02 | 220 | 0.3 | 66 | 6.89E-04 | 0.99 | 1.00 | 1.01 | | | | | | | |
| 25 | | | 217 | 0.00063 | 6.485E-06 | 1.406E-03 | | | | | | | | | 13.5 | 7,230 | 66.11 | 8.4499E-02 | 3.011E+06 | 1.98 | 5.04E+03 |
| | 34 | 3,632 | | | | | 4.689E-02 | 214 | 0.3 | 64 | 7.32E-04 | 1.05 | 1.00 | 0.95 | | | | | | | |
| 26 | | | 210 | 0.00063 | 6.485E-06 | 1.365E-03 | | | | | | | | | 12.6 | 7,441 | 68.04 | 1.0047E-01 | 3.011E+06 | 1.92 | 5.82E+03 |
| | 33 | 3,421 | | | | | 4.826E-02 | 207 | 0.3 | 62 | 7.76E-04 | 1.12 | 1.00 | 0.90 | | | | | | | |
| 27 | | | 204 | 0.00063 | 6.485E-06 | 1.324E-03 | | | | | | | | | 11.7 | 7,645 | 69.91 | 1.1829E-01 | 3.011E+06 | 1.87 | 6.65E+03 |
| | 32 | 3,217 | | | | | 4.958E-02 | 201 | 0.3 | 60 | 8.22E-04 | 1.18 | 1.00 | 0.84 | | | | | | | |
| 28 | | | 198 | 0.00063 | 6.485E-06 | 1.284E-03 | | | | | | | | | 10.9 | 7,843 | 71.72 | 1.3800E-01 | 3.011E+06 | 1.81 | 7.52E+03 |
| | 31 | 3,019 | | | | | 5.086E-02 | 195 | 0.3 | 58 | 8.70E-04 | 1.25 | 1.00 | 0.80 | | | | | | | |
| 29 | | | 192 | 0.00063 | 6.485E-06 | 1.243E-03 | | | | | | | | | 10.1 | 8,034 | 73.47 | 1.5962E-01 | 3.011E+06 | 1.75 | 8.42E+03 |
| | 30 | 2,827 | | | | | 5.211E-02 | 188 | 0.3 | 57 | 9.21E-04 | 1.33 | 1.00 | 0.75 | | | | | | | |

**TABLE A-8 (CONTINUED)**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA A - ONE QUARTER ACRE AREA - ESTIMATE YEAR 2000 - LANDFILL POROSITY = 0.3**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multilier (e^-kt) | Rn-222 Flux Rate from FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-22 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| 28 | | | 198 | 0.00063 | 6.485E-06 | 1.284E-03 | | | | | | | | | 10.9 | 7,843 | 71.72 | 1.3800E-01 | 3.011E+06 | 1.81 | 7.52E+03 |
| | 31 | 3,019 | | | | | 5.086E-02 | 195 | 0.3 | 58 | 8.70E-04 | 1.25 | 1.00 | 0.80 | | | | | | | |
| 29 | | | 192 | 0.00063 | 6.485E-06 | 1.243E-03 | | | | | | | | | 10.1 | 8,034 | 73.47 | 1.5962E-01 | 3.011E+06 | 1.75 | 8.42E+03 |
| | 30 | 2,827 | | | | | 5.211E-02 | 188 | 0.3 | 57 | 9.21E-04 | 1.33 | 1.00 | 0.75 | | | | | | | |
| 30 | | | 185 | 0.00063 | 6.485E-06 | 1.202E-03 | | | | | | | | | 9.3 | 8,220 | 75.16 | 1.8314E-01 | 3.011E+06 | 1.69 | 9.35E+03 |
| | 29 | 2,642 | | | | | 5.331E-02 | 182 | 0.3 | 55 | 9.75E-04 | 1.40 | 1.00 | 0.71 | | | | | | | |
| 31 | | | 179 | 0.00063 | 6.485E-06 | 1.161E-03 | | | | | | | | | 8.6 | 8,399 | 76.80 | 2.0854E-01 | 3.011E+06 | 1.64 | 1.03E+04 |
| | 28 | 2,463 | | | | | 5.447E-02 | 176 | 0.3 | 53 | 1.03E-03 | 1.49 | 1.00 | 0.67 | | | | | | | |
| 32 | | | 173 | 0.00063 | 6.485E-06 | 1.121E-03 | | | | | | | | | 7.9 | 8,572 | 78.38 | 2.3577E-01 | 3.011E+06 | 1.58 | 1.12E+04 |
| | 27 | 2,290 | | | | | 5.559E-02 | 170 | 0.3 | 51 | 1.09E-03 | 1.57 | 1.00 | 0.64 | | | | | | | |
| 33 | | | 167 | 0.00063 | 6.485E-06 | 1.080E-03 | | | | | | | | | 7.3 | 8,738 | 79.90 | 2.6476E-01 | 3.011E+06 | 1.52 | 1.21E+04 |
| | 26 | 2,124 | | | | | 5.667E-02 | 163 | 0.3 | 49 | 1.16E-03 | 1.67 | 1.00 | 0.60 | | | | | | | |
| 34 | | | 160 | 0.00063 | 6.485E-06 | 1.039E-03 | | | | | | | | | 6.7 | 8,898 | 81.37 | 2.9541E-01 | 3.011E+06 | 1.47 | 1.30E+04 |
| | 25 | 1,964 | | | | | 5.771E-02 | 157 | 0.3 | 47 | 1.22E-03 | 1.76 | 1.00 | 0.57 | | | | | | | |
| 35 | | | 154 | 0.00063 | 6.485E-06 | 9.983E-04 | | | | | | | | | 6.1 | 9,052 | 82.78 | 3.2760E-01 | 3.011E+06 | 1.41 | 1.39E+04 |
| | 24 | 1,810 | | | | | 5.871E-02 | 151 | 0.3 | 45 | 1.30E-03 | 1.87 | 1.00 | 0.54 | | | | | | | |
| 36 | | | 148 | 0.00063 | 6.485E-06 | 9.576E-04 | | | | | | | | | 5.6 | 9,200 | 84.13 | 3.6119E-01 | 3.011E+06 | 1.35 | 1.47E+04 |
| | 23 | 1,662 | | | | | 5.966E-02 | 145 | 0.3 | 43 | 1.38E-03 | 1.98 | 1.00 | 0.50 | | | | | | | |
| 37 | | | 141 | 0.00063 | 6.485E-06 | 9.168E-04 | | | | | | | | | 5.1 | 9,341 | 85.42 | 3.9601E-01 | 3.011E+06 | 1.29 | 1.54E+04 |
| | 22 | 1,521 | | | | | 6.058E-02 | 138 | 0.3 | 41 | 1.46E-03 | 2.10 | 1.00 | 0.48 | | | | | | | |
| 38 | | | 135 | 0.00063 | 6.485E-06 | 8.761E-04 | | | | | | | | | 4.6 | 9,476 | 86.65 | 4.3188E-01 | 3.011E+06 | 1.24 | 1.61E+04 |
| | 21 | 1,385 | | | | | 6.146E-02 | 132 | 0.3 | 40 | 1.55E-03 | 2.24 | 1.00 | 0.45 | | | | | | | |
| 39 | | | 129 | 0.00063 | 6.485E-06 | 8.353E-04 | | | | | | | | | 4.2 | 9,605 | 87.83 | 4.6859E-01 | 3.011E+06 | 1.18 | 1.66E+04 |
| | 20 | 1,257 | | | | | 6.229E-02 | 126 | 0.3 | 38 | 1.65E-03 | 2.38 | 1.00 | 0.42 | | | | | | | |
| 40 | | | 123 | 0.00063 | 6.485E-06 | 7.946E-04 | | | | | | | | | 3.7 | 9,728 | 88.95 | 5.0593E-01 | 3.011E+06 | 1.12 | 1.71E+04 |
| | 19 | 1,134 | | | | | 6.309E-02 | 119 | 0.3 | 36 | 1.76E-03 | 2.54 | 1.00 | 0.39 | | | | | | | |
| 41 | | | 116 | 0.00063 | 6.485E-06 | 7.538E-04 | | | | | | | | | 3.3 | 9,844 | 90.01 | 5.4365E-01 | 3.011E+06 | 1.06 | 1.74E+04 |
| | 18 | 1,018 | | | | | 6.384E-02 | 113 | 0.3 | 34 | 1.88E-03 | 2.71 | 1.00 | 0.37 | | | | | | | |
| 42 | | | 110 | 0.00063 | 6.485E-06 | 7.131E-04 | | | | | | | | | 3.0 | 9,954 | 91.02 | 5.8151E-01 | 3.011E+06 | 1.01 | 1.76E+04 |
| | 17 | 908 | | | | | 6.455E-02 | 107 | 0.3 | 32 | 2.01E-03 | 2.90 | 1.00 | 0.34 | | | | | | | |
| 43 | | | 104 | 0.00063 | 6.485E-06 | 6.724E-04 | | | | | | | | | 2.6 | 10,058 | 91.97 | 6.1924E-01 | 3.011E+06 | 0.95 | 1.77E+04 |
| | 16 | 804 | | | | | 6.523E-02 | 101 | 0.3 | 30 | 2.16E-03 | 3.11 | 1.00 | 0.32 | | | | | | | |
| 44 | | | 97 | 0.00063 | 6.485E-06 | 6.316E-04 | | | | | | | | | 2.3 | 10,155 | 92.86 | 6.5659E-01 | 3.011E+06 | 0.89 | 1.76E+04 |
| | 15 | 707 | | | | | 6.586E-02 | 94 | 0.3 | 28 | 2.33E-03 | 3.35 | 1.00 | 0.30 | | | | | | | |
| 45 | | | 91 | 0.00063 | 6.485E-06 | 5.909E-04 | | | | | | | | | 2.0 | 10,246 | 93.69 | 6.9329E-01 | 3.011E+06 | 0.83 | 1.74E+04 |
| | 14 | 616 | | | | | 6.645E-02 | 88 | 0.3 | 26 | 2.52E-03 | 3.63 | 1.00 | 0.28 | | | | | | | |
| 46 | | | 85 | 0.00063 | 6.485E-06 | 5.501E-04 | | | | | | | | | 1.7 | 10,331 | 94.47 | 7.2905E-01 | 3.011E+06 | 0.78 | 1.70E+04 |
| | 13 | 531 | | | | | 6.700E-02 | 82 | 0.3 | 25 | 2.73E-03 | 3.94 | 1.00 | 0.25 | | | | | | | |
| 47 | | | 79 | 0.00063 | 6.485E-06 | 5.094E-04 | | | | | | | | | 1.5 | 10,410 | 95.19 | 7.6362E-01 | 3.011E+06 | 0.72 | 1.65E+04 |
| | 12 | 452 | | | | | 6.751E-02 | 75 | 0.3 | 23 | 2.98E-03 | 4.30 | 1.00 | 0.23 | | | | | | | |
| 48 | | | 72 | 0.00063 | 6.485E-06 | 4.686E-04 | | | | | | | | | 1.2 | 10,482 | 95.85 | 7.9673E-01 | 3.011E+06 | 0.66 | 1.59E+04 |
| | 11 | 380 | | | | | 6.798E-02 | 69 | 0.3 | 21 | 3.28E-03 | 4.72 | 1.00 | 0.21 | | | | | | | |
| 49 | | | 66 | 0.00063 | 6.485E-06 | 4.279E-04 | | | | | | | | | 1.0 | 10,548 | 96.45 | 8.2812E-01 | 3.011E+06 | 0.60 | 1.50E+04 |
| | 10 | 314 | | | | | 6.841E-02 | 63 | 0.3 | 19 | 3.63E-03 | 5.23 | 1.00 | 0.19 | | | | | | | |
| 50 | | | 60 | 0.00063 | 6.485E-06 | 3.871E-04 | | | | | | | | | 0.8 | 10,607 | 97.00 | 8.5753E-01 | 3.011E+06 | 0.55 | 1.41E+04 |
| | 9 | 254 | | | | | 6.879E-02 | 57 | 0.3 | 17 | 4.06E-03 | 5.84 | 1.00 | 0.17 | | | | | | | |
| 51 | | | 53 | 0.00063 | 6.485E-06 | 3.464E-04 | | | | | | | | | 0.7 | 10,661 | 97.48 | 8.8474E-01 | 3.011E+06 | 0.49 | 1.30E+04 |
| | 8 | 201 | | | | | 6.914E-02 | 50 | 0.3 | 15 | 4.58E-03 | 6.60 | 1.00 | 0.15 | | | | | | | |
| 52 | | | 47 | 0.00063 | 6.485E-06 | 3.056E-04 | | | | | | | | | 0.5 | 10,708 | 97.91 | 9.0952E-01 | 3.011E+06 | 0.43 | 1.18E+04 |
| | 7 | 154 | | | | | 6.944E-02 | 44 | 0.3 | 13 | 5.26E-03 | 7.58 | 1.00 | 0.13 | | | | | | | |
| 53 | | | 41 | 0.00063 | 6.485E-06 | 2.649E-04 | | | | | | | | | 0.4 | 10,749 | 98.29 | 9.3168E-01 | 3.011E+06 | 0.37 | 1.05E+04 |
| | 6 | 113 | | | | | 6.971E-02 | 38 | 0.3 | 11 | 6.16E-03 | 8.88 | 1.00 | 0.11 | | | | | | | |
| 54 | | | 35 | 0.00063 | 6.485E-06 | 2.241E-04 | | | | | | | | | 0.3 | 10,783 | 98.60 | 9.5102E-01 | 3.011E+06 | 0.32 | 9.05E+03 |
| | 5 | 79 | | | | | 6.993E-02 | 31 | 0.3 | 9 | 7.42E-03 | 10.69 | 1.00 | 0.09 | | | | | | | |
| 55 | | | 28 | 0.00063 | 6.485E-06 | 1.834E-04 | | | | | | | | | 0.2 | 10,812 | 98.86 | 9.6740E-01 | 3.011E+06 | 0.26 | 7.53E+03 |
| | 4 | 50 | | | | | 7.012E-02 | 25 | 0.3 | 8 | 9.30E-03 | 13.39 | 1.00 | 0.07 | | | | | | | |
| 56 | | | 22 | 0.00063 | 6.485E-06 | 1.426E-04 | | | | | | | | | 0.1 | 10,834 | 99.06 | 9.8066E-01 | 3.011E+06 | 0.20 | 5.94E+03 |
| | 3 | 28 | | | | | 7.026E-02 | 19 | 0.3 | 6 | 1.24E-02 | 17.89 | 1.00 | 0.06 | | | | | | | |
| 57 | | | 16 | 0.00063 | 6.485E-06 | 1.019E-04 | | | | | | | | | 0.1 | 10,849 | 99.21 | 9.9071E-01 | 3.011E+06 | 0.14 | 4.28E+03 |
| | 2 | 13 | | | | | 7.036E-02 | 13 | 0.3 | 4 | 1.87E-02 | 26.88 | 1.00 | 0.04 | | | | | | | |
| 58 | | | 5 | 0.00063 | 6.485E-06 | 3.565E-05 | | | | | | | | | 0.0 | 10,855 | 99.26 | 9.9746E-01 | 3.011E+06 | 0.05 | 1.51E+03 |
| | 1.5 | 7 | | | | | 7.040E-02 | 9 | 0.3 | 3 | 2.49E-02 | 35.85 | 0.50 | 0.01 | | | | | | | |
| 59 | | | 7 | 0.00063 | 6.485E-06 | 4.584E-05 | | | | | | | | | 0.0 | 10,862 | 99.32 | 1.0000E+00 | 3.011E+06 | 0.06 | 1.95E+03 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Considered | pCi/min | 4.367E+05 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Not Considered | pCi/min | 3.011E+06 |

| | | |
|---|---|---|
| Reduction in Rn-222 Flux Due to Decay (%) | % | 85.50 |

**TABLE A-9**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA A - ONE QUARTER ACRE AREA - ESTIMATE YEAR 2025 - LANDFILL POROSITY = 0.3**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multilier (e^-kt) | Rn-222 Flux Rate from FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-22 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| | 58.80 | 10,862 | | | | | 0 | | | | 0 | 0 | | | | | | | | | |
| 1 | | | 294 | 0.02000 | 1.837E-06 | 5.391E-04 | | | | | | | | | 465.1 | 294 | 2.68 | 1.4348E-37 | 3.691E+06 | 2.68 | 1.42E-32 |
| | 58 | 10,568 | | | | | 5.391E-04 | 364 | 0.3 | 109 | 4.93E-06 | 0.01 | 0.80 | 112.66 | | | | | | | |
| 2 | | | 361 | 0.02000 | 1.837E-06 | 6.635E-04 | | | | | | | | | 352.4 | 655 | 5.99 | 1.2057E-28 | 3.691E+06 | 3.30 | 1.47E-23 |
| | 57 | 10,207 | | | | | 1.203E-03 | 358 | 0.3 | 107 | 1.12E-05 | 0.02 | 1.00 | 62.04 | | | | | | | |
| 3 | | | 355 | 0.02000 | 1.837E-06 | 6.520E-04 | | | | | | | | | 290.4 | 1,010 | 9.23 | 9.9047E-24 | 3.691E+06 | 3.25 | 1.19E-18 |
| | 56 | 9,852 | | | | | 1.855E-03 | 352 | 0.3 | 106 | 1.76E-05 | 0.03 | 1.00 | 39.53 | | | | | | | |
| 4 | | | 349 | 0.02000 | 1.837E-06 | 6.404E-04 | | | | | | | | | 250.9 | 1,359 | 12.42 | 1.3392E-20 | 3.691E+06 | 3.19 | 1.58E-15 |
| | 55 | 9,503 | | | | | 2.495E-03 | 346 | 0.3 | 104 | 2.41E-05 | 0.03 | 1.00 | 28.86 | | | | | | | |
| 5 | | | 342 | 0.02000 | 1.837E-06 | 6.289E-04 | | | | | | | | | 222.0 | 1,701 | 15.55 | 2.5859E-18 | 3.691E+06 | 3.13 | 2.99E-13 |
| | 54 | 9,161 | | | | | 3.124E-03 | 339 | 0.3 | 102 | 3.07E-05 | 0.04 | 1.00 | 22.63 | | | | | | | |
| 6 | | | 336 | 0.02000 | 1.837E-06 | 6.174E-04 | | | | | | | | | 199.4 | 2,037 | 18.63 | 1.6034E-16 | 3.691E+06 | 3.07 | 1.82E-11 |
| | 53 | 8,825 | | | | | 3.741E-03 | 333 | 0.3 | 100 | 3.74E-05 | 0.05 | 1.00 | 18.54 | | | | | | | |
| 7 | | | 330 | 0.02000 | 1.837E-06 | 6.058E-04 | | | | | | | | | 180.8 | 2,367 | 21.64 | 4.7203E-15 | 3.691E+06 | 3.02 | 5.26E-10 |
| | 52 | 8,495 | | | | | 4.347E-03 | 327 | 0.3 | 98 | 4.44E-05 | 0.06 | 1.00 | 15.66 | | | | | | | |
| 8 | | | 324 | 0.02000 | 1.837E-06 | 5.943E-04 | | | | | | | | | 165.2 | 2,691 | 24.60 | 8.2099E-14 | 3.691E+06 | 2.96 | 8.97E-09 |
| | 51 | 8,171 | | | | | 4.941E-03 | 320 | 0.3 | 96 | 5.14E-05 | 0.07 | 1.00 | 13.51 | | | | | | | |
| 9 | | | 317 | 0.02000 | 1.837E-06 | 5.827E-04 | | | | | | | | | 151.7 | 3,008 | 27.50 | 9.6504E-13 | 3.691E+06 | 2.90 | 1.03E-07 |
| | 50 | 7,854 | | | | | 5.524E-03 | 314 | 0.3 | 94 | 5.86E-05 | 0.08 | 1.00 | 11.85 | | | | | | | |
| 10 | | | 311 | 0.02000 | 1.837E-06 | 5.712E-04 | | | | | | | | | 139.8 | 3,319 | 30.35 | 8.3770E-12 | 3.691E+06 | 2.84 | 8.79E-07 |
| | 49 | 7,543 | | | | | 6.095E-03 | 308 | 0.3 | 92 | 6.60E-05 | 0.10 | 1.00 | 10.52 | | | | | | | |
| 11 | | | 305 | 0.00063 | 1.837E-06 | 5.597E-04 | | | | | | | | | 129.3 | 3,624 | 33.14 | 5.7104E-11 | 3.691E+06 | 2.79 | 5.87E-06 |
| | 48 | 7,238 | | | | | 6.655E-03 | 302 | 0.3 | 90 | 7.36E-05 | 0.11 | 1.00 | 9.44 | | | | | | | |
| 12 | | | 298 | 0.00063 | 1.837E-06 | 5.481E-04 | | | | | | | | | 119.9 | 3,922 | 35.86 | 3.1957E-10 | 3.691E+06 | 2.73 | 3.22E-05 |
| | 47 | 6,940 | | | | | 7.203E-03 | 295 | 0.3 | 89 | 8.13E-05 | 0.12 | 1.00 | 8.54 | | | | | | | |
| 13 | | | 292 | 0.00063 | 1.837E-06 | 5.366E-04 | | | | | | | | | 111.3 | 4,214 | 38.54 | 1.5176E-09 | 3.691E+06 | 2.67 | 1.50E-04 |
| | 46 | 6,648 | | | | | 7.740E-03 | 289 | 0.3 | 87 | 8.93E-05 | 0.13 | 1.00 | 7.78 | | | | | | | |
| 14 | | | 286 | 0.00063 | 1.837E-06 | 5.250E-04 | | | | | | | | | 103.5 | 4,500 | 41.15 | 6.2725E-09 | 3.691E+06 | 2.61 | 6.05E-04 |
| | 45 | 6,362 | | | | | 8.265E-03 | 283 | 0.3 | 85 | 9.74E-05 | 0.14 | 1.00 | 7.13 | | | | | | | |
| 15 | | | 280 | 0.00063 | 1.837E-06 | 5.135E-04 | | | | | | | | | 96.4 | 4,780 | 43.71 | 2.3016E-08 | 3.691E+06 | 2.56 | 2.17E-03 |
| | 44 | 6,082 | | | | | 8.778E-03 | 276 | 0.3 | 83 | 1.06E-04 | 0.15 | 1.00 | 6.56 | | | | | | | |
| 16 | | | 273 | 0.00063 | 1.837E-06 | 5.020E-04 | | | | | | | | | 89.9 | 5,053 | 46.21 | 7.6169E-08 | 3.691E+06 | 2.50 | 7.03E-03 |
| | 43 | 5,809 | | | | | 9.280E-03 | 270 | 0.3 | 81 | 1.14E-04 | 0.16 | 1.00 | 6.07 | | | | | | | |
| 17 | | | 267 | 0.00063 | 1.837E-06 | 4.904E-04 | | | | | | | | | 83.8 | 5,320 | 48.65 | 2.3027E-07 | 3.691E+06 | 2.44 | 2.08E-02 |
| | 42 | 5,542 | | | | | 9.771E-03 | 264 | 0.3 | 79 | 1.23E-04 | 0.18 | 1.00 | 5.63 | | | | | | | |
| 18 | | | 261 | 0.00063 | 1.837E-06 | 4.789E-04 | | | | | | | | | 78.2 | 5,581 | 51.03 | 6.4265E-07 | 3.691E+06 | 2.38 | 5.66E-02 |
| | 41 | 5,281 | | | | | 1.025E-02 | 258 | 0.3 | 77 | 1.33E-04 | 0.19 | 1.00 | 5.24 | | | | | | | |
| 19 | | | 254 | 0.00063 | 1.837E-06 | 4.673E-04 | | | | | | | | | 72.9 | 5,835 | 53.36 | 1.6702E-06 | 3.691E+06 | 2.33 | 1.43E-01 |
| | 40 | 5,027 | | | | | 1.072E-02 | 251 | 0.3 | 75 | 1.42E-04 | 0.20 | 1.00 | 4.89 | | | | | | | |
| 20 | | | 248 | 0.00063 | 1.837E-06 | 4.558E-04 | | | | | | | | | 68.0 | 6,084 | 55.63 | 4.0719E-06 | 3.691E+06 | 2.27 | 3.41E-01 |
| | 39 | 4,778 | | | | | 1.117E-02 | 245 | 0.3 | 74 | 1.52E-04 | 0.22 | 1.00 | 4.57 | | | | | | | |
| 21 | | | 242 | 0.00063 | 1.837E-06 | 4.443E-04 | | | | | | | | | 63.5 | 6,325 | 57.84 | 9.3702E-06 | 3.691E+06 | 2.21 | 7.65E-01 |
| | 38 | 4,536 | | | | | 1.162E-02 | 239 | 0.3 | 72 | 1.62E-04 | 0.23 | 1.00 | 4.28 | | | | | | | |
| 22 | | | 236 | 0.00063 | 1.837E-06 | 4.327E-04 | | | | | | | | | 59.2 | 6,561 | 59.99 | 2.0462E-05 | 3.691E+06 | 2.15 | 1.63E+00 |
| | 37 | 4,301 | | | | | 1.205E-02 | 232 | 0.3 | 70 | 1.73E-04 | 0.25 | 1.00 | 4.02 | | | | | | | |
| 23 | | | 229 | 0.00063 | 1.837E-06 | 4.212E-04 | | | | | | | | | 55.2 | 6,790 | 62.09 | 4.2593E-05 | 3.691E+06 | 2.10 | 3.30E+00 |
| | 36 | 4,072 | | | | | 1.247E-02 | 226 | 0.3 | 68 | 1.84E-04 | 0.26 | 1.00 | 3.78 | | | | | | | |
| 24 | | | 223 | 0.00063 | 1.837E-06 | 4.096E-04 | | | | | | | | | 51.4 | 7,013 | 64.13 | 8.4854E-05 | 3.691E+06 | 2.04 | 6.39E+00 |
| | 35 | 3,848 | | | | | 1.288E-02 | 220 | 0.3 | 66 | 1.95E-04 | 0.28 | 1.00 | 3.56 | | | | | | | |
| 25 | | | 217 | 0.00063 | 1.837E-06 | 3.981E-04 | | | | | | | | | 47.8 | 7,230 | 66.11 | 1.6234E-04 | 3.691E+06 | 1.98 | 1.19E+01 |
| | 34 | 3,632 | | | | | 1.328E-02 | 214 | 0.3 | 64 | 2.07E-04 | 0.30 | 1.00 | 3.35 | | | | | | | |
| 26 | | | 210 | 0.00063 | 1.837E-06 | 3.866E-04 | | | | | | | | | 44.5 | 7,441 | 68.04 | 2.9919E-04 | 3.691E+06 | 1.92 | 2.13E+01 |
| | 33 | 3,421 | | | | | 1.367E-02 | 207 | 0.3 | 62 | 2.20E-04 | 0.32 | 1.00 | 3.16 | | | | | | | |
| 27 | | | 204 | 0.00063 | 1.837E-06 | 3.750E-04 | | | | | | | | | 41.3 | 7,645 | 69.91 | 5.3254E-04 | 3.691E+06 | 1.87 | 3.67E+01 |
| | 32 | 3,217 | | | | | 1.404E-02 | 201 | 0.3 | 60 | 2.33E-04 | 0.34 | 1.00 | 2.98 | | | | | | | |
| 28 | | | 198 | 0.00063 | 1.837E-06 | 3.635E-04 | | | | | | | | | 38.3 | 7,843 | 71.72 | 9.1766E-04 | 3.691E+06 | 1.81 | 6.13E+01 |
| | 31 | 3,019 | | | | | 1.440E-02 | 195 | 0.3 | 58 | 2.46E-04 | 0.35 | 1.00 | 2.82 | | | | | | | |
| 29 | | | 192 | 0.00063 | 1.837E-06 | 3.520E-04 | | | | | | | | | 35.5 | 8,034 | 73.47 | 1.5341E-03 | 3.691E+06 | 1.75 | 9.92E+01 |
| | 30 | 2,827 | | | | | 1.476E-02 | 188 | 0.3 | 57 | 2.61E-04 | 0.38 | 1.00 | 2.66 | | | | | | | |

**TABLE A-9 (CONTINUED)**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA A - ONE QUARTER ACRE AREA - ESTIMATE YEAR 2025 - LANDFILL POROSITY = 0.3**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multilier (e^-kt) | Rn-222 Flux Rate from FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-22 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| 28 | | | 198 | 0.00063 | 1.837E-06 | 3.635E-04 | | | | | | | | | 38.3 | 7,843 | 71.72 | 9.1766E-04 | 3.691E+06 | 1.81 | 6.13E+01 |
| | 31 | 3,019 | | | | | 1.440E-02 | 195 | 0.3 | 58 | 2.46E-04 | 0.35 | 1.00 | 2.82 | | | | | | | |
| 29 | | | 192 | 0.00063 | 1.837E-06 | 3.520E-04 | | | | | | | | | 35.5 | 8,034 | 73.47 | 1.5341E-03 | 3.691E+06 | 1.75 | 9.92E+01 |
| | 30 | 2,827 | | | | | 1.476E-02 | 188 | 0.3 | 57 | 2.61E-04 | 0.38 | 1.00 | 2.66 | | | | | | | |
| 30 | | | 185 | 0.00063 | 1.837E-06 | 3.404E-04 | | | | | | | | | 32.9 | 8,220 | 75.16 | 2.4927E-03 | 3.691E+06 | 1.69 | 1.56E+02 |
| | 29 | 2,642 | | | | | 1.510E-02 | 182 | 0.3 | 55 | 2.76E-04 | 0.40 | 1.00 | 2.51 | | | | | | | |
| 31 | | | 179 | 0.00063 | 1.837E-06 | 3.289E-04 | | | | | | | | | 30.3 | 8,399 | 76.80 | 3.9434E-03 | 3.691E+06 | 1.64 | 2.38E+02 |
| | 28 | 2,463 | | | | | 1.542E-02 | 176 | 0.3 | 53 | 2.92E-04 | 0.42 | 1.00 | 2.38 | | | | | | | |
| 32 | | | 173 | 0.00063 | 1.837E-06 | 3.173E-04 | | | | | | | | | 28.0 | 8,572 | 78.38 | 6.0827E-03 | 3.691E+06 | 1.58 | 3.55E+02 |
| | 27 | 2,290 | | | | | 1.574E-02 | 170 | 0.3 | 51 | 3.09E-04 | 0.45 | 1.00 | 2.25 | | | | | | | |
| 33 | | | 167 | 0.00063 | 1.837E-06 | 3.058E-04 | | | | | | | | | 25.7 | 8,738 | 79.90 | 9.1610E-03 | 3.691E+06 | 1.52 | 5.15E+02 |
| | 26 | 2,124 | | | | | 1.605E-02 | 163 | 0.3 | 49 | 3.27E-04 | 0.47 | 1.00 | 2.12 | | | | | | | |
| 34 | | | 160 | 0.00063 | 1.837E-06 | 2.943E-04 | | | | | | | | | 23.6 | 8,898 | 81.37 | 1.3488E-02 | 3.691E+06 | 1.47 | 7.29E+02 |
| | 25 | 1,964 | | | | | 1.634E-02 | 157 | 0.3 | 47 | 3.47E-04 | 0.50 | 1.00 | 2.00 | | | | | | | |
| 35 | | | 154 | 0.00063 | 1.837E-06 | 2.827E-04 | | | | | | | | | 21.6 | 9,052 | 82.78 | 1.9434E-02 | 3.691E+06 | 1.41 | 1.01E+03 |
| | 24 | 1,810 | | | | | 1.663E-02 | 151 | 0.3 | 45 | 3.67E-04 | 0.53 | 1.00 | 1.89 | | | | | | | |
| 36 | | | 148 | 0.00063 | 1.837E-06 | 2.712E-04 | | | | | | | | | 19.7 | 9,200 | 84.13 | 2.7432E-02 | 3.691E+06 | 1.35 | 1.37E+03 |
| | 23 | 1,662 | | | | | 1.690E-02 | 145 | 0.3 | 43 | 3.90E-04 | 0.56 | 1.00 | 1.78 | | | | | | | |
| 37 | | | 141 | 0.00063 | 1.837E-06 | 2.596E-04 | | | | | | | | | 17.9 | 9,341 | 85.42 | 3.7967E-02 | 3.691E+06 | 1.29 | 1.81E+03 |
| | 22 | 1,521 | | | | | 1.716E-02 | 138 | 0.3 | 41 | 4.14E-04 | 0.60 | 1.00 | 1.68 | | | | | | | |
| 38 | | | 135 | 0.00063 | 1.837E-06 | 2.481E-04 | | | | | | | | | 16.3 | 9,476 | 86.65 | 5.1568E-02 | 3.691E+06 | 1.24 | 2.35E+03 |
| | 21 | 1,385 | | | | | 1.740E-02 | 132 | 0.3 | 40 | 4.40E-04 | 0.63 | 1.00 | 1.58 | | | | | | | |
| 39 | | | 129 | 0.00063 | 1.837E-06 | 2.366E-04 | | | | | | | | | 14.7 | 9,605 | 87.83 | 6.8786E-02 | 3.691E+06 | 1.18 | 2.99E+03 |
| | 20 | 1,257 | | | | | 1.764E-02 | 126 | 0.3 | 38 | 4.68E-04 | 0.67 | 1.00 | 1.48 | | | | | | | |
| 40 | | | 123 | 0.00063 | 1.837E-06 | 2.250E-04 | | | | | | | | | 13.2 | 9,728 | 88.95 | 9.0170E-02 | 3.691E+06 | 1.12 | 3.73E+03 |
| | 19 | 1,134 | | | | | 1.787E-02 | 119 | 0.3 | 36 | 4.99E-04 | 0.72 | 1.00 | 1.39 | | | | | | | |
| 41 | | | 116 | 0.00063 | 1.837E-06 | 2.135E-04 | | | | | | | | | 11.8 | 9,844 | 90.01 | 1.1624E-01 | 3.691E+06 | 1.06 | 4.56E+03 |
| | 18 | 1,018 | | | | | 1.808E-02 | 113 | 0.3 | 34 | 5.33E-04 | 0.77 | 1.00 | 1.30 | | | | | | | |
| 42 | | | 110 | 0.00063 | 1.837E-06 | 2.019E-04 | | | | | | | | | 10.5 | 9,954 | 91.02 | 1.4743E-01 | 3.691E+06 | 1.01 | 5.47E+03 |
| | 17 | 908 | | | | | 1.828E-02 | 107 | 0.3 | 32 | 5.70E-04 | 0.82 | 1.00 | 1.22 | | | | | | | |
| 43 | | | 104 | 0.00063 | 1.837E-06 | 1.904E-04 | | | | | | | | | 9.3 | 10,058 | 91.97 | 1.8408E-01 | 3.691E+06 | 0.95 | 6.44E+03 |
| | 16 | 804 | | | | | 1.847E-02 | 101 | 0.3 | 30 | 6.12E-04 | 0.88 | 1.00 | 1.13 | | | | | | | |
| 44 | | | 97 | 0.00063 | 1.837E-06 | 1.789E-04 | | | | | | | | | 8.1 | 10,155 | 92.86 | 2.2637E-01 | 3.691E+06 | 0.89 | 7.44E+03 |
| | 15 | 707 | | | | | 1.865E-02 | 94 | 0.3 | 28 | 6.60E-04 | 0.95 | 1.00 | 1.05 | | | | | | | |
| 45 | | | 91 | 0.00063 | 1.837E-06 | 1.673E-04 | | | | | | | | | 7.1 | 10,246 | 93.69 | 2.7430E-01 | 3.691E+06 | 0.83 | 8.43E+03 |
| | 14 | 616 | | | | | 1.882E-02 | 88 | 0.3 | 26 | 7.13E-04 | 1.03 | 1.00 | 0.97 | | | | | | | |
| 46 | | | 85 | 0.00063 | 1.837E-06 | 1.558E-04 | | | | | | | | | 6.1 | 10,331 | 94.47 | 3.2762E-01 | 3.691E+06 | 0.78 | 9.38E+03 |
| | 13 | 531 | | | | | 1.897E-02 | 82 | 0.3 | 25 | 7.74E-04 | 1.11 | 1.00 | 0.90 | | | | | | | |
| 47 | | | 79 | 0.00063 | 1.837E-06 | 1.442E-04 | | | | | | | | | 5.2 | 10,410 | 95.19 | 3.8585E-01 | 3.691E+06 | 0.72 | 1.02E+04 |
| | 12 | 452 | | | | | 1.912E-02 | 75 | 0.3 | 23 | 8.45E-04 | 1.22 | 1.00 | 0.82 | | | | | | | |
| 48 | | | 72 | 0.00063 | 1.837E-06 | 1.327E-04 | | | | | | | | | 4.4 | 10,482 | 95.85 | 4.4824E-01 | 3.691E+06 | 0.66 | 1.09E+04 |
| | 11 | 380 | | | | | 1.925E-02 | 69 | 0.3 | 21 | 9.28E-04 | 1.34 | 1.00 | 0.75 | | | | | | | |
| 49 | | | 66 | 0.00063 | 1.837E-06 | 1.212E-04 | | | | | | | | | 3.7 | 10,548 | 96.45 | 5.1376E-01 | 3.691E+06 | 0.60 | 1.14E+04 |
| | 10 | 314 | | | | | 1.937E-02 | 63 | 0.3 | 19 | 1.03E-03 | 1.48 | 1.00 | 0.68 | | | | | | | |
| 50 | | | 60 | 0.00063 | 1.837E-06 | 1.096E-04 | | | | | | | | | 3.0 | 10,607 | 97.00 | 5.8115E-01 | 3.691E+06 | 0.55 | 1.17E+04 |
| | 9 | 254 | | | | | 1.948E-02 | 57 | 0.3 | 17 | 1.15E-03 | 1.65 | 1.00 | 0.60 | | | | | | | |
| 51 | | | 53 | 0.00063 | 1.837E-06 | 9.808E-05 | | | | | | | | | 2.4 | 10,661 | 97.48 | 6.4892E-01 | 3.691E+06 | 0.49 | 1.17E+04 |
| | 8 | 201 | | | | | 1.958E-02 | 50 | 0.3 | 15 | 1.30E-03 | 1.87 | 1.00 | 0.53 | | | | | | | |
| 52 | | | 47 | 0.00063 | 1.837E-06 | 8.655E-05 | | | | | | | | | 1.8 | 10,708 | 97.91 | 7.1542E-01 | 3.691E+06 | 0.43 | 1.14E+04 |
| | 7 | 154 | | | | | 1.967E-02 | 44 | 0.3 | 13 | 1.49E-03 | 2.15 | 1.00 | 0.47 | | | | | | | |
| 53 | | | 41 | 0.00063 | 1.837E-06 | 7.501E-05 | | | | | | | | | 1.4 | 10,749 | 98.29 | 7.7888E-01 | 3.691E+06 | 0.37 | 1.07E+04 |
| | 6 | 113 | | | | | 1.974E-02 | 38 | 0.3 | 11 | 1.75E-03 | 2.51 | 1.00 | 0.40 | | | | | | | |
| 54 | | | 35 | 0.00063 | 1.837E-06 | 6.347E-05 | | | | | | | | | 1.0 | 10,783 | 98.60 | 8.3750E-01 | 3.691E+06 | 0.32 | 9.77E+03 |
| | 5 | 79 | | | | | 1.980E-02 | 31 | 0.3 | 9 | 2.10E-03 | 3.03 | 1.00 | 0.33 | | | | | | | |
| 55 | | | 28 | 0.00063 | 1.837E-06 | 5.193E-05 | | | | | | | | | 0.6 | 10,812 | 98.86 | 8.8954E-01 | 3.691E+06 | 0.26 | 8.49E+03 |
| | 4 | 50 | | | | | 1.986E-02 | 25 | 0.3 | 8 | 2.63E-03 | 3.79 | 1.00 | 0.26 | | | | | | | |
| 56 | | | 22 | 0.00063 | 1.837E-06 | 4.039E-05 | | | | | | | | | 0.4 | 10,834 | 99.06 | 9.3337E-01 | 3.691E+06 | 0.20 | 6.93E+03 |
| | 3 | 28 | | | | | 1.990E-02 | 19 | 0.3 | 6 | 3.52E-03 | 5.07 | 1.00 | 0.20 | | | | | | | |
| 57 | | | 16 | 0.00063 | 1.837E-06 | 2.885E-05 | | | | | | | | | 0.2 | 10,849 | 99.21 | 9.6759E-01 | 3.691E+06 | 0.14 | 5.13E+03 |
| | 2 | 13 | | | | | 1.993E-02 | 13 | 0.3 | 4 | 5.29E-03 | 7.61 | 1.00 | 0.13 | | | | | | | |
| 58 | | | 5 | 0.00063 | 1.837E-06 | 1.010E-05 | | | | | | | | | 0.0 | 10,855 | 99.26 | 9.9106E-01 | 3.691E+06 | 0.05 | 1.84E+03 |
| | 1.5 | 7 | | | | | 1.994E-02 | 9 | 0.3 | 3 | 7.05E-03 | 10.15 | 0.50 | 0.05 | | | | | | | |
| 59 | | | 7 | 0.00063 | 1.837E-06 | 1.298E-05 | | | | | | | | | 0.0 | 10,862 | 99.32 | 1.0000E+00 | 3.691E+06 | 0.06 | 2.39E+03 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Considered | pCi/min | 1.699E+05 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Not Considered | pCi/min | 3.691E+06 |

| | | |
|---|---|---|
| Reduction in Rn-222 Flux Due to Decay (%) | % | 95.40 |

**TABLE A-10**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA A - ONE QUARTER ACRE AREA - ESTIMATE YEAR 2100 - LANDFILL POROSITY = 0.3**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multilier (e^-kt) | Rn-222 Flux Rate from FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-22 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| | 58.80 | 10,862 | | | | | 0 | | | | 0 | 0 | | | | | | | | | |
| 1 | | | 294 | 0.00063 | 5.739E-08 | 1.685E-05 | | | | | | | | | 14,883 | 294 | 2.68 | 0.0000E+00 | 5.196E+06 | 2.68 | 0.00E+00 |
| | 58 | 10,568 | | | | | 1.685E-05 | 364 | 0.3 | 109 | 1.54E-07 | 0.00 | 0.80 | 3,605 | | | | | | | |
| 2 | | | 361 | 0.00063 | 5.739E-08 | 2.073E-05 | | | | | | | | | 11,278 | 655 | 5.99 | 0.0000E+00 | 5.196E+06 | 3.30 | 0.00E+00 |
| | 57 | 10,207 | | | | | 3.758E-05 | 358 | 0.3 | 107 | 3.50E-07 | 0.00 | 1.00 | 1,985 | | | | | | | |
| 3 | | | 355 | 0.00063 | 5.739E-08 | 2.037E-05 | | | | | | | | | 9,293 | 1,010 | 9.23 | 0.0000E+00 | 5.196E+06 | 3.25 | 0.00E+00 |
| | 56 | 9,852 | | | | | 5.796E-05 | 352 | 0.3 | 106 | 5.49E-07 | 0.00 | 1.00 | 1,265 | | | | | | | |
| 4 | | | 349 | 0.00063 | 5.739E-08 | 2.001E-05 | | | | | | | | | 8,028 | 1,359 | 12.42 | 0.0000E+00 | 5.196E+06 | 3.19 | 0.00E+00 |
| | 55 | 9,503 | | | | | 7.797E-05 | 346 | 0.3 | 104 | 7.52E-07 | 0.00 | 1.00 | 923 | | | | | | | |
| 5 | | | 342 | 0.00063 | 5.739E-08 | 1.965E-05 | | | | | | | | | 7,105 | 1,701 | 15.55 | 0.0000E+00 | 5.196E+06 | 3.13 | 0.00E+00 |
| | 54 | 9,161 | | | | | 9.762E-05 | 339 | 0.3 | 102 | 9.59E-07 | 0.00 | 1.00 | 724 | | | | | | | |
| 6 | | | 336 | 0.00063 | 5.739E-08 | 1.929E-05 | | | | | | | | | 6,381 | 2,037 | 18.63 | 0.0000E+00 | 5.196E+06 | 3.07 | 0.00E+00 |
| | 53 | 8,825 | | | | | 1.169E-04 | 333 | 0.3 | 100 | 1.17E-06 | 0.00 | 1.00 | 593 | | | | | | | |
| 7 | | | 330 | 0.00063 | 5.739E-08 | 1.893E-05 | | | | | | | | | 5,787 | 2,367 | 21.64 | 0.0000E+00 | 5.196E+06 | 3.02 | 0.00E+00 |
| | 52 | 8,495 | | | | | 1.358E-04 | 327 | 0.3 | 98 | 1.39E-06 | 0.00 | 1.00 | 501 | | | | | | | |
| 8 | | | 324 | 0.00063 | 5.739E-08 | 1.857E-05 | | | | | | | | | 5,286 | 2,691 | 24.60 | 0.0000E+00 | 5.196E+06 | 2.96 | 0.00E+00 |
| | 51 | 8,171 | | | | | 1.544E-04 | 320 | 0.3 | 96 | 1.61E-06 | 0.00 | 1.00 | 432 | | | | | | | |
| 9 | | | 317 | 0.00063 | 5.739E-08 | 1.821E-05 | | | | | | | | | 4,854 | 3,008 | 27.50 | 0.0000E+00 | 5.196E+06 | 2.90 | 0.00E+00 |
| | 50 | 7,854 | | | | | 1.726E-04 | 314 | 0.3 | 94 | 1.83E-06 | 0.00 | 1.00 | 379 | | | | | | | |
| 10 | | | 311 | 0.00063 | 5.739E-08 | 1.785E-05 | | | | | | | | | 4,475 | 3,319 | 30.35 | 0.0000E+00 | 5.196E+06 | 2.84 | 0.00E+00 |
| | 49 | 7,543 | | | | | 1.905E-04 | 308 | 0.3 | 92 | 2.06E-06 | 0.00 | 1.00 | 337 | | | | | | | |
| 11 | | | 305 | 0.00063 | 5.739E-08 | 1.749E-05 | | | | | | | | | 4,138 | 3,624 | 33.14 | 0.0000E+00 | 5.196E+06 | 2.79 | 0.00E+00 |
| | 48 | 7,238 | | | | | 2.080E-04 | 302 | 0.3 | 90 | 2.30E-06 | 0.00 | 1.00 | 302.12 | | | | | | | |
| 12 | | | 298 | 0.00063 | 5.739E-08 | 1.713E-05 | | | | | | | | | 3,836 | 3,922 | 35.86 | 1.4000E-304 | 5.196E+06 | 2.73 | 1.99E-299 |
| | 47 | 6,940 | | | | | 2.251E-04 | 295 | 0.3 | 89 | 2.54E-06 | 0.00 | 1.00 | 273.32 | | | | | | | |
| 13 | | | 292 | 0.00063 | 5.739E-08 | 1.677E-05 | | | | | | | | | 3,562 | 4,214 | 38.54 | 6.2665E-283 | 5.196E+06 | 2.67 | 8.70E-278 |
| | 46 | 6,648 | | | | | 2.419E-04 | 289 | 0.3 | 87 | 2.79E-06 | 0.00 | 1.00 | 248.96 | | | | | | | |
| 14 | | | 286 | 0.00063 | 5.739E-08 | 1.641E-05 | | | | | | | | | 3,314 | 4,500 | 41.15 | 3.2974E-263 | 5.196E+06 | 2.61 | 4.48E-258 |
| | 45 | 6,362 | | | | | 2.583E-04 | 283 | 0.3 | 85 | 3.04E-06 | 0.00 | 1.00 | 228.07 | | | | | | | |
| 15 | | | 280 | 0.00063 | 5.739E-08 | 1.605E-05 | | | | | | | | | 3,085 | 4,780 | 43.71 | 3.8459E-245 | 5.196E+06 | 2.56 | 5.11E-240 |
| | 44 | 6,082 | | | | | 2.743E-04 | 276 | 0.3 | 83 | 3.31E-06 | 0.00 | 1.00 | 209.96 | | | | | | | |
| 16 | | | 273 | 0.00063 | 5.739E-08 | 1.569E-05 | | | | | | | | | 2,875 | 5,053 | 46.21 | 1.6480E-228 | 5.196E+06 | 2.50 | 2.14E-223 |
| | 43 | 5,809 | | | | | 2.900E-04 | 270 | 0.3 | 81 | 3.58E-06 | 0.01 | 1.00 | 194.09 | | | | | | | |
| 17 | | | 267 | 0.00063 | 5.739E-08 | 1.533E-05 | | | | | | | | | 2,681 | 5,320 | 48.65 | 3.9063E-213 | 5.196E+06 | 2.44 | 4.96E-208 |
| | 42 | 5,542 | | | | | 3.053E-04 | 264 | 0.3 | 79 | 3.86E-06 | 0.01 | 1.00 | 180.06 | | | | | | | |
| 18 | | | 261 | 0.00063 | 5.739E-08 | 1.497E-05 | | | | | | | | | 2,501 | 5,581 | 51.03 | 7.1653E-199 | 5.196E+06 | 2.38 | 8.88E-194 |
| | 41 | 5,281 | | | | | 3.203E-04 | 258 | 0.3 | 77 | 4.14E-06 | 0.01 | 1.00 | 167.56 | | | | | | | |
| 19 | | | 254 | 0.00063 | 5.739E-08 | 1.460E-05 | | | | | | | | | 2,334 | 5,835 | 53.36 | 1.3444E-185 | 5.196E+06 | 2.33 | 1.63E-180 |
| | 40 | 5,027 | | | | | 3.349E-04 | 251 | 0.3 | 75 | 4.44E-06 | 0.01 | 1.00 | 156.34 | | | | | | | |
| 20 | | | 248 | 0.00063 | 5.739E-08 | 1.424E-05 | | | | | | | | | 2,177 | 6,084 | 55.63 | 3.2614E-173 | 5.196E+06 | 2.27 | 3.85E-168 |
| | 39 | 4,778 | | | | | 3.491E-04 | 245 | 0.3 | 74 | 4.75E-06 | 0.01 | 1.00 | 146.22 | | | | | | | |
| 21 | | | 242 | 0.00063 | 5.739E-08 | 1.388E-05 | | | | | | | | | 2,031 | 6,325 | 57.84 | 1.2474E-161 | 5.196E+06 | 2.21 | 1.43E-156 |
| | 38 | 4,536 | | | | | 3.630E-04 | 239 | 0.3 | 72 | 5.07E-06 | 0.01 | 1.00 | 137.02 | | | | | | | |
| 22 | | | 236 | 0.00063 | 5.739E-08 | 1.352E-05 | | | | | | | | | 1,894 | 6,561 | 59.99 | 8.9131E-151 | 5.196E+06 | 2.15 | 9.98E-146 |
| | 37 | 4,301 | | | | | 3.766E-04 | 232 | 0.3 | 70 | 5.40E-06 | 0.01 | 1.00 | 128.62 | | | | | | | |
| 23 | | | 229 | 0.00063 | 5.739E-08 | 1.316E-05 | | | | | | | | | 1,766 | 6,790 | 62.09 | 1.3768E-140 | 5.196E+06 | 2.10 | 1.50E-135 |
| | 36 | 4,072 | | | | | 3.897E-04 | 226 | 0.3 | 68 | 5.74E-06 | 0.01 | 1.00 | 120.92 | | | | | | | |
| 24 | | | 223 | 0.00063 | 5.739E-08 | 1.280E-05 | | | | | | | | | 1,645 | 7,013 | 64.13 | 5.2186E-131 | 5.196E+06 | 2.04 | 5.53E-126 |
| | 35 | 3,848 | | | | | 4.025E-04 | 220 | 0.3 | 66 | 6.10E-06 | 0.01 | 1.00 | 113.82 | | | | | | | |
| 25 | | | 217 | 0.00063 | 5.739E-08 | 1.244E-05 | | | | | | | | | 1,531 | 7,230 | 66.11 | 5.4196E-122 | 5.196E+06 | 1.98 | 5.58E-117 |
| | 34 | 3,632 | | | | | 4.150E-04 | 214 | 0.3 | 64 | 6.47E-06 | 0.01 | 1.00 | 107.25 | | | | | | | |
| 26 | | | 210 | 0.00063 | 5.739E-08 | 1.208E-05 | | | | | | | | | 1,424 | 7,441 | 68.04 | 1.6989E-113 | 5.196E+06 | 1.92 | 1.70E-108 |
| | 33 | 3,421 | | | | | 4.270E-04 | 207 | 0.3 | 62 | 6.87E-06 | 0.01 | 1.00 | 101.16 | | | | | | | |
| 27 | | | 204 | 0.00063 | 5.739E-08 | 1.172E-05 | | | | | | | | | 1,322 | 7,645 | 69.91 | 1.7507E-105 | 5.196E+06 | 1.87 | 1.70E-100 |
| | 32 | 3,217 | | | | | 4.388E-04 | 201 | 0.3 | 60 | 7.27E-06 | 0.01 | 1.00 | 95.47 | | | | | | | |
| 28 | | | 198 | 0.00063 | 5.739E-08 | 1.136E-05 | | | | | | | | | 1,227 | 7,843 | 71.72 | 6.3956E-98 | 5.196E+06 | 1.81 | 6.01E-93 |
| | 31 | 3,019 | | | | | 4.501E-04 | 195 | 0.3 | 58 | 7.70E-06 | 0.01 | 1.00 | 90.15 | | | | | | | |
| 29 | | | 192 | 0.00063 | 5.739E-08 | 1.100E-05 | | | | | | | | | 1,137 | 8,034 | 73.47 | 8.8579E-91 | 5.196E+06 | 1.75 | 8.07E-86 |
| | 30 | 2,827 | | | | | 4.611E-04 | 188 | 0.3 | 57 | 8.15E-06 | 0.01 | 1.00 | 85.16 | | | | | | | |

**TABLE A-10 (CONTINUED)**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA A - ONE QUARTER ACRE AREA - ESTIMATE YEAR 2100 - LANDFILL POROSITY = 0.3**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multilier ($e^{-kt}$) | Rn-222 Flux Rate from FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-222 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| 28 | | | 198 | 0.00063 | 5.739E-08 | 1.136E-05 | | | | | | | | | 1,227 | 7,843 | 71.72 | 6.3956E-98 | 5.196E+06 | 1.81 | 6.01E-93 |
| | 31 | 3,019 | | | | | 4.501E-04 | 195 | 0.3 | 58 | 7.70E-06 | 0.01 | 1.00 | 90.15 | | | | | | | |
| 29 | | | 192 | 0.00063 | 5.739E-08 | 1.100E-05 | | | | | | | | | 1,137 | 8,034 | 73.47 | 8.8579E-91 | 5.196E+06 | 1.75 | 8.07E-86 |
| | 30 | 2,827 | | | | | 4.611E-04 | 188 | 0.3 | 57 | 8.15E-06 | 0.01 | 1.00 | 85.16 | | | | | | | |
| 30 | | | 185 | 0.00063 | 5.739E-08 | 1.064E-05 | | | | | | | | | 1,052 | 8,220 | 75.16 | 4.9382E-84 | 5.196E+06 | 1.69 | 4.35E-79 |
| | 29 | 2,642 | | | | | 4.718E-04 | 182 | 0.3 | 55 | 8.63E-06 | 0.01 | 1.00 | 80.47 | | | | | | | |
| 31 | | | 179 | 0.00063 | 5.739E-08 | 1.028E-05 | | | | | | | | | 971 | 8,399 | 76.80 | 1.1692E-77 | 5.196E+06 | 1.64 | 9.95E-73 |
| | 28 | 2,463 | | | | | 4.820E-04 | 176 | 0.3 | 53 | 9.13E-06 | 0.01 | 1.00 | 76.04 | | | | | | | |
| 32 | | | 173 | 0.00063 | 5.739E-08 | 9.917E-06 | | | | | | | | | 895 | 8,572 | 78.38 | 1.2336E-71 | 5.196E+06 | 1.58 | 1.01E-66 |
| | 27 | 2,290 | | | | | 4.919E-04 | 170 | 0.3 | 51 | 9.67E-06 | 0.01 | 1.00 | 71.84 | | | | | | | |
| 33 | | | 167 | 0.00063 | 5.739E-08 | 9.556E-06 | | | | | | | | | 823 | 8,738 | 79.90 | 6.0568E-66 | 5.196E+06 | 1.52 | 4.79E-61 |
| | 26 | 2,124 | | | | | 5.015E-04 | 163 | 0.3 | 49 | 1.02E-05 | 0.01 | 1.00 | 67.86 | | | | | | | |
| 34 | | | 160 | 0.00063 | 5.739E-08 | 9.195E-06 | | | | | | | | | 755 | 8,898 | 81.37 | 1.4392E-60 | 5.196E+06 | 1.47 | 1.10E-55 |
| | 25 | 1,964 | | | | | 5.107E-04 | 157 | 0.3 | 47 | 1.08E-05 | 0.02 | 1.00 | 64.08 | | | | | | | |
| 35 | | | 154 | 0.00063 | 5.739E-08 | 8.835E-06 | | | | | | | | | 691 | 9,052 | 82.78 | 1.7146E-55 | 5.196E+06 | 1.41 | 1.25E-50 |
| | 24 | 1,810 | | | | | 5.195E-04 | 151 | 0.3 | 45 | 1.15E-05 | 0.02 | 1.00 | 60.47 | | | | | | | |
| 36 | | | 148 | 0.00063 | 5.739E-08 | 8.474E-06 | | | | | | | | | 631 | 9,200 | 84.13 | 1.0575E-50 | 5.196E+06 | 1.35 | 7.42E-46 |
| | 23 | 1,662 | | | | | 5.280E-04 | 145 | 0.3 | 43 | 1.22E-05 | 0.02 | 1.00 | 57.02 | | | | | | | |
| 37 | | | 141 | 0.00063 | 5.739E-08 | 8.114E-06 | | | | | | | | | 574 | 9,341 | 85.42 | 3.4767E-46 | 5.196E+06 | 1.29 | 2.34E-41 |
| | 22 | 1,521 | | | | | 5.361E-04 | 138 | 0.3 | 41 | 1.29E-05 | 0.02 | 1.00 | 53.72 | | | | | | | |
| 38 | | | 135 | 0.00063 | 5.739E-08 | 7.753E-06 | | | | | | | | | 520 | 9,476 | 86.65 | 6.2554E-42 | 5.196E+06 | 1.24 | 4.02E-37 |
| | 21 | 1,385 | | | | | 5.439E-04 | 132 | 0.3 | 40 | 1.37E-05 | 0.02 | 1.00 | 50.54 | | | | | | | |
| 39 | | | 129 | 0.00063 | 5.739E-08 | 7.392E-06 | | | | | | | | | 470 | 9,605 | 87.83 | 6.3101E-38 | 5.196E+06 | 1.18 | 3.86E-33 |
| | 20 | 1,257 | | | | | 5.513E-04 | 126 | 0.3 | 38 | 1.46E-05 | 0.02 | 1.00 | 47.49 | | | | | | | |
| 40 | | | 123 | 0.00063 | 5.739E-08 | 7.032E-06 | | | | | | | | | 422 | 9,728 | 88.95 | 3.6478E-34 | 5.196E+06 | 1.12 | 2.12E-29 |
| | 19 | 1,134 | | | | | 5.583E-04 | 119 | 0.3 | 36 | 1.56E-05 | 0.02 | 1.00 | 44.55 | | | | | | | |
| 41 | | | 116 | 0.00063 | 5.739E-08 | 6.671E-06 | | | | | | | | | 378 | 9,844 | 90.01 | 1.2328E-30 | 5.196E+06 | 1.06 | 6.81E-26 |
| | 18 | 1,018 | | | | | 5.650E-04 | 113 | 0.3 | 34 | 1.67E-05 | 0.02 | 1.00 | 41.70 | | | | | | | |
| 42 | | | 110 | 0.00063 | 5.739E-08 | 6.311E-06 | | | | | | | | | 336 | 9,954 | 91.02 | 2.4807E-27 | 5.196E+06 | 1.01 | 1.30E-22 |
| | 17 | 908 | | | | | 5.713E-04 | 107 | 0.3 | 32 | 1.78E-05 | 0.03 | 1.00 | 38.95 | | | | | | | |
| 43 | | | 104 | 0.00063 | 5.739E-08 | 5.950E-06 | | | | | | | | | 297 | 10,058 | 91.97 | 3.0217E-24 | 5.196E+06 | 0.95 | 1.49E-19 |
| | 16 | 804 | | | | | 5.772E-04 | 101 | 0.3 | 30 | 1.91E-05 | 0.03 | 1.00 | 36.28 | | | | | | | |
| 44 | | | 97 | 0.00063 | 5.739E-08 | 5.589E-06 | | | | | | | | | 261 | 10,155 | 92.86 | 2.2619E-21 | 5.196E+06 | 0.89 | 1.05E-16 |
| | 15 | 707 | | | | | 5.828E-04 | 94 | 0.3 | 28 | 2.06E-05 | 0.03 | 1.00 | 33.7 | | | | | | | |
| 45 | | | 91 | 0.00063 | 5.739E-08 | 5.229E-06 | | | | | | | | | 227 | 10,246 | 93.69 | 1.0549E-18 | 5.196E+06 | 0.83 | 4.57E-14 |
| | 14 | 616 | | | | | 5.880E-04 | 88 | 0.3 | 26 | 2.23E-05 | 0.03 | 1.00 | 31.2 | | | | | | | |
| 46 | | | 85 | 0.00063 | 5.739E-08 | 4.868E-06 | | | | | | | | | 196 | 10,331 | 94.47 | 3.1038E-16 | 5.196E+06 | 0.78 | 1.25E-11 |
| | 13 | 531 | | | | | 5.929E-04 | 82 | 0.3 | 25 | 2.42E-05 | 0.03 | 1.00 | 28.7 | | | | | | | |
| 47 | | | 79 | 0.00063 | 5.739E-08 | 4.508E-06 | | | | | | | | | 167 | 10,410 | 95.19 | 5.8266E-14 | 5.196E+06 | 0.72 | 2.17E-09 |
| | 12 | 452 | | | | | 5.974E-04 | 75 | 0.3 | 23 | 2.64E-05 | 0.04 | 1.00 | 26.3 | | | | | | | |
| 48 | | | 72 | 0.00063 | 5.739E-08 | 4.147E-06 | | | | | | | | | 141 | 10,482 | 95.85 | 7.0504E-12 | 5.196E+06 | 0.66 | 2.42E-07 |
| | 11 | 380 | | | | | 6.016E-04 | 69 | 0.3 | 21 | 2.90E-05 | 0.04 | 1.00 | 23.9 | | | | | | | |
| 49 | | | 66 | 0.00063 | 5.739E-08 | 3.786E-06 | | | | | | | | | 117 | 10,548 | 96.45 | 5.5499E-10 | 5.196E+06 | 0.60 | 1.74E-05 |
| | 10 | 314 | | | | | 6.054E-04 | 63 | 0.3 | 19 | 3.21E-05 | 0.05 | 1.00 | 21.6 | | | | | | | |
| 50 | | | 60 | 0.00063 | 5.739E-08 | 3.426E-06 | | | | | | | | | 95.2 | 10,607 | 97.00 | 2.8656E-08 | 5.196E+06 | 0.55 | 8.13E-04 |
| | 9 | 254 | | | | | 6.088E-04 | 57 | 0.3 | 17 | 3.59E-05 | 0.05 | 1.00 | 19.4 | | | | | | | |
| 51 | | | 53 | 0.00063 | 5.739E-08 | 3.065E-06 | | | | | | | | | 75.9 | 10,661 | 97.48 | 9.7761E-07 | 5.196E+06 | 0.49 | 2.48E-02 |
| | 8 | 201 | | | | | 6.118E-04 | 50 | 0.3 | 15 | 4.06E-05 | 0.06 | 1.00 | 17.1 | | | | | | | |
| 52 | | | 47 | 0.00063 | 5.739E-08 | 2.705E-06 | | | | | | | | | 58.8 | 10,708 | 97.91 | 2.2180E-05 | 5.196E+06 | 0.43 | 4.97E-01 |
| | 7 | 154 | | | | | 6.146E-04 | 44 | 0.3 | 13 | 4.66E-05 | 0.07 | 1.00 | 14.9 | | | | | | | |
| 53 | | | 41 | 0.00063 | 5.739E-08 | 2.344E-06 | | | | | | | | | 43.8 | 10,749 | 98.29 | 3.3656E-04 | 5.196E+06 | 0.37 | 6.53E+00 |
| | 6 | 113 | | | | | 6.169E-04 | 38 | 0.3 | 11 | 5.45E-05 | 0.08 | 1.00 | 12.7 | | | | | | | |
| 54 | | | 35 | 0.00063 | 5.739E-08 | 1.983E-06 | | | | | | | | | 31.1 | 10,783 | 98.60 | 3.4324E-03 | 5.196E+06 | 0.32 | 5.64E+01 |
| | 5 | 79 | | | | | 6.189E-04 | 31 | 0.3 | 9 | 6.57E-05 | 0.09 | 1.00 | 10.6 | | | | | | | |
| 55 | | | 28 | 0.00063 | 5.739E-08 | 1.623E-06 | | | | | | | | | 20.5 | 10,812 | 98.86 | 2.3623E-02 | 5.196E+06 | 0.26 | 3.17E+02 |
| | 4 | 50 | | | | | 6.205E-04 | 25 | 0.3 | 8 | 8.23E-05 | 0.12 | 1.00 | 8.4 | | | | | | | |
| 56 | | | 22 | 0.00063 | 5.739E-08 | 1.262E-06 | | | | | | | | | 12.1 | 10,834 | 99.06 | 1.1010E-01 | 5.196E+06 | 0.20 | 1.15E+03 |
| | 3 | 28 | | | | | 6.218E-04 | 19 | 0.3 | 6 | 1.10E-04 | 0.16 | 1.00 | 6.3 | | | | | | | |
| 57 | | | 16 | 0.00063 | 5.739E-08 | 9.015E-07 | | | | | | | | | 5.8 | 10,849 | 99.21 | 3.4842E-01 | 5.196E+06 | 0.14 | 2.60E+03 |
| | 2 | 13 | | | | | 6.227E-04 | 13 | 0.3 | 4 | 1.65E-04 | 0.24 | 1.00 | 4.2 | | | | | | | |
| 58 | | | 5 | 0.00063 | 5.739E-08 | 3.155E-07 | | | | | | | | | 1.6 | 10,855 | 99.26 | 7.5018E-01 | 5.196E+06 | 0.05 | 1.96E+03 |
| | 1.5 | 7 | | | | | 6.230E-04 | 9 | 0.3 | 3 | 2.20E-04 | 0.32 | 0.50 | 1.6 | | | | | | | |
| 59 | | | 7 | 0.00063 | 5.739E-08 | 4.057E-07 | | | | | | | | | 0.0 | 10,862 | 99.32 | 1.0000E+00 | 5.196E+06 | 0.06 | 3.36E+03 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Considered | pCi/min | 9.450E+03 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Not Considered | pCi/min | 5.196E+06 |

| | | |
|---|---|---|
| Reduction in Rn-222 Flux Due to Decay (%) | % | 99.82 |

**TABLE A-11**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA A - ONE ACRE AREA - ESTIMATE YEAR 2000 - LANDFILL POROSITY= 0.2**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multilier (e^-kt) | Rn-222 Flux Rate from FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-22 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| | 117.75 | 43,558 | | | | | 0 | | | | 0 | 0 | | | | | | | | | |
| 1 | | | 1,285 | 0.283 | 6.485E-06 | 0.0083 | | | | | | | | | 86.7 | 1,285 | 2.95 | 1.3595E-07 | 3.011E+06 | 2.95 | 1.21E-02 |
| | 116 | 42,273 | | | | | 0.008 | 729 | 0.2 | 146 | 5.72E-05 | 0.08 | 1.75 | 21.26 | | | | | | | |
| 2 | | | 1,445 | 0.283 | 6.485E-06 | 0.0094 | | | | | | | | | 65.4 | 2,730 | 6.27 | 6.5635E-06 | 3.011E+06 | 3.32 | 6.56E-01 |
| | 114 | 40,828 | | | | | 0.018 | 716 | 0.2 | 143 | 1.24E-04 | 0.18 | 2.00 | 11.24 | | | | | | | |
| 3 | | | 1,420 | 0.283 | 6.485E-06 | 0.0092 | | | | | | | | | 54.2 | 4,150 | 9.53 | 5.0966E-05 | 3.011E+06 | 3.26 | 5.00E+00 |
| | 112 | 39,408 | | | | | 0.027 | 704 | 0.2 | 141 | 1.91E-04 | 0.28 | 2.00 | 7.26 | | | | | | | |
| 4 | | | 1,395 | 0.283 | 6.485E-06 | 0.0090 | | | | | | | | | 46.9 | 5,545 | 12.73 | 1.9168E-04 | 3.011E+06 | 3.20 | 1.85E+01 |
| | 110 | 38,013 | | | | | 0.036 | 691 | 0.2 | 138 | 2.60E-04 | 0.37 | 2.00 | 5.34 | | | | | | | |
| 5 | | | 1,370 | 0.283 | 6.485E-06 | 0.0089 | | | | | | | | | 41.6 | 6,915 | 15.87 | 5.0756E-04 | 3.011E+06 | 3.14 | 4.81E+01 |
| | 108 | 36,644 | | | | | 0.045 | 679 | 0.2 | 136 | 3.30E-04 | 0.48 | 2.00 | 4.20 | | | | | | | |
| 6 | | | 1,345 | 0.283 | 6.485E-06 | 0.0087 | | | | | | | | | 37.4 | 8,259 | 18.96 | 1.0926E-03 | 3.011E+06 | 3.09 | 1.02E+02 |
| | 106 | 35,299 | | | | | 0.054 | 666 | 0.2 | 133 | 4.02E-04 | 0.58 | 2.00 | 3.45 | | | | | | | |
| 7 | | | 1,319 | 0.283 | 6.485E-06 | 0.0086 | | | | | | | | | 33.9 | 9,579 | 21.99 | 2.0514E-03 | 3.011E+06 | 3.03 | 1.87E+02 |
| | 104 | 33,980 | | | | | 0.062 | 653 | 0.2 | 131 | 4.75E-04 | 0.68 | 2.00 | 2.92 | | | | | | | |
| 8 | | | 1,294 | 0.283 | 6.485E-06 | 0.0084 | | | | | | | | | 31.0 | 10,873 | 24.96 | 3.4955E-03 | 3.011E+06 | 2.97 | 3.13E+02 |
| | 102 | 32,685 | | | | | 0.071 | 641 | 0.2 | 128 | 5.50E-04 | 0.79 | 2.00 | 2.52 | | | | | | | |
| 9 | | | 1,269 | 0.283 | 6.485E-06 | 0.0082 | | | | | | | | | 28.5 | 12,142 | 27.88 | 5.5398E-03 | 3.011E+06 | 2.91 | 4.86E+02 |
| | 100 | 31,416 | | | | | 0.079 | 628 | 0.2 | 126 | 6.27E-04 | 0.90 | 2.00 | 2.22 | | | | | | | |
| 10 | | | 1,244 | 0.283 | 6.485E-06 | 0.0081 | | | | | | | | | 26.3 | 13,387 | 30.73 | 8.2997E-03 | 3.011E+06 | 2.86 | 7.14E+02 |
| | 98 | 30,172 | | | | | 0.087 | 616 | 0.2 | 123 | 7.05E-04 | 1.02 | 2.00 | 1.97 | | | | | | | |
| 11 | | | 1,219 | 0.283 | 6.485E-06 | 0.0079 | | | | | | | | | 24.3 | 14,605 | 33.53 | 1.1889E-02 | 3.011E+06 | 2.80 | 1.00E+03 |
| | 96 | 28,953 | | | | | 0.095 | 603 | 0.2 | 121 | 7.85E-04 | 1.13 | 2.00 | 1.77 | | | | | | | |
| 12 | | | 1,194 | 0.283 | 6.485E-06 | 0.0077 | | | | | | | | | 22.5 | 15,799 | 36.27 | 1.6416E-02 | 3.011E+06 | 2.74 | 1.35E+03 |
| | 94 | 27,759 | | | | | 0.102 | 591 | 0.2 | 118 | 8.67E-04 | 1.25 | 2.00 | 1.60 | | | | | | | |
| 13 | | | 1,169 | 0.283 | 6.485E-06 | 0.0076 | | | | | | | | | 20.9 | 16,968 | 38.95 | 2.1983E-02 | 3.011E+06 | 2.68 | 1.78E+03 |
| | 92 | 26,591 | | | | | 0.110 | 578 | 0.2 | 116 | 9.52E-04 | 1.37 | 2.00 | 1.46 | | | | | | | |
| 14 | | | 1,144 | 0.283 | 6.485E-06 | 0.0074 | | | | | | | | | 19.5 | 18,112 | 41.58 | 2.8687E-02 | 3.011E+06 | 2.63 | 2.27E+03 |
| | 90 | 25,447 | | | | | 0.117 | 565 | 0.2 | 113 | 1.04E-03 | 1.50 | 2.00 | 1.34 | | | | | | | |
| 15 | | | 1,118 | 0.283 | 6.485E-06 | 0.0073 | | | | | | | | | 18.1 | 19,230 | 44.15 | 3.6611E-02 | 3.011E+06 | 2.57 | 2.83E+03 |
| | 88 | 24,329 | | | | | 0.125 | 553 | 0.2 | 111 | 1.13E-03 | 1.62 | 2.00 | 1.23 | | | | | | | |
| 16 | | | 1,093 | 0.283 | 6.485E-06 | 0.0071 | | | | | | | | | 16.9 | 20,323 | 46.66 | 4.5833E-02 | 3.011E+06 | 2.51 | 3.46E+03 |
| | 86 | 23,235 | | | | | 0.132 | 540 | 0.2 | 108 | 1.22E-03 | 1.76 | 2.00 | 1.14 | | | | | | | |
| 17 | | | 1,068 | 0.283 | 6.485E-06 | 0.0069 | | | | | | | | | 15.8 | 21,391 | 49.11 | 5.6414E-02 | 3.011E+06 | 2.45 | 4.17E+03 |
| | 84 | 22,167 | | | | | 0.139 | 528 | 0.2 | 106 | 1.31E-03 | 1.89 | 2.00 | 1.06 | | | | | | | |
| 18 | | | 1,043 | 0.283 | 6.485E-06 | 0.0068 | | | | | | | | | 14.7 | 22,434 | 51.50 | 6.8407E-02 | 3.011E+06 | 2.39 | 4.93E+03 |
| | 82 | 21,124 | | | | | 0.145 | 515 | 0.2 | 103 | 1.41E-03 | 2.03 | 2.00 | 0.98 | | | | | | | |
| 19 | | | 1,018 | 0.283 | 6.485E-06 | 0.0066 | | | | | | | | | 13.7 | 23,452 | 53.84 | 8.1851E-02 | 3.011E+06 | 2.34 | 5.76E+03 |
| | 80 | 20,106 | | | | | 0.152 | 503 | 0.2 | 101 | 1.51E-03 | 2.18 | 2.00 | 0.92 | | | | | | | |
| 20 | | | 993 | 0.283 | 6.485E-06 | 0.0064 | | | | | | | | | 12.8 | 24,445 | 56.12 | 9.6771E-02 | 3.011E+06 | 2.28 | 6.64E+03 |
| | 78 | 19,113 | | | | | 0.159 | 490 | 0.2 | 98 | 1.62E-03 | 2.33 | 2.00 | 0.86 | | | | | | | |
| 21 | | | 968 | 0.283 | 6.485E-06 | 0.0063 | | | | | | | | | 11.9 | 25,413 | 58.34 | 1.1318E-01 | 3.011E+06 | 2.22 | 7.57E+03 |
| | 76 | 18,146 | | | | | 0.165 | 478 | 0.2 | 96 | 1.73E-03 | 2.48 | 2.00 | 0.80 | | | | | | | |
| 22 | | | 942 | 0.283 | 6.485E-06 | 0.0061 | | | | | | | | | 11.1 | 26,355 | 60.50 | 1.3108E-01 | 3.011E+06 | 2.16 | 8.54E+03 |
| | 74 | 17,203 | | | | | 0.171 | 465 | 0.2 | 93 | 1.84E-03 | 2.65 | 2.00 | 0.76 | | | | | | | |
| 23 | | | 917 | 0.283 | 6.485E-06 | 0.0059 | | | | | | | | | 10.4 | 27,272 | 62.61 | 1.5045E-01 | 3.011E+06 | 2.11 | 9.54E+03 |
| | 72 | 16,286 | | | | | 0.177 | 452 | 0.2 | 90 | 1.95E-03 | 2.81 | 2.00 | 0.71 | | | | | | | |
| 24 | | | 892 | 0.283 | 6.485E-06 | 0.0058 | | | | | | | | | 9.7 | 28,165 | 64.66 | 1.7126E-01 | 3.011E+06 | 2.05 | 1.06E+04 |
| | 70 | 15,394 | | | | | 0.183 | 440 | 0.2 | 88 | 2.08E-03 | 2.99 | 2.00 | 0.67 | | | | | | | |
| 25 | | | 867 | 0.283 | 6.485E-06 | 0.0056 | | | | | | | | | 9.0 | 29,032 | 66.65 | 1.9349E-01 | 3.011E+06 | 1.99 | 1.16E+04 |
| | 68 | 14,527 | | | | | 0.188 | 427 | 0.2 | 85 | 2.20E-03 | 3.17 | 2.00 | 0.63 | | | | | | | |
| 26 | | | 842 | 0.283 | 6.485E-06 | 0.0055 | | | | | | | | | 8.4 | 29,874 | 68.58 | 2.1706E-01 | 3.011E+06 | 1.93 | 1.26E+04 |
| | 66 | 13,685 | | | | | 0.194 | 415 | 0.2 | 83 | 2.34E-03 | 3.36 | 2.00 | 0.59 | | | | | | | |
| 27 | | | 817 | 0.283 | 6.485E-06 | 0.0053 | | | | | | | | | 7.8 | 30,690 | 70.46 | 2.4192E-01 | 3.011E+06 | 1.88 | 1.37E+04 |
| | 64 | 12,868 | | | | | 0.199 | 402 | 0.2 | 80 | 2.47E-03 | 3.56 | 2.00 | 0.56 | | | | | | | |
| 28 | | | 792 | 0.283 | 6.485E-06 | 0.0051 | | | | | | | | | 7.2 | 31,482 | 72.27 | 2.6800E-01 | 3.011E+06 | 1.82 | 1.47E+04 |
| | 62 | 12,076 | | | | | 0.204 | 390 | 0.2 | 78 | 2.62E-03 | 3.77 | 2.00 | 0.53 | | | | | | | |
| 29 | | | 767 | 0.283 | 6.485E-06 | 0.0050 | | | | | | | | | 6.7 | 32,249 | 74.03 | 2.9520E-01 | 3.011E+06 | 1.76 | 1.56E+04 |
| | 60 | 11,310 | | | | | 0.209 | 377 | 0.2 | 75 | 2.77E-03 | 3.99 | 2.00 | 0.50 | | | | | | | |
| 30 | | | 741 | 0.283 | 6.485E-06 | 0.0048 | | | | | | | | | 6.2 | 32,990 | 75.73 | 3.2343E-01 | 3.011E+06 | 1.70 | 1.66E+04 |
| | 58 | 10,568 | | | | | 0.214 | 364 | 0.2 | 73 | 2.94E-03 | 4.23 | 2.00 | 0.47 | | | | | | | |

**TABLE A-11 (CONTINUED)**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA A - ONE ACRE AREA - ESTIMATE YEAR 2000 - LANDFILL POROSITY= 0.2**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multilier (e^-kt) | Rn-222 Flux Rate from FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-22 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | | | pCi/min-acre | | pCi/min |
| 31 | | | 716 | 0.283 | 6.485E-06 | 0.0046 | | | | | | | | | 5.7 | 33,706 | 77.38 | 3.5259E-01 | 3.011E+06 | 1.64 | 1.75E+04 |
| | 56 | 9,852 | | | | | 0.219 | 352 | 0.2 | 70 | 3.11E-03 | 4.47 | 2.00 | 0.45 | | | | | | | |
| 32 | | | 691 | 0.283 | 6.485E-06 | 0.0045 | | | | | | | | | 5.3 | 34,398 | 78.97 | 3.8255E-01 | 3.011E+06 | 1.59 | 1.83E+04 |
| | 54 | 9,161 | | | | | 0.223 | 339 | 0.2 | 68 | 3.29E-03 | 4.73 | 2.00 | 0.42 | | | | | | | |
| 33 | | | 666 | 0.283 | 6.485E-06 | 0.0043 | | | | | | | | | 4.8 | 35,064 | 80.49 | 4.1319E-01 | 3.011E+06 | 1.53 | 1.90E+04 |
| | 52 | 8,495 | | | | | 0.227 | 327 | 0.2 | 65 | 3.48E-03 | 5.01 | 2.00 | 0.40 | | | | | | | |
| 34 | | | 641 | 0.283 | 6.485E-06 | 0.0042 | | | | | | | | | 4.4 | 35,704 | 81.97 | 4.4439E-01 | 3.011E+06 | 1.47 | 1.97E+04 |
| | 50 | 7,854 | | | | | 0.232 | 314 | 0.2 | 63 | 3.69E-03 | 5.31 | 2.00 | 0.38 | | | | | | | |
| 35 | | | 616 | 0.283 | 6.485E-06 | 0.0040 | | | | | | | | | 4.1 | 36,320 | 83.38 | 4.7601E-01 | 3.011E+06 | 1.41 | 2.03E+04 |
| | 48 | 7,238 | | | | | 0.236 | 302 | 0.2 | 60 | 3.91E-03 | 5.62 | 2.00 | 0.36 | | | | | | | |
| 36 | | | 591 | 0.283 | 6.485E-06 | 0.0038 | | | | | | | | | 3.7 | 36,911 | 84.74 | 5.0792E-01 | 3.011E+06 | 1.36 | 2.07E+04 |
| | 46 | 6,648 | | | | | 0.239 | 289 | 0.2 | 58 | 4.14E-03 | 5.96 | 2.00 | 0.34 | | | | | | | |
| 37 | | | 565 | 0.283 | 6.485E-06 | 0.0037 | | | | | | | | | 3.4 | 37,476 | 86.03 | 5.3996E-01 | 3.011E+06 | 1.30 | 2.11E+04 |
| | 44 | 6,082 | | | | | 0.243 | 276 | 0.2 | 55 | 4.40E-03 | 6.33 | 2.00 | 0.32 | | | | | | | |
| 38 | | | 540 | 0.283 | 6.485E-06 | 0.0035 | | | | | | | | | 3.1 | 38,017 | 87.27 | 5.7200E-01 | 3.011E+06 | 1.24 | 2.14E+04 |
| | 42 | 5,542 | | | | | 0.247 | 264 | 0.2 | 53 | 4.67E-03 | 6.73 | 2.00 | 0.30 | | | | | | | |
| 39 | | | 515 | 0.283 | 6.485E-06 | 0.0033 | | | | | | | | | 2.8 | 38,532 | 88.46 | 6.0387E-01 | 3.011E+06 | 1.18 | 2.15E+04 |
| | 40 | 5,027 | | | | | 0.250 | 251 | 0.2 | 50 | 4.97E-03 | 7.16 | 2.00 | 0.28 | | | | | | | |
| 40 | | | 490 | 0.283 | 6.485E-06 | 0.0032 | | | | | | | | | 2.5 | 39,022 | 89.58 | 6.3544E-01 | 3.011E+06 | 1.13 | 2.15E+04 |
| | 38 | 4,536 | | | | | 0.253 | 239 | 0.2 | 48 | 5.30E-03 | 7.63 | 2.00 | 0.26 | | | | | | | |
| 41 | | | 465 | 0.283 | 6.485E-06 | 0.0030 | | | | | | | | | 2.2 | 39,487 | 90.65 | 6.6655E-01 | 3.011E+06 | 1.07 | 2.14E+04 |
| | 36 | 4,072 | | | | | 0.256 | 226 | 0.2 | 45 | 5.66E-03 | 8.15 | 2.00 | 0.25 | | | | | | | |
| 42 | | | 440 | 0.283 | 6.485E-06 | 0.0029 | | | | | | | | | 2.0 | 39,927 | 91.66 | 6.9706E-01 | 3.011E+06 | 1.01 | 2.12E+04 |
| | 34 | 3,632 | | | | | 0.259 | 214 | 0.2 | 43 | 6.06E-03 | 8.73 | 2.00 | 0.23 | | | | | | | |
| 43 | | | 415 | 0.283 | 6.485E-06 | 0.0027 | | | | | | | | | 1.7 | 40,341 | 92.61 | 7.2682E-01 | 3.011E+06 | 0.95 | 2.08E+04 |
| | 32 | 3,217 | | | | | 0.262 | 201 | 0.2 | 40 | 6.51E-03 | 9.37 | 2.00 | 0.21 | | | | | | | |
| 44 | | | 390 | 0.283 | 6.485E-06 | 0.0025 | | | | | | | | | 1.5 | 40,731 | 93.51 | 7.5568E-01 | 3.011E+06 | 0.89 | 2.03E+04 |
| | 30 | 2,827 | | | | | 0.264 | 188 | 0.2 | 38 | 7.01E-03 | 10.09 | 2.00 | 0.20 | | | | | | | |
| 45 | | | 364 | 0.283 | 6.485E-06 | 0.0024 | | | | | | | | | 1.3 | 41,095 | 94.34 | 7.8350E-01 | 3.011E+06 | 0.84 | 1.97E+04 |
| | 28 | 2,463 | | | | | 0.267 | 176 | 0.2 | 35 | 7.57E-03 | 10.91 | 2.00 | 0.18 | | | | | | | |
| 46 | | | 339 | 0.283 | 6.485E-06 | 0.0022 | | | | | | | | | 1.2 | 41,435 | 95.12 | 8.1015E-01 | 3.011E+06 | 0.78 | 1.90E+04 |
| | 26 | 2,124 | | | | | 0.269 | 163 | 0.2 | 33 | 8.22E-03 | 11.84 | 2.00 | 0.17 | | | | | | | |
| 47 | | | 314 | 0.283 | 6.485E-06 | 0.0020 | | | | | | | | | 1.0 | 41,749 | 95.84 | 8.3549E-01 | 3.011E+06 | 0.72 | 1.81E+04 |
| | 24 | 1,810 | | | | | 0.271 | 151 | 0.2 | 30 | 8.98E-03 | 12.93 | 2.00 | 0.15 | | | | | | | |
| 48 | | | 289 | 0.283 | 6.485E-06 | 0.0019 | | | | | | | | | 0.8 | 42,038 | 96.51 | 8.5940E-01 | 3.011E+06 | 0.66 | 1.72E+04 |
| | 22 | 1,521 | | | | | 0.273 | 138 | 0.2 | 28 | 9.86E-03 | 14.20 | 2.00 | 0.14 | | | | | | | |
| 49 | | | 264 | 0.283 | 6.485E-06 | 0.0017 | | | | | | | | | 0.7 | 42,302 | 97.11 | 8.8176E-01 | 3.011E+06 | 0.61 | 1.61E+04 |
| | 20 | 1,257 | | | | | 0.274 | 126 | 0.2 | 25 | 1.09E-02 | 15.72 | 2.00 | 0.13 | | | | | | | |
| 50 | | | 239 | 0.283 | 6.485E-06 | 0.0015 | | | | | | | | | 0.6 | 42,541 | 97.66 | 9.0247E-01 | 3.011E+06 | 0.55 | 1.49E+04 |
| | 18 | 1,018 | | | | | 0.276 | 113 | 0.2 | 23 | 1.22E-02 | 17.56 | 2.00 | 0.11 | | | | | | | |
| 51 | | | 214 | 0.283 | 6.485E-06 | 0.0014 | | | | | | | | | 0.4 | 42,754 | 98.15 | 9.2141E-01 | 3.011E+06 | 0.49 | 1.36E+04 |
| | 16 | 804 | | | | | 0.277 | 101 | 0.2 | 20 | 1.38E-02 | 19.86 | 2.00 | 0.10 | | | | | | | |
| 52 | | | 188 | 0.283 | 6.485E-06 | 0.0012 | | | | | | | | | 0.3 | 42,943 | 98.58 | 9.3849E-01 | 3.011E+06 | 0.43 | 1.22E+04 |
| | 14 | 616 | | | | | 0.278 | 88 | 0.2 | 18 | 1.58E-02 | 22.80 | 2.00 | 0.09 | | | | | | | |
| 53 | | | 163 | 0.283 | 6.485E-06 | 0.0011 | | | | | | | | | 0.3 | 43,106 | 98.96 | 9.5363E-01 | 3.011E+06 | 0.38 | 1.08E+04 |
| | 12 | 452 | | | | | 0.280 | 75 | 0.2 | 15 | 1.85E-02 | 26.70 | 2.00 | 0.07 | | | | | | | |
| 54 | | | 138 | 0.283 | 6.485E-06 | 0.0009 | | | | | | | | | 0.2 | 43,244 | 99.28 | 9.6675E-01 | 3.011E+06 | 0.32 | 9.24E+03 |
| | 10 | 314 | | | | | 0.280 | 63 | 0.2 | 13 | 2.23E-02 | 32.14 | 2.00 | 0.06 | | | | | | | |
| 55 | | | 113 | 0.283 | 6.485E-06 | 0.0007 | | | | | | | | | 0.1 | 43,357 | 99.53 | 9.7779E-01 | 3.011E+06 | 0.26 | 7.64E+03 |
| | 8 | 201 | | | | | 0.281 | 50 | 0.2 | 10 | 2.80E-02 | 40.28 | 2.00 | 0.05 | | | | | | | |
| 56 | | | 88 | 0.283 | 6.485E-06 | 0.0006 | | | | | | | | | 0.1 | 43,445 | 99.74 | 9.8668E-01 | 3.011E+06 | 0.20 | 6.00E+03 |
| | 6 | 113 | | | | | 0.282 | 38 | 0.2 | 8 | 3.74E-02 | 53.81 | 2.00 | 0.04 | | | | | | | |
| 57 | | | 63 | 0.283 | 6.485E-06 | 0.0004 | | | | | | | | | 0.0 | 43,508 | 99.88 | 9.9340E-01 | 3.011E+06 | 0.14 | 4.31E+03 |
| | 4 | 50 | | | | | 0.282 | 25 | 0.2 | 5 | 5.61E-02 | 80.83 | 2.00 | 0.02 | | | | | | | |
| 58 | | | 43 | 0.283 | 6.485E-06 | 0.0003 | | | | | | | | | 0.0 | 43,551 | 99.98 | 9.9789E-01 | 3.011E+06 | 0.10 | 2.98E+03 |
| | 1.5 | 7 | | | | | 0.282 | 9 | 0.2 | 2 | 1.50E-01 | 215.77 | 2.50 | 0.01 | | | | | | | |
| 59 | | | 7 | 0.283 | 6.485E-06 | 0.0000 | | | | | | | | | 0.0 | 43,558 | 100.00 | 1.0000E+00 | 3.011E+06 | 0.02 | 4.89E+02 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Considered | pCi/min | 6.141E+05 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Not Considered | pCi/min | 3.011E+06 |

| | | |
|---|---|---|
| Reduction in Rn-222 Flux Due to Decay | % | 79.61 |

**TABLE A-12**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA A - ONE ACRE AREA - ESTIMATE YEAR 2025 - LANDFILL POROSITY= 0.2**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multilier (e^-kt) | Rn-222 Flux Rate from FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-22 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| | 117.75 | 43,558 | | | | | 0 | | | | 0 | 0 | | | | | | | | | |
| 1 | | | 1,285 | 0.080 | 1.837E-06 | 0.0024 | | | | | | | | | 306.1 | 1,285 | 2.95 | 5.6520E-25 | 3.691E+06 | 2.95 | 6.15E-20 |
| | 116 | 42,273 | | | | | 0.002 | 729 | 0.2 | 146 | 1.62E-05 | 0.02 | 1.75 | 75.06 | | | | | | | |
| 2 | | | 1,445 | 0.080 | 1.837E-06 | 0.0027 | | | | | | | | | 231.0 | 2,730 | 6.27 | 4.9890E-19 | 3.691E+06 | 3.32 | 6.11E-14 |
| | 114 | 40,828 | | | | | 0.005 | 716 | 0.2 | 143 | 3.50E-05 | 0.05 | 2.00 | 39.68 | | | | | | | |
| 3 | | | 1,420 | 0.080 | 1.837E-06 | 0.0026 | | | | | | | | | 191.4 | 4,150 | 9.53 | 6.9395E-16 | 3.691E+06 | 3.26 | 8.35E-11 |
| | 112 | 39,408 | | | | | 0.008 | 704 | 0.2 | 141 | 5.42E-05 | 0.08 | 2.00 | 25.65 | | | | | | | |
| 4 | | | 1,395 | 0.080 | 1.837E-06 | 0.0026 | | | | | | | | | 165.7 | 5,545 | 12.73 | 7.4626E-14 | 3.691E+06 | 3.20 | 8.82E-09 |
| | 110 | 38,013 | | | | | 0.010 | 691 | 0.2 | 138 | 7.37E-05 | 0.11 | 2.00 | 18.85 | | | | | | | |
| 5 | | | 1,370 | 0.080 | 1.837E-06 | 0.0025 | | | | | | | | | 146.9 | 6,915 | 15.87 | 2.3241E-12 | 3.691E+06 | 3.14 | 2.70E-07 |
| | 108 | 36,644 | | | | | 0.013 | 679 | 0.2 | 136 | 9.36E-05 | 0.13 | 2.00 | 14.84 | | | | | | | |
| 6 | | | 1,345 | 0.080 | 1.837E-06 | 0.0025 | | | | | | | | | 132.0 | 8,259 | 18.96 | 3.4837E-11 | 3.691E+06 | 3.09 | 3.97E-06 |
| | 106 | 35,299 | | | | | 0.015 | 666 | 0.2 | 133 | 1.14E-04 | 0.16 | 2.00 | 12.20 | | | | | | | |
| 7 | | | 1,319 | 0.080 | 1.837E-06 | 0.0024 | | | | | | | | | 119.8 | 9,579 | 21.99 | 3.2224E-10 | 3.691E+06 | 3.03 | 3.60E-05 |
| | 104 | 33,980 | | | | | 0.018 | 653 | 0.2 | 131 | 1.35E-04 | 0.19 | 2.00 | 10.32 | | | | | | | |
| 8 | | | 1,294 | 0.080 | 1.837E-06 | 0.0024 | | | | | | | | | 109.5 | 10,873 | 24.96 | 2.1160E-09 | 3.691E+06 | 2.97 | 2.32E-04 |
| | 102 | 32,685 | | | | | 0.020 | 641 | 0.2 | 128 | 1.56E-04 | 0.22 | 2.00 | 8.91 | | | | | | | |
| 9 | | | 1,269 | 0.080 | 1.837E-06 | 0.0023 | | | | | | | | | 100.6 | 12,142 | 27.88 | 1.0757E-08 | 3.691E+06 | 2.91 | 1.16E-03 |
| | 100 | 31,416 | | | | | 0.022 | 628 | 0.2 | 126 | 1.77E-04 | 0.26 | 2.00 | 7.83 | | | | | | | |
| 10 | | | 1,244 | 0.080 | 1.837E-06 | 0.0023 | | | | | | | | | 92.8 | 13,387 | 30.73 | 4.4843E-08 | 3.691E+06 | 2.86 | 4.73E-03 |
| | 98 | 30,172 | | | | | 0.025 | 616 | 0.2 | 123 | 2.00E-04 | 0.29 | 2.00 | 6.96 | | | | | | | |
| 11 | | | 1,219 | 0.080 | 1.837E-06 | 0.0022 | | | | | | | | | 85.8 | 14,605 | 33.53 | 1.5952E-07 | 3.691E+06 | 2.80 | 1.65E-02 |
| | 96 | 28,953 | | | | | 0.027 | 603 | 0.2 | 121 | 2.22E-04 | 0.32 | 2.00 | 6.25 | | | | | | | |
| 12 | | | 1,194 | 0.080 | 1.837E-06 | 0.0022 | | | | | | | | | 79.6 | 15,799 | 36.27 | 4.9845E-07 | 3.691E+06 | 2.74 | 5.04E-02 |
| | 94 | 27,759 | | | | | 0.029 | 591 | 0.2 | 118 | 2.46E-04 | 0.35 | 2.00 | 5.65 | | | | | | | |
| 13 | | | 1,169 | 0.080 | 1.837E-06 | 0.0021 | | | | | | | | | 73.9 | 16,968 | 38.95 | 1.3980E-06 | 3.691E+06 | 2.68 | 1.38E-01 |
| | 92 | 26,591 | | | | | 0.031 | 578 | 0.2 | 116 | 2.70E-04 | 0.39 | 2.00 | 5.15 | | | | | | | |
| 14 | | | 1,144 | 0.080 | 1.837E-06 | 0.0021 | | | | | | | | | 68.8 | 18,112 | 41.58 | 3.5784E-06 | 3.691E+06 | 2.63 | 3.47E-01 |
| | 90 | 25,447 | | | | | 0.033 | 565 | 0.2 | 113 | 2.94E-04 | 0.42 | 2.00 | 4.72 | | | | | | | |
| 15 | | | 1,118 | 0.080 | 1.837E-06 | 0.0021 | | | | | | | | | 64.0 | 19,230 | 44.15 | 8.4678E-06 | 3.691E+06 | 2.57 | 8.02E-01 |
| | 88 | 24,329 | | | | | 0.035 | 553 | 0.2 | 111 | 3.19E-04 | 0.46 | 2.00 | 4.35 | | | | | | | |
| 16 | | | 1,093 | 0.080 | 1.837E-06 | 0.0020 | | | | | | | | | 59.7 | 20,323 | 46.66 | 1.8719E-05 | 3.691E+06 | 2.51 | 1.73E+00 |
| | 86 | 23,235 | | | | | 0.037 | 540 | 0.2 | 108 | 3.45E-04 | 0.50 | 2.00 | 4.02 | | | | | | | |
| 17 | | | 1,068 | 0.080 | 1.837E-06 | 0.0020 | | | | | | | | | 55.7 | 21,391 | 49.11 | 3.8979E-05 | 3.691E+06 | 2.45 | 3.53E+00 |
| | 84 | 22,167 | | | | | 0.039 | 528 | 0.2 | 106 | 3.72E-04 | 0.54 | 2.00 | 3.73 | | | | | | | |
| 18 | | | 1,043 | 0.080 | 1.837E-06 | 0.0019 | | | | | | | | | 51.9 | 22,434 | 51.50 | 7.6992E-05 | 3.691E+06 | 2.39 | 6.80E+00 |
| | 82 | 21,124 | | | | | 0.041 | 515 | 0.2 | 103 | 4.00E-04 | 0.58 | 2.00 | 3.47 | | | | | | | |
| 19 | | | 1,018 | 0.080 | 1.837E-06 | 0.0019 | | | | | | | | | 48.5 | 23,452 | 53.84 | 1.4508E-04 | 3.691E+06 | 2.34 | 1.25E+01 |
| | 80 | 20,106 | | | | | 0.043 | 503 | 0.2 | 101 | 4.28E-04 | 0.62 | 2.00 | 3.24 | | | | | | | |
| 20 | | | 993 | 0.080 | 1.837E-06 | 0.0018 | | | | | | | | | 45.2 | 24,445 | 56.12 | 2.6206E-04 | 3.691E+06 | 2.28 | 2.20E+01 |
| | 78 | 19,113 | | | | | 0.045 | 490 | 0.2 | 98 | 4.58E-04 | 0.66 | 2.00 | 3.03 | | | | | | | |
| 21 | | | 968 | 0.080 | 1.837E-06 | 0.0018 | | | | | | | | | 42.2 | 25,413 | 58.34 | 4.5563E-04 | 3.691E+06 | 2.22 | 3.74E+01 |
| | 76 | 18,146 | | | | | 0.047 | 478 | 0.2 | 96 | 4.89E-04 | 0.70 | 2.00 | 2.84 | | | | | | | |
| 22 | | | 942 | 0.080 | 1.837E-06 | 0.0017 | | | | | | | | | 39.3 | 26,355 | 60.50 | 7.6516E-04 | 3.691E+06 | 2.16 | 6.11E+01 |
| | 74 | 17,203 | | | | | 0.048 | 465 | 0.2 | 93 | 5.21E-04 | 0.75 | 2.00 | 2.67 | | | | | | | |
| 23 | | | 917 | 0.080 | 1.837E-06 | 0.0017 | | | | | | | | | 36.7 | 27,272 | 62.61 | 1.2449E-03 | 3.691E+06 | 2.11 | 9.68E+01 |
| | 72 | 16,286 | | | | | 0.050 | 452 | 0.2 | 90 | 5.54E-04 | 0.80 | 2.00 | 2.51 | | | | | | | |
| 24 | | | 892 | 0.080 | 1.837E-06 | 0.0016 | | | | | | | | | 34.2 | 28,165 | 64.66 | 1.9673E-03 | 3.691E+06 | 2.05 | 1.49E+02 |
| | 70 | 15,394 | | | | | 0.052 | 440 | 0.2 | 88 | 5.88E-04 | 0.85 | 2.00 | 2.36 | | | | | | | |
| 25 | | | 867 | 0.080 | 1.837E-06 | 0.0016 | | | | | | | | | 31.8 | 29,032 | 66.65 | 3.0267E-03 | 3.691E+06 | 1.99 | 2.22E+02 |
| | 68 | 14,527 | | | | | 0.053 | 427 | 0.2 | 85 | 6.24E-04 | 0.90 | 2.00 | 2.23 | | | | | | | |
| 26 | | | 842 | 0.080 | 1.837E-06 | 0.0015 | | | | | | | | | 29.6 | 29,874 | 68.58 | 4.5426E-03 | 3.691E+06 | 1.93 | 3.24E+02 |
| | 66 | 13,685 | | | | | 0.055 | 415 | 0.2 | 83 | 6.62E-04 | 0.95 | 2.00 | 2.10 | | | | | | | |
| 27 | | | 817 | 0.080 | 1.837E-06 | 0.0015 | | | | | | | | | 27.5 | 30,690 | 70.46 | 6.6622E-03 | 3.691E+06 | 1.88 | 4.61E+02 |
| | 64 | 12,868 | | | | | 0.056 | 402 | 0.2 | 80 | 7.01E-04 | 1.01 | 2.00 | 1.98 | | | | | | | |
| 28 | | | 792 | 0.080 | 1.837E-06 | 0.0015 | | | | | | | | | 25.5 | 31,482 | 72.27 | 9.5633E-03 | 3.691E+06 | 1.82 | 6.42E+02 |
| | 62 | 12,076 | | | | | 0.058 | 390 | 0.2 | 78 | 7.42E-04 | 1.07 | 2.00 | 1.87 | | | | | | | |
| 29 | | | 767 | 0.080 | 1.837E-06 | 0.0014 | | | | | | | | | 23.6 | 32,249 | 74.03 | 1.3454E-02 | 3.691E+06 | 1.76 | 8.74E+02 |
| | 60 | 11,310 | | | | | 0.059 | 377 | 0.2 | 75 | 7.86E-04 | 1.13 | 2.00 | 1.77 | | | | | | | |
| 30 | | | 741 | 0.080 | 1.837E-06 | 0.0014 | | | | | | | | | 21.9 | 32,990 | 75.73 | 1.8575E-02 | 3.691E+06 | 1.70 | 1.17E+03 |
| | 58 | 10,568 | | | | | 0.061 | 364 | 0.2 | 73 | 8.31E-04 | 1.20 | 2.00 | 1.67 | | | | | | | |

**TABLE A-12 (CONTINUED)**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA A - ONE ACRE AREA - ESTIMATE YEAR 2025 - LANDFILL POROSITY= 0.2**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multilier (e^-kt) | Rn-222 Flux Rate from FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-22 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| 31 | | | 716 | 0.080 | 1.837E-06 | 0.0013 | | | | | | | | | 20.2 | 33,706 | 77.38 | 2.5193E-02 | 3.691E+06 | 1.64 | 1.53E+03 |
| | 56 | 9,852 | | | | | 0.062 | 352 | 0.2 | 70 | 8.80E-04 | 1.27 | 2.00 | 1.58 | | | | | | | |
| 32 | | | 691 | 0.080 | 1.837E-06 | 0.0013 | | | | | | | | | 18.6 | 34,398 | 78.97 | 3.3601E-02 | 3.691E+06 | 1.59 | 1.97E+03 |
| | 54 | 9,161 | | | | | 0.063 | 339 | 0.2 | 68 | 9.31E-04 | 1.34 | 2.00 | 1.49 | | | | | | | |
| 33 | | | 666 | 0.080 | 1.837E-06 | 0.0012 | | | | | | | | | 17.1 | 35,064 | 80.49 | 4.4110E-02 | 3.691E+06 | 1.53 | 2.49E+03 |
| | 52 | 8,495 | | | | | 0.064 | 327 | 0.2 | 65 | 9.85E-04 | 1.42 | 2.00 | 1.41 | | | | | | | |
| 34 | | | 641 | 0.080 | 1.837E-06 | 0.0012 | | | | | | | | | 15.7 | 35,704 | 81.97 | 5.7039E-02 | 3.691E+06 | 1.47 | 3.10E+03 |
| | 50 | 7,854 | | | | | 0.066 | 314 | 0.2 | 63 | 1.04E-03 | 1.50 | 2.00 | 1.33 | | | | | | | |
| 35 | | | 616 | 0.080 | 1.837E-06 | 0.0011 | | | | | | | | | 14.4 | 36,320 | 83.38 | 7.2711E-02 | 3.691E+06 | 1.41 | 3.79E+03 |
| | 48 | 7,238 | | | | | 0.067 | 302 | 0.2 | 60 | 1.11E-03 | 1.59 | 2.00 | 1.26 | | | | | | | |
| 36 | | | 591 | 0.080 | 1.837E-06 | 0.0011 | | | | | | | | | 13.1 | 36,911 | 84.74 | 9.1430E-02 | 3.691E+06 | 1.36 | 4.58E+03 |
| | 46 | 6,648 | | | | | 0.068 | 289 | 0.2 | 58 | 1.17E-03 | 1.69 | 2.00 | 1.18 | | | | | | | |
| 37 | | | 565 | 0.080 | 1.837E-06 | 0.0010 | | | | | | | | | 11.9 | 37,476 | 86.03 | 1.1348E-01 | 3.691E+06 | 1.30 | 5.44E+03 |
| | 44 | 6,082 | | | | | 0.069 | 276 | 0.2 | 55 | 1.24E-03 | 1.79 | 2.00 | 1.12 | | | | | | | |
| 38 | | | 540 | 0.080 | 1.837E-06 | 0.0010 | | | | | | | | | 10.8 | 38,017 | 87.27 | 1.3909E-01 | 3.691E+06 | 1.24 | 6.37E+03 |
| | 42 | 5,542 | | | | | 0.070 | 264 | 0.2 | 53 | 1.32E-03 | 1.90 | 2.00 | 1.05 | | | | | | | |
| 39 | | | 515 | 0.080 | 1.837E-06 | 0.0009 | | | | | | | | | 9.8 | 38,532 | 88.46 | 1.6845E-01 | 3.691E+06 | 1.18 | 7.35E+03 |
| | 40 | 5,027 | | | | | 0.071 | 251 | 0.2 | 50 | 1.41E-03 | 2.03 | 2.00 | 0.99 | | | | | | | |
| 40 | | | 490 | 0.080 | 1.837E-06 | 0.0009 | | | | | | | | | 8.8 | 39,022 | 89.58 | 2.0166E-01 | 3.691E+06 | 1.13 | 8.37E+03 |
| | 38 | 4,536 | | | | | 0.072 | 239 | 0.2 | 48 | 1.50E-03 | 2.16 | 2.00 | 0.93 | | | | | | | |
| 41 | | | 465 | 0.080 | 1.837E-06 | 0.0009 | | | | | | | | | 7.9 | 39,487 | 90.65 | 2.3874E-01 | 3.691E+06 | 1.07 | 9.41E+03 |
| | 36 | 4,072 | | | | | 0.073 | 226 | 0.2 | 45 | 1.60E-03 | 2.31 | 2.00 | 0.87 | | | | | | | |
| 42 | | | 440 | 0.080 | 1.837E-06 | 0.0008 | | | | | | | | | 7.0 | 39,927 | 91.66 | 2.7961E-01 | 3.691E+06 | 1.01 | 1.04E+04 |
| | 34 | 3,632 | | | | | 0.073 | 214 | 0.2 | 43 | 1.72E-03 | 2.47 | 2.00 | 0.81 | | | | | | | |
| 43 | | | 415 | 0.080 | 1.837E-06 | 0.0008 | | | | | | | | | 6.2 | 40,341 | 92.61 | 3.2408E-01 | 3.691E+06 | 0.95 | 1.14E+04 |
| | 32 | 3,217 | | | | | 0.074 | 201 | 0.2 | 40 | 1.84E-03 | 2.65 | 2.00 | 0.75 | | | | | | | |
| 44 | | | 390 | 0.080 | 1.837E-06 | 0.0007 | | | | | | | | | 5.4 | 40,731 | 93.51 | 3.7185E-01 | 3.691E+06 | 0.89 | 1.23E+04 |
| | 30 | 2,827 | | | | | 0.075 | 188 | 0.2 | 38 | 1.98E-03 | 2.86 | 2.00 | 0.70 | | | | | | | |
| 45 | | | 364 | 0.080 | 1.837E-06 | 0.0007 | | | | | | | | | 4.7 | 41,095 | 94.34 | 4.2249E-01 | 3.691E+06 | 0.84 | 1.30E+04 |
| | 28 | 2,463 | | | | | 0.075 | 176 | 0.2 | 35 | 2.14E-03 | 3.09 | 2.00 | 0.65 | | | | | | | |
| 46 | | | 339 | 0.080 | 1.837E-06 | 0.0006 | | | | | | | | | 4.1 | 41,435 | 95.12 | 4.7546E-01 | 3.691E+06 | 0.78 | 1.37E+04 |
| | 26 | 2,124 | | | | | 0.076 | 163 | 0.2 | 33 | 2.33E-03 | 3.35 | 2.00 | 0.60 | | | | | | | |
| 47 | | | 314 | 0.080 | 1.837E-06 | 0.0006 | | | | | | | | | 3.5 | 41,749 | 95.84 | 5.3009E-01 | 3.691E+06 | 0.72 | 1.41E+04 |
| | 24 | 1,810 | | | | | 0.077 | 151 | 0.2 | 30 | 2.54E-03 | 3.66 | 2.00 | 0.55 | | | | | | | |
| 48 | | | 289 | 0.080 | 1.837E-06 | 0.0005 | | | | | | | | | 2.9 | 42,038 | 96.51 | 5.8564E-01 | 3.691E+06 | 0.66 | 1.43E+04 |
| | 22 | 1,521 | | | | | 0.077 | 138 | 0.2 | 28 | 2.79E-03 | 4.02 | 2.00 | 0.50 | | | | | | | |
| 49 | | | 264 | 0.080 | 1.837E-06 | 0.0005 | | | | | | | | | 2.4 | 42,302 | 97.11 | 6.4125E-01 | 3.691E+06 | 0.61 | 1.43E+04 |
| | 20 | 1,257 | | | | | 0.078 | 126 | 0.2 | 25 | 3.09E-03 | 4.45 | 2.00 | 0.45 | | | | | | | |
| 50 | | | 239 | 0.080 | 1.837E-06 | 0.0004 | | | | | | | | | 2.0 | 42,541 | 97.66 | 6.9601E-01 | 3.691E+06 | 0.55 | 1.41E+04 |
| | 18 | 1,018 | | | | | 0.078 | 113 | 0.2 | 23 | 3.45E-03 | 4.97 | 2.00 | 0.40 | | | | | | | |
| 51 | | | 214 | 0.080 | 1.837E-06 | 0.0004 | | | | | | | | | 1.6 | 42,754 | 98.15 | 7.4898E-01 | 3.691E+06 | 0.49 | 1.36E+04 |
| | 16 | 804 | | | | | 0.079 | 101 | 0.2 | 20 | 3.91E-03 | 5.62 | 2.00 | 0.36 | | | | | | | |
| 52 | | | 188 | 0.080 | 1.837E-06 | 0.0003 | | | | | | | | | 1.2 | 42,943 | 98.58 | 7.9918E-01 | 3.691E+06 | 0.43 | 1.28E+04 |
| | 14 | 616 | | | | | 0.079 | 88 | 0.2 | 18 | 4.48E-03 | 6.46 | 2.00 | 0.31 | | | | | | | |
| 53 | | | 163 | 0.080 | 1.837E-06 | 0.0003 | | | | | | | | | 0.9 | 43,106 | 98.96 | 8.4564E-01 | 3.691E+06 | 0.38 | 1.17E+04 |
| | 12 | 452 | | | | | 0.079 | 75 | 0.2 | 15 | 5.25E-03 | 7.56 | 2.00 | 0.26 | | | | | | | |
| 54 | | | 138 | 0.080 | 1.837E-06 | 0.0003 | | | | | | | | | 0.7 | 43,244 | 99.28 | 8.8745E-01 | 3.691E+06 | 0.32 | 1.04E+04 |
| | 10 | 314 | | | | | 0.079 | 63 | 0.2 | 13 | 6.32E-03 | 9.10 | 2.00 | 0.22 | | | | | | | |
| 55 | | | 113 | 0.080 | 1.837E-06 | 0.0002 | | | | | | | | | 0.4 | 43,357 | 99.53 | 9.2374E-01 | 3.691E+06 | 0.26 | 8.85E+03 |
| | 8 | 201 | | | | | 0.080 | 50 | 0.2 | 10 | 7.92E-03 | 11.41 | 2.00 | 0.18 | | | | | | | |
| 56 | | | 88 | 0.080 | 1.837E-06 | 0.0002 | | | | | | | | | 0.3 | 43,445 | 99.74 | 9.5376E-01 | 3.691E+06 | 0.20 | 7.11E+03 |
| | 6 | 113 | | | | | 0.080 | 38 | 0.2 | 8 | 1.06E-02 | 15.24 | 2.00 | 0.13 | | | | | | | |
| 57 | | | 63 | 0.080 | 1.837E-06 | 0.0001 | | | | | | | | | 0.1 | 43,508 | 99.88 | 9.7687E-01 | 3.691E+06 | 0.14 | 5.20E+03 |
| | 4 | 50 | | | | | 0.080 | 25 | 0.2 | 5 | 1.59E-02 | 22.89 | 2.00 | 0.09 | | | | | | | |
| 58 | | | 43 | 0.080 | 1.837E-06 | 0.0001 | | | | | | | | | 0.0 | 43,551 | 99.98 | 9.9257E-01 | 3.691E+06 | 0.10 | 3.63E+03 |
| | 1.5 | 7 | | | | | 0.080 | 9 | 0.2 | 2 | 4.24E-02 | 61.10 | 2.50 | 0.04 | | | | | | | |
| 59 | | | 7 | 0.080 | 1.837E-06 | 0.0000 | | | | | | | | | 0.0 | 43,558 | 100.00 | 1.0000E+00 | 3.691E+06 | 0.02 | 5.99E+02 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Considered | pCi/min | 2.500E+05 |
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Not Considered | pCi/min | 3.691E+06 |
| Reduction in Rn-222 Flux Due to Decay | % | 93.23 |

**TABLE A-13**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA A - ONE ACRE AREA - ESTIMATE YEAR 2100 - LANDFILL POROSITY= 0.2**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multilier (e^-kt) | Rn-222 Flux Rate from FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-22 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| | 117.75 | 43,558 | | | | | 0 | | | | 0 | 0 | | | | | | | | | |
| 1 | | | 1,285 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 9795.2 | 1,285 | 2.95 | 0.0000E+00 | 5.196E+06 | 2.95 | 0.00E+00 |
| | 116 | 42,273 | | | | | 0.000 | 729 | 0.2 | 146 | 5.06E-07 | 0.00 | 1.75 | 2401.88 | | | | | | | |
| 2 | | | 1,445 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 7393.3 | 2,730 | 6.27 | 0.0000E+00 | 5.196E+06 | 3.32 | 0.00E+00 |
| | 114 | 40,828 | | | | | 0.000 | 716 | 0.2 | 143 | 1.09E-06 | 0.00 | 2.00 | 1269.78 | | | | | | | |
| 3 | | | 1,420 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 6123.5 | 4,150 | 9.53 | 0.0000E+00 | 5.196E+06 | 3.26 | 0.00E+00 |
| | 112 | 39,408 | | | | | 0.000 | 704 | 0.2 | 141 | 1.69E-06 | 0.00 | 2.00 | 820.67 | | | | | | | |
| 4 | | | 1,395 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 5302.9 | 5,545 | 12.73 | 0.0000E+00 | 5.196E+06 | 3.20 | 0.00E+00 |
| | 110 | 38,013 | | | | | 0.000 | 691 | 0.2 | 138 | 2.30E-06 | 0.00 | 2.00 | 603.26 | | | | | | | |
| 5 | | | 1,370 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 4699.6 | 6,915 | 15.87 | 0.0000E+00 | 5.196E+06 | 3.14 | 0.00E+00 |
| | 108 | 36,644 | | | | | 0.000 | 679 | 0.2 | 136 | 2.92E-06 | 0.00 | 2.00 | 474.97 | | | | | | | |
| 6 | | | 1,345 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 4224.6 | 8,259 | 18.96 | 0.0000E+00 | 5.196E+06 | 3.09 | 0.00E+00 |
| | 106 | 35,299 | | | | | 0.000 | 666 | 0.2 | 133 | 3.56E-06 | 0.01 | 2.00 | 390.28 | | | | | | | |
| 7 | | | 1,319 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 3834.3 | 9,579 | 21.99 | 1.8265E-304 | 5.196E+06 | 3.03 | 2.87E-299 |
| | 104 | 33,980 | | | | | 0.001 | 653 | 0.2 | 131 | 4.21E-06 | 0.01 | 2.00 | 330.17 | | | | | | | |
| 8 | | | 1,294 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 3504.2 | 10,873 | 24.96 | 2.6087E-278 | 5.196E+06 | 2.97 | 4.03E-273 |
| | 102 | 32,685 | | | | | 0.001 | 641 | 0.2 | 128 | 4.87E-06 | 0.01 | 2.00 | 285.28 | | | | | | | |
| 9 | | | 1,269 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 3218.9 | 12,142 | 27.88 | 1.0344E-255 | 5.196E+06 | 2.91 | 1.57E-250 |
| | 100 | 31,416 | | | | | 0.001 | 628 | 0.2 | 126 | 5.55E-06 | 0.01 | 2.00 | 250.45 | | | | | | | |
| 10 | | | 1,244 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 2968.4 | 13,387 | 30.73 | 7.1462E-236 | 5.196E+06 | 2.86 | 1.06E-230 |
| | 98 | 30,172 | | | | | 0.001 | 616 | 0.2 | 123 | 6.24E-06 | 0.01 | 2.00 | 222.63 | | | | | | | |
| 11 | | | 1,219 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 2745.8 | 14,605 | 33.53 | 3.0887E-218 | 5.196E+06 | 2.80 | 4.49E-213 |
| | 96 | 28,953 | | | | | 0.001 | 603 | 0.2 | 121 | 6.95E-06 | 0.01 | 2.00 | 199.89 | | | | | | | |
| 12 | | | 1,194 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 2545.9 | 15,799 | 36.27 | 2.1075E-202 | 5.196E+06 | 2.74 | 3.00E-197 |
| | 94 | 27,759 | | | | | 0.001 | 591 | 0.2 | 118 | 7.68E-06 | 0.01 | 2.00 | 180.93 | | | | | | | |
| 13 | | | 1,169 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 2365.0 | 16,968 | 38.95 | 4.5329E-188 | 5.196E+06 | 2.68 | 6.32E-183 |
| | 92 | 26,591 | | | | | 0.001 | 578 | 0.2 | 116 | 8.42E-06 | 0.01 | 2.00 | 164.89 | | | | | | | |
| 14 | | | 1,144 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 2200.1 | 18,112 | 41.58 | 5.2225E-175 | 5.196E+06 | 2.63 | 7.12E-170 |
| | 90 | 25,447 | | | | | 0.001 | 565 | 0.2 | 113 | 9.19E-06 | 0.01 | 2.00 | 151.12 | | | | | | | |
| 15 | | | 1,118 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 2049.0 | 19,230 | 44.15 | 4.8829E-163 | 5.196E+06 | 2.57 | 6.51E-158 |
| | 88 | 24,329 | | | | | 0.001 | 553 | 0.2 | 111 | 9.98E-06 | 0.01 | 2.00 | 139.17 | | | | | | | |
| 16 | | | 1,093 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 1909.8 | 20,323 | 46.66 | 5.1606E-152 | 5.196E+06 | 2.51 | 6.73E-147 |
| | 86 | 23,235 | | | | | 0.001 | 540 | 0.2 | 108 | 1.08E-05 | 0.02 | 2.00 | 128.69 | | | | | | | |
| 17 | | | 1,068 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 1781.1 | 21,391 | 49.11 | 8.0655E-142 | 5.196E+06 | 2.45 | 1.03E-136 |
| | 84 | 22,167 | | | | | 0.001 | 528 | 0.2 | 106 | 1.16E-05 | 0.02 | 2.00 | 119.42 | | | | | | | |
| 18 | | | 1,043 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 1661.7 | 22,434 | 51.50 | 2.3244E-132 | 5.196E+06 | 2.39 | 2.89E-127 |
| | 82 | 21,124 | | | | | 0.001 | 515 | 0.2 | 103 | 1.25E-05 | 0.02 | 2.00 | 111.15 | | | | | | | |
| 19 | | | 1,018 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 1550.6 | 23,452 | 53.84 | 1.4840E-123 | 5.196E+06 | 2.34 | 1.80E-118 |
| | 80 | 20,106 | | | | | 0.001 | 503 | 0.2 | 101 | 1.34E-05 | 0.02 | 2.00 | 103.74 | | | | | | | |
| 20 | | | 993 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 1446.8 | 24,445 | 56.12 | 2.4489E-115 | 5.196E+06 | 2.28 | 2.90E-110 |
| | 78 | 19,113 | | | | | 0.001 | 490 | 0.2 | 98 | 1.43E-05 | 0.02 | 2.00 | 97.04 | | | | | | | |
| 21 | | | 968 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 1349.8 | 25,413 | 58.34 | 1.1903E-107 | 5.196E+06 | 2.22 | 1.37E-102 |
| | 76 | 18,146 | | | | | 0.001 | 478 | 0.2 | 96 | 1.53E-05 | 0.02 | 2.00 | 90.95 | | | | | | | |
| 22 | | | 942 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 1258.8 | 26,355 | 60.50 | 1.9059E-100 | 5.196E+06 | 2.16 | 2.14E-95 |
| | 74 | 17,203 | | | | | 0.002 | 465 | 0.2 | 93 | 1.63E-05 | 0.02 | 2.00 | 85.39 | | | | | | | |
| 23 | | | 917 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 1173.5 | 27,272 | 62.61 | 1.1069E-93 | 5.196E+06 | 2.11 | 1.21E-88 |
| | 72 | 16,286 | | | | | 0.002 | 452 | 0.2 | 90 | 1.73E-05 | 0.02 | 2.00 | 80.29 | | | | | | | |
| 24 | | | 892 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 1093.2 | 28,165 | 64.66 | 2.5345E-87 | 5.196E+06 | 2.05 | 2.70E-82 |
| | 70 | 15,394 | | | | | 0.002 | 440 | 0.2 | 88 | 1.84E-05 | 0.03 | 2.00 | 75.58 | | | | | | | |
| 25 | | | 867 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 1017.6 | 29,032 | 66.65 | 2.4614E-81 | 5.196E+06 | 1.99 | 2.55E-76 |
| | 68 | 14,527 | | | | | 0.002 | 427 | 0.2 | 85 | 1.95E-05 | 0.03 | 2.00 | 71.23 | | | | | | | |
| 26 | | | 842 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 946.4 | 29,874 | 68.58 | 1.0806E-75 | 5.196E+06 | 1.93 | 1.09E-70 |
| | 66 | 13,685 | | | | | 0.002 | 415 | 0.2 | 83 | 2.07E-05 | 0.03 | 2.00 | 67.19 | | | | | | | |
| 27 | | | 817 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 879.2 | 30,690 | 70.46 | 2.2692E-70 | 5.196E+06 | 1.88 | 2.21E-65 |
| | 64 | 12,868 | | | | | 0.002 | 402 | 0.2 | 80 | 2.19E-05 | 0.03 | 2.00 | 63.42 | | | | | | | |
| 28 | | | 792 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 815.8 | 31,482 | 72.27 | 2.3957E-65 | 5.196E+06 | 1.82 | 2.26E-60 |
| | 62 | 12,076 | | | | | 0.002 | 390 | 0.2 | 78 | 2.32E-05 | 0.03 | 2.00 | 59.89 | | | | | | | |
| 29 | | | 767 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 755.9 | 32,249 | 74.03 | 1.3293E-60 | 5.196E+06 | 1.76 | 1.22E-55 |
| | 60 | 11,310 | | | | | 0.002 | 377 | 0.2 | 75 | 2.45E-05 | 0.04 | 2.00 | 56.58 | | | | | | | |
| 30 | | | 741 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 699.3 | 32,990 | 75.73 | 4.0332E-56 | 5.196E+06 | 1.70 | 3.57E-51 |
| | 58 | 10,568 | | | | | 0.002 | 364 | 0.2 | 73 | 2.60E-05 | 0.04 | 2.00 | 53.47 | | | | | | | |

**TABLE A-13 (CONTINUED)**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA A - ONE ACRE AREA - ESTIMATE YEAR 2100 - LANDFILL POROSITY= 0.2**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multilier (e^-kt) | Rn-222 Flux Rate from FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-22 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| 31 | | | 716 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 645.8 | 33,706 | 77.38 | 6.9326E-52 | 5.196E+06 | 1.64 | 5.92E-47 |
| | 56 | 9,852 | | | | | 0.002 | 352 | 0.2 | 70 | 2.75E-05 | 0.04 | 2.00 | 50.52 | | | | | | | |
| 32 | | | 691 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 595.3 | 34,398 | 78.97 | 6.9696E-48 | 5.196E+06 | 1.59 | 5.75E-43 |
| | 54 | 9,161 | | | | | 0.002 | 339 | 0.2 | 68 | 2.91E-05 | 0.04 | 2.00 | 47.74 | | | | | | | |
| 33 | | | 666 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 547.6 | 35,064 | 80.49 | 4.2173E-44 | 5.196E+06 | 1.53 | 3.35E-39 |
| | 52 | 8,495 | | | | | 0.002 | 327 | 0.2 | 65 | 3.08E-05 | 0.04 | 2.00 | 45.10 | | | | | | | |
| 34 | | | 641 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 502.5 | 35,704 | 81.97 | 1.5762E-40 | 5.196E+06 | 1.47 | 1.20E-35 |
| | 50 | 7,854 | | | | | 0.002 | 314 | 0.2 | 63 | 3.26E-05 | 0.05 | 2.00 | 42.59 | | | | | | | |
| 35 | | | 616 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 459.9 | 36,320 | 83.38 | 3.7250E-37 | 5.196E+06 | 1.41 | 2.74E-32 |
| | 48 | 7,238 | | | | | 0.002 | 302 | 0.2 | 60 | 3.46E-05 | 0.05 | 2.00 | 40.19 | | | | | | | |
| 36 | | | 591 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 419.7 | 36,911 | 84.74 | 5.6859E-34 | 5.196E+06 | 1.36 | 4.01E-29 |
| | 46 | 6,648 | | | | | 0.002 | 289 | 0.2 | 58 | 3.66E-05 | 0.05 | 2.00 | 37.90 | | | | | | | |
| 37 | | | 565 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 381.8 | 37,476 | 86.03 | 5.7147E-31 | 5.196E+06 | 1.30 | 3.85E-26 |
| | 44 | 6,082 | | | | | 0.002 | 276 | 0.2 | 55 | 3.89E-05 | 0.06 | 2.00 | 35.70 | | | | | | | |
| 38 | | | 540 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 346.1 | 38,017 | 87.27 | 3.8489E-28 | 5.196E+06 | 1.24 | 2.48E-23 |
| | 42 | 5,542 | | | | | 0.002 | 264 | 0.2 | 53 | 4.13E-05 | 0.06 | 2.00 | 33.60 | | | | | | | |
| 39 | | | 515 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 312.5 | 38,532 | 88.46 | 1.7649E-25 | 5.196E+06 | 1.18 | 1.08E-20 |
| | 40 | 5,027 | | | | | 0.002 | 251 | 0.2 | 50 | 4.40E-05 | 0.06 | 2.00 | 31.57 | | | | | | | |
| 40 | | | 490 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 280.9 | 39,022 | 89.58 | 5.5912E-23 | 5.196E+06 | 1.13 | 3.27E-18 |
| | 38 | 4,536 | | | | | 0.002 | 239 | 0.2 | 48 | 4.69E-05 | 0.07 | 2.00 | 29.61 | | | | | | | |
| 41 | | | 465 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 251.3 | 39,487 | 90.65 | 1.2400E-20 | 5.196E+06 | 1.07 | 6.88E-16 |
| | 36 | 4,072 | | | | | 0.002 | 226 | 0.2 | 45 | 5.01E-05 | 0.07 | 2.00 | 27.73 | | | | | | | |
| 42 | | | 440 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 223.6 | 39,927 | 91.66 | 1.9484E-18 | 5.196E+06 | 1.01 | 1.02E-13 |
| | 34 | 3,632 | | | | | 0.002 | 214 | 0.2 | 43 | 5.36E-05 | 0.08 | 2.00 | 25.90 | | | | | | | |
| 43 | | | 415 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 197.7 | 40,341 | 92.61 | 2.1931E-16 | 5.196E+06 | 0.95 | 1.08E-11 |
| | 32 | 3,217 | | | | | 0.002 | 201 | 0.2 | 40 | 5.76E-05 | 0.08 | 2.00 | 24.12 | | | | | | | |
| 44 | | | 390 | 0.003 | 5.739E-08 | 0.00002 | | | | | | | | | 173.6 | 40,731 | 93.51 | 1.7863E-14 | 5.196E+06 | 0.89 | 8.30E-10 |
| | 30 | 2,827 | | | | | 0.002 | 188 | 0.2 | 38 | 6.20E-05 | 0.09 | 2.00 | 22.40 | | | | | | | |
| 45 | | | 364 | 0.003 | 5.739E-08 | 0.00002 | | | | | | | | | 151.2 | 41,095 | 94.34 | 1.0623E-12 | 5.196E+06 | 0.84 | 4.62E-08 |
| | 28 | 2,463 | | | | | 0.002 | 176 | 0.2 | 35 | 6.70E-05 | 0.10 | 2.00 | 20.72 | | | | | | | |
| 46 | | | 339 | 0.003 | 5.739E-08 | 0.00002 | | | | | | | | | 130.4 | 41,435 | 95.12 | 4.6517E-11 | 5.196E+06 | 0.78 | 1.88E-06 |
| | 26 | 2,124 | | | | | 0.002 | 163 | 0.2 | 33 | 7.28E-05 | 0.10 | 2.00 | 19.08 | | | | | | | |
| 47 | | | 314 | 0.003 | 5.739E-08 | 0.00002 | | | | | | | | | 111.4 | 41,749 | 95.84 | 1.5109E-09 | 5.196E+06 | 0.72 | 5.66E-05 |
| | 24 | 1,810 | | | | | 0.002 | 151 | 0.2 | 30 | 7.94E-05 | 0.11 | 2.00 | 17.48 | | | | | | | |
| 48 | | | 289 | 0.003 | 5.739E-08 | 0.00002 | | | | | | | | | 93.9 | 42,038 | 96.51 | 3.6650E-08 | 5.196E+06 | 0.66 | 1.26E-03 |
| | 22 | 1,521 | | | | | 0.002 | 138 | 0.2 | 28 | 8.73E-05 | 0.13 | 2.00 | 15.92 | | | | | | | |
| 49 | | | 264 | 0.003 | 5.739E-08 | 0.00002 | | | | | | | | | 78.0 | 42,302 | 97.11 | 6.6802E-07 | 5.196E+06 | 0.61 | 2.10E-02 |
| | 20 | 1,257 | | | | | 0.002 | 126 | 0.2 | 25 | 9.66E-05 | 0.14 | 2.00 | 14.38 | | | | | | | |
| 50 | | | 239 | 0.003 | 5.739E-08 | 0.00001 | | | | | | | | | 63.6 | 42,541 | 97.66 | 9.1991E-06 | 5.196E+06 | 0.55 | 2.62E-01 |
| | 18 | 1,018 | | | | | 0.002 | 113 | 0.2 | 23 | 1.08E-04 | 0.16 | 2.00 | 12.87 | | | | | | | |
| 51 | | | 214 | 0.003 | 5.739E-08 | 0.00001 | | | | | | | | | 50.7 | 42,754 | 98.15 | 9.6172E-05 | 5.196E+06 | 0.49 | 2.45E+00 |
| | 16 | 804 | | | | | 0.002 | 101 | 0.2 | 20 | 1.22E-04 | 0.18 | 2.00 | 11.38 | | | | | | | |
| 52 | | | 188 | 0.003 | 5.739E-08 | 0.00001 | | | | | | | | | 39.3 | 42,943 | 98.58 | 7.6661E-04 | 5.196E+06 | 0.43 | 1.72E+01 |
| | 14 | 616 | | | | | 0.002 | 88 | 0.2 | 18 | 1.40E-04 | 0.20 | 2.00 | 9.91 | | | | | | | |
| 53 | | | 163 | 0.003 | 5.739E-08 | 0.00001 | | | | | | | | | 29.4 | 43,106 | 98.96 | 4.6767E-03 | 5.196E+06 | 0.38 | 9.11E+01 |
| | 12 | 452 | | | | | 0.002 | 75 | 0.2 | 15 | 1.64E-04 | 0.24 | 2.00 | 8.47 | | | | | | | |
| 54 | | | 138 | 0.003 | 5.739E-08 | 0.00001 | | | | | | | | | 20.9 | 43,244 | 99.28 | 2.1906E-02 | 5.196E+06 | 0.32 | 3.61E+02 |
| | 10 | 314 | | | | | 0.002 | 63 | 0.2 | 13 | 1.98E-04 | 0.28 | 2.00 | 7.03 | | | | | | | |
| 55 | | | 113 | 0.003 | 5.739E-08 | 0.00001 | | | | | | | | | 13.9 | 43,357 | 99.53 | 7.9000E-02 | 5.196E+06 | 0.26 | 1.07E+03 |
| | 8 | 201 | | | | | 0.002 | 50 | 0.2 | 10 | 2.48E-04 | 0.36 | 2.00 | 5.61 | | | | | | | |
| 56 | | | 88 | 0.003 | 5.739E-08 | 0.00001 | | | | | | | | | 8.3 | 43,445 | 99.74 | 2.1985E-01 | 5.196E+06 | 0.20 | 2.31E+03 |
| | 6 | 113 | | | | | 0.002 | 38 | 0.2 | 8 | 3.31E-04 | 0.48 | 2.00 | 4.20 | | | | | | | |
| 57 | | | 63 | 0.003 | 5.739E-08 | 0.00000 | | | | | | | | | 4.1 | 43,508 | 99.88 | 4.7295E-01 | 5.196E+06 | 0.14 | 3.54E+03 |
| | 4 | 50 | | | | | 0.002 | 25 | 0.2 | 5 | 4.97E-04 | 0.72 | 2.00 | 2.80 | | | | | | | |
| 58 | | | 43 | 0.003 | 5.739E-08 | 0.00000 | | | | | | | | | 1.3 | 43,551 | 99.98 | 7.8757E-01 | 5.196E+06 | 0.10 | 4.06E+03 |
| | 1.5 | 7 | | | | | 0.002 | 9 | 0.2 | 2 | 1.33E-03 | 1.91 | 2.50 | 1.31 | | | | | | | |
| 59 | | | 7 | 0.003 | 5.739E-08 | 0.00000 | | | | | | | | | 0.0 | 43,558 | 100.00 | 1.0000E+00 | 5.196E+06 | 0.02 | 8.43E+02 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Considered | pCi/min | 1.229E+04 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Not Considered | pCi/min | 5.196E+06 |

| | | |
|---|---|---|
| Reduction in Rn-222 Flux Due to Decay | % | 99.76 |

**TABLE A-14**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA A -ONE HALF ACRE AREA - ESTIMATE YEAR 2000 - LANDFILL POROSITY = 0.2**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multilier (e^-kt) | Rn-222 Flux Rate from FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-22 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| | 83.25 | 21,773 | | | | | 0 | | | | 0 | 0 | | | | | | | | | |
| 1 | | | 131 | 0.1413 | 6.485E-06 | 8.468E-04 | | | | | | | | | 106.2 | 131 | 0.60 | 3.8636E-09 | 3.011E+06 | 0.60 | 6.97E-05 |
| | 83 | 21,642 | | | | | 8.468E-04 | 522 | 0.2 | 104 | 8.12E-06 | 0.01 | 0.25 | 21.38 | | | | | | | |
| 2 | | | 518 | 0.1413 | 6.485E-06 | 3.362E-03 | | | | | | | | | 84.8 | 649 | 2.98 | 1.9094E-07 | 3.011E+06 | 2.38 | 1.37E-02 |
| | 82 | 21,124 | | | | | 4.209E-03 | 515 | 0.2 | 103 | 4.08E-05 | 0.06 | 1.00 | 17.00 | | | | | | | |
| 3 | | | 512 | 0.1413 | 6.485E-06 | 3.321E-03 | | | | | | | | | 67.8 | 1,161 | 5.33 | 4.2444E-06 | 3.011E+06 | 2.35 | 3.00E-01 |
| | 81 | 20,612 | | | | | 7.530E-03 | 509 | 0.2 | 102 | 7.40E-05 | 0.11 | 1.00 | 9.39 | | | | | | | |
| 4 | | | 506 | 0.1413 | 6.485E-06 | 3.280E-03 | | | | | | | | | 58.4 | 1,667 | 7.65 | 2.3522E-05 | 3.011E+06 | 2.32 | 1.64E+00 |
| | 80 | 20,106 | | | | | 1.081E-02 | 503 | 0.2 | 101 | 1.08E-04 | 0.15 | 1.00 | 6.46 | | | | | | | |
| 5 | | | 500 | 0.1413 | 6.485E-06 | 3.240E-03 | | | | | | | | | 52.0 | 2,166 | 9.95 | 7.6396E-05 | 3.011E+06 | 2.29 | 5.28E+00 |
| | 79 | 19,607 | | | | | 1.405E-02 | 496 | 0.2 | 99 | 1.42E-04 | 0.20 | 1.00 | 4.91 | | | | | | | |
| 6 | | | 493 | 0.1413 | 6.485E-06 | 3.199E-03 | | | | | | | | | 47.1 | 2,660 | 12.21 | 1.8698E-04 | 3.011E+06 | 2.26 | 1.27E+01 |
| | 78 | 19,113 | | | | | 1.725E-02 | 490 | 0.2 | 98 | 1.76E-04 | 0.25 | 1.00 | 3.95 | | | | | | | |
| 7 | | | 487 | 0.1413 | 6.485E-06 | 3.158E-03 | | | | | | | | | 43.1 | 3,147 | 14.45 | 3.8406E-04 | 3.011E+06 | 2.24 | 2.59E+01 |
| | 77 | 18,627 | | | | | 2.041E-02 | 484 | 0.2 | 97 | 2.11E-04 | 0.30 | 1.00 | 3.29 | | | | | | | |
| 8 | | | 481 | 0.1413 | 6.485E-06 | 3.117E-03 | | | | | | | | | 39.8 | 3,627 | 16.65 | 7.0024E-04 | 3.011E+06 | 2.21 | 4.65E+01 |
| | 76 | 18,146 | | | | | 2.352E-02 | 478 | 0.2 | 96 | 2.46E-04 | 0.35 | 1.00 | 2.82 | | | | | | | |
| 9 | | | 474 | 0.1413 | 6.485E-06 | 3.077E-03 | | | | | | | | | 37.0 | 4,102 | 18.83 | 1.1711E-03 | 3.011E+06 | 2.18 | 7.68E+01 |
| | 75 | 17,672 | | | | | 2.660E-02 | 471 | 0.2 | 94 | 2.82E-04 | 0.41 | 1.00 | 2.46 | | | | | | | |
| 10 | | | 468 | 0.1413 | 6.485E-06 | 3.036E-03 | | | | | | | | | 34.5 | 4,570 | 20.98 | 1.8344E-03 | 3.011E+06 | 2.15 | 1.19E+02 |
| | 74 | 17,203 | | | | | 2.964E-02 | 465 | 0.2 | 93 | 3.19E-04 | 0.46 | 1.00 | 2.18 | | | | | | | |
| 11 | | | 462 | 0.1413 | 6.485E-06 | 2.995E-03 | | | | | | | | | 32.4 | 5,031 | 23.10 | 2.7297E-03 | 3.011E+06 | 2.12 | 1.74E+02 |
| | 73 | 16,742 | | | | | 3.263E-02 | 459 | 0.2 | 92 | 3.56E-04 | 0.51 | 1.00 | 1.95 | | | | | | | |
| 12 | | | 456 | 0.1413 | 6.485E-06 | 2.954E-03 | | | | | | | | | 30.4 | 5,487 | 25.19 | 3.8974E-03 | 3.011E+06 | 2.09 | 2.45E+02 |
| | 72 | 16,286 | | | | | 3.558E-02 | 452 | 0.2 | 90 | 3.93E-04 | 0.57 | 1.00 | 1.77 | | | | | | | |
| 13 | | | 449 | 0.1413 | 6.485E-06 | 2.914E-03 | | | | | | | | | 28.6 | 5,936 | 27.26 | 5.3782E-03 | 3.011E+06 | 2.06 | 3.34E+02 |
| | 71 | 15,837 | | | | | 3.850E-02 | 446 | 0.2 | 89 | 4.31E-04 | 0.62 | 1.00 | 1.61 | | | | | | | |
| 14 | | | 443 | 0.1413 | 6.485E-06 | 2.873E-03 | | | | | | | | | 27.0 | 6,379 | 29.29 | 7.2132E-03 | 3.011E+06 | 2.03 | 4.42E+02 |
| | 70 | 15,394 | | | | | 4.137E-02 | 440 | 0.2 | 88 | 4.70E-04 | 0.68 | 1.00 | 1.48 | | | | | | | |
| 15 | | | 437 | 0.1413 | 6.485E-06 | 2.832E-03 | | | | | | | | | 25.6 | 6,816 | 31.29 | 9.4427E-03 | 3.011E+06 | 2.00 | 5.70E+02 |
| | 69 | 14,957 | | | | | 4.420E-02 | 434 | 0.2 | 87 | 5.10E-04 | 0.73 | 1.00 | 1.36 | | | | | | | |
| 16 | | | 430 | 0.1413 | 6.485E-06 | 2.791E-03 | | | | | | | | | 24.2 | 7,246 | 33.27 | 1.2106E-02 | 3.011E+06 | 1.98 | 7.20E+02 |
| | 68 | 14,527 | | | | | 4.699E-02 | 427 | 0.2 | 85 | 5.50E-04 | 0.79 | 1.00 | 1.26 | | | | | | | |
| 17 | | | 424 | 0.1413 | 6.485E-06 | 2.751E-03 | | | | | | | | | 22.9 | 7,670 | 35.22 | 1.5242E-02 | 3.011E+06 | 1.95 | 8.94E+02 |
| | 67 | 14,103 | | | | | 4.974E-02 | 421 | 0.2 | 84 | 5.91E-04 | 0.85 | 1.00 | 1.18 | | | | | | | |
| 18 | | | 418 | 0.1413 | 6.485E-06 | 2.710E-03 | | | | | | | | | 21.8 | 8,088 | 37.14 | 1.8886E-02 | 3.011E+06 | 1.92 | 1.09E+03 |
| | 66 | 13,685 | | | | | 5.245E-02 | 415 | 0.2 | 83 | 6.32E-04 | 0.91 | 1.00 | 1.10 | | | | | | | |
| 19 | | | 412 | 0.1413 | 6.485E-06 | 2.669E-03 | | | | | | | | | 20.7 | 8,500 | 39.03 | 2.3074E-02 | 3.011E+06 | 1.89 | 1.31E+03 |
| | 65 | 13,273 | | | | | 5.512E-02 | 408 | 0.2 | 82 | 6.75E-04 | 0.97 | 1.00 | 1.03 | | | | | | | |
| 20 | | | 405 | 0.1413 | 6.485E-06 | 2.628E-03 | | | | | | | | | 19.6 | 8,905 | 40.89 | 2.7838E-02 | 3.011E+06 | 1.86 | 1.56E+03 |
| | 64 | 12,868 | | | | | 5.775E-02 | 402 | 0.2 | 80 | 7.18E-04 | 1.03 | 1.00 | 0.97 | | | | | | | |
| 21 | | | 399 | 0.1413 | 6.485E-06 | 2.588E-03 | | | | | | | | | 18.7 | 9,304 | 42.72 | 3.3208E-02 | 3.011E+06 | 1.83 | 1.83E+03 |
| | 63 | 12,469 | | | | | 6.034E-02 | 396 | 0.2 | 79 | 7.62E-04 | 1.10 | 1.00 | 0.91 | | | | | | | |
| 22 | | | 393 | 0.1413 | 6.485E-06 | 2.547E-03 | | | | | | | | | 17.8 | 9,697 | 44.52 | 3.9212E-02 | 3.011E+06 | 1.80 | 2.13E+03 |
| | 62 | 12,076 | | | | | 6.289E-02 | 390 | 0.2 | 78 | 8.07E-04 | 1.16 | 1.00 | 0.86 | | | | | | | |
| 23 | | | 386 | 0.1413 | 6.485E-06 | 2.506E-03 | | | | | | | | | 16.9 | 10,083 | 46.30 | 4.5874E-02 | 3.011E+06 | 1.77 | 2.45E+03 |
| | 61 | 11,690 | | | | | 6.539E-02 | 383 | 0.2 | 77 | 8.53E-04 | 1.23 | 1.00 | 0.81 | | | | | | | |
| 24 | | | 380 | 0.1413 | 6.485E-06 | 2.465E-03 | | | | | | | | | 16.1 | 10,463 | 48.04 | 5.3218E-02 | 3.011E+06 | 1.75 | 2.80E+03 |
| | 60 | 11,310 | | | | | 6.786E-02 | 377 | 0.2 | 75 | 9.00E-04 | 1.30 | 1.00 | 0.77 | | | | | | | |
| 25 | | | 374 | 0.1413 | 6.485E-06 | 2.425E-03 | | | | | | | | | 15.3 | 10,837 | 49.76 | 6.1260E-02 | 3.011E+06 | 1.72 | 3.17E+03 |
| | 59 | 10,936 | | | | | 7.028E-02 | 371 | 0.2 | 74 | 9.48E-04 | 1.37 | 1.00 | 0.73 | | | | | | | |
| 26 | | | 368 | 0.1413 | 6.485E-06 | 2.384E-03 | | | | | | | | | 14.6 | 11,205 | 51.44 | 7.0018E-02 | 3.011E+06 | 1.69 | 3.56E+03 |
| | 58 | 10,568 | | | | | 7.267E-02 | 364 | 0.2 | 73 | 9.97E-04 | 1.44 | 1.00 | 0.70 | | | | | | | |
| 27 | | | 361 | 0.1413 | 6.485E-06 | 2.343E-03 | | | | | | | | | 13.9 | 11,566 | 53.10 | 7.9504E-02 | 3.011E+06 | 1.66 | 3.97E+03 |
| | 57 | 10,207 | | | | | 7.501E-02 | 358 | 0.2 | 72 | 1.05E-03 | 1.51 | 1.00 | 0.66 | | | | | | | |
| 28 | | | 355 | 0.1413 | 6.485E-06 | 2.302E-03 | | | | | | | | | 13.2 | 11,921 | 54.73 | 8.9726E-02 | 3.011E+06 | 1.63 | 4.40E+03 |
| | 56 | 9,852 | | | | | 7.731E-02 | 352 | 0.2 | 70 | 1.10E-03 | 1.58 | 1.00 | 0.63 | | | | | | | |
| 29 | | | 349 | 0.1413 | 6.485E-06 | 2.262E-03 | | | | | | | | | 12.6 | 12,270 | 56.33 | 1.0069E-01 | 3.011E+06 | 1.60 | 4.85E+03 |
| | 55 | 9,503 | | | | | 7.957E-02 | 346 | 0.2 | 69 | 1.15E-03 | 1.66 | 1.00 | 0.60 | | | | | | | |
| 30 | | | 342 | 0.1413 | 6.485E-06 | 2.221E-03 | | | | | | | | | 12.0 | 12,612 | 57.91 | 1.1240E-01 | 3.011E+06 | 1.57 | 5.32E+03 |
| | 54 | 9,161 | | | | | 8.179E-02 | 339 | 0.2 | 68 | 1.21E-03 | 1.74 | 1.00 | 0.58 | | | | | | | |
| 31 | | | 336 | 0.1413 | 6.485E-06 | 2.180E-03 | | | | | | | | | 11.4 | 12,948 | 59.45 | 1.2486E-01 | 3.011E+06 | 1.54 | 5.80E+03 |
| | 53 | 8,825 | | | | | 8.397E-02 | 333 | 0.2 | 67 | 1.26E-03 | 1.82 | 1.00 | 0.55 | | | | | | | |
| 32 | | | 330 | 0.1413 | 6.485E-06 | 2.139E-03 | | | | | | | | | 10.9 | 13,278 | 60.96 | 1.3805E-01 | 3.011E+06 | 1.51 | 6.30E+03 |
| | 52 | 8,495 | | | | | 8.611E-02 | 327 | 0.2 | 65 | 1.32E-03 | 1.90 | 1.00 | 0.53 | | | | | | | |
| 33 | | | 324 | 0.1413 | 6.485E-06 | 2.099E-03 | | | | | | | | | 10.3 | 13,602 | 62.45 | 1.5198E-01 | 3.011E+06 | 1.49 | 6.80E+03 |
| | 51 | 8,171 | | | | | 8.821E-02 | 320 | 0.2 | 64 | 1.38E-03 | 1.98 | 1.00 | 0.50 | | | | | | | |
| 34 | | | 317 | 0.1413 | 6.485E-06 | 2.058E-03 | | | | | | | | | 9.8 | 13,919 | 63.91 | 1.6663E-01 | 3.011E+06 | 1.46 | 7.31E+03 |
| | 50 | 7,854 | | | | | 9.027E-02 | 314 | 0.2 | 63 | 1.44E-03 | 2.07 | 1.00 | 0.48 | | | | | | | |
| 35 | | | 311 | 0.1413 | 6.485E-06 | 2.017E-03 | | | | | | | | | 9.3 | 14,230 | 65.34 | 1.8199E-01 | 3.011E+06 | 1.43 | 7.82E+03 |
| | 49 | 7,543 | | | | | 9.229E-02 | 308 | 0.2 | 62 | 1.50E-03 | 2.16 | 1.00 | 0.46 | | | | | | | |
| 36 | | | 305 | 0.1413 | 6.485E-06 | 1.976E-03 | | | | | | | | | 8.9 | 14,535 | 66.73 | 1.9804E-01 | 3.011E+06 | 1.40 | 8.34E+03 |
| | 48 | 7,238 | | | | | 9.426E-02 | 302 | 0.2 | 60 | 1.56E-03 | 2.25 | 1.00 | 0.44 | | | | | | | |
| 37 | | | 298 | 0.1413 | 6.485E-06 | 1.936E-03 | | | | | | | | | 8.4 | 14,833 | 68.10 | 2.1476E-01 | 3.011E+06 | 1.37 | 8.86E+03 |
| | 47 | 6,940 | | | | | 9.620E-02 | 295 | 0.2 | 59 | 1.63E-03 | 2.35 | 1.00 | 0.43 | | | | | | | |
| 38 | | | 292 | 0.1413 | 6.485E-06 | 1.895E-03 | | | | | | | | | 8.0 | 15,125 | 69.45 | 2.3212E-01 | 3.011E+06 | 1.34 | 9.38E+03 |
| | 46 | 6,648 | | | | | 9.809E-02 | 289 | 0.2 | 58 | 1.70E-03 | 2.44 | 1.00 | 0.41 | | | | | | | |
| 39 | | | 286 | 0.1413 | 6.485E-06 | 1.854E-03 | | | | | | | | | 7.6 | 15,411 | 70.76 | 2.5011E-01 | 3.011E+06 | 1.31 | 9.89E+03 |
| | 45 | 6,362 | | | | | 9.995E-02 | 283 | 0.2 | 57 | 1.77E-03 | 2.55 | 1.00 | 0.39 | | | | | | | |
| 40 | | | 280 | 0.1413 | 6.485E-06 | 1.813E-03 | | | | | | | | | 7.2 | 15,691 | 72.04 | 2.6870E-01 | 3.011E+06 | 1.28 | 1.04E+04 |
| | 44 | 6,082 | | | | | 1.018E-01 | 276 | 0.2 | 55 | 1.84E-03 | 2.65 | 1.00 | 0.38 | | | | | | | |
| 41 | | | 273 | 0.1413 | 6.485E-06 | 1.773E-03 | | | | | | | | | 6.8 | 15,964 | 73.30 | 2.8784E-01 | 3.011E+06 | 1.25 | 1.09E+04 |
| | 43 | 5,809 | | | | | 1.035E-01 | 270 | 0.2 | 54 | 1.92E-03 | 2.76 | 1.00 | 0.36 | | | | | | | |
| 42 | | | 267 | 0.1413 | 6.485E-06 | 1.732E-03 | | | | | | | | | 6.5 | 16,231 | 74.52 | 3.0751E-01 | 3.011E+06 | 1.23 | 1.14E+04 |
| | 42 | 5,542 | | | | | 1.053E-01 | 264 | 0.2 | 53 | 1.99E-03 | 2.87 | 1.00 | 0.35 | | | | | | | |

**TABLE A-14 (CONTINUED)**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA A -ONE HALF ACRE AREA - ESTIMATE YEAR 2000 - LANDFILL POROSITY = 0.2**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multilier (e^-kt) | Rn-222 Flux Rate from FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-22 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| 43 | | | 261 | 0.1413 | 6.485E-06 | 1.691E-03 | | | | | | | | | 6.1 | 16,492 | 75.72 | 3.2768E-01 | 3.011E+06 | 1.20 | 1.18E+04 |
| | 41 | 5,281 | | | | | 1.070E-01 | 258 | 0.2 | 52 | 2.08E-03 | 2.99 | 1.00 | 0.33 | | | | | | | |
| 44 | | | 254 | 0.1413 | 6.485E-06 | 1.650E-03 | | | | | | | | | 5.8 | 16,746 | 76.89 | 3.4829E-01 | 3.011E+06 | 1.17 | 1.23E+04 |
| | 40 | 5,027 | | | | | 1.086E-01 | 251 | 0.2 | 50 | 2.16E-03 | 3.11 | 1.00 | 0.32 | | | | | | | |
| 45 | | | 248 | 0.1413 | 6.485E-06 | 1.610E-03 | | | | | | | | | 5.5 | 16,995 | 78.03 | 3.6932E-01 | 3.011E+06 | 1.14 | 1.27E+04 |
| | 39 | 4,778 | | | | | 1.102E-01 | 245 | 0.2 | 49 | 2.25E-03 | 3.24 | 1.00 | 0.31 | | | | | | | |
| 46 | | | 242 | 0.1413 | 6.485E-06 | 1.569E-03 | | | | | | | | | 5.2 | 17,237 | 79.14 | 3.9072E-01 | 3.011E+06 | 1.11 | 1.31E+04 |
| | 38 | 4,536 | | | | | 1.118E-01 | 239 | 0.2 | 48 | 2.34E-03 | 3.37 | 1.00 | 0.30 | | | | | | | |
| 47 | | | 236 | 0.1413 | 6.485E-06 | 1.528E-03 | | | | | | | | | 4.9 | 17,472 | 80.22 | 4.1245E-01 | 3.011E+06 | 1.08 | 1.34E+04 |
| | 37 | 4,301 | | | | | 1.133E-01 | 232 | 0.2 | 46 | 2.44E-03 | 3.51 | 1.00 | 0.28 | | | | | | | |
| 48 | | | 229 | 0.1413 | 6.485E-06 | 1.487E-03 | | | | | | | | | 4.6 | 17,702 | 81.27 | 4.3445E-01 | 3.011E+06 | 1.05 | 1.38E+04 |
| | 36 | 4,072 | | | | | 1.148E-01 | 226 | 0.2 | 45 | 2.54E-03 | 3.65 | 1.00 | 0.27 | | | | | | | |
| 49 | | | 223 | 0.1413 | 6.485E-06 | 1.447E-03 | | | | | | | | | 4.3 | 17,925 | 82.30 | 4.5669E-01 | 3.011E+06 | 1.02 | 1.41E+04 |
| | 35 | 3,848 | | | | | 1.162E-01 | 220 | 0.2 | 44 | 2.64E-03 | 3.81 | 1.00 | 0.26 | | | | | | | |
| 50 | | | 217 | 0.1413 | 6.485E-06 | 1.406E-03 | | | | | | | | | 4.0 | 18,141 | 83.29 | 4.7911E-01 | 3.011E+06 | 1.00 | 1.44E+04 |
| | 34 | 3,632 | | | | | 1.177E-01 | 214 | 0.2 | 43 | 2.75E-03 | 3.97 | 1.00 | 0.25 | | | | | | | |
| 51 | | | 210 | 0.1413 | 6.485E-06 | 1.365E-03 | | | | | | | | | 3.8 | 18,352 | 84.26 | 5.0166E-01 | 3.011E+06 | 0.97 | 1.46E+04 |
| | 33 | 3,421 | | | | | 1.190E-01 | 207 | 0.2 | 41 | 2.87E-03 | 4.13 | 1.00 | 0.24 | | | | | | | |
| 52 | | | 204 | 0.1413 | 6.485E-06 | 1.324E-03 | | | | | | | | | 3.5 | 18,556 | 85.20 | 5.2429E-01 | 3.011E+06 | 0.94 | 1.48E+04 |
| | 32 | 3,217 | | | | | 1.203E-01 | 201 | 0.2 | 40 | 2.99E-03 | 4.31 | 1.00 | 0.23 | | | | | | | |
| 53 | | | 198 | 0.1413 | 6.485E-06 | 1.284E-03 | | | | | | | | | 3.3 | 18,754 | 86.11 | 5.4696E-01 | 3.011E+06 | 0.91 | 1.50E+04 |
| | 31 | 3,019 | | | | | 1.216E-01 | 195 | 0.2 | 39 | 3.12E-03 | 4.50 | 1.00 | 0.22 | | | | | | | |
| 54 | | | 192 | 0.1413 | 6.485E-06 | 1.243E-03 | | | | | | | | | 3.1 | 18,946 | 86.99 | 5.6961E-01 | 3.011E+06 | 0.88 | 1.51E+04 |
| | 30 | 2,827 | | | | | 1.229E-01 | 188 | 0.2 | 38 | 3.26E-03 | 4.69 | 1.00 | 0.21 | | | | | | | |
| 55 | | | 185 | 0.1413 | 6.485E-06 | 1.202E-03 | | | | | | | | | 2.9 | 19,131 | 87.84 | 5.9218E-01 | 3.011E+06 | 0.85 | 1.52E+04 |
| | 29 | 2,642 | | | | | 1.241E-01 | 182 | 0.2 | 36 | 3.40E-03 | 4.90 | 1.00 | 0.20 | | | | | | | |
| 56 | | | 179 | 0.1413 | 6.485E-06 | 1.161E-03 | | | | | | | | | 2.7 | 19,310 | 88.66 | 6.1463E-01 | 3.011E+06 | 0.82 | 1.52E+04 |
| | 28 | 2,463 | | | | | 1.252E-01 | 176 | 0.2 | 35 | 3.56E-03 | 5.13 | 1.00 | 0.20 | | | | | | | |
| 57 | | | 173 | 0.1413 | 6.485E-06 | 1.121E-03 | | | | | | | | | 2.5 | 19,483 | 89.45 | 6.3690E-01 | 3.011E+06 | 0.79 | 1.52E+04 |
| | 27 | 2,290 | | | | | 1.264E-01 | 170 | 0.2 | 34 | 3.72E-03 | 5.36 | 1.00 | 0.19 | | | | | | | |
| 58 | | | 167 | 0.1413 | 6.485E-06 | 1.039E-03 | | | | | | | | | 2.3 | 19,649 | 90.22 | 6.5893E-01 | 3.011E+06 | 0.76 | 1.52E+04 |
| | 26 | 2,124 | | | | | 1.274E-01 | 163 | 0.2 | 33 | 3.90E-03 | 5.61 | 1.00 | 0.18 | | | | | | | |
| 59 | | | 160 | 0.1413 | 6.485E-06 | 9.983E-04 | | | | | | | | | 2.1 | 19,810 | 90.95 | 6.8069E-01 | 3.011E+06 | 0.74 | 1.51E+04 |
| | 25 | 1,964 | | | | | 1.284E-01 | 157 | 0.2 | 31 | 4.09E-03 | 5.88 | 1.00 | 0.17 | | | | | | | |
| 60 | | | 154 | 0.1413 | 6.485E-06 | 9.983E-04 | | | | | | | | | 1.9 | 19,963 | 91.66 | 7.0212E-01 | 3.011E+06 | 0.71 | 1.49E+04 |
| | 24 | 1,810 | | | | | 1.294E-01 | 151 | 0.2 | 30 | 4.29E-03 | 6.18 | 1.00 | 0.16 | | | | | | | |
| 61 | | | 148 | 0.1413 | 6.485E-06 | 9.576E-04 | | | | | | | | | 1.8 | 20,111 | 92.34 | 7.2316E-01 | 3.011E+06 | 0.68 | 1.48E+04 |
| | 23 | 1,662 | | | | | 1.303E-01 | 145 | 0.2 | 29 | 4.51E-03 | 6.49 | 1.00 | 0.15 | | | | | | | |
| 62 | | | 141 | 0.1413 | 6.485E-06 | 9.168E-04 | | | | | | | | | 1.6 | 20,253 | 92.99 | 7.4376E-01 | 3.011E+06 | 0.65 | 1.45E+04 |
| | 22 | 1,521 | | | | | 1.313E-01 | 138 | 0.2 | 28 | 4.75E-03 | 6.84 | 1.00 | 0.15 | | | | | | | |
| 63 | | | 135 | 0.1413 | 6.485E-06 | 8.761E-04 | | | | | | | | | 1.5 | 20,388 | 93.61 | 7.6387E-01 | 3.011E+06 | 0.62 | 1.43E+04 |
| | 21 | 1,385 | | | | | 1.321E-01 | 132 | 0.2 | 26 | 5.01E-03 | 7.21 | 1.00 | 0.14 | | | | | | | |
| 64 | | | 129 | 0.1413 | 6.485E-06 | 8.353E-04 | | | | | | | | | 1.3 | 20,516 | 94.20 | 7.8344E-01 | 3.011E+06 | 0.59 | 1.40E+04 |
| | 20 | 1,257 | | | | | 1.330E-01 | 126 | 0.2 | 25 | 5.29E-03 | 7.62 | 1.00 | 0.13 | | | | | | | |
| 65 | | | 123 | 0.1413 | 6.485E-06 | 7.946E-04 | | | | | | | | | 1.2 | 20,639 | 94.76 | 8.0242E-01 | 3.011E+06 | 0.56 | 1.36E+04 |
| | 19 | 1,134 | | | | | 1.338E-01 | 119 | 0.2 | 24 | 5.60E-03 | 8.07 | 1.00 | 0.12 | | | | | | | |
| 66 | | | 116 | 0.1413 | 6.485E-06 | 7.538E-04 | | | | | | | | | 1.1 | 20,755 | 95.29 | 8.2077E-01 | 3.011E+06 | 0.53 | 1.32E+04 |
| | 18 | 1,018 | | | | | 1.345E-01 | 113 | 0.2 | 23 | 5.95E-03 | 8.56 | 1.00 | 0.12 | | | | | | | |
| 67 | | | 110 | 0.1413 | 6.485E-06 | 7.131E-04 | | | | | | | | | 1.0 | 20,865 | 95.80 | 8.3844E-01 | 3.011E+06 | 0.50 | 1.27E+04 |
| | 17 | 908 | | | | | 1.352E-01 | 107 | 0.2 | 21 | 6.33E-03 | 9.12 | 1.00 | 0.11 | | | | | | | |
| 68 | | | 104 | 0.1413 | 6.485E-06 | 6.724E-04 | | | | | | | | | 0.9 | 20,969 | 96.28 | 8.5538E-01 | 3.011E+06 | 0.48 | 1.23E+04 |
| | 16 | 804 | | | | | 1.359E-01 | 101 | 0.2 | 20 | 6.76E-03 | 9.73 | 1.00 | 0.10 | | | | | | | |
| 69 | | | 97 | 0.1413 | 6.485E-06 | 6.316E-04 | | | | | | | | | 0.8 | 21,066 | 96.72 | 8.7156E-01 | 3.011E+06 | 0.45 | 1.17E+04 |
| | 15 | 707 | | | | | 1.365E-01 | 94 | 0.2 | 19 | 7.24E-03 | 10.43 | 1.00 | 0.10 | | | | | | | |
| 70 | | | 91 | 0.1413 | 6.485E-06 | 5.909E-04 | | | | | | | | | 0.7 | 21,157 | 97.14 | 8.8694E-01 | 3.011E+06 | 0.42 | 1.12E+04 |
| | 14 | 616 | | | | | 1.371E-01 | 88 | 0.2 | 18 | 7.79E-03 | 11.22 | 1.00 | 0.09 | | | | | | | |
| 71 | | | 85 | 0.1413 | 6.485E-06 | 5.501E-04 | | | | | | | | | 0.6 | 21,242 | 97.53 | 9.0147E-01 | 3.011E+06 | 0.39 | 1.06E+04 |
| | 13 | 531 | | | | | 1.377E-01 | 82 | 0.2 | 16 | 8.43E-03 | 12.14 | 1.00 | 0.08 | | | | | | | |
| 72 | | | 79 | 0.1413 | 6.485E-06 | 5.094E-04 | | | | | | | | | 0.5 | 21,321 | 97.89 | 9.1512E-01 | 3.011E+06 | 0.36 | 9.94E+03 |
| | 12 | 452 | | | | | 1.382E-01 | 75 | 0.2 | 15 | 9.16E-03 | 13.20 | 1.00 | 0.08 | | | | | | | |
| 73 | | | 72 | 0.1413 | 6.485E-06 | 4.686E-04 | | | | | | | | | 0.4 | 21,393 | 98.22 | 9.2786E-01 | 3.011E+06 | 0.33 | 9.27E+03 |
| | 11 | 380 | | | | | 1.387E-01 | 69 | 0.2 | 14 | 1.00E-02 | 14.44 | 1.00 | 0.07 | | | | | | | |
| 74 | | | 66 | 0.1413 | 6.485E-06 | 4.279E-04 | | | | | | | | | 0.3 | 21,459 | 98.53 | 9.3965E-01 | 3.011E+06 | 0.30 | 8.57E+03 |
| | 10 | 314 | | | | | 1.391E-01 | 63 | 0.2 | 13 | 1.11E-02 | 15.94 | 1.00 | 0.06 | | | | | | | |
| 75 | | | 60 | 0.1413 | 6.485E-06 | 3.871E-04 | | | | | | | | | 0.3 | 21,519 | 98.80 | 9.5046E-01 | 3.011E+06 | 0.27 | 7.84E+03 |
| | 9 | 254 | | | | | 1.395E-01 | 57 | 0.2 | 11 | 1.23E-02 | 17.76 | 1.00 | 0.06 | | | | | | | |
| 76 | | | 53 | 0.1413 | 6.485E-06 | 3.464E-04 | | | | | | | | | 0.2 | 21,572 | 99.04 | 9.6028E-01 | 3.011E+06 | 0.25 | 7.09E+03 |
| | 8 | 201 | | | | | 1.398E-01 | 50 | 0.2 | 10 | 1.39E-02 | 20.03 | 1.00 | 0.05 | | | | | | | |
| 77 | | | 47 | 0.1413 | 6.485E-06 | 3.056E-04 | | | | | | | | | 0.2 | 21,619 | 99.26 | 9.6906E-01 | 3.011E+06 | 0.22 | 6.31E+03 |
| | 7 | 154 | | | | | 1.401E-01 | 44 | 0.2 | 9 | 1.59E-02 | 22.94 | 1.00 | 0.04 | | | | | | | |
| 78 | | | 41 | 0.1413 | 6.485E-06 | 2.649E-04 | | | | | | | | | 0.1 | 21,660 | 99.45 | 9.7680E-01 | 3.011E+06 | 0.19 | 5.52E+03 |
| | 6 | 113 | | | | | 1.404E-01 | 38 | 0.2 | 8 | 1.86E-02 | 26.81 | 1.00 | 0.04 | | | | | | | |
| 79 | | | 35 | 0.1413 | 6.485E-06 | 2.241E-04 | | | | | | | | | 0.1 | 21,695 | 99.61 | 9.8346E-01 | 3.011E+06 | 0.16 | 4.70E+03 |
| | 5 | 79 | | | | | 1.406E-01 | 31 | 0.2 | 6 | 2.24E-02 | 32.23 | 1.00 | 0.03 | | | | | | | |
| 80 | | | 28 | 0.1413 | 6.485E-06 | 1.834E-04 | | | | | | | | | 0.1 | 21,723 | 99.74 | 9.8905E-01 | 3.011E+06 | 0.13 | 3.87E+03 |
| | 4 | 50 | | | | | 1.408E-01 | 25 | 0.2 | 5 | 2.80E-02 | 40.34 | 1.00 | 0.02 | | | | | | | |
| 81 | | | 22 | 0.1413 | 6.485E-06 | 1.426E-04 | | | | | | | | | 0.0 | 21,745 | 99.84 | 9.9353E-01 | 3.011E+06 | 0.10 | 3.02E+03 |
| | 3 | 28 | | | | | 1.409E-01 | 19 | 0.2 | 4 | 3.74E-02 | 53.84 | 1.00 | 0.02 | | | | | | | |
| 82 | | | 16 | 0.1413 | 6.485E-06 | 1.019E-04 | | | | | | | | | 0.017 | 21,760 | 99.91 | 9.9690E-01 | 3.011E+06 | 0.07 | 2.16E+03 |
| | 2 | 13 | | | | | 1.410E-01 | 13 | 0.2 | 3 | 5.61E-02 | 80.81 | 1.00 | 0.01 | | | | | | | |
| 83 | | | 5 | 0.1413 | 6.485E-06 | 3.565E-05 | | | | | | | | | 0.005 | 21,766 | 99.94 | 9.9915E-01 | 3.011E+06 | 0.03 | 7.59E+02 |
| | 1.5 | 7 | | | | | 1.411E-01 | 9 | 0.2 | 2 | 7.48E-02 | 107.78 | 0.50 | 0.00 | | | | | | | |
| 84 | | | 7 | 0.1413 | 6.485E-06 | 4.584E-05 | | | | | | | | | 0.000 | 21,773 | 99.97 | 1.0000E+00 | 3.011E+06 | 0.03 | 9.77E+02 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Considered | pCi/min | 6.137E+05 |
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Not Considered | pCi/min | 3.011E+06 |
| Reduction in Rn-222 Flux Due to Decay | % | 79.62 |

**TABLE A-15**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA A -ONE HALF ACRE AREA - ESTIMATE YEAR 2025 - LANDFILL POROSITY = 0.2**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multilier (e^-kt) | Rn-222 Flux Rate from FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-22 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| | 83.25 | 21,773 | | | | | 0 | | | | 0 | 0 | | | | | | | | | |
| 1 | | | 131 | 0.0400 | 1.837E-06 | 2.398E-04 | | | | | | | | | 375.0 | 131 | 0.60 | 1.9568E-30 | 3.691E+06 | 0.60 | 4.33E-26 |
| | 83 | 21,642 | | | | | 2.398E-04 | 522 | 0.2 | 104 | 2.30E-06 | 0.00 | 0.25 | 75.51 | | | | | | | |
| 2 | | | 518 | 0.0400 | 1.837E-06 | 9.520E-04 | | | | | | | | | 299.5 | 649 | 2.98 | 1.8758E-24 | 3.691E+06 | 2.38 | 1.65E-19 |
| | 82 | 21,124 | | | | | 1.192E-03 | 515 | 0.2 | 103 | 1.16E-05 | 0.02 | 1.00 | 60.04 | | | | | | | |
| 3 | | | 512 | 0.0400 | 1.837E-06 | 9.405E-04 | | | | | | | | | 239.5 | 1,161 | 5.33 | 1.0702E-19 | 3.691E+06 | 2.35 | 9.29E-15 |
| | 81 | 20,612 | | | | | 2.132E-03 | 509 | 0.2 | 102 | 2.09E-05 | 0.03 | 1.00 | 33.15 | | | | | | | |
| 4 | | | 506 | 0.0400 | 1.837E-06 | 9.289E-04 | | | | | | | | | 206.3 | 1,667 | 7.65 | 4.5239E-17 | 3.691E+06 | 2.32 | 3.88E-12 |
| | 80 | 20,106 | | | | | 3.061E-03 | 503 | 0.2 | 101 | 3.05E-05 | 0.04 | 1.00 | 22.81 | | | | | | | |
| 5 | | | 500 | 0.0400 | 1.837E-06 | 9.174E-04 | | | | | | | | | 183.5 | 2,166 | 9.95 | 2.8980E-15 | 3.691E+06 | 2.29 | 2.45E-10 |
| | 79 | 19,607 | | | | | 3.979E-03 | 496 | 0.2 | 99 | 4.01E-05 | 0.06 | 1.00 | 17.33 | | | | | | | |
| 6 | | | 493 | 0.0400 | 1.837E-06 | 9.058E-04 | | | | | | | | | 166.2 | 2,660 | 12.21 | 6.8350E-14 | 3.691E+06 | 2.26 | 5.71E-09 |
| | 78 | 19,113 | | | | | 4.884E-03 | 490 | 0.2 | 98 | 4.98E-05 | 0.07 | 1.00 | 13.94 | | | | | | | |
| 7 | | | 487 | 0.0400 | 1.837E-06 | 8.943E-04 | | | | | | | | | 152.3 | 3,147 | 14.45 | 8.6829E-13 | 3.691E+06 | 2.24 | 7.17E-08 |
| | 77 | 18,627 | | | | | 5.779E-03 | 484 | 0.2 | 97 | 5.97E-05 | 0.09 | 1.00 | 11.63 | | | | | | | |
| 8 | | | 481 | 0.0400 | 1.837E-06 | 8.828E-04 | | | | | | | | | 140.6 | 3,627 | 16.65 | 7.2408E-12 | 3.691E+06 | 2.21 | 5.90E-07 |
| | 76 | 18,146 | | | | | 6.661E-03 | 478 | 0.2 | 96 | 6.98E-05 | 0.10 | 1.00 | 9.96 | | | | | | | |
| 9 | | | 474 | 0.0400 | 1.837E-06 | 8.712E-04 | | | | | | | | | 130.7 | 4,102 | 18.83 | 4.4511E-11 | 3.691E+06 | 2.18 | 3.58E-06 |
| | 75 | 17,672 | | | | | 7.533E-03 | 471 | 0.2 | 94 | 7.99E-05 | 0.12 | 1.00 | 8.69 | | | | | | | |
| 10 | | | 468 | 0.0400 | 1.837E-06 | 8.597E-04 | | | | | | | | | 122.0 | 4,570 | 20.98 | 2.1715E-10 | 3.691E+06 | 2.15 | 1.72E-05 |
| | 74 | 17,203 | | | | | 8.392E-03 | 465 | 0.2 | 93 | 9.02E-05 | 0.13 | 1.00 | 7.69 | | | | | | | |
| 11 | | | 462 | 0.0400 | 1.837E-06 | 8.481E-04 | | | | | | | | | 114.3 | 5,031 | 23.10 | 8.8368E-10 | 3.691E+06 | 2.12 | 6.92E-05 |
| | 73 | 16,742 | | | | | 9.241E-03 | 459 | 0.2 | 92 | 1.01E-04 | 0.15 | 1.00 | 6.89 | | | | | | | |
| 12 | | | 456 | 0.0400 | 1.837E-06 | 8.366E-04 | | | | | | | | | 107.4 | 5,487 | 25.19 | 3.1075E-09 | 3.691E+06 | 2.09 | 2.40E-04 |
| | 72 | 16,286 | | | | | 1.008E-02 | 452 | 0.2 | 90 | 1.11E-04 | 0.16 | 1.00 | 6.24 | | | | | | | |
| 13 | | | 449 | 0.0400 | 1.837E-06 | 8.251E-04 | | | | | | | | | 101.2 | 5,936 | 27.26 | 9.6900E-09 | 3.691E+06 | 2.06 | 7.38E-04 |
| | 71 | 15,837 | | | | | 1.090E-02 | 446 | 0.2 | 89 | 1.22E-04 | 0.18 | 1.00 | 5.68 | | | | | | | |
| 14 | | | 443 | 0.0400 | 1.837E-06 | 8.135E-04 | | | | | | | | | 95.5 | 6,379 | 29.29 | 2.7323E-08 | 3.691E+06 | 2.03 | 2.05E-03 |
| | 70 | 15,394 | | | | | 1.172E-02 | 440 | 0.2 | 88 | 1.33E-04 | 0.19 | 1.00 | 5.21 | | | | | | | |
| 15 | | | 437 | 0.0400 | 1.837E-06 | 8.020E-04 | | | | | | | | | 90.3 | 6,816 | 31.29 | 7.0722E-08 | 3.691E+06 | 2.00 | 5.23E-03 |
| | 69 | 14,957 | | | | | 1.252E-02 | 434 | 0.2 | 87 | 1.44E-04 | 0.21 | 1.00 | 4.81 | | | | | | | |
| 16 | | | 430 | 0.0400 | 1.837E-06 | 7.904E-04 | | | | | | | | | 85.5 | 7,246 | 33.27 | 1.7006E-07 | 3.691E+06 | 1.98 | 1.24E-02 |
| | 68 | 14,527 | | | | | 1.331E-02 | 427 | 0.2 | 85 | 1.56E-04 | 0.22 | 1.00 | 4.46 | | | | | | | |
| 17 | | | 424 | 0.0400 | 1.837E-06 | 7.789E-04 | | | | | | | | | 81.0 | 7,670 | 35.22 | 3.8356E-07 | 3.691E+06 | 1.95 | 2.76E-02 |
| | 67 | 14,103 | | | | | 1.409E-02 | 421 | 0.2 | 84 | 1.67E-04 | 0.24 | 1.00 | 4.15 | | | | | | | |
| 18 | | | 418 | 0.0400 | 1.837E-06 | 7.674E-04 | | | | | | | | | 76.8 | 8,088 | 37.14 | 8.1773E-07 | 3.691E+06 | 1.92 | 5.79E-02 |
| | 66 | 13,685 | | | | | 1.485E-02 | 415 | 0.2 | 83 | 1.79E-04 | 0.26 | 1.00 | 3.88 | | | | | | | |
| 19 | | | 412 | 0.0400 | 1.837E-06 | 7.558E-04 | | | | | | | | | 73.0 | 8,500 | 39.03 | 1.6587E-06 | 3.691E+06 | 1.89 | 1.16E-01 |
| | 65 | 13,273 | | | | | 1.561E-02 | 408 | 0.2 | 82 | 1.91E-04 | 0.28 | 1.00 | 3.63 | | | | | | | |
| 20 | | | 405 | 0.0400 | 1.837E-06 | 7.443E-04 | | | | | | | | | 69.3 | 8,905 | 40.89 | 3.2181E-06 | 3.691E+06 | 1.86 | 2.21E-01 |
| | 64 | 12,868 | | | | | 1.635E-02 | 402 | 0.2 | 80 | 2.03E-04 | 0.29 | 1.00 | 3.41 | | | | | | | |
| 21 | | | 399 | 0.0400 | 1.837E-06 | 7.328E-04 | | | | | | | | | 65.9 | 9,304 | 42.72 | 5.9996E-06 | 3.691E+06 | 1.83 | 4.06E-01 |
| | 63 | 12,469 | | | | | 1.709E-02 | 396 | 0.2 | 79 | 2.16E-04 | 0.31 | 1.00 | 3.22 | | | | | | | |
| 22 | | | 393 | 0.0400 | 1.837E-06 | 7.212E-04 | | | | | | | | | 62.7 | 9,697 | 44.52 | 1.0789E-05 | 3.691E+06 | 1.80 | 7.18E-01 |
| | 62 | 12,076 | | | | | 1.781E-02 | 390 | 0.2 | 78 | 2.29E-04 | 0.33 | 1.00 | 3.04 | | | | | | | |
| 23 | | | 386 | 0.0400 | 1.837E-06 | 7.097E-04 | | | | | | | | | 59.7 | 10,083 | 46.30 | 1.8779E-05 | 3.691E+06 | 1.77 | 1.23E+00 |
| | 61 | 11,690 | | | | | 1.852E-02 | 383 | 0.2 | 77 | 2.42E-04 | 0.35 | 1.00 | 2.87 | | | | | | | |
| 24 | | | 380 | 0.0400 | 1.837E-06 | 6.981E-04 | | | | | | | | | 56.8 | 10,463 | 48.04 | 3.1723E-05 | 3.691E+06 | 1.75 | 2.04E+00 |
| | 60 | 11,310 | | | | | 1.922E-02 | 377 | 0.2 | 75 | 2.55E-04 | 0.37 | 1.00 | 2.72 | | | | | | | |
| 25 | | | 374 | 0.0400 | 1.837E-06 | 6.866E-04 | | | | | | | | | 54.1 | 10,837 | 49.76 | 5.2146E-05 | 3.691E+06 | 1.72 | 3.30E+00 |
| | 59 | 10,936 | | | | | 1.990E-02 | 371 | 0.2 | 74 | 2.68E-04 | 0.39 | 1.00 | 2.59 | | | | | | | |
| 26 | | | 368 | 0.0400 | 1.837E-06 | 6.751E-04 | | | | | | | | | 51.5 | 11,205 | 51.44 | 8.3589E-05 | 3.691E+06 | 1.69 | 5.21E+00 |
| | 58 | 10,568 | | | | | 2.058E-02 | 364 | 0.2 | 73 | 2.82E-04 | 0.41 | 1.00 | 2.46 | | | | | | | |
| 27 | | | 361 | 0.0400 | 1.837E-06 | 6.635E-04 | | | | | | | | | 49.0 | 11,566 | 53.10 | 1.3091E-04 | 3.691E+06 | 1.66 | 8.02E+00 |
| | 57 | 10,207 | | | | | 2.124E-02 | 358 | 0.2 | 72 | 2.97E-04 | 0.43 | 1.00 | 2.34 | | | | | | | |
| 28 | | | 355 | 0.0400 | 1.837E-06 | 6.520E-04 | | | | | | | | | 46.7 | 11,921 | 54.73 | 2.0067E-04 | 3.691E+06 | 1.63 | 1.21E+01 |
| | 56 | 9,852 | | | | | 2.189E-02 | 352 | 0.2 | 70 | 3.11E-04 | 0.45 | 1.00 | 2.23 | | | | | | | |
| 29 | | | 349 | 0.0400 | 1.837E-06 | 6.404E-04 | | | | | | | | | 44.4 | 12,270 | 56.33 | 3.0152E-04 | 3.691E+06 | 1.60 | 1.78E+01 |
| | 55 | 9,503 | | | | | 2.253E-02 | 346 | 0.2 | 69 | 3.26E-04 | 0.47 | 1.00 | 2.13 | | | | | | | |
| 30 | | | 342 | 0.0400 | 1.837E-06 | 6.289E-04 | | | | | | | | | 42.3 | 12,612 | 57.91 | 4.4467E-04 | 3.691E+06 | 1.57 | 2.58E+01 |
| | 54 | 9,161 | | | | | 2.316E-02 | 339 | 0.2 | 68 | 3.41E-04 | 0.49 | 1.00 | 2.03 | | | | | | | |
| 31 | | | 336 | 0.0400 | 1.837E-06 | 6.174E-04 | | | | | | | | | 40.3 | 12,948 | 59.45 | 6.4446E-04 | 3.691E+06 | 1.54 | 3.67E+01 |
| | 53 | 8,825 | | | | | 2.378E-02 | 333 | 0.2 | 67 | 3.57E-04 | 0.51 | 1.00 | 1.94 | | | | | | | |
| 32 | | | 330 | 0.0400 | 1.837E-06 | 6.058E-04 | | | | | | | | | 38.3 | 13,278 | 60.96 | 9.1890E-04 | 3.691E+06 | 1.51 | 5.14E+01 |
| | 52 | 8,495 | | | | | 2.439E-02 | 327 | 0.2 | 65 | 3.73E-04 | 0.54 | 1.00 | 1.86 | | | | | | | |
| 33 | | | 324 | 0.0400 | 1.837E-06 | 5.943E-04 | | | | | | | | | 36.5 | 13,602 | 62.45 | 1.2903E-03 | 3.691E+06 | 1.49 | 7.08E+01 |
| | 51 | 8,171 | | | | | 2.498E-02 | 320 | 0.2 | 64 | 3.90E-04 | 0.56 | 1.00 | 1.78 | | | | | | | |
| 34 | | | 317 | 0.0400 | 1.837E-06 | 5.827E-04 | | | | | | | | | 34.7 | 13,919 | 63.91 | 1.7857E-03 | 3.691E+06 | 1.46 | 9.60E+01 |
| | 50 | 7,854 | | | | | 2.556E-02 | 314 | 0.2 | 63 | 4.07E-04 | 0.59 | 1.00 | 1.71 | | | | | | | |
| 35 | | | 311 | 0.0400 | 1.837E-06 | 5.712E-04 | | | | | | | | | 33.0 | 14,230 | 65.34 | 2.4379E-03 | 3.691E+06 | 1.43 | 1.28E+02 |
| | 49 | 7,543 | | | | | 2.613E-02 | 308 | 0.2 | 62 | 4.24E-04 | 0.61 | 1.00 | 1.64 | | | | | | | |
| 36 | | | 305 | 0.0400 | 1.837E-06 | 5.597E-04 | | | | | | | | | 31.3 | 14,535 | 66.73 | 3.2857E-03 | 3.691E+06 | 1.40 | 1.70E+02 |
| | 48 | 7,238 | | | | | 2.669E-02 | 302 | 0.2 | 60 | 4.43E-04 | 0.64 | 1.00 | 1.57 | | | | | | | |
| 37 | | | 298 | 0.0400 | 1.837E-06 | 5.481E-04 | | | | | | | | | 29.8 | 14,833 | 68.10 | 4.3746E-03 | 3.691E+06 | 1.37 | 2.21E+02 |
| | 47 | 6,940 | | | | | 2.724E-02 | 295 | 0.2 | 59 | 4.61E-04 | 0.66 | 1.00 | 1.51 | | | | | | | |
| 38 | | | 292 | 0.0400 | 1.837E-06 | 5.366E-04 | | | | | | | | | 28.3 | 15,125 | 69.45 | 5.7571E-03 | 3.691E+06 | 1.34 | 2.85E+02 |
| | 46 | 6,648 | | | | | 2.778E-02 | 289 | 0.2 | 58 | 4.81E-04 | 0.69 | 1.00 | 1.45 | | | | | | | |
| 39 | | | 286 | 0.0400 | 1.837E-06 | 5.250E-04 | | | | | | | | | 26.8 | 15,411 | 70.76 | 7.4934E-03 | 3.691E+06 | 1.31 | 3.63E+02 |
| | 45 | 6,362 | | | | | 2.830E-02 | 283 | 0.2 | 57 | 5.01E-04 | 0.72 | 1.00 | 1.39 | | | | | | | |
| 40 | | | 280 | 0.0400 | 1.837E-06 | 5.135E-04 | | | | | | | | | 25.4 | 15,691 | 72.04 | 9.6513E-03 | 3.691E+06 | 1.28 | 4.57E+02 |
| | 44 | 6,082 | | | | | 2.882E-02 | 276 | 0.2 | 55 | 5.21E-04 | 0.75 | 1.00 | 1.33 | | | | | | | |
| 41 | | | 273 | 0.0400 | 1.837E-06 | 5.020E-04 | | | | | | | | | 24.1 | 15,964 | 73.30 | 1.2307E-02 | 3.691E+06 | 1.25 | 5.70E+02 |
| | 43 | 5,809 | | | | | 2.932E-02 | 270 | 0.2 | 54 | 5.43E-04 | 0.78 | 1.00 | 1.28 | | | | | | | |
| 42 | | | 267 | 0.0400 | 1.837E-06 | 4.904E-04 | | | | | | | | | 22.8 | 16,231 | 74.52 | 1.5543E-02 | 3.691E+06 | 1.23 | 7.03E+02 |
| | 42 | 5,542 | | | | | 2.981E-02 | 264 | 0.2 | 53 | 5.65E-04 | 0.81 | 1.00 | 1.23 | | | | | | | |

**TABLE A-15 (CONTINUED)**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA A -ONE HALF ACRE AREA - ESTIMATE YEAR 2025 - LANDFILL POROSITY = 0.2**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multilier ($e^{-kt}$) | Rn-222 Flux Rate from FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-22 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| 43 | | | 261 | 0.0400 | 1.837E-06 | 4.789E-04 | | | | | | | | | 21.6 | 16,492 | 75.72 | 1.9450E-02 | 3.691E+06 | 1.20 | 8.59E+02 |
| | 41 | 5,281 | | | | | 3.029E-02 | 258 | 0.2 | 52 | 5.88E-04 | 0.85 | 1.00 | 1.18 | | | | | | | |
| 44 | | | 254 | 0.0400 | 1.837E-06 | 4.673E-04 | | | | | | | | | 20.4 | 16,746 | 76.89 | 2.4127E-02 | 3.691E+06 | 1.17 | 1.04E+03 |
| | 40 | 5,027 | | | | | 3.076E-02 | 251 | 0.2 | 50 | 6.12E-04 | 0.88 | 1.00 | 1.13 | | | | | | | |
| 45 | | | 248 | 0.0400 | 1.837E-06 | 4.558E-04 | | | | | | | | | 19.3 | 16,995 | 78.03 | 2.9676E-02 | 3.691E+06 | 1.14 | 1.25E+03 |
| | 39 | 4,778 | | | | | 3.121E-02 | 245 | 0.2 | 49 | 6.37E-04 | 0.92 | 1.00 | 1.09 | | | | | | | |
| 46 | | | 242 | 0.0400 | 1.837E-06 | 4.443E-04 | | | | | | | | | 18.2 | 17,237 | 79.14 | 3.6206E-02 | 3.691E+06 | 1.11 | 1.48E+03 |
| | 38 | 4,536 | | | | | 3.166E-02 | 239 | 0.2 | 48 | 6.63E-04 | 0.95 | 1.00 | 1.05 | | | | | | | |
| 47 | | | 236 | 0.0400 | 1.837E-06 | 4.327E-04 | | | | | | | | | 17.1 | 17,472 | 80.22 | 4.3829E-02 | 3.691E+06 | 1.08 | 1.75E+03 |
| | 37 | 4,301 | | | | | 3.209E-02 | 232 | 0.2 | 46 | 6.90E-04 | 0.99 | 1.00 | 1.01 | | | | | | | |
| 48 | | | 229 | 0.0400 | 1.837E-06 | 4.212E-04 | | | | | | | | | 16.1 | 17,702 | 81.27 | 5.2659E-02 | 3.691E+06 | 1.05 | 2.05E+03 |
| | 36 | 4,072 | | | | | 3.251E-02 | 226 | 0.2 | 45 | 7.19E-04 | 1.03 | 1.00 | 0.97 | | | | | | | |
| 49 | | | 223 | 0.0400 | 1.837E-06 | 4.096E-04 | | | | | | | | | 15.2 | 17,925 | 82.30 | 6.2809E-02 | 3.691E+06 | 1.02 | 2.37E+03 |
| | 35 | 3,848 | | | | | 3.292E-02 | 220 | 0.2 | 44 | 7.48E-04 | 1.08 | 1.00 | 0.93 | | | | | | | |
| 50 | | | 217 | 0.0400 | 1.837E-06 | 3.981E-04 | | | | | | | | | 14.2 | 18,141 | 83.29 | 7.4391E-02 | 3.691E+06 | 1.00 | 2.73E+03 |
| | 34 | 3,632 | | | | | 3.332E-02 | 214 | 0.2 | 43 | 7.80E-04 | 1.12 | 1.00 | 0.89 | | | | | | | |
| 51 | | | 210 | 0.0400 | 1.837E-06 | 3.866E-04 | | | | | | | | | 13.4 | 18,352 | 84.26 | 8.7512E-02 | 3.691E+06 | 0.97 | 3.12E+03 |
| | 33 | 3,421 | | | | | 3.370E-02 | 207 | 0.2 | 41 | 8.13E-04 | 1.17 | 1.00 | 0.85 | | | | | | | |
| 52 | | | 204 | 0.0400 | 1.837E-06 | 3.750E-04 | | | | | | | | | 12.5 | 18,556 | 85.20 | 1.0227E-01 | 3.691E+06 | 0.94 | 3.54E+03 |
| | 32 | 3,217 | | | | | 3.408E-02 | 201 | 0.2 | 40 | 8.47E-04 | 1.22 | 1.00 | 0.82 | | | | | | | |
| 53 | | | 198 | 0.0400 | 1.837E-06 | 3.635E-04 | | | | | | | | | 11.7 | 18,754 | 86.11 | 1.1876E-01 | 3.691E+06 | 0.91 | 3.98E+03 |
| | 31 | 3,019 | | | | | 3.444E-02 | 195 | 0.2 | 39 | 8.84E-04 | 1.27 | 1.00 | 0.79 | | | | | | | |
| 54 | | | 192 | 0.0400 | 1.837E-06 | 3.520E-04 | | | | | | | | | 10.9 | 18,946 | 86.99 | 1.3705E-01 | 3.691E+06 | 0.88 | 4.45E+03 |
| | 30 | 2,827 | | | | | 3.479E-02 | 188 | 0.2 | 38 | 9.23E-04 | 1.33 | 1.00 | 0.75 | | | | | | | |
| 55 | | | 185 | 0.0400 | 1.837E-06 | 3.404E-04 | | | | | | | | | 10.1 | 19,131 | 87.84 | 1.5721E-01 | 3.691E+06 | 0.85 | 4.94E+03 |
| | 29 | 2,642 | | | | | 3.513E-02 | 182 | 0.2 | 36 | 9.64E-04 | 1.39 | 1.00 | 0.72 | | | | | | | |
| 56 | | | 179 | 0.0400 | 1.837E-06 | 3.289E-04 | | | | | | | | | 9.4 | 19,310 | 88.66 | 1.7928E-01 | 3.691E+06 | 0.82 | 5.44E+03 |
| | 28 | 2,463 | | | | | 3.546E-02 | 176 | 0.2 | 35 | 1.01E-03 | 1.45 | 1.00 | 0.69 | | | | | | | |
| 57 | | | 173 | 0.0400 | 1.837E-06 | 3.173E-04 | | | | | | | | | 8.7 | 19,483 | 89.45 | 2.0329E-01 | 3.691E+06 | 0.79 | 5.95E+03 |
| | 27 | 2,290 | | | | | 3.578E-02 | 170 | 0.2 | 34 | 1.05E-03 | 1.52 | 1.00 | 0.66 | | | | | | | |
| 58 | | | 167 | 0.0400 | 1.837E-06 | 2.943E-04 | | | | | | | | | 8.1 | 19,649 | 90.22 | 2.2924E-01 | 3.691E+06 | 0.76 | 6.47E+03 |
| | 26 | 2,124 | | | | | 3.608E-02 | 163 | 0.2 | 33 | 1.10E-03 | 1.59 | 1.00 | 0.63 | | | | | | | |
| 59 | | | 160 | 0.0400 | 1.837E-06 | 2.827E-04 | | | | | | | | | 7.4 | 19,810 | 90.95 | 2.5710E-01 | 3.691E+06 | 0.74 | 6.98E+03 |
| | 25 | 1,964 | | | | | 3.636E-02 | 157 | 0.2 | 31 | 1.16E-03 | 1.67 | 1.00 | 0.60 | | | | | | | |
| 60 | | | 154 | 0.0400 | 1.837E-06 | 2.827E-04 | | | | | | | | | 6.8 | 19,963 | 91.66 | 2.8684E-01 | 3.691E+06 | 0.71 | 7.48E+03 |
| | 24 | 1,810 | | | | | 3.664E-02 | 151 | 0.2 | 30 | 1.21E-03 | 1.75 | 1.00 | 0.57 | | | | | | | |
| 61 | | | 148 | 0.0400 | 1.837E-06 | 2.712E-04 | | | | | | | | | 6.3 | 20,111 | 92.34 | 3.1836E-01 | 3.691E+06 | 0.68 | 7.97E+03 |
| | 23 | 1,662 | | | | | 3.691E-02 | 145 | 0.2 | 29 | 1.28E-03 | 1.84 | 1.00 | 0.54 | | | | | | | |
| 62 | | | 141 | 0.0400 | 1.837E-06 | 2.596E-04 | | | | | | | | | 5.7 | 20,253 | 92.99 | 3.5156E-01 | 3.691E+06 | 0.65 | 8.42E+03 |
| | 22 | 1,521 | | | | | 3.717E-02 | 138 | 0.2 | 28 | 1.34E-03 | 1.94 | 1.00 | 0.52 | | | | | | | |
| 63 | | | 135 | 0.0400 | 1.837E-06 | 2.481E-04 | | | | | | | | | 5.2 | 20,388 | 93.61 | 3.8629E-01 | 3.691E+06 | 0.62 | 8.84E+03 |
| | 21 | 1,385 | | | | | 3.742E-02 | 132 | 0.2 | 26 | 1.42E-03 | 2.04 | 1.00 | 0.49 | | | | | | | |
| 64 | | | 129 | 0.0400 | 1.837E-06 | 2.366E-04 | | | | | | | | | 4.7 | 20,516 | 94.20 | 4.2238E-01 | 3.691E+06 | 0.59 | 9.22E+03 |
| | 20 | 1,257 | | | | | 3.766E-02 | 126 | 0.2 | 25 | 1.50E-03 | 2.16 | 1.00 | 0.46 | | | | | | | |
| 65 | | | 123 | 0.0400 | 1.837E-06 | 2.250E-04 | | | | | | | | | 4.3 | 20,639 | 94.76 | 4.5964E-01 | 3.691E+06 | 0.56 | 9.54E+03 |
| | 19 | 1,134 | | | | | 3.788E-02 | 119 | 0.2 | 24 | 1.59E-03 | 2.28 | 1.00 | 0.44 | | | | | | | |
| 66 | | | 116 | 0.0400 | 1.837E-06 | 2.135E-04 | | | | | | | | | 3.8 | 20,755 | 95.29 | 4.9784E-01 | 3.691E+06 | 0.53 | 9.81E+03 |
| | 18 | 1,018 | | | | | 3.809E-02 | 113 | 0.2 | 23 | 1.68E-03 | 2.43 | 1.00 | 0.41 | | | | | | | |
| 67 | | | 110 | 0.0400 | 1.837E-06 | 2.019E-04 | | | | | | | | | 3.4 | 20,865 | 95.80 | 5.3673E-01 | 3.691E+06 | 0.50 | 1.00E+04 |
| | 17 | 908 | | | | | 3.830E-02 | 107 | 0.2 | 21 | 1.79E-03 | 2.58 | 1.00 | 0.39 | | | | | | | |
| 68 | | | 104 | 0.0400 | 1.837E-06 | 1.904E-04 | | | | | | | | | 3.0 | 20,969 | 96.28 | 5.7602E-01 | 3.691E+06 | 0.48 | 1.01E+04 |
| | 16 | 804 | | | | | 3.849E-02 | 101 | 0.2 | 20 | 1.91E-03 | 2.76 | 1.00 | 0.36 | | | | | | | |
| 69 | | | 97 | 0.0400 | 1.837E-06 | 1.789E-04 | | | | | | | | | 2.7 | 21,066 | 96.72 | 6.1543E-01 | 3.691E+06 | 0.45 | 1.02E+04 |
| | 15 | 707 | | | | | 3.867E-02 | 94 | 0.2 | 19 | 2.05E-03 | 2.95 | 1.00 | 0.34 | | | | | | | |
| 70 | | | 91 | 0.0400 | 1.837E-06 | 1.673E-04 | | | | | | | | | 2.3 | 21,157 | 97.14 | 6.5463E-01 | 3.691E+06 | 0.42 | 1.01E+04 |
| | 14 | 616 | | | | | 3.883E-02 | 88 | 0.2 | 18 | 2.21E-03 | 3.18 | 1.00 | 0.31 | | | | | | | |
| 71 | | | 85 | 0.0400 | 1.837E-06 | 1.558E-04 | | | | | | | | | 2.0 | 21,242 | 97.53 | 6.9330E-01 | 3.691E+06 | 0.39 | 9.97E+03 |
| | 13 | 531 | | | | | 3.899E-02 | 82 | 0.2 | 16 | 2.39E-03 | 3.44 | 1.00 | 0.29 | | | | | | | |
| 72 | | | 79 | 0.0400 | 1.837E-06 | 1.442E-04 | | | | | | | | | 1.7 | 21,321 | 97.89 | 7.3109E-01 | 3.691E+06 | 0.36 | 9.73E+03 |
| | 12 | 452 | | | | | 3.913E-02 | 75 | 0.2 | 15 | 2.60E-03 | 3.74 | 1.00 | 0.27 | | | | | | | |
| 73 | | | 72 | 0.0400 | 1.837E-06 | 1.327E-04 | | | | | | | | | 1.4 | 21,393 | 98.22 | 7.6765E-01 | 3.691E+06 | 0.33 | 9.40E+03 |
| | 11 | 380 | | | | | 3.927E-02 | 69 | 0.2 | 14 | 2.84E-03 | 4.09 | 1.00 | 0.24 | | | | | | | |
| 74 | | | 66 | 0.0400 | 1.837E-06 | 1.212E-04 | | | | | | | | | 1.2 | 21,459 | 98.53 | 8.0266E-01 | 3.691E+06 | 0.30 | 8.97E+03 |
| | 10 | 314 | | | | | 3.939E-02 | 63 | 0.2 | 13 | 3.13E-03 | 4.51 | 1.00 | 0.22 | | | | | | | |
| 75 | | | 60 | 0.0400 | 1.837E-06 | 1.096E-04 | | | | | | | | | 1.0 | 21,519 | 98.80 | 8.3576E-01 | 3.691E+06 | 0.27 | 8.45E+03 |
| | 9 | 254 | | | | | 3.950E-02 | 57 | 0.2 | 11 | 3.49E-03 | 5.03 | 1.00 | 0.20 | | | | | | | |
| 76 | | | 53 | 0.0400 | 1.837E-06 | 9.808E-05 | | | | | | | | | 0.8 | 21,572 | 99.04 | 8.6663E-01 | 3.691E+06 | 0.25 | 7.84E+03 |
| | 8 | 201 | | | | | 3.959E-02 | 50 | 0.2 | 10 | 3.94E-03 | 5.67 | 1.00 | 0.18 | | | | | | | |
| 77 | | | 47 | 0.0400 | 1.837E-06 | 8.655E-05 | | | | | | | | | 0.6 | 21,619 | 99.26 | 8.9496E-01 | 3.691E+06 | 0.22 | 7.15E+03 |
| | 7 | 154 | | | | | 3.968E-02 | 44 | 0.2 | 9 | 4.51E-03 | 6.50 | 1.00 | 0.15 | | | | | | | |
| 78 | | | 41 | 0.0400 | 1.837E-06 | 7.501E-05 | | | | | | | | | 0.5 | 21,660 | 99.45 | 9.2044E-01 | 3.691E+06 | 0.19 | 6.37E+03 |
| | 6 | 113 | | | | | 3.976E-02 | 38 | 0.2 | 8 | 5.27E-03 | 7.59 | 1.00 | 0.13 | | | | | | | |
| 79 | | | 35 | 0.0400 | 1.837E-06 | 6.347E-05 | | | | | | | | | 0.3 | 21,695 | 99.61 | 9.4282E-01 | 3.691E+06 | 0.16 | 5.52E+03 |
| | 5 | 79 | | | | | 3.982E-02 | 31 | 0.2 | 6 | 6.34E-03 | 9.13 | 1.00 | 0.11 | | | | | | | |
| 80 | | | 28 | 0.0400 | 1.837E-06 | 5.193E-05 | | | | | | | | | 0.2 | 21,723 | 99.74 | 9.6186E-01 | 3.691E+06 | 0.13 | 4.61E+03 |
| | 4 | 50 | | | | | 3.987E-02 | 25 | 0.2 | 5 | 7.93E-03 | 11.42 | 1.00 | 0.09 | | | | | | | |
| 81 | | | 22 | 0.0400 | 1.837E-06 | 4.039E-05 | | | | | | | | | 0.1 | 21,745 | 99.84 | 9.7734E-01 | 3.691E+06 | 0.10 | 3.64E+03 |
| | 3 | 28 | | | | | 3.991E-02 | 19 | 0.2 | 4 | 1.06E-02 | 15.25 | 1.00 | 0.07 | | | | | | | |
| 82 | | | 16 | 0.0400 | 1.837E-06 | 2.885E-05 | | | | | | | | | 0.060 | 21,760 | 99.91 | 9.8910E-01 | 3.691E+06 | 0.07 | 2.63E+03 |
| | 2 | 13 | | | | | 3.994E-02 | 13 | 0.2 | 3 | 1.59E-02 | 22.88 | 1.00 | 0.04 | | | | | | | |
| 83 | | | 5 | 0.0400 | 1.837E-06 | 1.010E-05 | | | | | | | | | 0.016 | 21,766 | 99.94 | 9.9702E-01 | 3.691E+06 | 0.03 | 9.29E+02 |
| | 1.5 | 7 | | | | | 3.995E-02 | 9 | 0.2 | 2 | 2.12E-02 | 30.52 | 0.50 | 0.02 | | | | | | | |
| 84 | | | 7 | 0.0400 | 1.837E-06 | 1.298E-05 | | | | | | | | | 0.000 | 21,773 | 99.97 | 1.0000E+00 | 3.691E+06 | 0.03 | 1.20E+03 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Considered | pCi/min | 2.497E+05 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Not Considered | pCi/min | 3.691E+06 |

| | | |
|---|---|---|
| Reduction in Rn-222 Flux Due to Decay | % | 93.23 |

**TABLE A-16**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA A -ONE HALF ACRE AREA - ESTIMATE YEAR 2100 - LANDFILL POROSITY = 0.2**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multilier (e^-kt) | Rn-222 Flux Rate from FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-22 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| | 83.25 | 21,773 | | | | | 0 | | | | 0 | 0 | | | | | | | | | |
| 1 | | | 131 | 0.0013 | 5.739E-08 | 7.494E-06 | | | | | | | | | 12001.1 | 131 | 0.60 | 0.0000E+00 | 5.196E+06 | 0.60 | 0.00E+00 |
| | 83 | 21,642 | | | | | 7.494E-06 | 522 | 0.2 | 104 | 7.18E-08 | 0.00 | 0.25 | 2416.36 | | | | | | | |
| 2 | | | 518 | 0.0013 | 5.739E-08 | 2.975E-05 | | | | | | | | | 9584.7 | 649 | 2.98 | 0.0000E+00 | 5.196E+06 | 2.38 | 0.00E+00 |
| | 82 | 21,124 | | | | | 3.724E-05 | 515 | 0.2 | 103 | 3.61E-07 | 0.00 | 1.00 | 1921.36 | | | | | | | |
| 3 | | | 512 | 0.0013 | 5.739E-08 | 2.939E-05 | | | | | | | | | 7663.4 | 1,161 | 5.33 | 0.0000E+00 | 5.196E+06 | 2.35 | 0.00E+00 |
| | 81 | 20,612 | | | | | 6.663E-05 | 509 | 0.2 | 102 | 6.55E-07 | 0.00 | 1.00 | 1060.82 | | | | | | | |
| 4 | | | 506 | 0.0013 | 5.739E-08 | 2.903E-05 | | | | | | | | | 6602.6 | 1,667 | 7.65 | 0.0000E+00 | 5.196E+06 | 2.32 | 0.00E+00 |
| | 80 | 20,106 | | | | | 9.566E-05 | 503 | 0.2 | 101 | 9.52E-07 | 0.00 | 1.00 | 729.79 | | | | | | | |
| 5 | | | 500 | 0.0013 | 5.739E-08 | 2.867E-05 | | | | | | | | | 5872.8 | 2,166 | 9.95 | 0.0000E+00 | 5.196E+06 | 2.29 | 0.00E+00 |
| | 79 | 19,607 | | | | | 1.243E-04 | 496 | 0.2 | 99 | 1.25E-06 | 0.00 | 1.00 | 554.50 | | | | | | | |
| 6 | | | 493 | 0.0013 | 5.739E-08 | 2.831E-05 | | | | | | | | | 5318.3 | 2,660 | 12.21 | 0.0000E+00 | 5.196E+06 | 2.26 | 0.00E+00 |
| | 78 | 19,113 | | | | | 1.526E-04 | 490 | 0.2 | 98 | 1.56E-06 | 0.00 | 1.00 | 445.94 | | | | | | | |
| 7 | | | 487 | 0.0013 | 5.739E-08 | 2.795E-05 | | | | | | | | | 4872.3 | 3,147 | 14.45 | 0.0000E+00 | 5.196E+06 | 2.24 | 0.00E+00 |
| | 77 | 18,627 | | | | | 1.806E-04 | 484 | 0.2 | 97 | 1.87E-06 | 0.00 | 1.00 | 372.10 | | | | | | | |
| 8 | | | 481 | 0.0013 | 5.739E-08 | 2.759E-05 | | | | | | | | | 4500.2 | 3,627 | 16.65 | 0.0000E+00 | 5.196E+06 | 2.21 | 0.00E+00 |
| | 76 | 18,146 | | | | | 2.082E-04 | 478 | 0.2 | 96 | 2.18E-06 | 0.00 | 1.00 | 318.60 | | | | | | | |
| 9 | | | 474 | 0.0013 | 5.739E-08 | 2.723E-05 | | | | | | | | | 4181.6 | 4,102 | 18.83 | 0.0000E+00 | 5.196E+06 | 2.18 | 0.00E+00 |
| | 75 | 17,672 | | | | | 2.354E-04 | 471 | 0.2 | 94 | 2.50E-06 | 0.00 | 1.00 | 278.04 | | | | | | | |
| 10 | | | 468 | 0.0013 | 5.739E-08 | 2.687E-05 | | | | | | | | | 3903.6 | 4,570 | 20.98 | 0.0000E+00 | 5.196E+06 | 2.15 | 6.67E-305 |
| | 74 | 17,203 | | | | | 2.623E-04 | 465 | 0.2 | 93 | 2.82E-06 | 0.00 | 1.00 | 246.23 | | | | | | | |
| 11 | | | 462 | 0.0013 | 5.739E-08 | 2.650E-05 | | | | | | | | | 3657.4 | 5,031 | 23.10 | 1.9119E-290 | 5.196E+06 | 2.12 | 2.11E-285 |
| | 73 | 16,742 | | | | | 2.888E-04 | 459 | 0.2 | 92 | 3.15E-06 | 0.00 | 1.00 | 220.61 | | | | | | | |
| 12 | | | 456 | 0.0013 | 5.739E-08 | 2.614E-05 | | | | | | | | | 3436.7 | 5,487 | 25.19 | 5.7163E-273 | 5.196E+06 | 2.09 | 6.21E-268 |
| | 72 | 16,286 | | | | | 3.149E-04 | 452 | 0.2 | 90 | 3.48E-06 | 0.01 | 1.00 | 199.52 | | | | | | | |
| 13 | | | 449 | 0.0013 | 5.739E-08 | 2.578E-05 | | | | | | | | | 3237.2 | 5,936 | 27.26 | 3.6511E-257 | 5.196E+06 | 2.06 | 3.91E-252 |
| | 71 | 15,837 | | | | | 3.407E-04 | 446 | 0.2 | 89 | 3.82E-06 | 0.01 | 1.00 | 181.86 | | | | | | | |
| 14 | | | 443 | 0.0013 | 5.739E-08 | 2.542E-05 | | | | | | | | | 3055.4 | 6,379 | 29.29 | 9.3044E-243 | 5.196E+06 | 2.03 | 9.83E-238 |
| | 70 | 15,394 | | | | | 3.661E-04 | 440 | 0.2 | 88 | 4.16E-06 | 0.01 | 1.00 | 166.85 | | | | | | | |
| 15 | | | 437 | 0.0013 | 5.739E-08 | 2.506E-05 | | | | | | | | | 2888.5 | 6,816 | 31.29 | 1.5339E-229 | 5.196E+06 | 2.00 | 1.60E-224 |
| | 69 | 14,957 | | | | | 3.912E-04 | 434 | 0.2 | 87 | 4.51E-06 | 0.01 | 1.00 | 153.93 | | | | | | | |
| 16 | | | 430 | 0.0013 | 5.739E-08 | 2.470E-05 | | | | | | | | | 2734.6 | 7,246 | 33.27 | 2.3954E-217 | 5.196E+06 | 1.98 | 2.46E-212 |
| | 68 | 14,527 | | | | | 4.159E-04 | 427 | 0.2 | 85 | 4.87E-06 | 0.01 | 1.00 | 142.69 | | | | | | | |
| 17 | | | 424 | 0.0013 | 5.739E-08 | 2.434E-05 | | | | | | | | | 2591.9 | 7,670 | 35.22 | 4.8139E-206 | 5.196E+06 | 1.95 | 4.87E-201 |
| | 67 | 14,103 | | | | | 4.402E-04 | 421 | 0.2 | 84 | 5.23E-06 | 0.01 | 1.00 | 132.82 | | | | | | | |
| 18 | | | 418 | 0.0013 | 5.739E-08 | 2.398E-05 | | | | | | | | | 2459.1 | 8,088 | 37.14 | 1.5981E-195 | 5.196E+06 | 1.92 | 1.59E-190 |
| | 66 | 13,685 | | | | | 4.642E-04 | 415 | 0.2 | 83 | 5.60E-06 | 0.01 | 1.00 | 124.08 | | | | | | | |
| 19 | | | 412 | 0.0013 | 5.739E-08 | 2.362E-05 | | | | | | | | | 2335.0 | 8,500 | 39.03 | 1.0771E-185 | 5.196E+06 | 1.89 | 1.06E-180 |
| | 65 | 13,273 | | | | | 4.878E-04 | 408 | 0.2 | 82 | 5.97E-06 | 0.01 | 1.00 | 116.28 | | | | | | | |
| 20 | | | 405 | 0.0013 | 5.739E-08 | 2.326E-05 | | | | | | | | | 2218.7 | 8,905 | 40.89 | 1.7513E-176 | 5.196E+06 | 1.86 | 1.69E-171 |
| | 64 | 12,868 | | | | | 5.111E-04 | 402 | 0.2 | 80 | 6.35E-06 | 0.01 | 1.00 | 109.28 | | | | | | | |
| 21 | | | 399 | 0.0013 | 5.739E-08 | 2.290E-05 | | | | | | | | | 2109.4 | 9,304 | 42.72 | 7.9428E-168 | 5.196E+06 | 1.83 | 7.56E-163 |
| | 63 | 12,469 | | | | | 5.340E-04 | 396 | 0.2 | 79 | 6.74E-06 | 0.01 | 1.00 | 102.96 | | | | | | | |
| 22 | | | 393 | 0.0013 | 5.739E-08 | 2.254E-05 | | | | | | | | | 2006.5 | 9,697 | 44.52 | 1.1374E-159 | 5.196E+06 | 1.80 | 1.07E-154 |
| | 62 | 12,076 | | | | | 5.565E-04 | 390 | 0.2 | 78 | 7.14E-06 | 0.01 | 1.00 | 97.22 | | | | | | | |
| 23 | | | 386 | 0.0013 | 5.739E-08 | 2.218E-05 | | | | | | | | | 1909.3 | 10,083 | 46.30 | 5.7193E-152 | 5.196E+06 | 1.77 | 5.27E-147 |
| | 61 | 11,690 | | | | | 5.787E-04 | 383 | 0.2 | 77 | 7.55E-06 | 0.01 | 1.00 | 91.99 | | | | | | | |
| 24 | | | 380 | 0.0013 | 5.739E-08 | 2.182E-05 | | | | | | | | | 1817.3 | 10,463 | 48.04 | 1.1071E-144 | 5.196E+06 | 1.75 | 1.00E-139 |
| | 60 | 11,310 | | | | | 6.005E-04 | 377 | 0.2 | 75 | 7.96E-06 | 0.01 | 1.00 | 87.19 | | | | | | | |
| 25 | | | 374 | 0.0013 | 5.739E-08 | 2.146E-05 | | | | | | | | | 1730.1 | 10,837 | 49.76 | 8.9361E-138 | 5.196E+06 | 1.72 | 7.97E-133 |
| | 59 | 10,936 | | | | | 6.220E-04 | 371 | 0.2 | 74 | 8.39E-06 | 0.01 | 1.00 | 82.78 | | | | | | | |
| 26 | | | 368 | 0.0013 | 5.739E-08 | 2.110E-05 | | | | | | | | | 1647.3 | 11,205 | 51.44 | 3.2263E-131 | 5.196E+06 | 1.69 | 2.83E-126 |
| | 58 | 10,568 | | | | | 6.431E-04 | 364 | 0.2 | 73 | 8.82E-06 | 0.01 | 1.00 | 78.71 | | | | | | | |
| 27 | | | 361 | 0.0013 | 5.739E-08 | 2.073E-05 | | | | | | | | | 1568.6 | 11,566 | 53.10 | 5.5419E-125 | 5.196E+06 | 1.66 | 4.78E-120 |
| | 57 | 10,207 | | | | | 6.638E-04 | 358 | 0.2 | 72 | 9.27E-06 | 0.01 | 1.00 | 74.94 | | | | | | | |
| 28 | | | 355 | 0.0013 | 5.739E-08 | 2.037E-05 | | | | | | | | | 1493.7 | 11,921 | 54.73 | 4.7830E-119 | 5.196E+06 | 1.63 | 4.05E-114 |
| | 56 | 9,852 | | | | | 6.842E-04 | 352 | 0.2 | 70 | 9.72E-06 | 0.01 | 1.00 | 71.43 | | | | | | | |
| 29 | | | 349 | 0.0013 | 5.739E-08 | 2.001E-05 | | | | | | | | | 1422.2 | 12,270 | 56.33 | 2.1774E-113 | 5.196E+06 | 1.60 | 1.81E-108 |
| | 55 | 9,503 | | | | | 7.042E-04 | 346 | 0.2 | 69 | 1.02E-05 | 0.01 | 1.00 | 68.16 | | | | | | | |
| 30 | | | 342 | 0.0013 | 5.739E-08 | 1.965E-05 | | | | | | | | | 1354.1 | 12,612 | 57.91 | 5.4599E-108 | 5.196E+06 | 1.57 | 4.46E-103 |
| | 54 | 9,161 | | | | | 7.238E-04 | 339 | 0.2 | 68 | 1.07E-05 | 0.02 | 1.00 | 65.10 | | | | | | | |
| 31 | | | 336 | 0.0013 | 5.739E-08 | 1.929E-05 | | | | | | | | | 1289.0 | 12,948 | 59.45 | 7.8404E-103 | 5.196E+06 | 1.54 | 6.29E-98 |
| | 53 | 8,825 | | | | | 7.431E-04 | 333 | 0.2 | 67 | 1.12E-05 | 0.02 | 1.00 | 62.24 | | | | | | | |
| 32 | | | 330 | 0.0013 | 5.739E-08 | 1.893E-05 | | | | | | | | | 1226.7 | 13,278 | 60.96 | 6.6771E-98 | 5.196E+06 | 1.51 | 5.25E-93 |
| | 52 | 8,495 | | | | | 7.621E-04 | 327 | 0.2 | 65 | 1.17E-05 | 0.02 | 1.00 | 59.55 | | | | | | | |
| 33 | | | 324 | 0.0013 | 5.739E-08 | 1.857E-05 | | | | | | | | | 1167.2 | 13,602 | 62.45 | 3.4805E-93 | 5.196E+06 | 1.49 | 2.69E-88 |
| | 51 | 8,171 | | | | | 7.806E-04 | 320 | 0.2 | 64 | 1.22E-05 | 0.02 | 1.00 | 57.01 | | | | | | | |
| 34 | | | 317 | 0.0013 | 5.739E-08 | 1.821E-05 | | | | | | | | | 1110.2 | 13,919 | 63.91 | 1.1427E-88 | 5.196E+06 | 1.46 | 8.65E-84 |
| | 50 | 7,854 | | | | | 7.988E-04 | 314 | 0.2 | 63 | 1.27E-05 | 0.02 | 1.00 | 54.62 | | | | | | | |
| 35 | | | 311 | 0.0013 | 5.739E-08 | 1.785E-05 | | | | | | | | | 1055.5 | 14,230 | 65.34 | 2.4249E-84 | 5.196E+06 | 1.43 | 1.80E-79 |
| | 49 | 7,543 | | | | | 8.167E-04 | 308 | 0.2 | 62 | 1.33E-05 | 0.02 | 1.00 | 52.36 | | | | | | | |
| 36 | | | 305 | 0.0013 | 5.739E-08 | 1.749E-05 | | | | | | | | | 1003.2 | 14,535 | 66.73 | 3.4063E-80 | 5.196E+06 | 1.40 | 2.48E-75 |
| | 48 | 7,238 | | | | | 8.342E-04 | 302 | 0.2 | 60 | 1.38E-05 | 0.02 | 1.00 | 50.21 | | | | | | | |
| 37 | | | 298 | 0.0013 | 5.739E-08 | 1.713E-05 | | | | | | | | | 953.0 | 14,833 | 68.10 | 3.2361E-76 | 5.196E+06 | 1.37 | 2.30E-71 |
| | 47 | 6,940 | | | | | 8.513E-04 | 295 | 0.2 | 59 | 1.44E-05 | 0.02 | 1.00 | 48.18 | | | | | | | |
| 38 | | | 292 | 0.0013 | 5.739E-08 | 1.677E-05 | | | | | | | | | 904.8 | 15,125 | 69.45 | 2.1210E-72 | 5.196E+06 | 1.34 | 1.48E-67 |
| | 46 | 6,648 | | | | | 8.681E-04 | 289 | 0.2 | 58 | 1.50E-05 | 0.02 | 1.00 | 46.24 | | | | | | | |
| 39 | | | 286 | 0.0013 | 5.739E-08 | 1.641E-05 | | | | | | | | | 858.5 | 15,411 | 70.76 | 9.7655E-69 | 5.196E+06 | 1.31 | 6.66E-64 |
| | 45 | 6,362 | | | | | 8.845E-04 | 283 | 0.2 | 57 | 1.56E-05 | 0.02 | 1.00 | 44.40 | | | | | | | |
| 40 | | | 280 | 0.0013 | 5.739E-08 | 1.605E-05 | | | | | | | | | 814.2 | 15,691 | 72.04 | 3.2118E-65 | 5.196E+06 | 1.28 | 2.14E-60 |
| | 44 | 6,082 | | | | | 9.005E-04 | 276 | 0.2 | 55 | 1.63E-05 | 0.02 | 1.00 | 42.64 | | | | | | | |
| 41 | | | 273 | 0.0013 | 5.739E-08 | 1.569E-05 | | | | | | | | | 771.5 | 15,964 | 73.30 | 7.6622E-62 | 5.196E+06 | 1.25 | 5.00E-57 |
| | 43 | 5,809 | | | | | 9.162E-04 | 270 | 0.2 | 54 | 1.70E-05 | 0.02 | 1.00 | 40.96 | | | | | | | |
| 42 | | | 267 | 0.0013 | 5.739E-08 | 1.533E-05 | | | | | | | | | 730.6 | 16,231 | 74.52 | 1.3449E-58 | 5.196E+06 | 1.23 | 8.57E-54 |
| | 42 | 5,542 | | | | | 9.315E-04 | 264 | 0.2 | 53 | 1.76E-05 | 0.03 | 1.00 | 39.35 | | | | | | | |

**TABLE A-16 (CONTINUED)**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA A -ONE HALF ACRE AREA - ESTIMATE YEAR 2100 - LANDFILL POROSITY = 0.2**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multilier (e^-kt) | Rn-222 Flux Rate from FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-222 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| 43 | | | 261 | 0.0013 | 5.739E-08 | 1.497E-05 | | | | | | | | | 691.2 | 16,492 | 75.72 | 1.7597E-55 | 5.196E+06 | 1.20 | 1.09E-50 |
| | 41 | 5,281 | | | | | 9.465E-04 | 258 | 0.2 | 52 | 1.84E-05 | 0.03 | 1.00 | 37.80 | | | | | | | |
| 44 | | | 254 | 0.0013 | 5.739E-08 | 1.460E-05 | | | | | | | | | 653.4 | 16,746 | 76.89 | 1.7373E-52 | 5.196E+06 | 1.17 | 1.05E-47 |
| | 40 | 5,027 | | | | | 9.611E-04 | 251 | 0.2 | 50 | 1.91E-05 | 0.03 | 1.00 | 36.32 | | | | | | | |
| 45 | | | 248 | 0.0013 | 5.739E-08 | 1.424E-05 | | | | | | | | | 617.1 | 16,995 | 78.03 | 1.3088E-49 | 5.196E+06 | 1.14 | 7.75E-45 |
| | 39 | 4,778 | | | | | 9.754E-04 | 245 | 0.2 | 49 | 1.99E-05 | 0.03 | 1.00 | 34.89 | | | | | | | |
| 46 | | | 242 | 0.0013 | 5.739E-08 | 1.388E-05 | | | | | | | | | 582.2 | 17,237 | 79.14 | 7.6034E-47 | 5.196E+06 | 1.11 | 4.39E-42 |
| | 38 | 4,536 | | | | | 9.892E-04 | 239 | 0.2 | 48 | 2.07E-05 | 0.03 | 1.00 | 33.52 | | | | | | | |
| 47 | | | 236 | 0.0013 | 5.739E-08 | 1.352E-05 | | | | | | | | | 548.7 | 17,472 | 80.22 | 3.4392E-44 | 5.196E+06 | 1.08 | 1.93E-39 |
| | 37 | 4,301 | | | | | 1.003E-03 | 232 | 0.2 | 46 | 2.16E-05 | 0.03 | 1.00 | 32.20 | | | | | | | |
| 48 | | | 229 | 0.0013 | 5.739E-08 | 1.316E-05 | | | | | | | | | 516.5 | 17,702 | 81.27 | 1.2222E-41 | 5.196E+06 | 1.05 | 6.69E-37 |
| | 36 | 4,072 | | | | | 1.016E-03 | 226 | 0.2 | 45 | 2.25E-05 | 0.03 | 1.00 | 30.92 | | | | | | | |
| 49 | | | 223 | 0.0013 | 5.739E-08 | 1.280E-05 | | | | | | | | | 485.6 | 17,925 | 82.30 | 3.4416E-39 | 5.196E+06 | 1.02 | 1.83E-34 |
| | 35 | 3,848 | | | | | 1.029E-03 | 220 | 0.2 | 44 | 2.34E-05 | 0.03 | 1.00 | 29.69 | | | | | | | |
| 50 | | | 217 | 0.0013 | 5.739E-08 | 1.244E-05 | | | | | | | | | 455.9 | 18,141 | 83.29 | 7.7392E-37 | 5.196E+06 | 1.00 | 4.00E-32 |
| | 34 | 3,632 | | | | | 1.041E-03 | 214 | 0.2 | 43 | 2.44E-05 | 0.04 | 1.00 | 28.50 | | | | | | | |
| 51 | | | 210 | 0.0013 | 5.739E-08 | 1.208E-05 | | | | | | | | | 427.4 | 18,352 | 84.26 | 1.4000E-34 | 5.196E+06 | 0.97 | 7.03E-30 |
| | 33 | 3,421 | | | | | 1.053E-03 | 207 | 0.2 | 41 | 2.54E-05 | 0.04 | 1.00 | 27.34 | | | | | | | |
| 52 | | | 204 | 0.0013 | 5.739E-08 | 1.172E-05 | | | | | | | | | 400.0 | 18,556 | 85.20 | 2.0513E-32 | 5.196E+06 | 0.94 | 9.99E-28 |
| | 32 | 3,217 | | | | | 1.065E-03 | 201 | 0.2 | 40 | 2.65E-05 | 0.04 | 1.00 | 26.22 | | | | | | | |
| 53 | | | 198 | 0.0013 | 5.739E-08 | 1.136E-05 | | | | | | | | | 373.8 | 18,754 | 86.11 | 2.4501E-30 | 5.196E+06 | 0.91 | 1.16E-25 |
| | 31 | 3,019 | | | | | 1.076E-03 | 195 | 0.2 | 39 | 2.76E-05 | 0.04 | 1.00 | 25.13 | | | | | | | |
| 54 | | | 192 | 0.0013 | 5.739E-08 | 1.100E-05 | | | | | | | | | 348.7 | 18,946 | 86.99 | 2.3999E-28 | 5.196E+06 | 0.88 | 1.10E-23 |
| | 30 | 2,827 | | | | | 1.087E-03 | 188 | 0.2 | 38 | 2.88E-05 | 0.04 | 1.00 | 24.08 | | | | | | | |
| 55 | | | 185 | 0.0013 | 5.739E-08 | 1.064E-05 | | | | | | | | | 324.6 | 19,131 | 87.84 | 1.9386E-26 | 5.196E+06 | 0.85 | 8.57E-22 |
| | 29 | 2,642 | | | | | 1.098E-03 | 182 | 0.2 | 36 | 3.01E-05 | 0.04 | 1.00 | 23.05 | | | | | | | |
| 56 | | | 179 | 0.0013 | 5.739E-08 | 1.028E-05 | | | | | | | | | 301.5 | 19,310 | 88.66 | 1.2982E-24 | 5.196E+06 | 0.82 | 5.55E-20 |
| | 28 | 2,463 | | | | | 1.108E-03 | 176 | 0.2 | 35 | 3.15E-05 | 0.05 | 1.00 | 22.05 | | | | | | | |
| 57 | | | 173 | 0.0013 | 5.739E-08 | 9.917E-06 | | | | | | | | | 279.5 | 19,483 | 89.45 | 7.2426E-23 | 5.196E+06 | 0.79 | 2.99E-18 |
| | 27 | 2,290 | | | | | 1.118E-03 | 170 | 0.2 | 34 | 3.30E-05 | 0.05 | 1.00 | 21.07 | | | | | | | |
| 58 | | | 167 | 0.0013 | 5.739E-08 | 9.195E-06 | | | | | | | | | 258.4 | 19,649 | 90.22 | 3.3817E-21 | 5.196E+06 | 0.76 | 1.34E-16 |
| | 26 | 2,124 | | | | | 1.127E-03 | 163 | 0.2 | 33 | 3.45E-05 | 0.05 | 1.00 | 20.13 | | | | | | | |
| 59 | | | 160 | 0.0013 | 5.739E-08 | 8.835E-06 | | | | | | | | | 238.3 | 19,810 | 90.95 | 1.3287E-19 | 5.196E+06 | 0.74 | 5.08E-15 |
| | 25 | 1,964 | | | | | 1.136E-03 | 157 | 0.2 | 31 | 3.62E-05 | 0.05 | 1.00 | 19.20 | | | | | | | |
| 60 | | | 154 | 0.0013 | 5.739E-08 | 8.835E-06 | | | | | | | | | 219.1 | 19,963 | 91.66 | 4.4105E-18 | 5.196E+06 | 0.71 | 1.62E-13 |
| | 24 | 1,810 | | | | | 1.145E-03 | 151 | 0.2 | 30 | 3.80E-05 | 0.05 | 1.00 | 18.29 | | | | | | | |
| 61 | | | 148 | 0.0013 | 5.739E-08 | 8.474E-06 | | | | | | | | | 200.8 | 20,111 | 92.34 | 1.2401E-16 | 5.196E+06 | 0.68 | 4.37E-12 |
| | 23 | 1,662 | | | | | 1.153E-03 | 145 | 0.2 | 29 | 3.99E-05 | 0.06 | 1.00 | 17.40 | | | | | | | |
| 62 | | | 141 | 0.0013 | 5.739E-08 | 8.114E-06 | | | | | | | | | 183.4 | 20,253 | 92.99 | 2.9636E-15 | 5.196E+06 | 0.65 | 1.00E-10 |
| | 22 | 1,521 | | | | | 1.162E-03 | 138 | 0.2 | 28 | 4.20E-05 | 0.06 | 1.00 | 16.53 | | | | | | | |
| 63 | | | 135 | 0.0013 | 5.739E-08 | 7.753E-06 | | | | | | | | | 166.9 | 20,388 | 93.61 | 6.0402E-14 | 5.196E+06 | 0.62 | 1.95E-09 |
| | 21 | 1,385 | | | | | 1.169E-03 | 132 | 0.2 | 26 | 4.43E-05 | 0.06 | 1.00 | 15.67 | | | | | | | |
| 64 | | | 129 | 0.0013 | 5.739E-08 | 7.392E-06 | | | | | | | | | 151.2 | 20,516 | 94.20 | 1.0532E-12 | 5.196E+06 | 0.59 | 3.24E-08 |
| | 20 | 1,257 | | | | | 1.177E-03 | 126 | 0.2 | 25 | 4.68E-05 | 0.07 | 1.00 | 14.83 | | | | | | | |
| 65 | | | 123 | 0.0013 | 5.739E-08 | 7.032E-06 | | | | | | | | | 136.4 | 20,639 | 94.76 | 1.5754E-11 | 5.196E+06 | 0.56 | 4.60E-07 |
| | 19 | 1,134 | | | | | 1.184E-03 | 119 | 0.2 | 24 | 4.96E-05 | 0.07 | 1.00 | 14.01 | | | | | | | |
| 66 | | | 116 | 0.0013 | 5.739E-08 | 6.671E-06 | | | | | | | | | 122.4 | 20,755 | 95.29 | 2.0273E-10 | 5.196E+06 | 0.53 | 5.62E-06 |
| | 18 | 1,018 | | | | | 1.190E-03 | 113 | 0.2 | 23 | 5.26E-05 | 0.08 | 1.00 | 13.19 | | | | | | | |
| 67 | | | 110 | 0.0013 | 5.739E-08 | 6.311E-06 | | | | | | | | | 109.2 | 20,865 | 95.80 | 2.2498E-09 | 5.196E+06 | 0.50 | 5.90E-05 |
| | 17 | 908 | | | | | 1.197E-03 | 107 | 0.2 | 21 | 5.60E-05 | 0.08 | 1.00 | 12.40 | | | | | | | |
| 68 | | | 104 | 0.0013 | 5.739E-08 | 5.950E-06 | | | | | | | | | 96.8 | 20,969 | 96.28 | 2.1583E-08 | 5.196E+06 | 0.48 | 5.34E-04 |
| | 16 | 804 | | | | | 1.203E-03 | 101 | 0.2 | 20 | 5.98E-05 | 0.09 | 1.00 | 11.61 | | | | | | | |
| 69 | | | 97 | 0.0013 | 5.739E-08 | 5.589E-06 | | | | | | | | | 85.2 | 21,066 | 96.72 | 1.7937E-07 | 5.196E+06 | 0.45 | 4.17E-03 |
| | 15 | 707 | | | | | 1.208E-03 | 94 | 0.2 | 19 | 6.41E-05 | 0.09 | 1.00 | 10.83 | | | | | | | |
| 70 | | | 91 | 0.0013 | 5.739E-08 | 5.229E-06 | | | | | | | | | 74.3 | 21,157 | 97.14 | 1.2939E-06 | 5.196E+06 | 0.42 | 2.81E-02 |
| | 14 | 616 | | | | | 1.214E-03 | 88 | 0.2 | 18 | 6.90E-05 | 0.10 | 1.00 | 10.07 | | | | | | | |
| 71 | | | 85 | 0.0013 | 5.739E-08 | 4.868E-06 | | | | | | | | | 64.3 | 21,242 | 97.53 | 8.1172E-06 | 5.196E+06 | 0.39 | 1.64E-01 |
| | 13 | 531 | | | | | 1.218E-03 | 82 | 0.2 | 16 | 7.46E-05 | 0.11 | 1.00 | 9.31 | | | | | | | |
| 72 | | | 79 | 0.0013 | 5.739E-08 | 4.508E-06 | | | | | | | | | 55.0 | 21,321 | 97.89 | 4.4359E-05 | 5.196E+06 | 0.36 | 8.31E-01 |
| | 12 | 452 | | | | | 1.223E-03 | 75 | 0.2 | 15 | 8.11E-05 | 0.12 | 1.00 | 8.56 | | | | | | | |
| 73 | | | 72 | 0.0013 | 5.739E-08 | 4.147E-06 | | | | | | | | | 46.4 | 21,393 | 98.22 | 2.1150E-04 | 5.196E+06 | 0.33 | 3.65E+00 |
| | 11 | 380 | | | | | 1.227E-03 | 69 | 0.2 | 14 | 8.88E-05 | 0.13 | 1.00 | 7.82 | | | | | | | |
| 74 | | | 66 | 0.0013 | 5.739E-08 | 3.786E-06 | | | | | | | | | 38.6 | 21,459 | 98.53 | 8.8108E-04 | 5.196E+06 | 0.30 | 1.39E+01 |
| | 10 | 314 | | | | | 1.231E-03 | 63 | 0.2 | 13 | 9.79E-05 | 0.14 | 1.00 | 7.09 | | | | | | | |
| 75 | | | 60 | 0.0013 | 5.739E-08 | 3.426E-06 | | | | | | | | | 31.5 | 21,519 | 98.80 | 3.2111E-03 | 5.196E+06 | 0.27 | 4.57E+01 |
| | 9 | 254 | | | | | 1.234E-03 | 57 | 0.2 | 11 | 1.09E-04 | 0.16 | 1.00 | 6.36 | | | | | | | |
| 76 | | | 53 | 0.0013 | 5.739E-08 | 3.065E-06 | | | | | | | | | 25.1 | 21,572 | 99.04 | 1.0250E-02 | 5.196E+06 | 0.25 | 1.31E+02 |
| | 8 | 201 | | | | | 1.237E-03 | 50 | 0.2 | 10 | 1.23E-04 | 0.18 | 1.00 | 5.64 | | | | | | | |
| 77 | | | 47 | 0.0013 | 5.739E-08 | 2.705E-06 | | | | | | | | | 19.5 | 21,619 | 99.26 | 2.8686E-02 | 5.196E+06 | 0.22 | 3.22E+02 |
| | 7 | 154 | | | | | 1.240E-03 | 44 | 0.2 | 9 | 1.41E-04 | 0.20 | 1.00 | 4.93 | | | | | | | |
| 78 | | | 41 | 0.0013 | 5.739E-08 | 2.344E-06 | | | | | | | | | 14.5 | 21,660 | 99.45 | 7.0452E-02 | 5.196E+06 | 0.19 | 6.86E+02 |
| | 6 | 113 | | | | | 1.242E-03 | 38 | 0.2 | 8 | 1.65E-04 | 0.24 | 1.00 | 4.21 | | | | | | | |
| 79 | | | 35 | 0.0013 | 5.739E-08 | 1.983E-06 | | | | | | | | | 10.3 | 21,695 | 99.61 | 1.5196E-01 | 5.196E+06 | 0.16 | 1.25E+03 |
| | 5 | 79 | | | | | 1.244E-03 | 31 | 0.2 | 6 | 1.98E-04 | 0.29 | 1.00 | 3.51 | | | | | | | |
| 80 | | | 28 | 0.0013 | 5.739E-08 | 1.623E-06 | | | | | | | | | 6.8 | 21,723 | 99.74 | 2.8808E-01 | 5.196E+06 | 0.13 | 1.94E+03 |
| | 4 | 50 | | | | | 1.246E-03 | 25 | 0.2 | 5 | 2.48E-04 | 0.36 | 1.00 | 2.80 | | | | | | | |
| 81 | | | 22 | 0.0013 | 5.739E-08 | 1.262E-06 | | | | | | | | | 4.0 | 21,745 | 99.84 | 4.8021E-01 | 5.196E+06 | 0.10 | 2.52E+03 |
| | 3 | 28 | | | | | 1.247E-03 | 19 | 0.2 | 4 | 3.31E-04 | 0.48 | 1.00 | 2.10 | | | | | | | |
| 82 | | | 16 | 0.0013 | 5.739E-08 | 9.015E-07 | | | | | | | | | 1.923 | 21,760 | 99.91 | 7.0421E-01 | 5.196E+06 | 0.07 | 2.64E+03 |
| | 2 | 13 | | | | | 1.248E-03 | 13 | 0.2 | 3 | 4.97E-04 | 0.72 | 1.00 | 1.40 | | | | | | | |
| 83 | | | 5 | 0.0013 | 5.739E-08 | 3.155E-07 | | | | | | | | | 0.524 | 21,766 | 99.94 | 9.0881E-01 | 5.196E+06 | 0.03 | 1.19E+03 |
| | 1.5 | 7 | | | | | 1.248E-03 | 9 | 0.2 | 2 | 6.62E-04 | 0.95 | 0.50 | 0.52 | | | | | | | |
| 84 | | | 7 | 0.0013 | 5.739E-08 | 4.057E-07 | | | | | | | | | 0.000 | 21,773 | 99.97 | 1.0000E+00 | 5.196E+06 | 0.03 | 1.69E+03 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Considered | pCi/min | 1.244E+04 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Not Considered | pCi/min | 5.196E+06 |

| | | |
|---|---|---|
| Reduction in Rn-222 Flux Due to Decay | % | 99.76 |

**TABLE A-17**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA A - ONE QUARTER ACRE AREA - ESTIMATE YEAR 2000 - LANDFILL POROSITY = 0.2**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multilier (e^-kt) | Rn-222 Flux Rate frrom FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-22 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| | 58.80 | 10,862 | | | | | 0 | | | | 0 | 0 | | | | | | | | | |
| 1 | | | 294 | 0.07063 | 6.485E-06 | 1.904E-03 | | | | | | | | | 87.8 | 294 | 2.68 | 1.1075E-07 | 3.011E+06 | 2.68 | 8.95E-03 |
| | 58 | 10,568 | | | | | 1.904E-03 | 364 | 0.2 | 73 | 2.61E-05 | 0.04 | 0.80 | 21.27 | | | | | | | |
| 2 | | | 361 | 0.07063 | 6.485E-06 | 2.343E-03 | | | | | | | | | 66.5 | 655 | 5.99 | 5.3604E-06 | 3.011E+06 | 3.30 | 5.33E-01 |
| | 57 | 10,207 | | | | | 4.247E-03 | 358 | 0.2 | 72 | 5.93E-05 | 0.09 | 1.00 | 11.71 | | | | | | | |
| 3 | | | 355 | 0.07063 | 6.485E-06 | 2.302E-03 | | | | | | | | | 54.8 | 1,010 | 9.23 | 4.5398E-05 | 3.011E+06 | 3.25 | 4.44E+00 |
| | 56 | 9,852 | | | | | 6.549E-03 | 352 | 0.2 | 70 | 9.31E-05 | 0.13 | 1.00 | 7.46 | | | | | | | |
| 4 | | | 349 | 0.07063 | 6.485E-06 | 2.262E-03 | | | | | | | | | 47.4 | 1,359 | 12.42 | 1.7707E-04 | 3.011E+06 | 3.19 | 1.70E+01 |
| | 55 | 9,503 | | | | | 8.811E-03 | 346 | 0.2 | 69 | 1.27E-04 | 0.18 | 1.00 | 5.45 | | | | | | | |
| 5 | | | 342 | 0.07063 | 6.485E-06 | 2.221E-03 | | | | | | | | | 41.9 | 1,701 | 15.55 | 4.7826E-04 | 3.011E+06 | 3.13 | 4.51E+01 |
| | 54 | 9,161 | | | | | 1.103E-02 | 339 | 0.2 | 68 | 1.63E-04 | 0.23 | 1.00 | 4.27 | | | | | | | |
| 6 | | | 336 | 0.07063 | 6.485E-06 | 2.180E-03 | | | | | | | | | 37.6 | 2,037 | 18.63 | 1.0425E-03 | 3.011E+06 | 3.07 | 9.65E+01 |
| | 53 | 8,825 | | | | | 1.321E-02 | 333 | 0.2 | 67 | 1.98E-04 | 0.29 | 1.00 | 3.50 | | | | | | | |
| 7 | | | 330 | 0.07063 | 6.485E-06 | 2.139E-03 | | | | | | | | | 34.1 | 2,367 | 21.64 | 1.9742E-03 | 3.011E+06 | 3.02 | 1.79E+02 |
| | 52 | 8,495 | | | | | 1.535E-02 | 327 | 0.2 | 65 | 2.35E-04 | 0.34 | 1.00 | 2.96 | | | | | | | |
| 8 | | | 324 | 0.07063 | 6.485E-06 | 2.099E-03 | | | | | | | | | 31.2 | 2,691 | 24.60 | 3.3849E-03 | 3.011E+06 | 2.96 | 3.02E+02 |
| | 51 | 8,171 | | | | | 1.745E-02 | 320 | 0.2 | 64 | 2.72E-04 | 0.39 | 1.00 | 2.55 | | | | | | | |
| 9 | | | 317 | 0.07063 | 6.485E-06 | 2.058E-03 | | | | | | | | | 28.6 | 3,008 | 27.50 | 5.3901E-03 | 3.011E+06 | 2.90 | 4.71E+02 |
| | 50 | 7,854 | | | | | 1.951E-02 | 314 | 0.2 | 63 | 3.10E-04 | 0.45 | 1.00 | 2.24 | | | | | | | |
| 10 | | | 311 | 0.07063 | 6.485E-06 | 2.017E-03 | | | | | | | | | 26.4 | 3,319 | 30.35 | 8.1056E-03 | 3.011E+06 | 2.84 | 6.94E+02 |
| | 49 | 7,543 | | | | | 2.152E-02 | 308 | 0.2 | 62 | 3.50E-04 | 0.50 | 1.00 | 1.99 | | | | | | | |
| 11 | | | 305 | 0.00063 | 6.485E-06 | 1.976E-03 | | | | | | | | | 24.4 | 3,624 | 33.14 | 1.1645E-02 | 3.011E+06 | 2.79 | 9.77E+02 |
| | 48 | 7,238 | | | | | 2.350E-02 | 302 | 0.2 | 60 | 3.90E-04 | 0.56 | 1.00 | 1.78 | | | | | | | |
| 12 | | | 298 | 0.00063 | 6.485E-06 | 1.936E-03 | | | | | | | | | 22.6 | 3,922 | 35.86 | 1.6120E-02 | 3.011E+06 | 2.73 | 1.32E+03 |
| | 47 | 6,940 | | | | | 2.544E-02 | 295 | 0.2 | 59 | 4.31E-04 | 0.62 | 1.00 | 1.61 | | | | | | | |
| 13 | | | 292 | 0.00063 | 6.485E-06 | 1.895E-03 | | | | | | | | | 21.0 | 4,214 | 38.54 | 2.1631E-02 | 3.011E+06 | 2.67 | 1.74E+03 |
| | 46 | 6,648 | | | | | 2.733E-02 | 289 | 0.2 | 58 | 4.73E-04 | 0.68 | 1.00 | 1.47 | | | | | | | |
| 14 | | | 286 | 0.00063 | 6.485E-06 | 1.854E-03 | | | | | | | | | 19.5 | 4,500 | 41.15 | 2.8277E-02 | 3.011E+06 | 2.61 | 2.23E+03 |
| | 45 | 6,362 | | | | | 2.918E-02 | 283 | 0.2 | 57 | 5.16E-04 | 0.74 | 1.00 | 1.35 | | | | | | | |
| 15 | | | 280 | 0.00063 | 6.485E-06 | 1.813E-03 | | | | | | | | | 18.2 | 4,780 | 43.71 | 3.6143E-02 | 3.011E+06 | 2.56 | 2.78E+03 |
| | 44 | 6,082 | | | | | 3.100E-02 | 276 | 0.2 | 55 | 5.61E-04 | 0.81 | 1.00 | 1.24 | | | | | | | |
| 16 | | | 273 | 0.00063 | 6.485E-06 | 1.773E-03 | | | | | | | | | 17.0 | 5,053 | 46.21 | 4.5305E-02 | 3.011E+06 | 2.50 | 3.41E+03 |
| | 43 | 5,809 | | | | | 3.277E-02 | 270 | 0.2 | 54 | 6.06E-04 | 0.87 | 1.00 | 1.15 | | | | | | | |
| 17 | | | 267 | 0.00063 | 6.485E-06 | 1.732E-03 | | | | | | | | | 15.8 | 5,320 | 48.65 | 5.5828E-02 | 3.011E+06 | 2.44 | 4.10E+03 |
| | 42 | 5,542 | | | | | 3.450E-02 | 264 | 0.2 | 53 | 6.54E-04 | 0.94 | 1.00 | 1.06 | | | | | | | |
| 18 | | | 261 | 0.00063 | 6.485E-06 | 1.691E-03 | | | | | | | | | 14.8 | 5,581 | 51.03 | 6.7765E-02 | 3.011E+06 | 2.38 | 4.87E+03 |
| | 41 | 5,281 | | | | | 3.619E-02 | 258 | 0.2 | 52 | 7.02E-04 | 1.01 | 1.00 | 0.99 | | | | | | | |
| 19 | | | 254 | 0.00063 | 6.485E-06 | 1.650E-03 | | | | | | | | | 13.8 | 5,835 | 53.36 | 8.1155E-02 | 3.011E+06 | 2.33 | 5.69E+03 |
| | 40 | 5,027 | | | | | 3.784E-02 | 251 | 0.2 | 50 | 7.53E-04 | 1.08 | 1.00 | 0.92 | | | | | | | |
| 20 | | | 248 | 0.00063 | 6.485E-06 | 1.610E-03 | | | | | | | | | 12.8 | 6,084 | 55.63 | 9.6024E-02 | 3.011E+06 | 2.27 | 6.56E+03 |
| | 39 | 4,778 | | | | | 3.945E-02 | 245 | 0.2 | 49 | 8.05E-04 | 1.16 | 1.00 | 0.86 | | | | | | | |
| 21 | | | 242 | 0.00063 | 6.485E-06 | 1.569E-03 | | | | | | | | | 12.0 | 6,325 | 57.84 | 1.1239E-01 | 3.011E+06 | 2.21 | 7.49E+03 |
| | 38 | 4,536 | | | | | 4.102E-02 | 239 | 0.2 | 48 | 8.59E-04 | 1.24 | 1.00 | 0.81 | | | | | | | |
| 22 | | | 236 | 0.00063 | 6.485E-06 | 1.528E-03 | | | | | | | | | 11.2 | 6,561 | 59.99 | 1.3024E-01 | 3.011E+06 | 2.15 | 8.45E+03 |
| | 37 | 4,301 | | | | | 4.255E-02 | 232 | 0.2 | 46 | 9.15E-04 | 1.32 | 1.00 | 0.76 | | | | | | | |
| 23 | | | 229 | 0.00063 | 6.485E-06 | 1.487E-03 | | | | | | | | | 10.4 | 6,790 | 62.09 | 1.4958E-01 | 3.011E+06 | 2.10 | 9.44E+03 |
| | 36 | 4,072 | | | | | 4.404E-02 | 226 | 0.2 | 45 | 9.73E-04 | 1.40 | 1.00 | 0.71 | | | | | | | |
| 24 | | | 223 | 0.00063 | 6.485E-06 | 1.447E-03 | | | | | | | | | 9.7 | 7,013 | 64.13 | 1.7036E-01 | 3.011E+06 | 2.04 | 1.05E+04 |
| | 35 | 3,848 | | | | | 4.548E-02 | 220 | 0.2 | 44 | 1.03E-03 | 1.49 | 1.00 | 0.67 | | | | | | | |
| 25 | | | 217 | 0.00063 | 6.485E-06 | 1.406E-03 | | | | | | | | | 9.0 | 7,230 | 66.11 | 1.9256E-01 | 3.011E+06 | 1.98 | 1.15E+04 |
| | 34 | 3,632 | | | | | 4.689E-02 | 214 | 0.2 | 43 | 1.10E-03 | 1.58 | 1.00 | 0.63 | | | | | | | |
| 26 | | | 210 | 0.00063 | 6.485E-06 | 1.365E-03 | | | | | | | | | 8.4 | 7,441 | 68.04 | 2.1612E-01 | 3.011E+06 | 1.92 | 1.25E+04 |
| | 33 | 3,421 | | | | | 4.826E-02 | 207 | 0.2 | 41 | 1.16E-03 | 1.68 | 1.00 | 0.60 | | | | | | | |
| 27 | | | 204 | 0.00063 | 6.485E-06 | 1.324E-03 | | | | | | | | | 7.8 | 7,645 | 69.91 | 2.4097E-01 | 3.011E+06 | 1.87 | 1.35E+04 |
| | 32 | 3,217 | | | | | 4.958E-02 | 201 | 0.2 | 40 | 1.23E-03 | 1.78 | 1.00 | 0.56 | | | | | | | |
| 28 | | | 198 | 0.00063 | 6.485E-06 | 1.284E-03 | | | | | | | | | 7.2 | 7,843 | 71.72 | 2.6704E-01 | 3.011E+06 | 1.81 | 1.46E+04 |
| | 31 | 3,019 | | | | | 5.086E-02 | 195 | 0.2 | 39 | 1.31E-03 | 1.88 | 1.00 | 0.53 | | | | | | | |
| 29 | | | 192 | 0.00063 | 6.485E-06 | 1.243E-03 | | | | | | | | | 6.7 | 8,034 | 73.47 | 2.9425E-01 | 3.011E+06 | 1.75 | 1.55E+04 |
| | 30 | 2,827 | | | | | 5.211E-02 | 188 | 0.2 | 38 | 1.38E-03 | 1.99 | 1.00 | 0.50 | | | | | | | |

**TABLE A-17 (CONTINUED)**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA A - ONE QUARTER ACRE AREA - ESTIMATE YEAR 2000 - LANDFILL POROSITY = 0.2**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multilier (e^-kt) | Rn-222 Flux Rate from FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-222 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| 28 | | | 198 | 0.00063 | 6.485E-06 | 1.284E-03 | | | | | | | | | 7.2 | 7,843 | 71.72 | 2.6704E-01 | 3.011E+06 | 1.81 | 1.46E+04 |
| | 31 | 3,019 | | | | | 5.086E-02 | 195 | 0.2 | 39 | 1.31E-03 | 1.88 | 1.00 | 0.53 | | | | | | | |
| 29 | | | 192 | 0.00063 | 6.485E-06 | 1.243E-03 | | | | | | | | | 6.7 | 8,034 | 73.47 | 2.9425E-01 | 3.011E+06 | 1.75 | 1.55E+04 |
| | 30 | 2,827 | | | | | 5.211E-02 | 188 | 0.2 | 38 | 1.38E-03 | 1.99 | 1.00 | 0.50 | | | | | | | |
| 30 | | | 185 | 0.00063 | 6.485E-06 | 1.202E-03 | | | | | | | | | 6.2 | 8,220 | 75.16 | 3.2249E-01 | 3.011E+06 | 1.69 | 1.65E+04 |
| | 29 | 2,642 | | | | | 5.331E-02 | 182 | 0.2 | 36 | 1.46E-03 | 2.11 | 1.00 | 0.47 | | | | | | | |
| 31 | | | 179 | 0.00063 | 6.485E-06 | 1.161E-03 | | | | | | | | | 5.7 | 8,399 | 76.80 | 3.5166E-01 | 3.011E+06 | 1.64 | 1.73E+04 |
| | 28 | 2,463 | | | | | 5.447E-02 | 176 | 0.2 | 35 | 1.55E-03 | 2.23 | 1.00 | 0.45 | | | | | | | |
| 32 | | | 173 | 0.00063 | 6.485E-06 | 1.121E-03 | | | | | | | | | 5.3 | 8,572 | 78.38 | 3.8164E-01 | 3.011E+06 | 1.58 | 1.82E+04 |
| | 27 | 2,290 | | | | | 5.559E-02 | 170 | 0.2 | 34 | 1.64E-03 | 2.36 | 1.00 | 0.42 | | | | | | | |
| 33 | | | 167 | 0.00063 | 6.485E-06 | 1.080E-03 | | | | | | | | | 4.9 | 8,738 | 79.90 | 4.1232E-01 | 3.011E+06 | 1.52 | 1.89E+04 |
| | 26 | 2,124 | | | | | 5.667E-02 | 163 | 0.2 | 33 | 1.73E-03 | 2.50 | 1.00 | 0.40 | | | | | | | |
| 34 | | | 160 | 0.00063 | 6.485E-06 | 1.039E-03 | | | | | | | | | 4.5 | 8,898 | 81.37 | 4.4356E-01 | 3.011E+06 | 1.47 | 1.96E+04 |
| | 25 | 1,964 | | | | | 5.771E-02 | 157 | 0.2 | 31 | 1.84E-03 | 2.65 | 1.00 | 0.38 | | | | | | | |
| 35 | | | 154 | 0.00063 | 6.485E-06 | 9.983E-04 | | | | | | | | | 4.1 | 9,052 | 82.78 | 4.7522E-01 | 3.011E+06 | 1.41 | 2.01E+04 |
| | 24 | 1,810 | | | | | 5.871E-02 | 151 | 0.2 | 30 | 1.95E-03 | 2.80 | 1.00 | 0.36 | | | | | | | |
| 36 | | | 148 | 0.00063 | 6.485E-06 | 9.576E-04 | | | | | | | | | 3.7 | 9,200 | 84.13 | 5.0718E-01 | 3.011E+06 | 1.35 | 2.06E+04 |
| | 23 | 1,662 | | | | | 5.966E-02 | 145 | 0.2 | 29 | 2.06E-03 | 2.97 | 1.00 | 0.34 | | | | | | | |
| 37 | | | 141 | 0.00063 | 6.485E-06 | 9.168E-04 | | | | | | | | | 3.4 | 9,341 | 85.42 | 5.3927E-01 | 3.011E+06 | 1.29 | 2.10E+04 |
| | 22 | 1,521 | | | | | 6.058E-02 | 138 | 0.2 | 28 | 2.19E-03 | 3.16 | 1.00 | 0.32 | | | | | | | |
| 38 | | | 135 | 0.00063 | 6.485E-06 | 8.761E-04 | | | | | | | | | 3.1 | 9,476 | 86.65 | 5.7136E-01 | 3.011E+06 | 1.24 | 2.13E+04 |
| | 21 | 1,385 | | | | | 6.146E-02 | 132 | 0.2 | 26 | 2.33E-03 | 3.35 | 1.00 | 0.30 | | | | | | | |
| 39 | | | 129 | 0.00063 | 6.485E-06 | 8.353E-04 | | | | | | | | | 2.8 | 9,605 | 87.83 | 6.0330E-01 | 3.011E+06 | 1.18 | 2.14E+04 |
| | 20 | 1,257 | | | | | 6.229E-02 | 126 | 0.2 | 25 | 2.48E-03 | 3.57 | 1.00 | 0.28 | | | | | | | |
| 40 | | | 123 | 0.00063 | 6.485E-06 | 7.946E-04 | | | | | | | | | 2.5 | 9,728 | 88.95 | 6.3493E-01 | 3.011E+06 | 1.12 | 2.14E+04 |
| | 19 | 1,134 | | | | | 6.309E-02 | 119 | 0.2 | 24 | 2.64E-03 | 3.80 | 1.00 | 0.26 | | | | | | | |
| 41 | | | 116 | 0.00063 | 6.485E-06 | 7.538E-04 | | | | | | | | | 2.2 | 9,844 | 90.01 | 6.6611E-01 | 3.011E+06 | 1.06 | 2.13E+04 |
| | 18 | 1,018 | | | | | 6.384E-02 | 113 | 0.2 | 23 | 2.82E-03 | 4.06 | 1.00 | 0.25 | | | | | | | |
| 42 | | | 110 | 0.00063 | 6.485E-06 | 7.131E-04 | | | | | | | | | 2.0 | 9,954 | 91.02 | 6.9668E-01 | 3.011E+06 | 1.01 | 2.11E+04 |
| | 17 | 908 | | | | | 6.455E-02 | 107 | 0.2 | 21 | 3.02E-03 | 4.35 | 1.00 | 0.23 | | | | | | | |
| 43 | | | 104 | 0.00063 | 6.485E-06 | 6.724E-04 | | | | | | | | | 1.8 | 10,058 | 91.97 | 7.2651E-01 | 3.011E+06 | 0.95 | 2.07E+04 |
| | 16 | 804 | | | | | 6.523E-02 | 101 | 0.2 | 20 | 3.24E-03 | 4.67 | 1.00 | 0.21 | | | | | | | |
| 44 | | | 97 | 0.00063 | 6.485E-06 | 6.316E-04 | | | | | | | | | 1.5 | 10,155 | 92.86 | 7.5544E-01 | 3.011E+06 | 0.89 | 2.03E+04 |
| | 15 | 707 | | | | | 6.586E-02 | 94 | 0.2 | 19 | 3.49E-03 | 5.03 | 1.00 | 0.20 | | | | | | | |
| 45 | | | 91 | 0.00063 | 6.485E-06 | 5.909E-04 | | | | | | | | | 1.3 | 10,246 | 93.69 | 7.8333E-01 | 3.011E+06 | 0.83 | 1.96E+04 |
| | 14 | 616 | | | | | 6.645E-02 | 88 | 0.2 | 18 | 3.78E-03 | 5.44 | 1.00 | 0.18 | | | | | | | |
| 46 | | | 85 | 0.00063 | 6.485E-06 | 5.501E-04 | | | | | | | | | 1.2 | 10,331 | 94.47 | 8.1004E-01 | 3.011E+06 | 0.78 | 1.89E+04 |
| | 13 | 531 | | | | | 6.700E-02 | 82 | 0.2 | 16 | 4.10E-03 | 5.91 | 1.00 | 0.17 | | | | | | | |
| 47 | | | 79 | 0.00063 | 6.485E-06 | 5.094E-04 | | | | | | | | | 1.0 | 10,410 | 95.19 | 8.3545E-01 | 3.011E+06 | 0.72 | 1.81E+04 |
| | 12 | 452 | | | | | 6.751E-02 | 75 | 0.2 | 15 | 4.48E-03 | 6.45 | 1.00 | 0.16 | | | | | | | |
| 48 | | | 72 | 0.00063 | 6.485E-06 | 4.686E-04 | | | | | | | | | 0.8 | 10,482 | 95.85 | 8.5942E-01 | 3.011E+06 | 0.66 | 1.71E+04 |
| | 11 | 380 | | | | | 6.798E-02 | 69 | 0.2 | 14 | 4.92E-03 | 7.08 | 1.00 | 0.14 | | | | | | | |
| 49 | | | 66 | 0.00063 | 6.485E-06 | 4.279E-04 | | | | | | | | | 0.7 | 10,548 | 96.45 | 8.8185E-01 | 3.011E+06 | 0.60 | 1.60E+04 |
| | 10 | 314 | | | | | 6.841E-02 | 63 | 0.2 | 13 | 5.44E-03 | 7.84 | 1.00 | 0.13 | | | | | | | |
| 50 | | | 60 | 0.00063 | 6.485E-06 | 3.871E-04 | | | | | | | | | 0.6 | 10,607 | 97.00 | 9.0261E-01 | 3.011E+06 | 0.55 | 1.48E+04 |
| | 9 | 254 | | | | | 6.879E-02 | 57 | 0.2 | 11 | 6.08E-03 | 8.76 | 1.00 | 0.11 | | | | | | | |
| 51 | | | 53 | 0.00063 | 6.485E-06 | 3.464E-04 | | | | | | | | | 0.4 | 10,661 | 97.48 | 9.2160E-01 | 3.011E+06 | 0.49 | 1.36E+04 |
| | 8 | 201 | | | | | 6.914E-02 | 50 | 0.2 | 10 | 6.88E-03 | 9.90 | 1.00 | 0.10 | | | | | | | |
| 52 | | | 47 | 0.00063 | 6.485E-06 | 3.056E-04 | | | | | | | | | 0.3 | 10,708 | 97.91 | 9.3873E-01 | 3.011E+06 | 0.43 | 1.22E+04 |
| | 7 | 154 | | | | | 6.944E-02 | 44 | 0.2 | 9 | 7.89E-03 | 11.37 | 1.00 | 0.09 | | | | | | | |
| 53 | | | 41 | 0.00063 | 6.485E-06 | 2.649E-04 | | | | | | | | | 0.3 | 10,749 | 98.29 | 9.5392E-01 | 3.011E+06 | 0.37 | 1.07E+04 |
| | 6 | 113 | | | | | 6.971E-02 | 38 | 0.2 | 8 | 9.25E-03 | 13.31 | 1.00 | 0.08 | | | | | | | |
| 54 | | | 35 | 0.00063 | 6.485E-06 | 2.241E-04 | | | | | | | | | 0.2 | 10,783 | 98.60 | 9.6708E-01 | 3.011E+06 | 0.32 | 9.20E+03 |
| | 5 | 79 | | | | | 6.993E-02 | 31 | 0.2 | 6 | 1.11E-02 | 16.03 | 1.00 | 0.06 | | | | | | | |
| 55 | | | 28 | 0.00063 | 6.485E-06 | 1.834E-04 | | | | | | | | | 0.1 | 10,812 | 98.86 | 9.7814E-01 | 3.011E+06 | 0.26 | 7.61E+03 |
| | 4 | 50 | | | | | 7.012E-02 | 25 | 0.2 | 5 | 1.39E-02 | 20.09 | 1.00 | 0.05 | | | | | | | |
| 56 | | | 22 | 0.00063 | 6.485E-06 | 1.426E-04 | | | | | | | | | 0.1 | 10,834 | 99.06 | 9.8707E-01 | 3.011E+06 | 0.20 | 5.98E+03 |
| | 3 | 28 | | | | | 7.026E-02 | 19 | 0.2 | 4 | 1.86E-02 | 26.84 | 1.00 | 0.04 | | | | | | | |
| 57 | | | 16 | 0.00063 | 6.485E-06 | 1.019E-04 | | | | | | | | | 0.0 | 10,849 | 99.21 | 9.9380E-01 | 3.011E+06 | 0.14 | 4.30E+03 |
| | 2 | 13 | | | | | 7.036E-02 | 13 | 0.2 | 3 | 2.80E-02 | 40.31 | 1.00 | 0.02 | | | | | | | |
| 58 | | | 5 | 0.00063 | 6.485E-06 | 3.565E-05 | | | | | | | | | 0.0 | 10,855 | 99.26 | 9.9831E-01 | 3.011E+06 | 0.05 | 1.51E+03 |
| | 1.5 | 7 | | | | | 7.040E-02 | 9 | 0.2 | 2 | 3.73E-02 | 53.78 | 0.50 | 0.01 | | | | | | | |
| 59 | | | 7 | 0.00063 | 6.485E-06 | 4.584E-05 | | | | | | | | | 0.0 | 10,862 | 99.32 | 1.0000E+00 | 3.011E+06 | 0.06 | 1.95E+03 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Considered | pCi/min | 6.102E+05 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Not Considered | pCi/min | 3.011E+06 |

| | | |
|---|---|---|
| Reduction in Rn-222 Flux Due to Decay (%) | % | 79.73 |

**TABLE A-18**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA A - ONE QUARTER ACRE AREA - ESTIMATE YEAR 2025- LANDFILL POROSITY = 0.2**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multilier (e^-kt) | Rn-222 Flux Rate from FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-22 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| | 58.80 | 10,862 | | | | | 0 | | | | 0 | 0 | | | | | | | | | |
| 1 | | | 294 | 0.02000 | 1.837E-06 | 5.391E-04 | | | | | | | | | 310.1 | 294 | 2.68 | 2.7407E-25 | 3.691E+06 | 2.68 | 2.72E-20 |
| | 58 | 10,568 | | | | | 5.391E-04 | 364 | 0.2 | 73 | 7.40E-06 | 0.01 | 0.80 | 75.11 | | | | | | | |
| 2 | | | 361 | 0.02000 | 1.837E-06 | 6.635E-04 | | | | | | | | | 235.0 | 655 | 5.99 | 2.4405E-19 | 3.691E+06 | 3.30 | 2.98E-14 |
| | 57 | 10,207 | | | | | 1.203E-03 | 358 | 0.2 | 72 | 1.68E-05 | 0.02 | 1.00 | 41.36 | | | | | | | |
| 3 | | | 355 | 0.02000 | 1.837E-06 | 6.520E-04 | | | | | | | | | 193.6 | 1,010 | 9.23 | 4.6121E-16 | 3.691E+06 | 3.25 | 5.53E-11 |
| | 56 | 9,852 | | | | | 1.855E-03 | 352 | 0.2 | 70 | 2.64E-05 | 0.04 | 1.00 | 26.35 | | | | | | | |
| 4 | | | 349 | 0.02000 | 1.837E-06 | 6.404E-04 | | | | | | | | | 167.3 | 1,359 | 12.42 | 5.6394E-14 | 3.691E+06 | 3.19 | 6.64E-09 |
| | 55 | 9,503 | | | | | 2.495E-03 | 346 | 0.2 | 69 | 3.61E-05 | 0.05 | 1.00 | 19.24 | | | | | | | |
| 5 | | | 342 | 0.02000 | 1.837E-06 | 6.289E-04 | | | | | | | | | 148.0 | 1,701 | 15.55 | 1.8840E-12 | 3.691E+06 | 3.13 | 2.18E-07 |
| | 54 | 9,161 | | | | | 3.124E-03 | 339 | 0.2 | 68 | 4.60E-05 | 0.07 | 1.00 | 15.08 | | | | | | | |
| 6 | | | 336 | 0.02000 | 1.837E-06 | 6.174E-04 | | | | | | | | | 132.9 | 2,037 | 18.63 | 2.9514E-11 | 3.691E+06 | 3.07 | 3.35E-06 |
| | 53 | 8,825 | | | | | 3.741E-03 | 333 | 0.2 | 67 | 5.62E-05 | 0.08 | 1.00 | 12.36 | | | | | | | |
| 7 | | | 330 | 0.02000 | 1.837E-06 | 6.058E-04 | | | | | | | | | 120.6 | 2,367 | 21.64 | 2.8139E-10 | 3.691E+06 | 3.02 | 3.13E-05 |
| | 52 | 8,495 | | | | | 4.347E-03 | 327 | 0.2 | 65 | 6.65E-05 | 0.10 | 1.00 | 10.44 | | | | | | | |
| 8 | | | 324 | 0.02000 | 1.837E-06 | 5.943E-04 | | | | | | | | | 110.1 | 2,691 | 24.60 | 1.8890E-09 | 3.691E+06 | 2.96 | 2.06E-04 |
| | 51 | 8,171 | | | | | 4.941E-03 | 320 | 0.2 | 64 | 7.71E-05 | 0.11 | 1.00 | 9.01 | | | | | | | |
| 9 | | | 317 | 0.02000 | 1.837E-06 | 5.827E-04 | | | | | | | | | 101.1 | 3,008 | 27.50 | 9.7656E-09 | 3.691E+06 | 2.90 | 1.05E-03 |
| | 50 | 7,854 | | | | | 5.524E-03 | 314 | 0.2 | 63 | 8.79E-05 | 0.13 | 1.00 | 7.90 | | | | | | | |
| 10 | | | 311 | 0.02000 | 1.837E-06 | 5.712E-04 | | | | | | | | | 93.2 | 3,319 | 30.35 | 4.1247E-08 | 3.691E+06 | 2.84 | 4.33E-03 |
| | 49 | 7,543 | | | | | 6.095E-03 | 308 | 0.2 | 62 | 9.90E-05 | 0.14 | 1.00 | 7.02 | | | | | | | |
| 11 | | | 305 | 0.00063 | 1.837E-06 | 5.597E-04 | | | | | | | | | 86.2 | 3,624 | 33.14 | 1.4829E-07 | 3.691E+06 | 2.79 | 1.53E-02 |
| | 48 | 7,238 | | | | | 6.655E-03 | 302 | 0.2 | 60 | 1.10E-04 | 0.16 | 1.00 | 6.29 | | | | | | | |
| 12 | | | 298 | 0.00063 | 1.837E-06 | 5.481E-04 | | | | | | | | | 79.9 | 3,922 | 35.86 | 4.6742E-07 | 3.691E+06 | 2.73 | 4.71E-02 |
| | 47 | 6,940 | | | | | 7.203E-03 | 295 | 0.2 | 59 | 1.22E-04 | 0.18 | 1.00 | 5.69 | | | | | | | |
| 13 | | | 292 | 0.00063 | 1.837E-06 | 5.366E-04 | | | | | | | | | 74.2 | 4,214 | 38.54 | 1.3206E-06 | 3.691E+06 | 2.67 | 1.30E-01 |
| | 46 | 6,648 | | | | | 7.740E-03 | 289 | 0.2 | 58 | 1.34E-04 | 0.19 | 1.00 | 5.19 | | | | | | | |
| 14 | | | 286 | 0.00063 | 1.837E-06 | 5.250E-04 | | | | | | | | | 69.0 | 4,500 | 41.15 | 3.4012E-06 | 3.691E+06 | 2.61 | 3.28E-01 |
| | 45 | 6,362 | | | | | 8.265E-03 | 283 | 0.2 | 57 | 1.46E-04 | 0.21 | 1.00 | 4.75 | | | | | | | |
| 15 | | | 280 | 0.00063 | 1.837E-06 | 5.135E-04 | | | | | | | | | 64.3 | 4,780 | 43.71 | 8.0913E-06 | 3.691E+06 | 2.56 | 7.64E-01 |
| | 44 | 6,082 | | | | | 8.778E-03 | 276 | 0.2 | 55 | 1.59E-04 | 0.23 | 1.00 | 4.37 | | | | | | | |
| 16 | | | 273 | 0.00063 | 1.837E-06 | 5.020E-04 | | | | | | | | | 59.9 | 5,053 | 46.21 | 1.7969E-05 | 3.691E+06 | 2.50 | 1.66E+00 |
| | 43 | 5,809 | | | | | 9.280E-03 | 270 | 0.2 | 54 | 1.72E-04 | 0.25 | 1.00 | 4.04 | | | | | | | |
| 17 | | | 267 | 0.00063 | 1.837E-06 | 4.904E-04 | | | | | | | | | 55.9 | 5,320 | 48.65 | 3.7569E-05 | 3.691E+06 | 2.44 | 3.39E+00 |
| | 42 | 5,542 | | | | | 9.771E-03 | 264 | 0.2 | 53 | 1.85E-04 | 0.27 | 1.00 | 3.75 | | | | | | | |
| 18 | | | 261 | 0.00063 | 1.837E-06 | 4.789E-04 | | | | | | | | | 52.1 | 5,581 | 51.03 | 7.4470E-05 | 3.691E+06 | 2.38 | 6.55E+00 |
| | 41 | 5,281 | | | | | 1.025E-02 | 258 | 0.2 | 52 | 1.99E-04 | 0.29 | 1.00 | 3.49 | | | | | | | |
| 19 | | | 254 | 0.00063 | 1.837E-06 | 4.673E-04 | | | | | | | | | 48.6 | 5,835 | 53.36 | 1.4077E-04 | 3.691E+06 | 2.33 | 1.21E+01 |
| | 40 | 5,027 | | | | | 1.072E-02 | 251 | 0.2 | 50 | 2.13E-04 | 0.31 | 1.00 | 3.26 | | | | | | | |
| 20 | | | 248 | 0.00063 | 1.837E-06 | 4.558E-04 | | | | | | | | | 45.4 | 6,084 | 55.63 | 2.5499E-04 | 3.691E+06 | 2.27 | 2.14E+01 |
| | 39 | 4,778 | | | | | 1.117E-02 | 245 | 0.2 | 49 | 2.28E-04 | 0.33 | 1.00 | 3.05 | | | | | | | |
| 21 | | | 242 | 0.00063 | 1.837E-06 | 4.443E-04 | | | | | | | | | 42.3 | 6,325 | 57.84 | 4.4446E-04 | 3.691E+06 | 2.21 | 3.63E+01 |
| | 38 | 4,536 | | | | | 1.162E-02 | 239 | 0.2 | 48 | 2.43E-04 | 0.35 | 1.00 | 2.85 | | | | | | | |
| 22 | | | 236 | 0.00063 | 1.837E-06 | 4.327E-04 | | | | | | | | | 39.5 | 6,561 | 59.99 | 7.4810E-04 | 3.691E+06 | 2.15 | 5.95E+01 |
| | 37 | 4,301 | | | | | 1.205E-02 | 232 | 0.2 | 46 | 2.59E-04 | 0.37 | 1.00 | 2.68 | | | | | | | |
| 23 | | | 229 | 0.00063 | 1.837E-06 | 4.212E-04 | | | | | | | | | 36.8 | 6,790 | 62.09 | 1.2196E-03 | 3.691E+06 | 2.10 | 9.44E+01 |
| | 36 | 4,072 | | | | | 1.247E-02 | 226 | 0.2 | 45 | 2.76E-04 | 0.40 | 1.00 | 2.52 | | | | | | | |
| 24 | | | 223 | 0.00063 | 1.837E-06 | 4.096E-04 | | | | | | | | | 34.3 | 7,013 | 64.13 | 1.9310E-03 | 3.691E+06 | 2.04 | 1.45E+02 |
| | 35 | 3,848 | | | | | 1.288E-02 | 220 | 0.2 | 44 | 2.93E-04 | 0.42 | 1.00 | 2.37 | | | | | | | |
| 25 | | | 217 | 0.00063 | 1.837E-06 | 3.981E-04 | | | | | | | | | 31.9 | 7,230 | 66.11 | 2.9759E-03 | 3.691E+06 | 1.98 | 2.18E+02 |
| | 34 | 3,632 | | | | | 1.328E-02 | 214 | 0.2 | 43 | 3.11E-04 | 0.45 | 1.00 | 2.23 | | | | | | | |
| 26 | | | 210 | 0.00063 | 1.837E-06 | 3.866E-04 | | | | | | | | | 29.7 | 7,441 | 68.04 | 4.4733E-03 | 3.691E+06 | 1.92 | 3.18E+02 |
| | 33 | 3,421 | | | | | 1.367E-02 | 207 | 0.2 | 41 | 3.30E-04 | 0.47 | 1.00 | 2.11 | | | | | | | |
| 27 | | | 204 | 0.00063 | 1.837E-06 | 3.750E-04 | | | | | | | | | 27.6 | 7,645 | 69.91 | 6.5700E-03 | 3.691E+06 | 1.87 | 4.53E+02 |
| | 32 | 3,217 | | | | | 1.404E-02 | 201 | 0.2 | 40 | 3.49E-04 | 0.50 | 1.00 | 1.99 | | | | | | | |
| 28 | | | 198 | 0.00063 | 1.837E-06 | 3.635E-04 | | | | | | | | | 25.6 | 7,843 | 71.72 | 9.4433E-03 | 3.691E+06 | 1.81 | 6.31E+02 |
| | 31 | 3,019 | | | | | 1.440E-02 | 195 | 0.2 | 39 | 3.70E-04 | 0.53 | 1.00 | 1.88 | | | | | | | |
| 29 | | | 192 | 0.00063 | 1.837E-06 | 3.520E-04 | | | | | | | | | 23.7 | 8,034 | 73.47 | 1.3302E-02 | 3.691E+06 | 1.75 | 8.60E+02 |
| | 30 | 2,827 | | | | | 1.476E-02 | 188 | 0.2 | 38 | 3.91E-04 | 0.56 | 1.00 | 1.77 | | | | | | | |

**TABLE A-18 (CONTINUED)**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA A - ONE QUARTER ACRE AREA - ESTIMATE YEAR 2025- LANDFILL POROSITY = 0.2**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multilier (e^-kt) | Rn-222 Flux Rate from FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-22 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| 30 | | | 185 | 0.00063 | 1.837E-06 | 3.404E-04 | | | | | | | | | 21.9 | 8,220 | 75.16 | 1.8384E-02 | 3.691E+06 | 1.69 | 1.15E+03 |
| | 29 | 2,642 | | | | | 1.510E-02 | 182 | 0.2 | 36 | 4.14E-04 | 0.60 | 1.00 | 1.68 | | | | | | | |
| 31 | | | 179 | 0.00063 | 1.837E-06 | 3.289E-04 | | | | | | | | | 20.2 | 8,399 | 76.80 | 2.4960E-02 | 3.691E+06 | 1.64 | 1.51E+03 |
| | 28 | 2,463 | | | | | 1.542E-02 | 176 | 0.2 | 35 | 4.38E-04 | 0.63 | 1.00 | 1.58 | | | | | | | |
| 32 | | | 173 | 0.00063 | 1.837E-06 | 3.173E-04 | | | | | | | | | 18.6 | 8,572 | 78.38 | 3.3322E-02 | 3.691E+06 | 1.58 | 1.94E+03 |
| | 27 | 2,290 | | | | | 1.574E-02 | 170 | 0.2 | 34 | 4.64E-04 | 0.67 | 1.00 | 1.50 | | | | | | | |
| 33 | | | 167 | 0.00063 | 1.837E-06 | 3.058E-04 | | | | | | | | | 17.2 | 8,738 | 79.90 | 4.3782E-02 | 3.691E+06 | 1.52 | 2.46E+03 |
| | 26 | 2,124 | | | | | 1.605E-02 | 163 | 0.2 | 33 | 4.91E-04 | 0.71 | 1.00 | 1.41 | | | | | | | |
| 34 | | | 160 | 0.00063 | 1.837E-06 | 2.943E-04 | | | | | | | | | 15.7 | 8,898 | 81.37 | 5.6662E-02 | 3.691E+06 | 1.47 | 3.06E+03 |
| | 25 | 1,964 | | | | | 1.634E-02 | 157 | 0.2 | 31 | 5.20E-04 | 0.75 | 1.00 | 1.33 | | | | | | | |
| 35 | | | 154 | 0.00063 | 1.837E-06 | 2.827E-04 | | | | | | | | | 14.4 | 9,052 | 82.78 | 7.2284E-02 | 3.691E+06 | 1.41 | 3.76E+03 |
| | 24 | 1,810 | | | | | 1.663E-02 | 151 | 0.2 | 30 | 5.51E-04 | 0.79 | 1.00 | 1.26 | | | | | | | |
| 36 | | | 148 | 0.00063 | 1.837E-06 | 2.712E-04 | | | | | | | | | 13.1 | 9,200 | 84.13 | 9.0958E-02 | 3.691E+06 | 1.35 | 4.53E+03 |
| | 23 | 1,662 | | | | | 1.690E-02 | 145 | 0.2 | 29 | 5.85E-04 | 0.84 | 1.00 | 1.19 | | | | | | | |
| 37 | | | 141 | 0.00063 | 1.837E-06 | 2.596E-04 | | | | | | | | | 12.0 | 9,341 | 85.42 | 1.1296E-01 | 3.691E+06 | 1.29 | 5.39E+03 |
| | 22 | 1,521 | | | | | 1.716E-02 | 138 | 0.2 | 28 | 6.21E-04 | 0.89 | 1.00 | 1.12 | | | | | | | |
| 38 | | | 135 | 0.00063 | 1.837E-06 | 2.481E-04 | | | | | | | | | 10.8 | 9,476 | 86.65 | 1.3854E-01 | 3.691E+06 | 1.24 | 6.32E+03 |
| | 21 | 1,385 | | | | | 1.740E-02 | 132 | 0.2 | 26 | 6.60E-04 | 0.95 | 1.00 | 1.05 | | | | | | | |
| 39 | | | 129 | 0.00063 | 1.837E-06 | 2.366E-04 | | | | | | | | | 9.8 | 9,605 | 87.83 | 1.6788E-01 | 3.691E+06 | 1.18 | 7.30E+03 |
| | 20 | 1,257 | | | | | 1.764E-02 | 126 | 0.2 | 25 | 7.02E-04 | 1.01 | 1.00 | 0.99 | | | | | | | |
| 40 | | | 123 | 0.00063 | 1.837E-06 | 2.250E-04 | | | | | | | | | 8.8 | 9,728 | 88.95 | 2.0108E-01 | 3.691E+06 | 1.12 | 8.32E+03 |
| | 19 | 1,134 | | | | | 1.787E-02 | 119 | 0.2 | 24 | 7.48E-04 | 1.08 | 1.00 | 0.93 | | | | | | | |
| 41 | | | 116 | 0.00063 | 1.837E-06 | 2.135E-04 | | | | | | | | | 7.9 | 9,844 | 90.01 | 2.3817E-01 | 3.691E+06 | 1.06 | 9.34E+03 |
| | 18 | 1,018 | | | | | 1.808E-02 | 113 | 0.2 | 23 | 7.99E-04 | 1.15 | 1.00 | 0.87 | | | | | | | |
| 42 | | | 110 | 0.00063 | 1.837E-06 | 2.019E-04 | | | | | | | | | 7.0 | 9,954 | 91.02 | 2.7907E-01 | 3.691E+06 | 1.01 | 1.04E+04 |
| | 17 | 908 | | | | | 1.828E-02 | 107 | 0.2 | 21 | 8.56E-04 | 1.23 | 1.00 | 0.81 | | | | | | | |
| 43 | | | 104 | 0.00063 | 1.837E-06 | 1.904E-04 | | | | | | | | | 6.2 | 10,058 | 91.97 | 3.2360E-01 | 3.691E+06 | 0.95 | 1.13E+04 |
| | 16 | 804 | | | | | 1.847E-02 | 101 | 0.2 | 20 | 9.19E-04 | 1.32 | 1.00 | 0.76 | | | | | | | |
| 44 | | | 97 | 0.00063 | 1.837E-06 | 1.789E-04 | | | | | | | | | 5.4 | 10,155 | 92.86 | 3.7144E-01 | 3.691E+06 | 0.89 | 1.22E+04 |
| | 15 | 707 | | | | | 1.865E-02 | 94 | 0.2 | 19 | 9.89E-04 | 1.42 | 1.00 | 0.70 | | | | | | | |
| 45 | | | 91 | 0.00063 | 1.837E-06 | 1.673E-04 | | | | | | | | | 4.7 | 10,246 | 93.69 | 4.2217E-01 | 3.691E+06 | 0.83 | 1.30E+04 |
| | 14 | 616 | | | | | 1.882E-02 | 88 | 0.2 | 18 | 1.07E-03 | 1.54 | 1.00 | 0.65 | | | | | | | |
| 46 | | | 85 | 0.00063 | 1.837E-06 | 1.558E-04 | | | | | | | | | 4.1 | 10,331 | 94.47 | 4.7524E-01 | 3.691E+06 | 0.78 | 1.36E+04 |
| | 13 | 531 | | | | | 1.897E-02 | 82 | 0.2 | 16 | 1.16E-03 | 1.67 | 1.00 | 0.60 | | | | | | | |
| 47 | | | 79 | 0.00063 | 1.837E-06 | 1.442E-04 | | | | | | | | | 3.5 | 10,410 | 95.19 | 5.3000E-01 | 3.691E+06 | 0.72 | 1.40E+04 |
| | 12 | 452 | | | | | 1.912E-02 | 75 | 0.2 | 15 | 1.27E-03 | 1.83 | 1.00 | 0.55 | | | | | | | |
| 48 | | | 72 | 0.00063 | 1.837E-06 | 1.327E-04 | | | | | | | | | 2.9 | 10,482 | 95.85 | 5.8569E-01 | 3.691E+06 | 0.66 | 1.43E+04 |
| | 11 | 380 | | | | | 1.925E-02 | 69 | 0.2 | 14 | 1.39E-03 | 2.01 | 1.00 | 0.50 | | | | | | | |
| 49 | | | 66 | 0.00063 | 1.837E-06 | 1.212E-04 | | | | | | | | | 2.4 | 10,548 | 96.45 | 6.4146E-01 | 3.691E+06 | 0.60 | 1.43E+04 |
| | 10 | 314 | | | | | 1.937E-02 | 63 | 0.2 | 13 | 1.54E-03 | 2.22 | 1.00 | 0.45 | | | | | | | |
| 50 | | | 60 | 0.00063 | 1.837E-06 | 1.096E-04 | | | | | | | | | 2.0 | 10,607 | 97.00 | 6.9640E-01 | 3.691E+06 | 0.55 | 1.40E+04 |
| | 9 | 254 | | | | | 1.948E-02 | 57 | 0.2 | 11 | 1.72E-03 | 2.48 | 1.00 | 0.40 | | | | | | | |
| 51 | | | 53 | 0.00063 | 1.837E-06 | 9.808E-05 | | | | | | | | | 1.6 | 10,661 | 97.48 | 7.4954E-01 | 3.691E+06 | 0.49 | 1.35E+04 |
| | 8 | 201 | | | | | 1.958E-02 | 50 | 0.2 | 10 | 1.95E-03 | 2.80 | 1.00 | 0.36 | | | | | | | |
| 52 | | | 47 | 0.00063 | 1.837E-06 | 8.655E-05 | | | | | | | | | 1.2 | 10,708 | 97.91 | 7.9991E-01 | 3.691E+06 | 0.43 | 1.27E+04 |
| | 7 | 154 | | | | | 1.967E-02 | 44 | 0.2 | 9 | 2.24E-03 | 3.22 | 1.00 | 0.31 | | | | | | | |
| 53 | | | 41 | 0.00063 | 1.837E-06 | 7.501E-05 | | | | | | | | | 0.9 | 10,749 | 98.29 | 8.4654E-01 | 3.691E+06 | 0.37 | 1.17E+04 |
| | 6 | 113 | | | | | 1.974E-02 | 38 | 0.2 | 8 | 2.62E-03 | 3.77 | 1.00 | 0.27 | | | | | | | |
| 54 | | | 35 | 0.00063 | 1.837E-06 | 6.347E-05 | | | | | | | | | 0.6 | 10,783 | 98.60 | 8.8850E-01 | 3.691E+06 | 0.32 | 1.04E+04 |
| | 5 | 79 | | | | | 1.980E-02 | 31 | 0.2 | 6 | 3.15E-03 | 4.54 | 1.00 | 0.22 | | | | | | | |
| 55 | | | 28 | 0.00063 | 1.837E-06 | 5.193E-05 | | | | | | | | | 0.4 | 10,812 | 98.86 | 9.2494E-01 | 3.691E+06 | 0.26 | 8.83E+03 |
| | 4 | 50 | | | | | 1.986E-02 | 25 | 0.2 | 5 | 3.95E-03 | 5.69 | 1.00 | 0.18 | | | | | | | |
| 56 | | | 22 | 0.00063 | 1.837E-06 | 4.039E-05 | | | | | | | | | 0.3 | 10,834 | 99.06 | 9.5507E-01 | 3.691E+06 | 0.20 | 7.09E+03 |
| | 3 | 28 | | | | | 1.990E-02 | 19 | 0.2 | 4 | 5.28E-03 | 7.60 | 1.00 | 0.13 | | | | | | | |
| 57 | | | 16 | 0.00063 | 1.837E-06 | 2.885E-05 | | | | | | | | | 0.1 | 10,849 | 99.21 | 9.7827E-01 | 3.691E+06 | 0.14 | 5.19E+03 |
| | 2 | 13 | | | | | 1.993E-02 | 13 | 0.2 | 3 | 7.93E-03 | 11.42 | 1.00 | 0.09 | | | | | | | |
| 58 | | | 5 | 0.00063 | 1.837E-06 | 1.010E-05 | | | | | | | | | 0.0 | 10,855 | 99.26 | 9.9403E-01 | 3.691E+06 | 0.05 | 1.84E+03 |
| | 1.5 | 7 | | | | | 1.994E-02 | 9 | 0.2 | 2 | 1.06E-02 | 15.23 | 0.50 | 0.03 | | | | | | | |
| 59 | | | 7 | 0.00063 | 1.837E-06 | 1.298E-05 | | | | | | | | | 0.0 | 10,862 | 99.32 | 1.0000E+00 | 3.691E+06 | 0.06 | 2.39E+03 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Considered | pCi/min | 2.487E+05 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Not Considered | pCi/min | 3.691E+06 |

| | | |
|---|---|---|
| Reduction in Rn-222 Flux Due to Decay (%) | % | 93.26 |

**TABLE A-19**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA A - ONE QUARTER ACRE AREA - ESTIMATE YEAR 2100 - LANDFILL POROSITY = 0.2**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multilier (e^-kt) | Rn-222 Flux Rate from FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-22 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| | 58.80 | 10,862 | | | | | 0 | | | | 0 | 0 | | | | | | | | | |
| 1 | | | 294 | 0.00063 | 5.739E-08 | 1.685E-05 | | | | | | | | | 9,922 | 294 | 2.68 | 0.0000E+00 | 5.196E+06 | 2.68 | 0.00E+00 |
| | 58 | 10,568 | | | | | 1.685E-05 | 364 | 0.2 | 73 | 2.31E-07 | 0.00 | 0.80 | 2,403 | | | | | | | |
| 2 | | | 361 | 0.00063 | 5.739E-08 | 2.073E-05 | | | | | | | | | 7,519 | 655 | 5.99 | 0.0000E+00 | 5.196E+06 | 3.30 | 0.00E+00 |
| | 57 | 10,207 | | | | | 3.758E-05 | 358 | 0.2 | 72 | 5.25E-07 | 0.00 | 1.00 | 1,324 | | | | | | | |
| 3 | | | 355 | 0.00063 | 5.739E-08 | 2.037E-05 | | | | | | | | | 6,195 | 1,010 | 9.23 | 0.0000E+00 | 5.196E+06 | 3.25 | 0.00E+00 |
| | 56 | 9,852 | | | | | 5.796E-05 | 352 | 0.2 | 70 | 8.24E-07 | 0.00 | 1.00 | 843 | | | | | | | |
| 4 | | | 349 | 0.00063 | 5.739E-08 | 2.001E-05 | | | | | | | | | 5,352 | 1,359 | 12.42 | 0.0000E+00 | 5.196E+06 | 3.19 | 0.00E+00 |
| | 55 | 9,503 | | | | | 7.797E-05 | 346 | 0.2 | 69 | 1.13E-06 | 0.00 | 1.00 | 616 | | | | | | | |
| 5 | | | 342 | 0.00063 | 5.739E-08 | 1.965E-05 | | | | | | | | | 4,736 | 1,701 | 15.55 | 0.0000E+00 | 5.196E+06 | 3.13 | 0.00E+00 |
| | 54 | 9,161 | | | | | 9.762E-05 | 339 | 0.2 | 68 | 1.44E-06 | 0.00 | 1.00 | 483 | | | | | | | |
| 6 | | | 336 | 0.00063 | 5.739E-08 | 1.929E-05 | | | | | | | | | 4,254 | 2,037 | 18.63 | 0.0000E+00 | 5.196E+06 | 3.07 | 0.00E+00 |
| | 53 | 8,825 | | | | | 1.169E-04 | 333 | 0.2 | 67 | 1.76E-06 | 0.00 | 1.00 | 396 | | | | | | | |
| 7 | | | 330 | 0.00063 | 5.739E-08 | 1.893E-05 | | | | | | | | | 3,858 | 2,367 | 21.64 | 2.3878E-306 | 5.196E+06 | 3.02 | 3.74E-301 |
| | 52 | 8,495 | | | | | 1.358E-04 | 327 | 0.2 | 65 | 2.08E-06 | 0.00 | 1.00 | 334 | | | | | | | |
| 8 | | | 324 | 0.00063 | 5.739E-08 | 1.857E-05 | | | | | | | | | 3,524 | 2,691 | 24.60 | 6.9052E-280 | 5.196E+06 | 2.96 | 1.06E-274 |
| | 51 | 8,171 | | | | | 1.544E-04 | 320 | 0.2 | 64 | 2.41E-06 | 0.00 | 1.00 | 288 | | | | | | | |
| 9 | | | 317 | 0.00063 | 5.739E-08 | 1.821E-05 | | | | | | | | | 3,236 | 3,008 | 27.50 | 4.6808E-257 | 5.196E+06 | 2.90 | 7.06E-252 |
| | 50 | 7,854 | | | | | 1.726E-04 | 314 | 0.2 | 63 | 2.75E-06 | 0.00 | 1.00 | 253 | | | | | | | |
| 10 | | | 311 | 0.00063 | 5.739E-08 | 1.785E-05 | | | | | | | | | 2,983 | 3,319 | 30.35 | 4.9269E-237 | 5.196E+06 | 2.84 | 7.28E-232 |
| | 49 | 7,543 | | | | | 1.905E-04 | 308 | 0.2 | 62 | 3.09E-06 | 0.00 | 1.00 | 224 | | | | | | | |
| 11 | | | 305 | 0.00063 | 5.739E-08 | 1.749E-05 | | | | | | | | | 2,759 | 3,624 | 33.14 | 2.9895E-219 | 5.196E+06 | 2.79 | 4.33E-214 |
| | 48 | 7,238 | | | | | 2.080E-04 | 302 | 0.2 | 60 | 3.45E-06 | 0.00 | 1.00 | 201.41 | | | | | | | |
| 12 | | | 298 | 0.00063 | 5.739E-08 | 1.713E-05 | | | | | | | | | 2,557 | 3,922 | 35.86 | 2.6962E-203 | 5.196E+06 | 2.73 | 3.82E-198 |
| | 47 | 6,940 | | | | | 2.251E-04 | 295 | 0.2 | 59 | 3.81E-06 | 0.01 | 1.00 | 182.21 | | | | | | | |
| 13 | | | 292 | 0.00063 | 5.739E-08 | 1.677E-05 | | | | | | | | | 2,375 | 4,214 | 38.54 | 7.3229E-189 | 5.196E+06 | 2.67 | 1.02E-183 |
| | 46 | 6,648 | | | | | 2.419E-04 | 289 | 0.2 | 58 | 4.18E-06 | 0.01 | 1.00 | 165.97 | | | | | | | |
| 14 | | | 286 | 0.00063 | 5.739E-08 | 1.641E-05 | | | | | | | | | 2,209 | 4,500 | 41.15 | 1.0283E-175 | 5.196E+06 | 2.61 | 1.40E-170 |
| | 45 | 6,362 | | | | | 2.583E-04 | 283 | 0.2 | 57 | 4.57E-06 | 0.01 | 1.00 | 152.05 | | | | | | | |
| 15 | | | 280 | 0.00063 | 5.739E-08 | 1.605E-05 | | | | | | | | | 2,057 | 4,780 | 43.71 | 1.1394E-163 | 5.196E+06 | 2.56 | 1.51E-158 |
| | 44 | 6,082 | | | | | 2.743E-04 | 276 | 0.2 | 55 | 4.96E-06 | 0.01 | 1.00 | 139.97 | | | | | | | |
| 16 | | | 273 | 0.00063 | 5.739E-08 | 1.569E-05 | | | | | | | | | 1,917 | 5,053 | 46.21 | 1.3952E-152 | 5.196E+06 | 2.50 | 1.81E-147 |
| | 43 | 5,809 | | | | | 2.900E-04 | 270 | 0.2 | 54 | 5.37E-06 | 0.01 | 1.00 | 129.39 | | | | | | | |
| 17 | | | 267 | 0.00063 | 5.739E-08 | 1.533E-05 | | | | | | | | | 1,788 | 5,320 | 48.65 | 2.4803E-142 | 5.196E+06 | 2.44 | 3.15E-137 |
| | 42 | 5,542 | | | | | 3.053E-04 | 264 | 0.2 | 53 | 5.79E-06 | 0.01 | 1.00 | 120.04 | | | | | | | |
| 18 | | | 261 | 0.00063 | 5.739E-08 | 1.497E-05 | | | | | | | | | 1,668 | 5,581 | 51.03 | 8.0074E-133 | 5.196E+06 | 2.38 | 9.92E-128 |
| | 41 | 5,281 | | | | | 3.203E-04 | 258 | 0.2 | 52 | 6.22E-06 | 0.01 | 1.00 | 111.71 | | | | | | | |
| 19 | | | 254 | 0.00063 | 5.739E-08 | 1.460E-05 | | | | | | | | | 1,556 | 5,835 | 53.36 | 5.6541E-124 | 5.196E+06 | 2.33 | 6.84E-119 |
| | 40 | 5,027 | | | | | 3.349E-04 | 251 | 0.2 | 50 | 6.66E-06 | 0.01 | 1.00 | 104.23 | | | | | | | |
| 20 | | | 248 | 0.00063 | 5.739E-08 | 1.424E-05 | | | | | | | | | 1,452 | 6,084 | 55.63 | 1.0208E-115 | 5.196E+06 | 2.27 | 1.20E-110 |
| | 39 | 4,778 | | | | | 3.491E-04 | 245 | 0.2 | 49 | 7.12E-06 | 0.01 | 1.00 | 97.48 | | | | | | | |
| 21 | | | 242 | 0.00063 | 5.739E-08 | 1.388E-05 | | | | | | | | | 1,354 | 6,325 | 57.84 | 5.3786E-108 | 5.196E+06 | 2.21 | 6.18E-103 |
| | 38 | 4,536 | | | | | 3.630E-04 | 239 | 0.2 | 48 | 7.60E-06 | 0.01 | 1.00 | 91.35 | | | | | | | |
| 22 | | | 236 | 0.00063 | 5.739E-08 | 1.352E-05 | | | | | | | | | 1,263 | 6,561 | 59.99 | 9.2616E-101 | 5.196E+06 | 2.15 | 1.04E-95 |
| | 37 | 4,301 | | | | | 3.766E-04 | 232 | 0.2 | 46 | 8.10E-06 | 0.01 | 1.00 | 85.75 | | | | | | | |
| 23 | | | 229 | 0.00063 | 5.739E-08 | 1.316E-05 | | | | | | | | | 1,177 | 6,790 | 62.09 | 5.7446E-94 | 5.196E+06 | 2.10 | 6.26E-89 |
| | 36 | 4,072 | | | | | 3.897E-04 | 226 | 0.2 | 45 | 8.61E-06 | 0.01 | 1.00 | 80.61 | | | | | | | |
| 24 | | | 223 | 0.00063 | 5.739E-08 | 1.280E-05 | | | | | | | | | 1,096 | 7,013 | 64.13 | 1.3965E-87 | 5.196E+06 | 2.04 | 1.48E-82 |
| | 35 | 3,848 | | | | | 4.025E-04 | 220 | 0.2 | 44 | 9.15E-06 | 0.01 | 1.00 | 75.88 | | | | | | | |
| 25 | | | 217 | 0.00063 | 5.739E-08 | 1.244E-05 | | | | | | | | | 1,021 | 7,230 | 66.11 | 1.4321E-81 | 5.196E+06 | 1.98 | 1.47E-76 |
| | 34 | 3,632 | | | | | 4.150E-04 | 214 | 0.2 | 43 | 9.71E-06 | 0.01 | 1.00 | 71.50 | | | | | | | |
| 26 | | | 210 | 0.00063 | 5.739E-08 | 1.208E-05 | | | | | | | | | 949 | 7,441 | 68.04 | 6.6087E-76 | 5.196E+06 | 1.92 | 6.61E-71 |
| | 33 | 3,421 | | | | | 4.270E-04 | 207 | 0.2 | 41 | 1.03E-05 | 0.01 | 1.00 | 67.44 | | | | | | | |
| 27 | | | 204 | 0.00063 | 5.739E-08 | 1.172E-05 | | | | | | | | | 882 | 7,645 | 69.91 | 1.4526E-70 | 5.196E+06 | 1.87 | 1.41E-65 |
| | 32 | 3,217 | | | | | 4.388E-04 | 201 | 0.2 | 40 | 1.09E-05 | 0.02 | 1.00 | 63.65 | | | | | | | |
| 28 | | | 198 | 0.00063 | 5.739E-08 | 1.136E-05 | | | | | | | | | 818 | 7,843 | 71.72 | 1.5993E-65 | 5.196E+06 | 1.81 | 1.50E-60 |
| | 31 | 3,019 | | | | | 4.501E-04 | 195 | 0.2 | 39 | 1.16E-05 | 0.02 | 1.00 | 60.10 | | | | | | | |
| 29 | | | 192 | 0.00063 | 5.739E-08 | 1.100E-05 | | | | | | | | | 758 | 8,034 | 73.47 | 9.2233E-61 | 5.196E+06 | 1.75 | 8.40E-56 |
| | 30 | 2,827 | | | | | 4.611E-04 | 188 | 0.2 | 38 | 1.22E-05 | 0.02 | 1.00 | 56.78 | | | | | | | |

**TABLE A-19 (CONTINUED)**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA A - ONE QUARTER ACRE AREA - ESTIMATE YEAR 2100 - LANDFILL POROSITY = 0.2**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multilier (e^-kt) | Rn-222 Flux Rate frrom FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-22 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| 30 | | | 185 | 0.00063 | 5.739E-08 | 1.064E-05 | | | | | | | | | 701 | 8,220 | 75.16 | 2.8999E-56 | 5.196E+06 | 1.69 | 2.55E-51 |
| | 29 | 2,642 | | | | | 4.718E-04 | 182 | 0.2 | 36 | 1.29E-05 | 0.02 | 1.00 | 53.65 | | | | | | | |
| 31 | | | 179 | 0.00063 | 5.739E-08 | 1.028E-05 | | | | | | | | | 647 | 8,399 | 76.80 | 5.1513E-52 | 5.196E+06 | 1.64 | 4.38E-47 |
| | 28 | 2,463 | | | | | 4.820E-04 | 176 | 0.2 | 35 | 1.37E-05 | 0.02 | 1.00 | 50.69 | | | | | | | |
| 32 | | | 173 | 0.00063 | 5.739E-08 | 9.917E-06 | | | | | | | | | 597 | 8,572 | 78.38 | 5.3388E-48 | 5.196E+06 | 1.58 | 4.38E-43 |
| | 27 | 2,290 | | | | | 4.919E-04 | 170 | 0.2 | 34 | 1.45E-05 | 0.02 | 1.00 | 47.90 | | | | | | | |
| 33 | | | 167 | 0.00063 | 5.739E-08 | 9.556E-06 | | | | | | | | | 549 | 8,738 | 79.90 | 3.3227E-44 | 5.196E+06 | 1.52 | 2.63E-39 |
| | 26 | 2,124 | | | | | 5.015E-04 | 163 | 0.2 | 33 | 1.53E-05 | 0.02 | 1.00 | 45.24 | | | | | | | |
| 34 | | | 160 | 0.00063 | 5.739E-08 | 9.195E-06 | | | | | | | | | 504 | 8,898 | 81.37 | 1.2747E-40 | 5.196E+06 | 1.47 | 9.70E-36 |
| | 25 | 1,964 | | | | | 5.107E-04 | 157 | 0.2 | 31 | 1.63E-05 | 0.02 | 1.00 | 42.72 | | | | | | | |
| 35 | | | 154 | 0.00063 | 5.739E-08 | 8.835E-06 | | | | | | | | | 461 | 9,052 | 82.78 | 3.0863E-37 | 5.196E+06 | 1.41 | 2.26E-32 |
| | 24 | 1,810 | | | | | 5.195E-04 | 151 | 0.2 | 30 | 1.72E-05 | 0.02 | 1.00 | 40.31 | | | | | | | |
| 36 | | | 148 | 0.00063 | 5.739E-08 | 8.474E-06 | | | | | | | | | 421 | 9,200 | 84.13 | 4.8180E-34 | 5.196E+06 | 1.35 | 3.38E-29 |
| | 23 | 1,662 | | | | | 5.280E-04 | 145 | 0.2 | 29 | 1.83E-05 | 0.03 | 1.00 | 38.01 | | | | | | | |
| 37 | | | 141 | 0.00063 | 5.739E-08 | 8.114E-06 | | | | | | | | | 383 | 9,341 | 85.42 | 4.9443E-31 | 5.196E+06 | 1.29 | 3.32E-26 |
| | 22 | 1,521 | | | | | 5.361E-04 | 138 | 0.2 | 28 | 1.94E-05 | 0.03 | 1.00 | 35.81 | | | | | | | |
| 38 | | | 135 | 0.00063 | 5.739E-08 | 7.753E-06 | | | | | | | | | 347 | 9,476 | 86.65 | 3.3950E-28 | 5.196E+06 | 1.24 | 2.18E-23 |
| | 21 | 1,385 | | | | | 5.439E-04 | 132 | 0.2 | 26 | 2.06E-05 | 0.03 | 1.00 | 33.70 | | | | | | | |
| 39 | | | 129 | 0.00063 | 5.739E-08 | 7.392E-06 | | | | | | | | | 313 | 9,605 | 87.83 | 1.5850E-25 | 5.196E+06 | 1.18 | 9.70E-21 |
| | 20 | 1,257 | | | | | 5.513E-04 | 126 | 0.2 | 25 | 2.19E-05 | 0.03 | 1.00 | 31.66 | | | | | | | |
| 40 | | | 123 | 0.00063 | 5.739E-08 | 7.032E-06 | | | | | | | | | 281 | 9,728 | 88.95 | 5.1053E-23 | 5.196E+06 | 1.12 | 2.97E-18 |
| | 19 | 1,134 | | | | | 5.583E-04 | 119 | 0.2 | 24 | 2.34E-05 | 0.03 | 1.00 | 29.70 | | | | | | | |
| 41 | | | 116 | 0.00063 | 5.739E-08 | 6.671E-06 | | | | | | | | | 252 | 9,844 | 90.01 | 1.1498E-20 | 5.196E+06 | 1.06 | 6.35E-16 |
| | 18 | 1,018 | | | | | 5.650E-04 | 113 | 0.2 | 23 | 2.50E-05 | 0.04 | 1.00 | 27.80 | | | | | | | |
| 42 | | | 110 | 0.00063 | 5.739E-08 | 6.311E-06 | | | | | | | | | 224 | 9,954 | 91.02 | 1.8325E-18 | 5.196E+06 | 1.01 | 9.57E-14 |
| | 17 | 908 | | | | | 5.713E-04 | 107 | 0.2 | 21 | 2.67E-05 | 0.04 | 1.00 | 25.97 | | | | | | | |
| 43 | | | 104 | 0.00063 | 5.739E-08 | 5.950E-06 | | | | | | | | | 198 | 10,058 | 91.97 | 2.0901E-16 | 5.196E+06 | 0.95 | 1.03E-11 |
| | 16 | 804 | | | | | 5.772E-04 | 101 | 0.2 | 20 | 2.87E-05 | 0.04 | 1.00 | 24.19 | | | | | | | |
| 44 | | | 97 | 0.00063 | 5.739E-08 | 5.589E-06 | | | | | | | | | 174 | 10,155 | 92.86 | 1.7231E-14 | 5.196E+06 | 0.89 | 7.97E-10 |
| | 15 | 707 | | | | | 5.828E-04 | 94 | 0.2 | 19 | 3.09E-05 | 0.04 | 1.00 | 22.5 | | | | | | | |
| 45 | | | 91 | 0.00063 | 5.739E-08 | 5.229E-06 | | | | | | | | | 151 | 10,246 | 93.69 | 1.0363E-12 | 5.196E+06 | 0.83 | 4.49E-08 |
| | 14 | 616 | | | | | 5.880E-04 | 88 | 0.2 | 18 | 3.34E-05 | 0.05 | 1.00 | 20.8 | | | | | | | |
| 46 | | | 85 | 0.00063 | 5.739E-08 | 4.868E-06 | | | | | | | | | 131 | 10,331 | 94.47 | 4.5842E-11 | 5.196E+06 | 0.78 | 1.85E-06 |
| | 13 | 531 | | | | | 5.929E-04 | 82 | 0.2 | 16 | 3.63E-05 | 0.05 | 1.00 | 19.1 | | | | | | | |
| 47 | | | 79 | 0.00063 | 5.739E-08 | 4.508E-06 | | | | | | | | | 111 | 10,410 | 95.19 | 1.5029E-09 | 5.196E+06 | 0.72 | 5.61E-05 |
| | 12 | 452 | | | | | 5.974E-04 | 75 | 0.2 | 15 | 3.96E-05 | 0.06 | 1.00 | 17.5 | | | | | | | |
| 48 | | | 72 | 0.00063 | 5.739E-08 | 4.147E-06 | | | | | | | | | 94 | 10,482 | 95.85 | 3.6769E-08 | 5.196E+06 | 0.66 | 1.26E-03 |
| | 11 | 380 | | | | | 6.016E-04 | 69 | 0.2 | 14 | 4.35E-05 | 0.06 | 1.00 | 16.0 | | | | | | | |
| 49 | | | 66 | 0.00063 | 5.739E-08 | 3.786E-06 | | | | | | | | | 78 | 10,548 | 96.45 | 6.7534E-07 | 5.196E+06 | 0.60 | 2.12E-02 |
| | 10 | 314 | | | | | 6.054E-04 | 63 | 0.2 | 13 | 4.82E-05 | 0.07 | 1.00 | 14.4 | | | | | | | |
| 50 | | | 60 | 0.00063 | 5.739E-08 | 3.426E-06 | | | | | | | | | 63.5 | 10,607 | 97.00 | 9.3643E-06 | 5.196E+06 | 0.55 | 2.66E-01 |
| | 9 | 254 | | | | | 6.088E-04 | 57 | 0.2 | 11 | 5.38E-05 | 0.08 | 1.00 | 12.9 | | | | | | | |
| 51 | | | 53 | 0.00063 | 5.739E-08 | 3.065E-06 | | | | | | | | | 50.6 | 10,661 | 97.48 | 9.8502E-05 | 5.196E+06 | 0.49 | 2.50E+00 |
| | 8 | 201 | | | | | 6.118E-04 | 50 | 0.2 | 10 | 6.09E-05 | 0.09 | 1.00 | 11.4 | | | | | | | |
| 52 | | | 47 | 0.00063 | 5.739E-08 | 2.705E-06 | | | | | | | | | 39.2 | 10,708 | 97.91 | 7.8942E-04 | 5.196E+06 | 0.43 | 1.77E+01 |
| | 7 | 154 | | | | | 6.146E-04 | 44 | 0.2 | 9 | 6.99E-05 | 0.10 | 1.00 | 9.9 | | | | | | | |
| 53 | | | 41 | 0.00063 | 5.739E-08 | 2.344E-06 | | | | | | | | | 29.2 | 10,749 | 98.29 | 4.8385E-03 | 5.196E+06 | 0.37 | 9.39E+01 |
| | 6 | 113 | | | | | 6.169E-04 | 38 | 0.2 | 8 | 8.18E-05 | 0.12 | 1.00 | 8.5 | | | | | | | |
| 54 | | | 35 | 0.00063 | 5.739E-08 | 1.983E-06 | | | | | | | | | 20.7 | 10,783 | 98.60 | 2.2754E-02 | 5.196E+06 | 0.32 | 3.74E+02 |
| | 5 | 79 | | | | | 6.189E-04 | 31 | 0.2 | 6 | 9.85E-05 | 0.14 | 1.00 | 7.1 | | | | | | | |
| 55 | | | 28 | 0.00063 | 5.739E-08 | 1.623E-06 | | | | | | | | | 13.7 | 10,812 | 98.86 | 8.2331E-02 | 5.196E+06 | 0.26 | 1.11E+03 |
| | 4 | 50 | | | | | 6.205E-04 | 25 | 0.2 | 5 | 1.23E-04 | 0.18 | 1.00 | 5.6 | | | | | | | |
| 56 | | | 22 | 0.00063 | 5.739E-08 | 1.262E-06 | | | | | | | | | 8.1 | 10,834 | 99.06 | 2.2972E-01 | 5.196E+06 | 0.20 | 2.40E+03 |
| | 3 | 28 | | | | | 6.218E-04 | 19 | 0.2 | 4 | 1.65E-04 | 0.24 | 1.00 | 4.2 | | | | | | | |
| 57 | | | 16 | 0.00063 | 5.739E-08 | 9.015E-07 | | | | | | | | | 3.9 | 10,849 | 99.21 | 4.9515E-01 | 5.196E+06 | 0.14 | 3.70E+03 |
| | 2 | 13 | | | | | 6.227E-04 | 13 | 0.2 | 3 | 2.48E-04 | 0.36 | 1.00 | 2.8 | | | | | | | |
| 58 | | | 5 | 0.00063 | 5.739E-08 | 3.155E-07 | | | | | | | | | 1.1 | 10,855 | 99.26 | 8.2561E-01 | 5.196E+06 | 0.05 | 2.16E+03 |
| | 1.5 | 7 | | | | | 6.230E-04 | 9 | 0.2 | 2 | 3.31E-04 | 0.48 | 0.50 | 1.1 | | | | | | | |
| 59 | | | 7 | 0.00063 | 5.739E-08 | 4.057E-07 | | | | | | | | | 0.0 | 10,862 | 99.32 | 1.0000E+00 | 5.196E+06 | 0.06 | 3.36E+03 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Considered | pCi/min | 1.320E+04 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Not Considered | pCi/min | 5.196E+06 |

| | | |
|---|---|---|
| Reduction in Rn-222 Flux Due to Decay (%) | % | 99.75 |

**TABLE A-20**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA A - ONE ACRE AREA - ESTIMATE YEAR 2000 - LANDFILL POROSITY = 0.1**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multilier (e^-kt) | Rn-222 Flux Rate frrom FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-22 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| | 117.75 | 43,558 | | | | | 0 | | | | 0 | 0 | | | | | | | | | |
| 1 | | | 1,285 | 0.283 | 6.485E-06 | 0.0083 | | | | | | | | | 43.3 | 1,285 | 2.95 | 3.6871E-04 | 3.011E+06 | 2.95 | 3.28E+01 |
| | 116 | 42,273 | | | | | 0.008 | 729 | 0.1 | 73 | 1.14E-04 | 0.16 | 1.75 | 10.63 | | | | | | | |
| 2 | | | 1,445 | 0.283 | 6.485E-06 | 0.0094 | | | | | | | | | 32.7 | 2,730 | 6.27 | 2.5619E-03 | 3.011E+06 | 3.32 | 2.56E+02 |
| | 114 | 40,828 | | | | | 0.018 | 716 | 0.1 | 72 | 2.47E-04 | 0.36 | 2.00 | 5.62 | | | | | | | |
| 3 | | | 1,420 | 0.283 | 6.485E-06 | 0.0092 | | | | | | | | | 27.1 | 4,150 | 9.53 | 7.1390E-03 | 3.011E+06 | 3.26 | 7.01E+02 |
| | 112 | 39,408 | | | | | 0.027 | 704 | 0.1 | 70 | 3.82E-04 | 0.55 | 2.00 | 3.63 | | | | | | | |
| 4 | | | 1,395 | 0.283 | 6.485E-06 | 0.0090 | | | | | | | | | 23.5 | 5,545 | 12.73 | 1.3845E-02 | 3.011E+06 | 3.20 | 1.33E+03 |
| | 110 | 38,013 | | | | | 0.036 | 691 | 0.1 | 69 | 5.20E-04 | 0.75 | 2.00 | 2.67 | | | | | | | |
| 5 | | | 1,370 | 0.283 | 6.485E-06 | 0.0089 | | | | | | | | | 20.8 | 6,915 | 15.87 | 2.2529E-02 | 3.011E+06 | 3.14 | 2.13E+03 |
| | 108 | 36,644 | | | | | 0.045 | 679 | 0.1 | 68 | 6.61E-04 | 0.95 | 2.00 | 2.10 | | | | | | | |
| 6 | | | 1,345 | 0.283 | 6.485E-06 | 0.0087 | | | | | | | | | 18.7 | 8,259 | 18.96 | 3.3054E-02 | 3.011E+06 | 3.09 | 3.07E+03 |
| | 106 | 35,299 | | | | | 0.054 | 666 | 0.1 | 67 | 8.04E-04 | 1.16 | 2.00 | 1.73 | | | | | | | |
| 7 | | | 1,319 | 0.283 | 6.485E-06 | 0.0086 | | | | | | | | | 17.0 | 9,579 | 21.99 | 4.5292E-02 | 3.011E+06 | 3.03 | 4.13E+03 |
| | 104 | 33,980 | | | | | 0.062 | 653 | 0.1 | 65 | 9.51E-04 | 1.37 | 2.00 | 1.46 | | | | | | | |
| 8 | | | 1,294 | 0.283 | 6.485E-06 | 0.0084 | | | | | | | | | 15.5 | 10,873 | 24.96 | 5.9123E-02 | 3.011E+06 | 2.97 | 5.29E+03 |
| | 102 | 32,685 | | | | | 0.071 | 641 | 0.1 | 64 | 1.10E-03 | 1.58 | 2.00 | 1.26 | | | | | | | |
| 9 | | | 1,269 | 0.283 | 6.485E-06 | 0.0082 | | | | | | | | | 14.2 | 12,142 | 27.88 | 7.4430E-02 | 3.011E+06 | 2.91 | 6.53E+03 |
| | 100 | 31,416 | | | | | 0.079 | 628 | 0.1 | 63 | 1.25E-03 | 1.80 | 2.00 | 1.11 | | | | | | | |
| 10 | | | 1,244 | 0.283 | 6.485E-06 | 0.0081 | | | | | | | | | 13.1 | 13,387 | 30.73 | 9.1103E-02 | 3.011E+06 | 2.86 | 7.83E+03 |
| | 98 | 30,172 | | | | | 0.087 | 616 | 0.1 | 62 | 1.41E-03 | 2.03 | 2.00 | 0.99 | | | | | | | |
| 11 | | | 1,219 | 0.283 | 6.485E-06 | 0.0079 | | | | | | | | | 12.1 | 14,605 | 33.53 | 1.0903E-01 | 3.011E+06 | 2.80 | 9.19E+03 |
| | 96 | 28,953 | | | | | 0.095 | 603 | 0.1 | 60 | 1.57E-03 | 2.26 | 2.00 | 0.88 | | | | | | | |
| 12 | | | 1,194 | 0.283 | 6.485E-06 | 0.0077 | | | | | | | | | 11.3 | 15,799 | 36.27 | 1.2812E-01 | 3.011E+06 | 2.74 | 1.06E+04 |
| | 94 | 27,759 | | | | | 0.102 | 591 | 0.1 | 59 | 1.73E-03 | 2.50 | 2.00 | 0.80 | | | | | | | |
| 13 | | | 1,169 | 0.283 | 6.485E-06 | 0.0076 | | | | | | | | | 10.5 | 16,968 | 38.95 | 1.4827E-01 | 3.011E+06 | 2.68 | 1.20E+04 |
| | 92 | 26,591 | | | | | 0.110 | 578 | 0.1 | 58 | 1.90E-03 | 2.74 | 2.00 | 0.73 | | | | | | | |
| 14 | | | 1,144 | 0.283 | 6.485E-06 | 0.0074 | | | | | | | | | 9.7 | 18,112 | 41.58 | 1.6937E-01 | 3.011E+06 | 2.63 | 1.34E+04 |
| | 90 | 25,447 | | | | | 0.117 | 565 | 0.1 | 57 | 2.08E-03 | 2.99 | 2.00 | 0.67 | | | | | | | |
| 15 | | | 1,118 | 0.283 | 6.485E-06 | 0.0073 | | | | | | | | | 9.1 | 19,230 | 44.15 | 1.9134E-01 | 3.011E+06 | 2.57 | 1.48E+04 |
| | 88 | 24,329 | | | | | 0.125 | 553 | 0.1 | 55 | 2.26E-03 | 3.25 | 2.00 | 0.62 | | | | | | | |
| 16 | | | 1,093 | 0.283 | 6.485E-06 | 0.0071 | | | | | | | | | 8.5 | 20,323 | 46.66 | 2.1409E-01 | 3.011E+06 | 2.51 | 1.62E+04 |
| | 86 | 23,235 | | | | | 0.132 | 540 | 0.1 | 54 | 2.44E-03 | 3.51 | 2.00 | 0.57 | | | | | | | |
| 17 | | | 1,068 | 0.283 | 6.485E-06 | 0.0069 | | | | | | | | | 7.9 | 21,391 | 49.11 | 2.3752E-01 | 3.011E+06 | 2.45 | 1.75E+04 |
| | 84 | 22,167 | | | | | 0.139 | 528 | 0.1 | 53 | 2.63E-03 | 3.79 | 2.00 | 0.53 | | | | | | | |
| 18 | | | 1,043 | 0.283 | 6.485E-06 | 0.0068 | | | | | | | | | 7.4 | 22,434 | 51.50 | 2.6155E-01 | 3.011E+06 | 2.39 | 1.89E+04 |
| | 82 | 21,124 | | | | | 0.145 | 515 | 0.1 | 52 | 2.82E-03 | 4.07 | 2.00 | 0.49 | | | | | | | |
| 19 | | | 1,018 | 0.283 | 6.485E-06 | 0.0066 | | | | | | | | | 6.9 | 23,452 | 53.84 | 2.8610E-01 | 3.011E+06 | 2.34 | 2.01E+04 |
| | 80 | 20,106 | | | | | 0.152 | 503 | 0.1 | 50 | 3.03E-03 | 4.36 | 2.00 | 0.46 | | | | | | | |
| 20 | | | 993 | 0.283 | 6.485E-06 | 0.0064 | | | | | | | | | 6.4 | 24,445 | 56.12 | 3.1108E-01 | 3.011E+06 | 2.28 | 2.13E+04 |
| | 78 | 19,113 | | | | | 0.159 | 490 | 0.1 | 49 | 3.23E-03 | 4.66 | 2.00 | 0.43 | | | | | | | |
| 21 | | | 968 | 0.283 | 6.485E-06 | 0.0063 | | | | | | | | | 6.0 | 25,413 | 58.34 | 3.3642E-01 | 3.011E+06 | 2.22 | 2.25E+04 |
| | 76 | 18,146 | | | | | 0.165 | 478 | 0.1 | 48 | 3.45E-03 | 4.97 | 2.00 | 0.40 | | | | | | | |
| 22 | | | 942 | 0.283 | 6.485E-06 | 0.0061 | | | | | | | | | 5.6 | 26,355 | 60.50 | 3.6204E-01 | 3.011E+06 | 2.16 | 2.36E+04 |
| | 74 | 17,203 | | | | | 0.171 | 465 | 0.1 | 46 | 3.68E-03 | 5.29 | 2.00 | 0.38 | | | | | | | |
| 23 | | | 917 | 0.283 | 6.485E-06 | 0.0059 | | | | | | | | | 5.2 | 27,272 | 62.61 | 3.8787E-01 | 3.011E+06 | 2.11 | 2.46E+04 |
| | 72 | 16,286 | | | | | 0.177 | 452 | 0.1 | 45 | 3.91E-03 | 5.63 | 2.00 | 0.36 | | | | | | | |
| 24 | | | 892 | 0.283 | 6.485E-06 | 0.0058 | | | | | | | | | 4.8 | 28,165 | 64.66 | 4.1384E-01 | 3.011E+06 | 2.05 | 2.55E+04 |
| | 70 | 15,394 | | | | | 0.183 | 440 | 0.1 | 44 | 4.15E-03 | 5.98 | 2.00 | 0.33 | | | | | | | |
| 25 | | | 867 | 0.283 | 6.485E-06 | 0.0056 | | | | | | | | | 4.5 | 29,032 | 66.65 | 4.3987E-01 | 3.011E+06 | 1.99 | 2.64E+04 |
| | 68 | 14,527 | | | | | 0.188 | 427 | 0.1 | 43 | 4.41E-03 | 6.35 | 2.00 | 0.32 | | | | | | | |
| 26 | | | 842 | 0.283 | 6.485E-06 | 0.0055 | | | | | | | | | 4.2 | 29,874 | 68.58 | 4.6590E-01 | 3.011E+06 | 1.93 | 2.71E+04 |
| | 66 | 13,685 | | | | | 0.194 | 415 | 0.1 | 41 | 4.67E-03 | 6.73 | 2.00 | 0.30 | | | | | | | |
| 27 | | | 817 | 0.283 | 6.485E-06 | 0.0053 | | | | | | | | | 3.9 | 30,690 | 70.46 | 4.9186E-01 | 3.011E+06 | 1.88 | 2.78E+04 |
| | 64 | 12,868 | | | | | 0.199 | 402 | 0.1 | 40 | 4.95E-03 | 7.13 | 2.00 | 0.28 | | | | | | | |
| 28 | | | 792 | 0.283 | 6.485E-06 | 0.0051 | | | | | | | | | 3.6 | 31,482 | 72.27 | 5.1769E-01 | 3.011E+06 | 1.82 | 2.83E+04 |
| | 62 | 12,076 | | | | | 0.204 | 390 | 0.1 | 39 | 5.24E-03 | 7.55 | 2.00 | 0.26 | | | | | | | |
| 29 | | | 767 | 0.283 | 6.485E-06 | 0.0050 | | | | | | | | | 3.3 | 32,249 | 74.03 | 5.4333E-01 | 3.011E+06 | 1.76 | 2.88E+04 |
| | 60 | 11,310 | | | | | 0.209 | 377 | 0.1 | 38 | 5.55E-03 | 7.99 | 2.00 | 0.25 | | | | | | | |
| 30 | | | 741 | 0.283 | 6.485E-06 | 0.0048 | | | | | | | | | 3.1 | 32,990 | 75.73 | 5.6871E-01 | 3.011E+06 | 1.70 | 2.91E+04 |
| | 58 | 10,568 | | | | | 0.214 | 364 | 0.1 | 36 | 5.87E-03 | 8.45 | 2.00 | 0.24 | | | | | | | |

**TABLE A-20 (CONTINUED)**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA A - ONE ACRE AREA - ESTIMATE YEAR 2000 - LANDFILL POROSITY = 0.1**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multilier (e^-kt) | Rn-222 Flux Rate frrom FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-22 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| 31 | | | 716 | 0.283 | 6.485E-06 | 0.0046 | | | | | | | | | 2.9 | 33,706 | 77.38 | 5.9379E-01 | 3.011E+06 | 1.64 | 2.94E+04 |
| | 56 | 9,852 | | | | | 0.219 | 352 | 0.1 | 35 | 6.21E-03 | 8.95 | 2.00 | 0.22 | | | | | | | |
| 32 | | | 691 | 0.283 | 6.485E-06 | 0.0045 | | | | | | | | | 2.6 | 34,398 | 78.97 | 6.1850E-01 | 3.011E+06 | 1.59 | 2.95E+04 |
| | 54 | 9,161 | | | | | 0.223 | 339 | 0.1 | 34 | 6.57E-03 | 9.47 | 2.00 | 0.21 | | | | | | | |
| 33 | | | 666 | 0.283 | 6.485E-06 | 0.0043 | | | | | | | | | 2.4 | 35,064 | 80.49 | 6.4280E-01 | 3.011E+06 | 1.53 | 2.96E+04 |
| | 52 | 8,495 | | | | | 0.227 | 327 | 0.1 | 33 | 6.96E-03 | 10.02 | 2.00 | 0.20 | | | | | | | |
| 34 | | | 641 | 0.283 | 6.485E-06 | 0.0042 | | | | | | | | | 2.2 | 35,704 | 81.97 | 6.6663E-01 | 3.011E+06 | 1.47 | 2.95E+04 |
| | 50 | 7,854 | | | | | 0.232 | 314 | 0.1 | 31 | 7.37E-03 | 10.61 | 2.00 | 0.19 | | | | | | | |
| 35 | | | 616 | 0.283 | 6.485E-06 | 0.0040 | | | | | | | | | 2.0 | 36,320 | 83.38 | 6.8994E-01 | 3.011E+06 | 1.41 | 2.94E+04 |
| | 48 | 7,238 | | | | | 0.236 | 302 | 0.1 | 30 | 7.81E-03 | 11.25 | 2.00 | 0.18 | | | | | | | |
| 36 | | | 591 | 0.283 | 6.485E-06 | 0.0038 | | | | | | | | | 1.9 | 36,911 | 84.74 | 7.1268E-01 | 3.011E+06 | 1.36 | 2.91E+04 |
| | 46 | 6,648 | | | | | 0.239 | 289 | 0.1 | 29 | 8.28E-03 | 11.93 | 2.00 | 0.17 | | | | | | | |
| 37 | | | 565 | 0.283 | 6.485E-06 | 0.0037 | | | | | | | | | 1.7 | 37,476 | 86.03 | 7.3482E-01 | 3.011E+06 | 1.30 | 2.87E+04 |
| | 44 | 6,082 | | | | | 0.243 | 276 | 0.1 | 28 | 8.79E-03 | 12.66 | 2.00 | 0.16 | | | | | | | |
| 38 | | | 540 | 0.283 | 6.485E-06 | 0.0035 | | | | | | | | | 1.5 | 38,017 | 87.27 | 7.5630E-01 | 3.011E+06 | 1.24 | 2.82E+04 |
| | 42 | 5,542 | | | | | 0.247 | 264 | 0.1 | 26 | 9.34E-03 | 13.45 | 2.00 | 0.15 | | | | | | | |
| 39 | | | 515 | 0.283 | 6.485E-06 | 0.0033 | | | | | | | | | 1.4 | 38,532 | 88.46 | 7.7709E-01 | 3.011E+06 | 1.18 | 2.77E+04 |
| | 40 | 5,027 | | | | | 0.250 | 251 | 0.1 | 25 | 9.94E-03 | 14.32 | 2.00 | 0.14 | | | | | | | |
| 40 | | | 490 | 0.283 | 6.485E-06 | 0.0032 | | | | | | | | | 1.2 | 39,022 | 89.58 | 7.9715E-01 | 3.011E+06 | 1.13 | 2.70E+04 |
| | 38 | 4,536 | | | | | 0.253 | 239 | 0.1 | 24 | 1.06E-02 | 15.26 | 2.00 | 0.13 | | | | | | | |
| 41 | | | 465 | 0.283 | 6.485E-06 | 0.0030 | | | | | | | | | 1.1 | 39,487 | 90.65 | 8.1643E-01 | 3.011E+06 | 1.07 | 2.62E+04 |
| | 36 | 4,072 | | | | | 0.256 | 226 | 0.1 | 23 | 1.13E-02 | 16.30 | 2.00 | 0.12 | | | | | | | |
| 42 | | | 440 | 0.283 | 6.485E-06 | 0.0029 | | | | | | | | | 1.0 | 39,927 | 91.66 | 8.3490E-01 | 3.011E+06 | 1.01 | 2.54E+04 |
| | 34 | 3,632 | | | | | 0.259 | 214 | 0.1 | 21 | 1.21E-02 | 17.45 | 2.00 | 0.11 | | | | | | | |
| 43 | | | 415 | 0.283 | 6.485E-06 | 0.0027 | | | | | | | | | 0.9 | 40,341 | 92.61 | 8.5254E-01 | 3.011E+06 | 0.95 | 2.44E+04 |
| | 32 | 3,217 | | | | | 0.262 | 201 | 0.1 | 20 | 1.30E-02 | 18.74 | 2.00 | 0.11 | | | | | | | |
| 44 | | | 390 | 0.283 | 6.485E-06 | 0.0025 | | | | | | | | | 0.8 | 40,731 | 93.51 | 8.6930E-01 | 3.011E+06 | 0.89 | 2.34E+04 |
| | 30 | 2,827 | | | | | 0.264 | 188 | 0.1 | 19 | 1.40E-02 | 20.18 | 2.00 | 0.10 | | | | | | | |
| 45 | | | 364 | 0.283 | 6.485E-06 | 0.0024 | | | | | | | | | 0.7 | 41,095 | 94.34 | 8.8515E-01 | 3.011E+06 | 0.84 | 2.23E+04 |
| | 28 | 2,463 | | | | | 0.267 | 176 | 0.1 | 18 | 1.51E-02 | 21.81 | 2.00 | 0.09 | | | | | | | |
| 46 | | | 339 | 0.283 | 6.485E-06 | 0.0022 | | | | | | | | | 0.6 | 41,435 | 95.12 | 9.0008E-01 | 3.011E+06 | 0.78 | 2.11E+04 |
| | 26 | 2,124 | | | | | 0.269 | 163 | 0.1 | 16 | 1.64E-02 | 23.69 | 2.00 | 0.08 | | | | | | | |
| 47 | | | 314 | 0.283 | 6.485E-06 | 0.0020 | | | | | | | | | 0.5 | 41,749 | 95.84 | 9.1405E-01 | 3.011E+06 | 0.72 | 1.98E+04 |
| | 24 | 1,810 | | | | | 0.271 | 151 | 0.1 | 15 | 1.80E-02 | 25.86 | 2.00 | 0.08 | | | | | | | |
| 48 | | | 289 | 0.283 | 6.485E-06 | 0.0019 | | | | | | | | | 0.4 | 42,038 | 96.51 | 9.2704E-01 | 3.011E+06 | 0.66 | 1.85E+04 |
| | 22 | 1,521 | | | | | 0.273 | 138 | 0.1 | 14 | 1.97E-02 | 28.40 | 2.00 | 0.07 | | | | | | | |
| 49 | | | 264 | 0.283 | 6.485E-06 | 0.0017 | | | | | | | | | 0.3 | 42,302 | 97.11 | 9.3902E-01 | 3.011E+06 | 0.61 | 1.71E+04 |
| | 20 | 1,257 | | | | | 0.274 | 126 | 0.1 | 13 | 2.18E-02 | 31.44 | 2.00 | 0.06 | | | | | | | |
| 50 | | | 239 | 0.283 | 6.485E-06 | 0.0015 | | | | | | | | | 0.3 | 42,541 | 97.66 | 9.4998E-01 | 3.011E+06 | 0.55 | 1.57E+04 |
| | 18 | 1,018 | | | | | 0.276 | 113 | 0.1 | 11 | 2.44E-02 | 35.13 | 2.00 | 0.06 | | | | | | | |
| 51 | | | 214 | 0.283 | 6.485E-06 | 0.0014 | | | | | | | | | 0.2 | 42,754 | 98.15 | 9.5990E-01 | 3.011E+06 | 0.49 | 1.42E+04 |
| | 16 | 804 | | | | | 0.277 | 101 | 0.1 | 10 | 2.76E-02 | 39.72 | 2.00 | 0.05 | | | | | | | |
| 52 | | | 188 | 0.283 | 6.485E-06 | 0.0012 | | | | | | | | | 0.2 | 42,943 | 98.58 | 9.6876E-01 | 3.011E+06 | 0.43 | 1.26E+04 |
| | 14 | 616 | | | | | 0.278 | 88 | 0.1 | 9 | 3.17E-02 | 45.59 | 2.00 | 0.04 | | | | | | | |
| 53 | | | 163 | 0.283 | 6.485E-06 | 0.0011 | | | | | | | | | 0.1 | 43,106 | 98.96 | 9.7654E-01 | 3.011E+06 | 0.38 | 1.10E+04 |
| | 12 | 452 | | | | | 0.280 | 75 | 0.1 | 8 | 3.71E-02 | 53.39 | 2.00 | 0.04 | | | | | | | |
| 54 | | | 138 | 0.283 | 6.485E-06 | 0.0009 | | | | | | | | | 0.1 | 43,244 | 99.28 | 9.8324E-01 | 3.011E+06 | 0.32 | 9.39E+03 |
| | 10 | 314 | | | | | 0.280 | 63 | 0.1 | 6 | 4.46E-02 | 64.27 | 2.00 | 0.03 | | | | | | | |
| 55 | | | 113 | 0.283 | 6.485E-06 | 0.0007 | | | | | | | | | 0.1 | 43,357 | 99.53 | 9.8883E-01 | 3.011E+06 | 0.26 | 7.73E+03 |
| | 8 | 201 | | | | | 0.281 | 50 | 0.1 | 5 | 5.59E-02 | 80.55 | 2.00 | 0.02 | | | | | | | |
| 56 | | | 88 | 0.283 | 6.485E-06 | 0.0006 | | | | | | | | | 0.0 | 43,445 | 99.74 | 9.9332E-01 | 3.011E+06 | 0.20 | 6.04E+03 |
| | 6 | 113 | | | | | 0.282 | 38 | 0.1 | 4 | 7.47E-02 | 107.62 | 2.00 | 0.02 | | | | | | | |
| 57 | | | 63 | 0.283 | 6.485E-06 | 0.0004 | | | | | | | | | 0.0 | 43,508 | 99.88 | 9.9669E-01 | 3.011E+06 | 0.14 | 4.33E+03 |
| | 4 | 50 | | | | | 0.282 | 25 | 0.1 | 3 | 1.12E-01 | 161.67 | 2.00 | 0.01 | | | | | | | |
| 58 | | | 43 | 0.283 | 6.485E-06 | 0.0003 | | | | | | | | | 0.0 | 43,551 | 99.98 | 9.9894E-01 | 3.011E+06 | 0.10 | 2.98E+03 |
| | 1.5 | 7 | | | | | 0.282 | 9 | 0.1 | 1 | 3.00E-01 | 431.54 | 2.50 | 0.01 | | | | | | | |
| 59 | | | 7 | 0.283 | 6.485E-06 | 0.0000 | | | | | | | | | 0.0 | 43,558 | 100.00 | 1.0000E+00 | 3.011E+06 | 0.02 | 4.89E+02 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Considered | pCi/min | 1.020E+06 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Not Considered | pCi/min | 3.011E+06 |

| | | |
|---|---|---|
| Reduction in Rn-222 Flux Due to Decay | % | 66.12 |

**TABLE A-21**

**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA A - ONE ACRE AREA - ESTIMATE YEAR 2025 - LANDFILL POROSITY = 0.1**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multilier (e^-kt) | Rn-222 Flux Rate from FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-22 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | | | pCi/min-acre | | pCi/min |
| | 117.75 | 43,558 | | | | | 0 | | | | 0 | 0 | | | | | | | | | |
| 1 | | | 1,285 | 0.080 | 1.837E-06 | 0.0024 | | | | | | | | | 153.0 | 1,285 | 2.95 | 7.5180E-13 | 3.011E+06 | 2.95 | 6.68E-08 |
| | 116 | 42,273 | | | | | 0.002 | 729 | 0.1 | 73 | 3.24E-05 | 0.05 | 1.75 | 37.53 | | | | | | | |
| 2 | | | 1,445 | 0.080 | 1.837E-06 | 0.0027 | | | | | | | | | 115.5 | 2,730 | 6.27 | 7.0633E-10 | 3.011E+06 | 3.32 | 7.06E-05 |
| | 114 | 40,828 | | | | | 0.005 | 716 | 0.1 | 72 | 7.00E-05 | 0.10 | 2.00 | 19.84 | | | | | | | |
| 3 | | | 1,420 | 0.080 | 1.837E-06 | 0.0026 | | | | | | | | | 95.7 | 4,150 | 9.53 | 2.6343E-08 | 3.011E+06 | 3.26 | 2.59E-03 |
| | 112 | 39,408 | | | | | 0.008 | 704 | 0.1 | 70 | 1.08E-04 | 0.16 | 2.00 | 12.82 | | | | | | | |
| 4 | | | 1,395 | 0.080 | 1.837E-06 | 0.0026 | | | | | | | | | 82.9 | 5,545 | 12.73 | 2.7318E-07 | 3.011E+06 | 3.20 | 2.63E-02 |
| | 110 | 38,013 | | | | | 0.010 | 691 | 0.1 | 69 | 1.47E-04 | 0.21 | 2.00 | 9.43 | | | | | | | |
| 5 | | | 1,370 | 0.080 | 1.837E-06 | 0.0025 | | | | | | | | | 73.4 | 6,915 | 15.87 | 1.5245E-06 | 3.011E+06 | 3.14 | 1.44E-01 |
| | 108 | 36,644 | | | | | 0.013 | 679 | 0.1 | 68 | 1.87E-04 | 0.27 | 2.00 | 7.42 | | | | | | | |
| 6 | | | 1,345 | 0.080 | 1.837E-06 | 0.0025 | | | | | | | | | 66.0 | 8,259 | 18.96 | 5.9023E-06 | 3.011E+06 | 3.09 | 5.49E-01 |
| | 106 | 35,299 | | | | | 0.015 | 666 | 0.1 | 67 | 2.28E-04 | 0.33 | 2.00 | 6.10 | | | | | | | |
| 7 | | | 1,319 | 0.080 | 1.837E-06 | 0.0024 | | | | | | | | | 59.9 | 9,579 | 21.99 | 1.7951E-05 | 3.011E+06 | 3.03 | 1.64E+00 |
| | 104 | 33,980 | | | | | 0.018 | 653 | 0.1 | 65 | 2.69E-04 | 0.39 | 2.00 | 5.16 | | | | | | | |
| 8 | | | 1,294 | 0.080 | 1.837E-06 | 0.0024 | | | | | | | | | 54.8 | 10,873 | 24.96 | 4.6000E-05 | 3.011E+06 | 2.97 | 4.12E+00 |
| | 102 | 32,685 | | | | | 0.020 | 641 | 0.1 | 64 | 3.12E-04 | 0.45 | 2.00 | 4.46 | | | | | | | |
| 9 | | | 1,269 | 0.080 | 1.837E-06 | 0.0023 | | | | | | | | | 50.3 | 12,142 | 27.88 | 1.0372E-04 | 3.011E+06 | 2.91 | 9.10E+00 |
| | 100 | 31,416 | | | | | 0.022 | 628 | 0.1 | 63 | 3.55E-04 | 0.51 | 2.00 | 3.91 | | | | | | | |
| 10 | | | 1,244 | 0.080 | 1.837E-06 | 0.0023 | | | | | | | | | 46.4 | 13,387 | 30.73 | 2.1176E-04 | 3.011E+06 | 2.86 | 1.82E+01 |
| | 98 | 30,172 | | | | | 0.025 | 616 | 0.1 | 62 | 3.99E-04 | 0.57 | 2.00 | 3.48 | | | | | | | |
| 11 | | | 1,219 | 0.080 | 1.837E-06 | 0.0022 | | | | | | | | | 42.9 | 14,605 | 33.53 | 3.9940E-04 | 3.011E+06 | 2.80 | 3.37E+01 |
| | 96 | 28,953 | | | | | 0.027 | 603 | 0.1 | 60 | 4.45E-04 | 0.64 | 2.00 | 3.12 | | | | | | | |
| 12 | | | 1,194 | 0.080 | 1.837E-06 | 0.0022 | | | | | | | | | 39.8 | 15,799 | 36.27 | 7.0601E-04 | 3.011E+06 | 2.74 | 5.83E+01 |
| | 94 | 27,759 | | | | | 0.029 | 591 | 0.1 | 59 | 4.91E-04 | 0.71 | 2.00 | 2.83 | | | | | | | |
| 13 | | | 1,169 | 0.080 | 1.837E-06 | 0.0021 | | | | | | | | | 37.0 | 16,968 | 38.95 | 1.1824E-03 | 3.011E+06 | 2.68 | 9.55E+01 |
| | 92 | 26,591 | | | | | 0.031 | 578 | 0.1 | 58 | 5.39E-04 | 0.78 | 2.00 | 2.58 | | | | | | | |
| 14 | | | 1,144 | 0.080 | 1.837E-06 | 0.0021 | | | | | | | | | 34.4 | 18,112 | 41.58 | 1.8917E-03 | 3.011E+06 | 2.63 | 1.50E+02 |
| | 90 | 25,447 | | | | | 0.033 | 565 | 0.1 | 57 | 5.88E-04 | 0.85 | 2.00 | 2.36 | | | | | | | |
| 15 | | | 1,118 | 0.080 | 1.837E-06 | 0.0021 | | | | | | | | | 32.0 | 19,230 | 44.15 | 2.9099E-03 | 3.011E+06 | 2.57 | 2.25E+02 |
| | 88 | 24,329 | | | | | 0.035 | 553 | 0.1 | 55 | 6.39E-04 | 0.92 | 2.00 | 2.17 | | | | | | | |
| 16 | | | 1,093 | 0.080 | 1.837E-06 | 0.0020 | | | | | | | | | 29.8 | 20,323 | 46.66 | 4.3265E-03 | 3.011E+06 | 2.51 | 3.27E+02 |
| | 86 | 23,235 | | | | | 0.037 | 540 | 0.1 | 54 | 6.91E-04 | 0.99 | 2.00 | 2.01 | | | | | | | |
| 17 | | | 1,068 | 0.080 | 1.837E-06 | 0.0020 | | | | | | | | | 27.8 | 21,391 | 49.11 | 6.2433E-03 | 3.011E+06 | 2.45 | 4.61E+02 |
| | 84 | 22,167 | | | | | 0.039 | 528 | 0.1 | 53 | 7.44E-04 | 1.07 | 2.00 | 1.87 | | | | | | | |
| 18 | | | 1,043 | 0.080 | 1.837E-06 | 0.0019 | | | | | | | | | 26.0 | 22,434 | 51.50 | 8.7745E-03 | 3.011E+06 | 2.39 | 6.33E+02 |
| | 82 | 21,124 | | | | | 0.041 | 515 | 0.1 | 52 | 8.00E-04 | 1.15 | 2.00 | 1.74 | | | | | | | |
| 19 | | | 1,018 | 0.080 | 1.837E-06 | 0.0019 | | | | | | | | | 24.2 | 23,452 | 53.84 | 1.2045E-02 | 3.011E+06 | 2.34 | 8.47E+02 |
| | 80 | 20,106 | | | | | 0.043 | 503 | 0.1 | 50 | 8.57E-04 | 1.23 | 2.00 | 1.62 | | | | | | | |
| 20 | | | 993 | 0.080 | 1.837E-06 | 0.0018 | | | | | | | | | 22.6 | 24,445 | 56.12 | 1.6188E-02 | 3.011E+06 | 2.28 | 1.11E+03 |
| | 78 | 19,113 | | | | | 0.045 | 490 | 0.1 | 49 | 9.16E-04 | 1.32 | 2.00 | 1.52 | | | | | | | |
| 21 | | | 968 | 0.080 | 1.837E-06 | 0.0018 | | | | | | | | | 21.1 | 25,413 | 58.34 | 2.1346E-02 | 3.011E+06 | 2.22 | 1.43E+03 |
| | 76 | 18,146 | | | | | 0.047 | 478 | 0.1 | 48 | 9.77E-04 | 1.41 | 2.00 | 1.42 | | | | | | | |
| 22 | | | 942 | 0.080 | 1.837E-06 | 0.0017 | | | | | | | | | 19.7 | 26,355 | 60.50 | 2.7662E-02 | 3.011E+06 | 2.16 | 1.80E+03 |
| | 74 | 17,203 | | | | | 0.048 | 465 | 0.1 | 46 | 1.04E-03 | 1.50 | 2.00 | 1.33 | | | | | | | |
| 23 | | | 917 | 0.080 | 1.837E-06 | 0.0017 | | | | | | | | | 18.3 | 27,272 | 62.61 | 3.5283E-02 | 3.011E+06 | 2.11 | 2.24E+03 |
| | 72 | 16,286 | | | | | 0.050 | 452 | 0.1 | 45 | 1.11E-03 | 1.59 | 2.00 | 1.25 | | | | | | | |
| 24 | | | 892 | 0.080 | 1.837E-06 | 0.0016 | | | | | | | | | 17.1 | 28,165 | 64.66 | 4.4354E-02 | 3.011E+06 | 2.05 | 2.74E+03 |
| | 70 | 15,394 | | | | | 0.052 | 440 | 0.1 | 44 | 1.18E-03 | 1.69 | 2.00 | 1.18 | | | | | | | |
| 25 | | | 867 | 0.080 | 1.837E-06 | 0.0016 | | | | | | | | | 15.9 | 29,032 | 66.65 | 5.5016E-02 | 3.011E+06 | 1.99 | 3.30E+03 |
| | 68 | 14,527 | | | | | 0.053 | 427 | 0.1 | 43 | 1.25E-03 | 1.80 | 2.00 | 1.11 | | | | | | | |
| 26 | | | 842 | 0.080 | 1.837E-06 | 0.0015 | | | | | | | | | 14.8 | 29,874 | 68.58 | 6.7399E-02 | 3.011E+06 | 1.93 | 3.92E+03 |
| | 66 | 13,685 | | | | | 0.055 | 415 | 0.1 | 41 | 1.32E-03 | 1.91 | 2.00 | 1.05 | | | | | | | |
| 27 | | | 817 | 0.080 | 1.837E-06 | 0.0015 | | | | | | | | | 13.7 | 30,690 | 70.46 | 8.1623E-02 | 3.011E+06 | 1.88 | 4.61E+03 |
| | 64 | 12,868 | | | | | 0.056 | 402 | 0.1 | 40 | 1.40E-03 | 2.02 | 2.00 | 0.99 | | | | | | | |
| 28 | | | 792 | 0.080 | 1.837E-06 | 0.0015 | | | | | | | | | 12.7 | 31,482 | 72.27 | 9.7792E-02 | 3.011E+06 | 1.82 | 5.35E+03 |
| | 62 | 12,076 | | | | | 0.058 | 390 | 0.1 | 39 | 1.48E-03 | 2.14 | 2.00 | 0.94 | | | | | | | |
| 29 | | | 767 | 0.080 | 1.837E-06 | 0.0014 | | | | | | | | | 11.8 | 32,249 | 74.03 | 1.1599E-01 | 3.011E+06 | 1.76 | 6.15E+03 |
| | 60 | 11,310 | | | | | 0.059 | 377 | 0.1 | 38 | 1.57E-03 | 2.26 | 2.00 | 0.88 | | | | | | | |
| 30 | | | 741 | 0.080 | 1.837E-06 | 0.0014 | | | | | | | | | 10.9 | 32,990 | 75.73 | 1.3629E-01 | 3.011E+06 | 1.70 | 6.98E+03 |
| | 58 | 10,568 | | | | | 0.061 | 364 | 0.1 | 36 | 1.66E-03 | 2.39 | 2.00 | 0.84 | | | | | | | |

**TABLE A-21 (CONTINUED)**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA A - ONE ACRE AREA - ESTIMATE YEAR 2025 - LANDFILL POROSITY = 0.1**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multilier (e^-kt) | Rn-222 Flux Rate from FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-222 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | | | pCi/min-acre | | pCi/min |
| 31 | | | 716 | 0.080 | 1.837E-06 | 0.0013 | | | | | | | | | 10.1 | 33,706 | 77.38 | 1.5872E-01 | 3.011E+06 | 1.64 | 7.86E+03 |
| | 56 | 9,852 | | | | | 0.062 | 352 | 0.1 | 35 | 1.76E-03 | 2.53 | 2.00 | 0.79 | | | | | | | |
| 32 | | | 691 | 0.080 | 1.837E-06 | 0.0013 | | | | | | | | | 9.3 | 34,398 | 78.97 | 1.8331E-01 | 3.011E+06 | 1.59 | 8.76E+03 |
| | 54 | 9,161 | | | | | 0.063 | 339 | 0.1 | 34 | 1.86E-03 | 2.68 | 2.00 | 0.75 | | | | | | | |
| 33 | | | 666 | 0.080 | 1.837E-06 | 0.0012 | | | | | | | | | 8.6 | 35,064 | 80.49 | 2.1002E-01 | 3.011E+06 | 1.53 | 9.67E+03 |
| | 52 | 8,495 | | | | | 0.064 | 327 | 0.1 | 33 | 1.97E-03 | 2.84 | 2.00 | 0.70 | | | | | | | |
| 34 | | | 641 | 0.080 | 1.837E-06 | 0.0012 | | | | | | | | | 7.9 | 35,704 | 81.97 | 2.3883E-01 | 3.011E+06 | 1.47 | 1.06E+04 |
| | 50 | 7,854 | | | | | 0.066 | 314 | 0.1 | 31 | 2.09E-03 | 3.01 | 2.00 | 0.67 | | | | | | | |
| 35 | | | 616 | 0.080 | 1.837E-06 | 0.0011 | | | | | | | | | 7.2 | 36,320 | 83.38 | 2.6965E-01 | 3.011E+06 | 1.41 | 1.15E+04 |
| | 48 | 7,238 | | | | | 0.067 | 302 | 0.1 | 30 | 2.21E-03 | 3.18 | 2.00 | 0.63 | | | | | | | |
| 36 | | | 591 | 0.080 | 1.837E-06 | 0.0011 | | | | | | | | | 6.6 | 36,911 | 84.74 | 3.0237E-01 | 3.011E+06 | 1.36 | 1.23E+04 |
| | 46 | 6,648 | | | | | 0.068 | 289 | 0.1 | 29 | 2.35E-03 | 3.38 | 2.00 | 0.59 | | | | | | | |
| 37 | | | 565 | 0.080 | 1.837E-06 | 0.0010 | | | | | | | | | 6.0 | 37,476 | 86.03 | 3.3686E-01 | 3.011E+06 | 1.30 | 1.32E+04 |
| | 44 | 6,082 | | | | | 0.069 | 276 | 0.1 | 28 | 2.49E-03 | 3.58 | 2.00 | 0.56 | | | | | | | |
| 38 | | | 540 | 0.080 | 1.837E-06 | 0.0010 | | | | | | | | | 5.4 | 38,017 | 87.27 | 3.7295E-01 | 3.011E+06 | 1.24 | 1.39E+04 |
| | 42 | 5,542 | | | | | 0.070 | 264 | 0.1 | 26 | 2.65E-03 | 3.81 | 2.00 | 0.52 | | | | | | | |
| 39 | | | 515 | 0.080 | 1.837E-06 | 0.0009 | | | | | | | | | 4.9 | 38,532 | 88.46 | 4.1042E-01 | 3.011E+06 | 1.18 | 1.46E+04 |
| | 40 | 5,027 | | | | | 0.071 | 251 | 0.1 | 25 | 2.82E-03 | 4.05 | 2.00 | 0.49 | | | | | | | |
| 40 | | | 490 | 0.080 | 1.837E-06 | 0.0009 | | | | | | | | | 4.4 | 39,022 | 89.58 | 4.4906E-01 | 3.011E+06 | 1.13 | 1.52E+04 |
| | 38 | 4,536 | | | | | 0.072 | 239 | 0.1 | 24 | 3.00E-03 | 4.32 | 2.00 | 0.46 | | | | | | | |
| 41 | | | 465 | 0.080 | 1.837E-06 | 0.0009 | | | | | | | | | 3.9 | 39,487 | 90.65 | 4.8861E-01 | 3.011E+06 | 1.07 | 1.57E+04 |
| | 36 | 4,072 | | | | | 0.073 | 226 | 0.1 | 23 | 3.21E-03 | 4.62 | 2.00 | 0.43 | | | | | | | |
| 42 | | | 440 | 0.080 | 1.837E-06 | 0.0008 | | | | | | | | | 3.5 | 39,927 | 91.66 | 5.2878E-01 | 3.011E+06 | 1.01 | 1.61E+04 |
| | 34 | 3,632 | | | | | 0.073 | 214 | 0.1 | 21 | 3.43E-03 | 4.94 | 2.00 | 0.40 | | | | | | | |
| 43 | | | 415 | 0.080 | 1.837E-06 | 0.0008 | | | | | | | | | 3.1 | 40,341 | 92.61 | 5.6928E-01 | 3.011E+06 | 0.95 | 1.63E+04 |
| | 32 | 3,217 | | | | | 0.074 | 201 | 0.1 | 20 | 3.68E-03 | 5.31 | 2.00 | 0.38 | | | | | | | |
| 44 | | | 390 | 0.080 | 1.837E-06 | 0.0007 | | | | | | | | | 2.7 | 40,731 | 93.51 | 6.0980E-01 | 3.011E+06 | 0.89 | 1.64E+04 |
| | 30 | 2,827 | | | | | 0.075 | 188 | 0.1 | 19 | 3.97E-03 | 5.71 | 2.00 | 0.35 | | | | | | | |
| 45 | | | 364 | 0.080 | 1.837E-06 | 0.0007 | | | | | | | | | 2.4 | 41,095 | 94.34 | 6.5000E-01 | 3.011E+06 | 0.84 | 1.64E+04 |
| | 28 | 2,463 | | | | | 0.075 | 176 | 0.1 | 18 | 4.29E-03 | 6.18 | 2.00 | 0.32 | | | | | | | |
| 46 | | | 339 | 0.080 | 1.837E-06 | 0.0006 | | | | | | | | | 2.0 | 41,435 | 95.12 | 6.8954E-01 | 3.011E+06 | 0.78 | 1.62E+04 |
| | 26 | 2,124 | | | | | 0.076 | 163 | 0.1 | 16 | 4.66E-03 | 6.71 | 2.00 | 0.30 | | | | | | | |
| 47 | | | 314 | 0.080 | 1.837E-06 | 0.0006 | | | | | | | | | 1.7 | 41,749 | 95.84 | 7.2807E-01 | 3.011E+06 | 0.72 | 1.58E+04 |
| | 24 | 1,810 | | | | | 0.077 | 151 | 0.1 | 15 | 5.08E-03 | 7.32 | 2.00 | 0.27 | | | | | | | |
| 48 | | | 289 | 0.080 | 1.837E-06 | 0.0005 | | | | | | | | | 1.5 | 42,038 | 96.51 | 7.6527E-01 | 3.011E+06 | 0.66 | 1.53E+04 |
| | 22 | 1,521 | | | | | 0.077 | 138 | 0.1 | 14 | 5.59E-03 | 8.04 | 2.00 | 0.25 | | | | | | | |
| 49 | | | 264 | 0.080 | 1.837E-06 | 0.0005 | | | | | | | | | 1.2 | 42,302 | 97.11 | 8.0078E-01 | 3.011E+06 | 0.61 | 1.46E+04 |
| | 20 | 1,257 | | | | | 0.078 | 126 | 0.1 | 13 | 6.18E-03 | 8.90 | 2.00 | 0.22 | | | | | | | |
| 50 | | | 239 | 0.080 | 1.837E-06 | 0.0004 | | | | | | | | | 1.0 | 42,541 | 97.66 | 8.3427E-01 | 3.011E+06 | 0.55 | 1.38E+04 |
| | 18 | 1,018 | | | | | 0.078 | 113 | 0.1 | 11 | 6.91E-03 | 9.95 | 2.00 | 0.20 | | | | | | | |
| 51 | | | 214 | 0.080 | 1.837E-06 | 0.0004 | | | | | | | | | 0.8 | 42,754 | 98.15 | 8.6544E-01 | 3.011E+06 | 0.49 | 1.28E+04 |
| | 16 | 804 | | | | | 0.079 | 101 | 0.1 | 10 | 7.81E-03 | 11.25 | 2.00 | 0.18 | | | | | | | |
| 52 | | | 188 | 0.080 | 1.837E-06 | 0.0003 | | | | | | | | | 0.6 | 42,943 | 98.58 | 8.9397E-01 | 3.011E+06 | 0.43 | 1.16E+04 |
| | 14 | 616 | | | | | 0.079 | 88 | 0.1 | 9 | 8.97E-03 | 12.91 | 2.00 | 0.15 | | | | | | | |
| 53 | | | 163 | 0.080 | 1.837E-06 | 0.0003 | | | | | | | | | 0.5 | 43,106 | 98.96 | 9.1959E-01 | 3.011E+06 | 0.38 | 1.04E+04 |
| | 12 | 452 | | | | | 0.079 | 75 | 0.1 | 8 | 1.05E-02 | 15.12 | 2.00 | 0.13 | | | | | | | |
| 54 | | | 138 | 0.080 | 1.837E-06 | 0.0003 | | | | | | | | | 0.3 | 43,244 | 99.28 | 9.4204E-01 | 3.011E+06 | 0.32 | 9.00E+03 |
| | 10 | 314 | | | | | 0.079 | 63 | 0.1 | 6 | 1.26E-02 | 18.20 | 2.00 | 0.11 | | | | | | | |
| 55 | | | 113 | 0.080 | 1.837E-06 | 0.0002 | | | | | | | | | 0.2 | 43,357 | 99.53 | 9.6112E-01 | 3.011E+06 | 0.26 | 7.51E+03 |
| | 8 | 201 | | | | | 0.080 | 50 | 0.1 | 5 | 1.58E-02 | 22.81 | 2.00 | 0.09 | | | | | | | |
| 56 | | | 88 | 0.080 | 1.837E-06 | 0.0002 | | | | | | | | | 0.1 | 43,445 | 99.74 | 9.7661E-01 | 3.011E+06 | 0.20 | 5.94E+03 |
| | 6 | 113 | | | | | 0.080 | 38 | 0.1 | 4 | 2.12E-02 | 30.48 | 2.00 | 0.07 | | | | | | | |
| 57 | | | 63 | 0.080 | 1.837E-06 | 0.0001 | | | | | | | | | 0.1 | 43,508 | 99.88 | 9.8837E-01 | 3.011E+06 | 0.14 | 4.29E+03 |
| | 4 | 50 | | | | | 0.080 | 25 | 0.1 | 3 | 3.18E-02 | 45.78 | 2.00 | 0.04 | | | | | | | |
| 58 | | | 43 | 0.080 | 1.837E-06 | 0.0001 | | | | | | | | | 0.0 | 43,551 | 99.98 | 9.9628E-01 | 3.011E+06 | 0.10 | 2.97E+03 |
| | 1.5 | 7 | | | | | 0.080 | 9 | 0.1 | 1 | 8.49E-02 | 122.21 | 2.50 | 0.02 | | | | | | | |
| 59 | | | 7 | 0.080 | 1.837E-06 | 0.0000 | | | | | | | | | 0.0 | 43,558 | 100.00 | 1.0000E+00 | 3.011E+06 | 0.02 | 4.89E+02 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Considered | pCi/min | 3.817E+05 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Not Considered | pCi/min | 3.011E+06 |

| | | |
|---|---|---|
| Reduction in Rn-222 Flux Due to Decay | % | 87.32 |

**TABLE A-22**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA A - ONE ACRE AREA - ESTIMATE YEAR 2100 - LANDFILL POROSITY = 0.1**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multilier (e^-kt) | Rn-222 Flux Rate from FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-22 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| | 117.75 | 43,558 | | | | | 0 | | | | 0 | 0 | | | | | | | | | |
| 1 | | | 1,285 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 4897.6 | 1,285 | 2.95 | 0.0000E+00 | 5.196E+06 | 2.95 | 0.00E+00 |
| | 116 | 42,273 | | | | | 0.000 | 729 | 0.1 | 73 | 1.01E-06 | 0.00 | 1.75 | 1200.94 | | | | | | | |
| 2 | | | 1,445 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 3696.7 | 2,730 | 6.27 | 1.4730E-293 | 5.196E+06 | 3.32 | 2.54E-288 |
| | 114 | 40,828 | | | | | 0.000 | 716 | 0.1 | 72 | 2.19E-06 | 0.00 | 2.00 | 634.89 | | | | | | | |
| 3 | | | 1,420 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 3061.8 | 4,150 | 9.53 | 2.8926E-243 | 5.196E+06 | 3.26 | 4.90E-238 |
| | 112 | 39,408 | | | | | 0.000 | 704 | 0.1 | 70 | 3.38E-06 | 0.00 | 2.00 | 410.34 | | | | | | | |
| 4 | | | 1,395 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 2651.4 | 5,545 | 12.73 | 9.2516E-211 | 5.196E+06 | 3.20 | 1.54E-205 |
| | 110 | 38,013 | | | | | 0.000 | 691 | 0.1 | 69 | 4.60E-06 | 0.01 | 2.00 | 301.63 | | | | | | | |
| 5 | | | 1,370 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 2349.8 | 6,915 | 15.87 | 7.2464E-187 | 5.196E+06 | 3.14 | 1.18E-181 |
| | 108 | 36,644 | | | | | 0.000 | 679 | 0.1 | 68 | 5.85E-06 | 0.01 | 2.00 | 237.49 | | | | | | | |
| 6 | | | 1,345 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 2112.3 | 8,259 | 18.96 | 4.7054E-168 | 5.196E+06 | 3.09 | 7.55E-163 |
| | 106 | 35,299 | | | | | 0.000 | 666 | 0.1 | 67 | 7.12E-06 | 0.01 | 2.00 | 195.14 | | | | | | | |
| 7 | | | 1,319 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 1917.2 | 9,579 | 21.99 | 1.3515E-152 | 5.196E+06 | 3.03 | 2.13E-147 |
| | 104 | 33,980 | | | | | 0.001 | 653 | 0.1 | 65 | 8.41E-06 | 0.01 | 2.00 | 165.09 | | | | | | | |
| 8 | | | 1,294 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 1752.1 | 10,873 | 24.96 | 1.6152E-139 | 5.196E+06 | 2.97 | 2.49E-134 |
| | 102 | 32,685 | | | | | 0.001 | 641 | 0.1 | 64 | 9.74E-06 | 0.01 | 2.00 | 142.64 | | | | | | | |
| 9 | | | 1,269 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 1609.4 | 12,142 | 27.88 | 3.2163E-128 | 5.196E+06 | 2.91 | 4.87E-123 |
| | 100 | 31,416 | | | | | 0.001 | 628 | 0.1 | 63 | 1.11E-05 | 0.02 | 2.00 | 125.22 | | | | | | | |
| 10 | | | 1,244 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 1484.2 | 13,387 | 30.73 | 2.6732E-118 | 5.196E+06 | 2.86 | 3.97E-113 |
| | 98 | 30,172 | | | | | 0.001 | 616 | 0.1 | 62 | 1.25E-05 | 0.02 | 2.00 | 111.31 | | | | | | | |
| 11 | | | 1,219 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 1372.9 | 14,605 | 33.53 | 1.7575E-109 | 5.196E+06 | 2.80 | 2.56E-104 |
| | 96 | 28,953 | | | | | 0.001 | 603 | 0.1 | 60 | 1.39E-05 | 0.02 | 2.00 | 99.94 | | | | | | | |
| 12 | | | 1,194 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 1273.0 | 15,799 | 36.27 | 1.4517E-101 | 5.196E+06 | 2.74 | 2.07E-96 |
| | 94 | 27,759 | | | | | 0.001 | 591 | 0.1 | 59 | 1.54E-05 | 0.02 | 2.00 | 90.47 | | | | | | | |
| 13 | | | 1,169 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 1182.5 | 16,968 | 38.95 | 2.1291E-94 | 5.196E+06 | 2.68 | 2.97E-89 |
| | 92 | 26,591 | | | | | 0.001 | 578 | 0.1 | 58 | 1.68E-05 | 0.02 | 2.00 | 82.44 | | | | | | | |
| 14 | | | 1,144 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 1100.1 | 18,112 | 41.58 | 7.2267E-88 | 5.196E+06 | 2.63 | 9.86E-83 |
| | 90 | 25,447 | | | | | 0.001 | 565 | 0.1 | 57 | 1.84E-05 | 0.03 | 2.00 | 75.56 | | | | | | | |
| 15 | | | 1,118 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 1024.5 | 19,230 | 44.15 | 6.9877E-82 | 5.196E+06 | 2.57 | 9.32E-77 |
| | 88 | 24,329 | | | | | 0.001 | 553 | 0.1 | 55 | 2.00E-05 | 0.03 | 2.00 | 69.58 | | | | | | | |
| 16 | | | 1,093 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 954.9 | 20,323 | 46.66 | 2.2717E-76 | 5.196E+06 | 2.51 | 2.96E-71 |
| | 86 | 23,235 | | | | | 0.001 | 540 | 0.1 | 54 | 2.16E-05 | 0.03 | 2.00 | 64.34 | | | | | | | |
| 17 | | | 1,068 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 890.6 | 21,391 | 49.11 | 2.8400E-71 | 5.196E+06 | 2.45 | 3.62E-66 |
| | 84 | 22,167 | | | | | 0.001 | 528 | 0.1 | 53 | 2.33E-05 | 0.03 | 2.00 | 59.71 | | | | | | | |
| 18 | | | 1,043 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 830.9 | 22,434 | 51.50 | 1.5246E-66 | 5.196E+06 | 2.39 | 1.90E-61 |
| | 82 | 21,124 | | | | | 0.001 | 515 | 0.1 | 52 | 2.50E-05 | 0.04 | 2.00 | 55.58 | | | | | | | |
| 19 | | | 1,018 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 775.3 | 23,452 | 53.84 | 3.8523E-62 | 5.196E+06 | 2.34 | 4.68E-57 |
| | 80 | 20,106 | | | | | 0.001 | 503 | 0.1 | 50 | 2.68E-05 | 0.04 | 2.00 | 51.87 | | | | | | | |
| 20 | | | 993 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 723.4 | 24,445 | 56.12 | 4.9486E-58 | 5.196E+06 | 2.28 | 5.86E-53 |
| | 78 | 19,113 | | | | | 0.001 | 490 | 0.1 | 49 | 2.86E-05 | 0.04 | 2.00 | 48.52 | | | | | | | |
| 21 | | | 968 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 674.9 | 25,413 | 58.34 | 3.4501E-54 | 5.196E+06 | 2.22 | 3.98E-49 |
| | 76 | 18,146 | | | | | 0.001 | 478 | 0.1 | 48 | 3.05E-05 | 0.04 | 2.00 | 45.47 | | | | | | | |
| 22 | | | 942 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 629.4 | 26,355 | 60.50 | 1.3805E-50 | 5.196E+06 | 2.16 | 1.55E-45 |
| | 74 | 17,203 | | | | | 0.002 | 465 | 0.1 | 46 | 3.25E-05 | 0.05 | 2.00 | 42.69 | | | | | | | |
| 23 | | | 917 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 586.7 | 27,272 | 62.61 | 3.3269E-47 | 5.196E+06 | 2.11 | 3.64E-42 |
| | 72 | 16,286 | | | | | 0.002 | 452 | 0.1 | 45 | 3.46E-05 | 0.05 | 2.00 | 40.14 | | | | | | | |
| 24 | | | 892 | 0.003 | 5.739E-08 | 0.0001 | | | | | | | | | 546.6 | 28,165 | 64.66 | 5.0344E-44 | 5.196E+06 | 2.05 | 5.36E-39 |
| | 70 | 15,394 | | | | | 0.002 | 440 | 0.1 | 44 | 3.68E-05 | 0.05 | 2.00 | 37.79 | | | | | | | |
| 25 | | | 867 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 508.8 | 29,032 | 66.65 | 4.9612E-41 | 5.196E+06 | 1.99 | 5.13E-36 |
| | 68 | 14,527 | | | | | 0.002 | 427 | 0.1 | 43 | 3.90E-05 | 0.06 | 2.00 | 35.61 | | | | | | | |
| 26 | | | 842 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 473.2 | 29,874 | 68.58 | 3.2873E-38 | 5.196E+06 | 1.93 | 3.30E-33 |
| | 66 | 13,685 | | | | | 0.002 | 415 | 0.1 | 41 | 4.13E-05 | 0.06 | 2.00 | 33.59 | | | | | | | |
| 27 | | | 817 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 439.6 | 30,690 | 70.46 | 1.5064E-35 | 5.196E+06 | 1.88 | 1.47E-30 |
| | 64 | 12,868 | | | | | 0.002 | 402 | 0.1 | 40 | 4.38E-05 | 0.06 | 2.00 | 31.71 | | | | | | | |
| 28 | | | 792 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 407.9 | 31,482 | 72.27 | 4.8946E-33 | 5.196E+06 | 1.82 | 4.62E-28 |
| | 62 | 12,076 | | | | | 0.002 | 390 | 0.1 | 39 | 4.64E-05 | 0.07 | 2.00 | 29.94 | | | | | | | |
| 29 | | | 767 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 377.9 | 32,249 | 74.03 | 1.1530E-30 | 5.196E+06 | 1.76 | 1.05E-25 |
| | 60 | 11,310 | | | | | 0.002 | 377 | 0.1 | 38 | 4.91E-05 | 0.07 | 2.00 | 28.29 | | | | | | | |
| 30 | | | 741 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 349.6 | 32,990 | 75.73 | 2.0083E-28 | 5.196E+06 | 1.70 | 1.78E-23 |
| | 58 | 10,568 | | | | | 0.002 | 364 | 0.1 | 36 | 5.20E-05 | 0.07 | 2.00 | 26.73 | | | | | | | |

**TABLE A-22 (CONTINUED)**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA A - ONE ACRE AREA - ESTIMATE YEAR 2100 - LANDFILL POROSITY = 0.1**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multilier (e^-kt) | Rn-222 Flux Rate from FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-222 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| 31 | | | 716 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 322.9 | 33,706 | 77.38 | 2.6330E-26 | 5.196E+06 | 1.64 | 2.25E-21 |
| | 56 | 9,852 | | | | | 0.002 | 352 | 0.1 | 35 | 5.50E-05 | 0.08 | 2.00 | 25.26 | | | | | | | |
| 32 | | | 691 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 297.6 | 34,398 | 78.97 | 2.6400E-24 | 5.196E+06 | 1.59 | 2.18E-19 |
| | 54 | 9,161 | | | | | 0.002 | 339 | 0.1 | 34 | 5.82E-05 | 0.08 | 2.00 | 23.87 | | | | | | | |
| 33 | | | 666 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 273.8 | 35,064 | 80.49 | 2.0536E-22 | 5.196E+06 | 1.53 | 1.63E-17 |
| | 52 | 8,495 | | | | | 0.002 | 327 | 0.1 | 33 | 6.16E-05 | 0.09 | 2.00 | 22.55 | | | | | | | |
| 34 | | | 641 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 251.2 | 35,704 | 81.97 | 1.2555E-20 | 5.196E+06 | 1.47 | 9.60E-16 |
| | 50 | 7,854 | | | | | 0.002 | 314 | 0.1 | 31 | 6.52E-05 | 0.09 | 2.00 | 21.29 | | | | | | | |
| 35 | | | 616 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 229.9 | 36,320 | 83.38 | 6.1033E-19 | 5.196E+06 | 1.41 | 4.48E-14 |
| | 48 | 7,238 | | | | | 0.002 | 302 | 0.1 | 30 | 6.91E-05 | 0.10 | 2.00 | 20.10 | | | | | | | |
| 36 | | | 591 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 209.8 | 36,911 | 84.74 | 2.3845E-17 | 5.196E+06 | 1.36 | 1.68E-12 |
| | 46 | 6,648 | | | | | 0.002 | 289 | 0.1 | 29 | 7.33E-05 | 0.11 | 2.00 | 18.95 | | | | | | | |
| 37 | | | 565 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 190.9 | 37,476 | 86.03 | 7.5596E-16 | 5.196E+06 | 1.30 | 5.10E-11 |
| | 44 | 6,082 | | | | | 0.002 | 276 | 0.1 | 28 | 7.78E-05 | 0.11 | 2.00 | 17.85 | | | | | | | |
| 38 | | | 540 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 173.0 | 38,017 | 87.27 | 1.9618E-14 | 5.196E+06 | 1.24 | 1.26E-09 |
| | 42 | 5,542 | | | | | 0.002 | 264 | 0.1 | 26 | 8.27E-05 | 0.12 | 2.00 | 16.80 | | | | | | | |
| 39 | | | 515 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 156.2 | 38,532 | 88.46 | 4.2011E-13 | 5.196E+06 | 1.18 | 2.58E-08 |
| | 40 | 5,027 | | | | | 0.002 | 251 | 0.1 | 25 | 8.80E-05 | 0.13 | 2.00 | 15.78 | | | | | | | |
| 40 | | | 490 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 140.5 | 39,022 | 89.58 | 7.4775E-12 | 5.196E+06 | 1.13 | 4.37E-07 |
| | 38 | 4,536 | | | | | 0.002 | 239 | 0.1 | 24 | 9.38E-05 | 0.14 | 2.00 | 14.81 | | | | | | | |
| 41 | | | 465 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 125.6 | 39,487 | 90.65 | 1.1135E-10 | 5.196E+06 | 1.07 | 6.18E-06 |
| | 36 | 4,072 | | | | | 0.002 | 226 | 0.1 | 23 | 1.00E-04 | 0.14 | 2.00 | 13.86 | | | | | | | |
| 42 | | | 440 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 111.8 | 39,927 | 91.66 | 1.3958E-09 | 5.196E+06 | 1.01 | 7.32E-05 |
| | 34 | 3,632 | | | | | 0.002 | 214 | 0.1 | 21 | 1.07E-04 | 0.15 | 2.00 | 12.95 | | | | | | | |
| 43 | | | 415 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 98.8 | 40,341 | 92.61 | 1.4809E-08 | 5.196E+06 | 0.95 | 7.33E-04 |
| | 32 | 3,217 | | | | | 0.002 | 201 | 0.1 | 20 | 1.15E-04 | 0.17 | 2.00 | 12.06 | | | | | | | |
| 44 | | | 390 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 86.8 | 40,731 | 93.51 | 1.3365E-07 | 5.196E+06 | 0.89 | 6.21E-03 |
| | 30 | 2,827 | | | | | 0.002 | 188 | 0.1 | 19 | 1.24E-04 | 0.18 | 2.00 | 11.20 | | | | | | | |
| 45 | | | 364 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 75.6 | 41,095 | 94.34 | 1.0307E-06 | 5.196E+06 | 0.84 | 4.48E-02 |
| | 28 | 2,463 | | | | | 0.002 | 176 | 0.1 | 18 | 1.34E-04 | 0.19 | 2.00 | 10.36 | | | | | | | |
| 46 | | | 339 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 65.2 | 41,435 | 95.12 | 6.8203E-06 | 5.196E+06 | 0.78 | 2.76E-01 |
| | 26 | 2,124 | | | | | 0.002 | 163 | 0.1 | 16 | 1.46E-04 | 0.21 | 2.00 | 9.54 | | | | | | | |
| 47 | | | 314 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 55.7 | 41,749 | 95.84 | 3.8870E-05 | 5.196E+06 | 0.72 | 1.46E+00 |
| | 24 | 1,810 | | | | | 0.002 | 151 | 0.1 | 15 | 1.59E-04 | 0.23 | 2.00 | 8.74 | | | | | | | |
| 48 | | | 289 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 46.9 | 42,038 | 96.51 | 1.9144E-04 | 5.196E+06 | 0.66 | 6.60E+00 |
| | 22 | 1,521 | | | | | 0.002 | 138 | 0.1 | 14 | 1.75E-04 | 0.25 | 2.00 | 7.96 | | | | | | | |
| 49 | | | 264 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 39.0 | 42,302 | 97.11 | 8.1733E-04 | 5.196E+06 | 0.61 | 2.57E+01 |
| | 20 | 1,257 | | | | | 0.002 | 126 | 0.1 | 13 | 1.93E-04 | 0.28 | 2.00 | 7.19 | | | | | | | |
| 50 | | | 239 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 31.8 | 42,541 | 97.66 | 3.0330E-03 | 5.196E+06 | 0.55 | 8.64E+01 |
| | 18 | 1,018 | | | | | 0.002 | 113 | 0.1 | 11 | 2.16E-04 | 0.31 | 2.00 | 6.43 | | | | | | | |
| 51 | | | 214 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 25.4 | 42,754 | 98.15 | 9.8068E-03 | 5.196E+06 | 0.49 | 2.50E+02 |
| | 16 | 804 | | | | | 0.002 | 101 | 0.1 | 10 | 2.44E-04 | 0.35 | 2.00 | 5.69 | | | | | | | |
| 52 | | | 188 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 19.7 | 42,943 | 98.58 | 2.7688E-02 | 5.196E+06 | 0.43 | 6.23E+02 |
| | 14 | 616 | | | | | 0.002 | 88 | 0.1 | 9 | 2.80E-04 | 0.40 | 2.00 | 4.96 | | | | | | | |
| 53 | | | 163 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 14.7 | 43,106 | 98.96 | 6.8387E-02 | 5.196E+06 | 0.38 | 1.33E+03 |
| | 12 | 452 | | | | | 0.002 | 75 | 0.1 | 8 | 3.28E-04 | 0.47 | 2.00 | 4.23 | | | | | | | |
| 54 | | | 138 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 10.5 | 43,244 | 99.28 | 1.4801E-01 | 5.196E+06 | 0.32 | 2.44E+03 |
| | 10 | 314 | | | | | 0.002 | 63 | 0.1 | 6 | 3.95E-04 | 0.57 | 2.00 | 3.52 | | | | | | | |
| 55 | | | 113 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 7.0 | 43,357 | 99.53 | 2.8107E-01 | 5.196E+06 | 0.26 | 3.79E+03 |
| | 8 | 201 | | | | | 0.002 | 50 | 0.1 | 5 | 4.95E-04 | 0.71 | 2.00 | 2.81 | | | | | | | |
| 56 | | | 88 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 4.2 | 43,445 | 99.74 | 4.6888E-01 | 5.196E+06 | 0.20 | 4.92E+03 |
| | 6 | 113 | | | | | 0.002 | 38 | 0.1 | 4 | 6.61E-04 | 0.95 | 2.00 | 2.10 | | | | | | | |
| 57 | | | 63 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 2.1 | 43,508 | 99.88 | 6.8771E-01 | 5.196E+06 | 0.14 | 5.15E+03 |
| | 4 | 50 | | | | | 0.002 | 25 | 0.1 | 3 | 9.94E-04 | 1.43 | 2.00 | 1.40 | | | | | | | |
| 58 | | | 43 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 0.7 | 43,551 | 99.98 | 8.8745E-01 | 5.196E+06 | 0.10 | 4.57E+03 |
| | 1.5 | 7 | | | | | 0.002 | 9 | 0.1 | 1 | 2.65E-03 | 3.82 | 2.50 | 0.65 | | | | | | | |
| 59 | | | 7 | 0.003 | 5.739E-08 | 0.0000 | | | | | | | | | 0.0 | 43,558 | 100.00 | 1.0000E+00 | 5.196E+06 | 0.02 | 8.43E+02 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Considered | pCi/min | 2.405E+04 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Not Considered | pCi/min | 5.196E+06 |

| | | |
|---|---|---|
| Reduction in Rn-222 Flux Due to Decay | % | 99.54 |

**TABLE A-23**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA A - ONE HALF ACRE AREA - ESTIMATE YEAR 2000 - LANDFILL POROSITY = 0.1**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multiflier ($e^{-kt}$) | Rn-222 Flux Rate from FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-22 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| | 83.25 | 21,773 | | | | | 0 | | | | 0 | 0 | | | | | | | | | |
| 1 | | | 131 | 0.1413 | 6.485E-06 | 8.468E-04 | | | | | | | | | 53.1 | 131 | 0.60 | 6.2157E-05 | 3.011E+06 | 0.60 | 1.12E+00 |
| | 83 | 21,642 | | | | | 8.468E-04 | 522 | 0.1 | 52 | 1.62E-05 | 0.02 | 0.25 | 10.69 | | | | | | | |
| 2 | | | 518 | 0.1413 | 6.485E-06 | 3.362E-03 | | | | | | | | | 42.4 | 649 | 2.98 | 4.3697E-04 | 3.011E+06 | 2.38 | 3.13E+01 |
| | 82 | 21,124 | | | | | 4.209E-03 | 515 | 0.1 | 52 | 8.17E-05 | 0.12 | 1.00 | 8.50 | | | | | | | |
| 3 | | | 512 | 0.1413 | 6.485E-06 | 3.321E-03 | | | | | | | | | 33.9 | 1,161 | 5.33 | 2.0602E-03 | 3.011E+06 | 2.35 | 1.46E+02 |
| | 81 | 20,612 | | | | | 7.530E-03 | 509 | 0.1 | 51 | 1.48E-04 | 0.21 | 1.00 | 4.69 | | | | | | | |
| 4 | | | 506 | 0.1413 | 6.485E-06 | 3.280E-03 | | | | | | | | | 29.2 | 1,667 | 7.65 | 4.8499E-03 | 3.011E+06 | 2.32 | 3.39E+02 |
| | 80 | 20,106 | | | | | 1.081E-02 | 503 | 0.1 | 50 | 2.15E-04 | 0.31 | 1.00 | 3.23 | | | | | | | |
| 5 | | | 500 | 0.1413 | 6.485E-06 | 3.240E-03 | | | | | | | | | 26.0 | 2,166 | 9.95 | 8.7405E-03 | 3.011E+06 | 2.29 | 6.04E+02 |
| | 79 | 19,607 | | | | | 1.405E-02 | 496 | 0.1 | 50 | 2.83E-04 | 0.41 | 1.00 | 2.45 | | | | | | | |
| 6 | | | 493 | 0.1413 | 6.485E-06 | 3.199E-03 | | | | | | | | | 23.5 | 2,660 | 12.21 | 1.3674E-02 | 3.011E+06 | 2.26 | 9.32E+02 |
| | 78 | 19,113 | | | | | 1.725E-02 | 490 | 0.1 | 49 | 3.52E-04 | 0.51 | 1.00 | 1.97 | | | | | | | |
| 7 | | | 487 | 0.1413 | 6.485E-06 | 3.158E-03 | | | | | | | | | 21.6 | 3,147 | 14.45 | 1.9597E-02 | 3.011E+06 | 2.24 | 1.32E+03 |
| | 77 | 18,627 | | | | | 2.041E-02 | 484 | 0.1 | 48 | 4.22E-04 | 0.61 | 1.00 | 1.65 | | | | | | | |
| 8 | | | 481 | 0.1413 | 6.485E-06 | 3.117E-03 | | | | | | | | | 19.9 | 3,627 | 16.65 | 2.6462E-02 | 3.011E+06 | 2.21 | 1.76E+03 |
| | 76 | 18,146 | | | | | 2.352E-02 | 478 | 0.1 | 48 | 4.93E-04 | 0.71 | 1.00 | 1.41 | | | | | | | |
| 9 | | | 474 | 0.1413 | 6.485E-06 | 3.077E-03 | | | | | | | | | 18.5 | 4,102 | 18.83 | 3.4221E-02 | 3.011E+06 | 2.18 | 2.24E+03 |
| | 75 | 17,672 | | | | | 2.660E-02 | 471 | 0.1 | 47 | 5.64E-04 | 0.81 | 1.00 | 1.23 | | | | | | | |
| 10 | | | 468 | 0.1413 | 6.485E-06 | 3.036E-03 | | | | | | | | | 17.3 | 4,570 | 20.98 | 4.2830E-02 | 3.011E+06 | 2.15 | 2.77E+03 |
| | 74 | 17,203 | | | | | 2.964E-02 | 465 | 0.1 | 46 | 6.37E-04 | 0.92 | 1.00 | 1.09 | | | | | | | |
| 11 | | | 462 | 0.1413 | 6.485E-06 | 2.995E-03 | | | | | | | | | 16.2 | 5,031 | 23.10 | 5.2247E-02 | 3.011E+06 | 2.12 | 3.34E+03 |
| | 73 | 16,742 | | | | | 3.263E-02 | 459 | 0.1 | 46 | 7.11E-04 | 1.02 | 1.00 | 0.98 | | | | | | | |
| 12 | | | 456 | 0.1413 | 6.485E-06 | 2.954E-03 | | | | | | | | | 15.2 | 5,487 | 25.19 | 6.2429E-02 | 3.011E+06 | 2.09 | 3.93E+03 |
| | 72 | 16,286 | | | | | 3.558E-02 | 452 | 0.1 | 45 | 7.87E-04 | 1.13 | 1.00 | 0.88 | | | | | | | |
| 13 | | | 449 | 0.1413 | 6.485E-06 | 2.914E-03 | | | | | | | | | 14.3 | 5,936 | 27.26 | 7.3337E-02 | 3.011E+06 | 2.06 | 4.55E+03 |
| | 71 | 15,837 | | | | | 3.850E-02 | 446 | 0.1 | 45 | 8.63E-04 | 1.24 | 1.00 | 0.80 | | | | | | | |
| 14 | | | 443 | 0.1413 | 6.485E-06 | 2.873E-03 | | | | | | | | | 13.5 | 6,379 | 29.29 | 8.4931E-02 | 3.011E+06 | 2.03 | 5.20E+03 |
| | 70 | 15,394 | | | | | 4.137E-02 | 440 | 0.1 | 44 | 9.41E-04 | 1.35 | 1.00 | 0.74 | | | | | | | |
| 15 | | | 437 | 0.1413 | 6.485E-06 | 2.832E-03 | | | | | | | | | 12.8 | 6,816 | 31.29 | 9.7173E-02 | 3.011E+06 | 2.00 | 5.87E+03 |
| | 69 | 14,957 | | | | | 4.420E-02 | 434 | 0.1 | 43 | 1.02E-03 | 1.47 | 1.00 | 0.68 | | | | | | | |
| 16 | | | 430 | 0.1413 | 6.485E-06 | 2.791E-03 | | | | | | | | | 12.1 | 7,246 | 33.27 | 1.1003E-01 | 3.011E+06 | 1.98 | 6.55E+03 |
| | 68 | 14,527 | | | | | 4.699E-02 | 427 | 0.1 | 43 | 1.10E-03 | 1.58 | 1.00 | 0.63 | | | | | | | |
| 17 | | | 424 | 0.1413 | 6.485E-06 | 2.751E-03 | | | | | | | | | 11.5 | 7,670 | 35.22 | 1.2346E-01 | 3.011E+06 | 1.95 | 7.24E+03 |
| | 67 | 14,103 | | | | | 4.974E-02 | 421 | 0.1 | 42 | 1.18E-03 | 1.70 | 1.00 | 0.59 | | | | | | | |
| 18 | | | 418 | 0.1413 | 6.485E-06 | 2.710E-03 | | | | | | | | | 10.9 | 8,088 | 37.14 | 1.3743E-01 | 3.011E+06 | 1.92 | 7.94E+03 |
| | 66 | 13,685 | | | | | 5.245E-02 | 415 | 0.1 | 41 | 1.26E-03 | 1.82 | 1.00 | 0.55 | | | | | | | |
| 19 | | | 412 | 0.1413 | 6.485E-06 | 2.669E-03 | | | | | | | | | 10.3 | 8,500 | 39.03 | 1.5190E-01 | 3.011E+06 | 1.89 | 8.64E+03 |
| | 65 | 13,273 | | | | | 5.512E-02 | 408 | 0.1 | 41 | 1.35E-03 | 1.94 | 1.00 | 0.51 | | | | | | | |
| 20 | | | 405 | 0.1413 | 6.485E-06 | 2.628E-03 | | | | | | | | | 9.8 | 8,905 | 40.89 | 1.6685E-01 | 3.011E+06 | 1.86 | 9.35E+03 |
| | 64 | 12,868 | | | | | 5.775E-02 | 402 | 0.1 | 40 | 1.44E-03 | 2.07 | 1.00 | 0.48 | | | | | | | |
| 21 | | | 399 | 0.1413 | 6.485E-06 | 2.588E-03 | | | | | | | | | 9.3 | 9,304 | 42.72 | 1.8223E-01 | 3.011E+06 | 1.83 | 1.01E+04 |
| | 63 | 12,469 | | | | | 6.034E-02 | 396 | 0.1 | 40 | 1.52E-03 | 2.20 | 1.00 | 0.46 | | | | | | | |
| 22 | | | 393 | 0.1413 | 6.485E-06 | 2.547E-03 | | | | | | | | | 8.9 | 9,697 | 44.52 | 1.9802E-01 | 3.011E+06 | 1.80 | 1.08E+04 |
| | 62 | 12,076 | | | | | 6.289E-02 | 390 | 0.1 | 39 | 1.61E-03 | 2.32 | 1.00 | 0.43 | | | | | | | |
| 23 | | | 386 | 0.1413 | 6.485E-06 | 2.506E-03 | | | | | | | | | 8.4 | 10,083 | 46.30 | 2.1418E-01 | 3.011E+06 | 1.77 | 1.14E+04 |
| | 61 | 11,690 | | | | | 6.539E-02 | 383 | 0.1 | 38 | 1.71E-03 | 2.46 | 1.00 | 0.41 | | | | | | | |
| 24 | | | 380 | 0.1413 | 6.485E-06 | 2.465E-03 | | | | | | | | | 8.0 | 10,463 | 48.04 | 2.3069E-01 | 3.011E+06 | 1.75 | 1.21E+04 |
| | 60 | 11,310 | | | | | 6.786E-02 | 377 | 0.1 | 38 | 1.80E-03 | 2.59 | 1.00 | 0.39 | | | | | | | |
| 25 | | | 374 | 0.1413 | 6.485E-06 | 2.425E-03 | | | | | | | | | 7.7 | 10,837 | 49.76 | 2.4751E-01 | 3.011E+06 | 1.72 | 1.28E+04 |
| | 59 | 10,936 | | | | | 7.028E-02 | 371 | 0.1 | 37 | 1.90E-03 | 2.73 | 1.00 | 0.37 | | | | | | | |
| 26 | | | 368 | 0.1413 | 6.485E-06 | 2.384E-03 | | | | | | | | | 7.3 | 11,205 | 51.44 | 2.6461E-01 | 3.011E+06 | 1.69 | 1.34E+04 |
| | 58 | 10,568 | | | | | 7.267E-02 | 364 | 0.1 | 36 | 1.99E-03 | 2.87 | 1.00 | 0.35 | | | | | | | |
| 27 | | | 361 | 0.1413 | 6.485E-06 | 2.343E-03 | | | | | | | | | 6.9 | 11,566 | 53.10 | 2.8196E-01 | 3.011E+06 | 1.66 | 1.41E+04 |
| | 57 | 10,207 | | | | | 7.501E-02 | 358 | 0.1 | 36 | 2.09E-03 | 3.02 | 1.00 | 0.33 | | | | | | | |
| 28 | | | 355 | 0.1413 | 6.485E-06 | 2.302E-03 | | | | | | | | | 6.6 | 11,921 | 54.73 | 2.9954E-01 | 3.011E+06 | 1.63 | 1.47E+04 |
| | 56 | 9,852 | | | | | 7.731E-02 | 352 | 0.1 | 35 | 2.20E-03 | 3.16 | 1.00 | 0.32 | | | | | | | |
| 29 | | | 349 | 0.1413 | 6.485E-06 | 2.262E-03 | | | | | | | | | 6.3 | 12,270 | 56.33 | 3.1732E-01 | 3.011E+06 | 1.60 | 1.53E+04 |
| | 55 | 9,503 | | | | | 7.957E-02 | 346 | 0.1 | 35 | 2.30E-03 | 3.32 | 1.00 | 0.30 | | | | | | | |
| 30 | | | 342 | 0.1413 | 6.485E-06 | 2.221E-03 | | | | | | | | | 6.0 | 12,612 | 57.91 | 3.3526E-01 | 3.011E+06 | 1.57 | 1.59E+04 |
| | 54 | 9,161 | | | | | 8.179E-02 | 339 | 0.1 | 34 | 2.41E-03 | 3.47 | 1.00 | 0.29 | | | | | | | |
| 31 | | | 336 | 0.1413 | 6.485E-06 | 2.180E-03 | | | | | | | | | 5.7 | 12,948 | 59.45 | 3.5335E-01 | 3.011E+06 | 1.54 | 1.64E+04 |
| | 53 | 8,825 | | | | | 8.397E-02 | 333 | 0.1 | 33 | 2.52E-03 | 3.63 | 1.00 | 0.28 | | | | | | | |
| 32 | | | 330 | 0.1413 | 6.485E-06 | 2.139E-03 | | | | | | | | | 5.4 | 13,278 | 60.96 | 3.7155E-01 | 3.011E+06 | 1.51 | 1.69E+04 |
| | 52 | 8,495 | | | | | 8.611E-02 | 327 | 0.1 | 33 | 2.64E-03 | 3.80 | 1.00 | 0.26 | | | | | | | |
| 33 | | | 324 | 0.1413 | 6.485E-06 | 2.099E-03 | | | | | | | | | 5.2 | 13,602 | 62.45 | 3.8985E-01 | 3.011E+06 | 1.49 | 1.74E+04 |
| | 51 | 8,171 | | | | | 8.821E-02 | 320 | 0.1 | 32 | 2.75E-03 | 3.96 | 1.00 | 0.25 | | | | | | | |
| 34 | | | 317 | 0.1413 | 6.485E-06 | 2.058E-03 | | | | | | | | | 4.9 | 13,919 | 63.91 | 4.0820E-01 | 3.011E+06 | 1.46 | 1.79E+04 |
| | 50 | 7,854 | | | | | 9.027E-02 | 314 | 0.1 | 31 | 2.87E-03 | 4.14 | 1.00 | 0.24 | | | | | | | |
| 35 | | | 311 | 0.1413 | 6.485E-06 | 2.017E-03 | | | | | | | | | 4.7 | 14,230 | 65.34 | 4.2660E-01 | 3.011E+06 | 1.43 | 1.83E+04 |
| | 49 | 7,543 | | | | | 9.229E-02 | 308 | 0.1 | 31 | 3.00E-03 | 4.32 | 1.00 | 0.23 | | | | | | | |
| 36 | | | 305 | 0.1413 | 6.485E-06 | 1.976E-03 | | | | | | | | | 4.4 | 14,535 | 66.73 | 4.4501E-01 | 3.011E+06 | 1.40 | 1.87E+04 |
| | 48 | 7,238 | | | | | 9.426E-02 | 302 | 0.1 | 30 | 3.13E-03 | 4.50 | 1.00 | 0.22 | | | | | | | |
| 37 | | | 298 | 0.1413 | 6.485E-06 | 1.936E-03 | | | | | | | | | 4.2 | 14,833 | 68.10 | 4.6342E-01 | 3.011E+06 | 1.37 | 1.91E+04 |
| | 47 | 6,940 | | | | | 9.620E-02 | 295 | 0.1 | 30 | 3.26E-03 | 4.69 | 1.00 | 0.21 | | | | | | | |
| 38 | | | 292 | 0.1413 | 6.485E-06 | 1.895E-03 | | | | | | | | | 4.0 | 15,125 | 69.45 | 4.8179E-01 | 3.011E+06 | 1.34 | 1.95E+04 |
| | 46 | 6,648 | | | | | 9.809E-02 | 289 | 0.1 | 29 | 3.39E-03 | 4.89 | 1.00 | 0.20 | | | | | | | |
| 39 | | | 286 | 0.1413 | 6.485E-06 | 1.854E-03 | | | | | | | | | 3.8 | 15,411 | 70.76 | 5.0011E-01 | 3.011E+06 | 1.31 | 1.98E+04 |
| | 45 | 6,362 | | | | | 9.995E-02 | 283 | 0.1 | 28 | 3.53E-03 | 5.09 | 1.00 | 0.20 | | | | | | | |
| 40 | | | 280 | 0.1413 | 6.485E-06 | 1.813E-03 | | | | | | | | | 3.6 | 15,691 | 72.04 | 5.1836E-01 | 3.011E+06 | 1.28 | 2.00E+04 |
| | 44 | 6,082 | | | | | 1.018E-01 | 276 | 0.1 | 28 | 3.68E-03 | 5.30 | 1.00 | 0.19 | | | | | | | |
| 41 | | | 273 | 0.1413 | 6.485E-06 | 1.773E-03 | | | | | | | | | 3.4 | 15,964 | 73.30 | 5.3651E-01 | 3.011E+06 | 1.25 | 2.03E+04 |
| | 43 | 5,809 | | | | | 1.035E-01 | 270 | 0.1 | 27 | 3.83E-03 | 5.52 | 1.00 | 0.18 | | | | | | | |
| 42 | | | 267 | 0.1413 | 6.485E-06 | 1.732E-03 | | | | | | | | | 3.2 | 16,231 | 74.52 | 5.5454E-01 | 3.011E+06 | 1.23 | 2.05E+04 |
| | 42 | 5,542 | | | | | 1.053E-01 | 264 | 0.1 | 26 | 3.99E-03 | 5.74 | 1.00 | 0.17 | | | | | | | |

**TABLE A-23 (CONTINUED)**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA A - ONE HALF ACRE AREA - ESTIMATE YEAR 2000 - LANDFILL POROSITY = 0.1**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multiller ($e^{-kt}$) | Rn-222 Flux Rate from FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-22 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| 43 | | | 261 | 0.1413 | 6.485E-06 | 1.691E-03 | | | | | | | | | 3.1 | 16,492 | 75.72 | 5.7243E-01 | 3.011E+06 | 1.20 | 2.06E+04 |
| | 41 | 5,281 | | | | | 1.070E-01 | 258 | 0.1 | 26 | 4.15E-03 | 5.98 | 1.00 | 0.17 | | | | | | | |
| 44 | | | 254 | 0.1413 | 6.485E-06 | 1.650E-03 | | | | | | | | | 2.9 | 16,746 | 76.89 | 5.9016E-01 | 3.011E+06 | 1.17 | 2.08E+04 |
| | 40 | 5,027 | | | | | 1.086E-01 | 251 | 0.1 | 25 | 4.32E-03 | 6.22 | 1.00 | 0.16 | | | | | | | |
| 45 | | | 248 | 0.1413 | 6.485E-06 | 1.610E-03 | | | | | | | | | 2.7 | 16,995 | 78.03 | 6.0772E-01 | 3.011E+06 | 1.14 | 2.09E+04 |
| | 39 | 4,778 | | | | | 1.102E-01 | 245 | 0.1 | 25 | 4.50E-03 | 6.48 | 1.00 | 0.15 | | | | | | | |
| 46 | | | 242 | 0.1413 | 6.485E-06 | 1.569E-03 | | | | | | | | | 2.6 | 17,237 | 79.14 | 6.2508E-01 | 3.011E+06 | 1.11 | 2.09E+04 |
| | 38 | 4,536 | | | | | 1.118E-01 | 239 | 0.1 | 24 | 4.68E-03 | 6.74 | 1.00 | 0.15 | | | | | | | |
| 47 | | | 236 | 0.1413 | 6.485E-06 | 1.528E-03 | | | | | | | | | 2.4 | 17,472 | 80.22 | 6.4222E-01 | 3.011E+06 | 1.08 | 2.09E+04 |
| | 37 | 4,301 | | | | | 1.133E-01 | 232 | 0.1 | 23 | 4.87E-03 | 7.02 | 1.00 | 0.14 | | | | | | | |
| 48 | | | 229 | 0.1413 | 6.485E-06 | 1.487E-03 | | | | | | | | | 2.3 | 17,702 | 81.27 | 6.5913E-01 | 3.011E+06 | 1.05 | 2.09E+04 |
| | 36 | 4,072 | | | | | 1.148E-01 | 226 | 0.1 | 23 | 5.08E-03 | 7.31 | 1.00 | 0.14 | | | | | | | |
| 49 | | | 223 | 0.1413 | 6.485E-06 | 1.447E-03 | | | | | | | | | 2.1 | 17,925 | 82.30 | 6.7579E-01 | 3.011E+06 | 1.02 | 2.08E+04 |
| | 35 | 3,848 | | | | | 1.162E-01 | 220 | 0.1 | 22 | 5.29E-03 | 7.61 | 1.00 | 0.13 | | | | | | | |
| 50 | | | 217 | 0.1413 | 6.485E-06 | 1.406E-03 | | | | | | | | | 2.0 | 18,141 | 83.29 | 6.9217E-01 | 3.011E+06 | 1.00 | 2.07E+04 |
| | 34 | 3,632 | | | | | 1.177E-01 | 214 | 0.1 | 21 | 5.51E-03 | 7.93 | 1.00 | 0.13 | | | | | | | |
| 51 | | | 210 | 0.1413 | 6.485E-06 | 1.365E-03 | | | | | | | | | 1.9 | 18,352 | 84.26 | 7.0828E-01 | 3.011E+06 | 0.97 | 2.06E+04 |
| | 33 | 3,421 | | | | | 1.190E-01 | 207 | 0.1 | 21 | 5.74E-03 | 8.27 | 1.00 | 0.12 | | | | | | | |
| 52 | | | 204 | 0.1413 | 6.485E-06 | 1.324E-03 | | | | | | | | | 1.8 | 18,556 | 85.20 | 7.2408E-01 | 3.011E+06 | 0.94 | 2.04E+04 |
| | 32 | 3,217 | | | | | 1.203E-01 | 201 | 0.1 | 20 | 5.99E-03 | 8.62 | 1.00 | 0.12 | | | | | | | |
| 53 | | | 198 | 0.1413 | 6.485E-06 | 1.284E-03 | | | | | | | | | 1.7 | 18,754 | 86.11 | 7.3957E-01 | 3.011E+06 | 0.91 | 2.02E+04 |
| | 31 | 3,019 | | | | | 1.216E-01 | 195 | 0.1 | 19 | 6.24E-03 | 8.99 | 1.00 | 0.11 | | | | | | | |
| 54 | | | 192 | 0.1413 | 6.485E-06 | 1.243E-03 | | | | | | | | | 1.5 | 18,946 | 86.99 | 7.5472E-01 | 3.011E+06 | 0.88 | 2.00E+04 |
| | 30 | 2,827 | | | | | 1.229E-01 | 188 | 0.1 | 19 | 6.52E-03 | 9.39 | 1.00 | 0.11 | | | | | | | |
| 55 | | | 185 | 0.1413 | 6.485E-06 | 1.202E-03 | | | | | | | | | 1.4 | 19,131 | 87.84 | 7.6953E-01 | 3.011E+06 | 0.85 | 1.97E+04 |
| | 29 | 2,642 | | | | | 1.241E-01 | 182 | 0.1 | 18 | 6.81E-03 | 9.81 | 1.00 | 0.10 | | | | | | | |
| 56 | | | 179 | 0.1413 | 6.485E-06 | 1.161E-03 | | | | | | | | | 1.3 | 19,310 | 88.66 | 7.8398E-01 | 3.011E+06 | 0.82 | 1.94E+04 |
| | 28 | 2,463 | | | | | 1.252E-01 | 176 | 0.1 | 18 | 7.12E-03 | 10.25 | 1.00 | 0.10 | | | | | | | |
| 57 | | | 173 | 0.1413 | 6.485E-06 | 1.121E-03 | | | | | | | | | 1.2 | 19,483 | 89.45 | 7.9806E-01 | 3.011E+06 | 0.79 | 1.91E+04 |
| | 27 | 2,290 | | | | | 1.264E-01 | 170 | 0.1 | 17 | 7.45E-03 | 10.73 | 1.00 | 0.09 | | | | | | | |
| 58 | | | 167 | 0.1413 | 6.485E-06 | 1.039E-03 | | | | | | | | | 1.1 | 19,649 | 90.22 | 8.1175E-01 | 3.011E+06 | 0.76 | 1.87E+04 |
| | 26 | 2,124 | | | | | 1.274E-01 | 163 | 0.1 | 16 | 7.80E-03 | 11.23 | 1.00 | 0.09 | | | | | | | |
| 59 | | | 160 | 0.1413 | 6.485E-06 | 9.983E-04 | | | | | | | | | 1.1 | 19,810 | 90.95 | 8.2504E-01 | 3.011E+06 | 0.74 | 1.83E+04 |
| | 25 | 1,964 | | | | | 1.284E-01 | 157 | 0.1 | 16 | 8.17E-03 | 11.77 | 1.00 | 0.08 | | | | | | | |
| 60 | | | 154 | 0.1413 | 6.485E-06 | 9.983E-04 | | | | | | | | | 1.0 | 19,963 | 91.66 | 8.3793E-01 | 3.011E+06 | 0.71 | 1.78E+04 |
| | 24 | 1,810 | | | | | 1.294E-01 | 151 | 0.1 | 15 | 8.58E-03 | 12.36 | 1.00 | 0.08 | | | | | | | |
| 61 | | | 148 | 0.1413 | 6.485E-06 | 9.576E-04 | | | | | | | | | 0.9 | 20,111 | 92.34 | 8.5039E-01 | 3.011E+06 | 0.68 | 1.74E+04 |
| | 23 | 1,662 | | | | | 1.303E-01 | 145 | 0.1 | 14 | 9.02E-03 | 12.99 | 1.00 | 0.08 | | | | | | | |
| 62 | | | 141 | 0.1413 | 6.485E-06 | 9.168E-04 | | | | | | | | | 0.8 | 20,253 | 92.99 | 8.6241E-01 | 3.011E+06 | 0.65 | 1.69E+04 |
| | 22 | 1,521 | | | | | 1.313E-01 | 138 | 0.1 | 14 | 9.50E-03 | 13.67 | 1.00 | 0.07 | | | | | | | |
| 63 | | | 135 | 0.1413 | 6.485E-06 | 8.761E-04 | | | | | | | | | 0.7 | 20,388 | 93.61 | 8.7400E-01 | 3.011E+06 | 0.62 | 1.63E+04 |
| | 21 | 1,385 | | | | | 1.321E-01 | 132 | 0.1 | 13 | 1.00E-02 | 14.42 | 1.00 | 0.07 | | | | | | | |
| 64 | | | 129 | 0.1413 | 6.485E-06 | 8.353E-04 | | | | | | | | | 0.7 | 20,516 | 94.20 | 8.8512E-01 | 3.011E+06 | 0.59 | 1.58E+04 |
| | 20 | 1,257 | | | | | 1.330E-01 | 126 | 0.1 | 13 | 1.06E-02 | 15.24 | 1.00 | 0.07 | | | | | | | |
| 65 | | | 123 | 0.1413 | 6.485E-06 | 7.946E-04 | | | | | | | | | 0.6 | 20,639 | 94.76 | 8.9578E-01 | 3.011E+06 | 0.56 | 1.52E+04 |
| | 19 | 1,134 | | | | | 1.338E-01 | 119 | 0.1 | 12 | 1.12E-02 | 16.14 | 1.00 | 0.06 | | | | | | | |
| 66 | | | 116 | 0.1413 | 6.485E-06 | 7.538E-04 | | | | | | | | | 0.5 | 20,755 | 95.29 | 9.0596E-01 | 3.011E+06 | 0.53 | 1.46E+04 |
| | 18 | 1,018 | | | | | 1.345E-01 | 113 | 0.1 | 11 | 1.19E-02 | 17.13 | 1.00 | 0.06 | | | | | | | |
| 67 | | | 110 | 0.1413 | 6.485E-06 | 7.131E-04 | | | | | | | | | 0.5 | 20,865 | 95.80 | 9.1566E-01 | 3.011E+06 | 0.50 | 1.39E+04 |
| | 17 | 908 | | | | | 1.352E-01 | 107 | 0.1 | 11 | 1.27E-02 | 18.23 | 1.00 | 0.05 | | | | | | | |
| 68 | | | 104 | 0.1413 | 6.485E-06 | 6.724E-04 | | | | | | | | | 0.4 | 20,969 | 96.28 | 9.2487E-01 | 3.011E+06 | 0.48 | 1.33E+04 |
| | 16 | 804 | | | | | 1.359E-01 | 101 | 0.1 | 10 | 1.35E-02 | 19.47 | 1.00 | 0.05 | | | | | | | |
| 69 | | | 97 | 0.1413 | 6.485E-06 | 6.316E-04 | | | | | | | | | 0.4 | 21,066 | 96.72 | 9.3358E-01 | 3.011E+06 | 0.45 | 1.26E+04 |
| | 15 | 707 | | | | | 1.365E-01 | 94 | 0.1 | 9 | 1.45E-02 | 20.86 | 1.00 | 0.05 | | | | | | | |
| 70 | | | 91 | 0.1413 | 6.485E-06 | 5.909E-04 | | | | | | | | | 0.3 | 21,157 | 97.14 | 9.4177E-01 | 3.011E+06 | 0.42 | 1.19E+04 |
| | 14 | 616 | | | | | 1.371E-01 | 88 | 0.1 | 9 | 1.56E-02 | 22.45 | 1.00 | 0.04 | | | | | | | |
| 71 | | | 85 | 0.1413 | 6.485E-06 | 5.501E-04 | | | | | | | | | 0.3 | 21,242 | 97.53 | 9.4946E-01 | 3.011E+06 | 0.39 | 1.11E+04 |
| | 13 | 531 | | | | | 1.377E-01 | 82 | 0.1 | 8 | 1.69E-02 | 24.27 | 1.00 | 0.04 | | | | | | | |
| 72 | | | 79 | 0.1413 | 6.485E-06 | 5.094E-04 | | | | | | | | | 0.2 | 21,321 | 97.89 | 9.5662E-01 | 3.011E+06 | 0.36 | 1.04E+04 |
| | 12 | 452 | | | | | 1.382E-01 | 75 | 0.1 | 8 | 1.83E-02 | 26.39 | 1.00 | 0.04 | | | | | | | |
| 73 | | | 72 | 0.1413 | 6.485E-06 | 4.686E-04 | | | | | | | | | 0.2 | 21,393 | 98.22 | 9.6325E-01 | 3.011E+06 | 0.33 | 9.62E+03 |
| | 11 | 380 | | | | | 1.387E-01 | 69 | 0.1 | 7 | 2.01E-02 | 28.89 | 1.00 | 0.03 | | | | | | | |
| 74 | | | 66 | 0.1413 | 6.485E-06 | 4.279E-04 | | | | | | | | | 0.2 | 21,459 | 98.53 | 9.6935E-01 | 3.011E+06 | 0.30 | 8.84E+03 |
| | 10 | 314 | | | | | 1.391E-01 | 63 | 0.1 | 6 | 2.21E-02 | 31.88 | 1.00 | 0.03 | | | | | | | |
| 75 | | | 60 | 0.1413 | 6.485E-06 | 3.871E-04 | | | | | | | | | 0.1 | 21,519 | 98.80 | 9.7492E-01 | 3.011E+06 | 0.27 | 8.04E+03 |
| | 9 | 254 | | | | | 1.395E-01 | 57 | 0.1 | 6 | 2.47E-02 | 35.52 | 1.00 | 0.03 | | | | | | | |
| 76 | | | 53 | 0.1413 | 6.485E-06 | 3.464E-04 | | | | | | | | | 0.1 | 21,572 | 99.04 | 9.7994E-01 | 3.011E+06 | 0.25 | 7.24E+03 |
| | 8 | 201 | | | | | 1.398E-01 | 50 | 0.1 | 5 | 2.78E-02 | 40.06 | 1.00 | 0.02 | | | | | | | |
| 77 | | | 47 | 0.1413 | 6.485E-06 | 3.056E-04 | | | | | | | | | 0.1 | 21,619 | 99.26 | 9.8441E-01 | 3.011E+06 | 0.22 | 6.41E+03 |
| | 7 | 154 | | | | | 1.401E-01 | 44 | 0.1 | 4 | 3.19E-02 | 45.88 | 1.00 | 0.02 | | | | | | | |
| 78 | | | 41 | 0.1413 | 6.485E-06 | 2.649E-04 | | | | | | | | | 0.1 | 21,660 | 99.45 | 9.8833E-01 | 3.011E+06 | 0.19 | 5.58E+03 |
| | 6 | 113 | | | | | 1.404E-01 | 38 | 0.1 | 4 | 3.72E-02 | 53.62 | 1.00 | 0.02 | | | | | | | |
| 79 | | | 35 | 0.1413 | 6.485E-06 | 2.241E-04 | | | | | | | | | 0.0 | 21,695 | 99.61 | 9.9170E-01 | 3.011E+06 | 0.16 | 4.74E+03 |
| | 5 | 79 | | | | | 1.406E-01 | 31 | 0.1 | 3 | 4.48E-02 | 64.45 | 1.00 | 0.02 | | | | | | | |
| 80 | | | 28 | 0.1413 | 6.485E-06 | 1.834E-04 | | | | | | | | | 0.0 | 21,723 | 99.74 | 9.9451E-01 | 3.011E+06 | 0.13 | 3.89E+03 |
| | 4 | 50 | | | | | 1.408E-01 | 25 | 0.1 | 3 | 5.60E-02 | 80.67 | 1.00 | 0.01 | | | | | | | |
| 81 | | | 22 | 0.1413 | 6.485E-06 | 1.426E-04 | | | | | | | | | 0.0 | 21,745 | 99.84 | 9.9676E-01 | 3.011E+06 | 0.10 | 3.03E+03 |
| | 3 | 28 | | | | | 1.409E-01 | 19 | 0.1 | 2 | 7.48E-02 | 107.67 | 1.00 | 0.01 | | | | | | | |
| 82 | | | 16 | 0.1413 | 6.485E-06 | 1.019E-04 | | | | | | | | | 0.009 | 21,760 | 99.91 | 9.9845E-01 | 3.011E+06 | 0.07 | 2.17E+03 |
| | 2 | 13 | | | | | 1.410E-01 | 13 | 0.1 | 1 | 1.12E-01 | 161.62 | 1.00 | 0.01 | | | | | | | |
| 83 | | | 5 | 0.1413 | 6.485E-06 | 3.565E-05 | | | | | | | | | 0.002 | 21,766 | 99.94 | 9.9958E-01 | 3.011E+06 | 0.03 | 7.60E+02 |
| | 1.5 | 7 | | | | | 1.411E-01 | 9 | 0.1 | 1 | 1.50E-01 | 215.55 | 0.50 | 0.00 | | | | | | | |
| 84 | | | 7 | 0.1413 | 6.485E-06 | 4.584E-05 | | | | | | | | | 0.000 | 21,773 | 99.97 | 1.0000E+00 | 3.011E+06 | 0.03 | 9.77E+02 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Considered | pCi/min | 1.020E+06 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Not Considered | pCi/min | 3.011E+06 |

| | | |
|---|---|---|
| Reduction in Rn-222 Flux Due to Decay | % | 66.14 |

**TABLE A-24**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA A - ONE HALF ACRE AREA - ESTIMATE YEAR 2025 - LANDFILL POROSITY = 0.1**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multiflier (e^-kt) | Rn-222 Flux Rate from FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-22 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| | 83.25 | 21,773 | | | | | 0 | | | | 0 | 0 | | | | | | | | | |
| 1 | | | 131 | 0.0400 | 1.837E-06 | 2.398E-04 | | | | | | | | | 187.5 | 131 | 0.60 | 1.3989E-15 | 3.691E+06 | 0.60 | 3.10E-11 |
| | 83 | 21,642 | | | | | 2.398E-04 | 522 | 0.1 | 52 | 4.60E-06 | 0.01 | 0.25 | 37.76 | | | | | | | |
| 2 | | | 518 | 0.0400 | 1.837E-06 | 9.520E-04 | | | | | | | | | 149.8 | 649 | 2.98 | 1.3696E-12 | 3.691E+06 | 2.38 | 1.20E-07 |
| | 82 | 21,124 | | | | | 1.192E-03 | 515 | 0.1 | 52 | 2.31E-05 | 0.03 | 1.00 | 30.02 | | | | | | | |
| 3 | | | 512 | 0.0400 | 1.837E-06 | 9.405E-04 | | | | | | | | | 119.7 | 1,161 | 5.33 | 3.2714E-10 | 3.691E+06 | 2.35 | 2.84E-05 |
| | 81 | 20,612 | | | | | 2.132E-03 | 509 | 0.1 | 51 | 4.19E-05 | 0.06 | 1.00 | 16.58 | | | | | | | |
| 4 | | | 506 | 0.0400 | 1.837E-06 | 9.289E-04 | | | | | | | | | 103.2 | 1,667 | 7.65 | 6.7260E-09 | 3.691E+06 | 2.32 | 5.77E-04 |
| | 80 | 20,106 | | | | | 3.061E-03 | 503 | 0.1 | 50 | 6.09E-05 | 0.09 | 1.00 | 11.40 | | | | | | | |
| 5 | | | 500 | 0.0400 | 1.837E-06 | 9.174E-04 | | | | | | | | | 91.8 | 2,166 | 9.95 | 5.3833E-08 | 3.691E+06 | 2.29 | 4.56E-03 |
| | 79 | 19,607 | | | | | 3.979E-03 | 496 | 0.1 | 50 | 8.02E-05 | 0.12 | 1.00 | 8.66 | | | | | | | |
| 6 | | | 493 | 0.0400 | 1.837E-06 | 9.058E-04 | | | | | | | | | 83.1 | 2,660 | 12.21 | 2.6144E-07 | 3.691E+06 | 2.26 | 2.19E-02 |
| | 78 | 19,113 | | | | | 4.884E-03 | 490 | 0.1 | 49 | 9.97E-05 | 0.14 | 1.00 | 6.97 | | | | | | | |
| 7 | | | 487 | 0.0400 | 1.837E-06 | 8.943E-04 | | | | | | | | | 76.1 | 3,147 | 14.45 | 9.3182E-07 | 3.691E+06 | 2.24 | 7.69E-02 |
| | 77 | 18,627 | | | | | 5.779E-03 | 484 | 0.1 | 48 | 1.19E-04 | 0.17 | 1.00 | 5.81 | | | | | | | |
| 8 | | | 481 | 0.0400 | 1.837E-06 | 8.828E-04 | | | | | | | | | 70.3 | 3,627 | 16.65 | 2.6909E-06 | 3.691E+06 | 2.21 | 2.19E-01 |
| | 76 | 18,146 | | | | | 6.661E-03 | 478 | 0.1 | 48 | 1.40E-04 | 0.20 | 1.00 | 4.98 | | | | | | | |
| 9 | | | 474 | 0.0400 | 1.837E-06 | 8.712E-04 | | | | | | | | | 65.3 | 4,102 | 18.83 | 6.6717E-06 | 3.691E+06 | 2.18 | 5.36E-01 |
| | 75 | 17,672 | | | | | 7.533E-03 | 471 | 0.1 | 47 | 1.60E-04 | 0.23 | 1.00 | 4.34 | | | | | | | |
| 10 | | | 468 | 0.0400 | 1.837E-06 | 8.597E-04 | | | | | | | | | 61.0 | 4,570 | 20.98 | 1.4736E-05 | 3.691E+06 | 2.15 | 1.17E+00 |
| | 74 | 17,203 | | | | | 8.392E-03 | 465 | 0.1 | 46 | 1.80E-04 | 0.26 | 1.00 | 3.85 | | | | | | | |
| 11 | | | 462 | 0.0400 | 1.837E-06 | 8.481E-04 | | | | | | | | | 57.1 | 5,031 | 23.10 | 2.9727E-05 | 3.691E+06 | 2.12 | 2.33E+00 |
| | 73 | 16,742 | | | | | 9.241E-03 | 459 | 0.1 | 46 | 2.01E-04 | 0.29 | 1.00 | 3.45 | | | | | | | |
| 12 | | | 456 | 0.0400 | 1.837E-06 | 8.366E-04 | | | | | | | | | 53.7 | 5,487 | 25.19 | 5.5745E-05 | 3.691E+06 | 2.09 | 4.30E+00 |
| | 72 | 16,286 | | | | | 1.008E-02 | 452 | 0.1 | 45 | 2.23E-04 | 0.32 | 1.00 | 3.12 | | | | | | | |
| 13 | | | 449 | 0.0400 | 1.837E-06 | 8.251E-04 | | | | | | | | | 50.6 | 5,936 | 27.26 | 9.8438E-05 | 3.691E+06 | 2.06 | 7.49E+00 |
| | 71 | 15,837 | | | | | 1.090E-02 | 446 | 0.1 | 45 | 2.44E-04 | 0.35 | 1.00 | 2.84 | | | | | | | |
| 14 | | | 443 | 0.0400 | 1.837E-06 | 8.135E-04 | | | | | | | | | 47.7 | 6,379 | 29.29 | 1.6530E-04 | 3.691E+06 | 2.03 | 1.24E+01 |
| | 70 | 15,394 | | | | | 1.172E-02 | 440 | 0.1 | 44 | 2.66E-04 | 0.38 | 1.00 | 2.61 | | | | | | | |
| 15 | | | 437 | 0.0400 | 1.837E-06 | 8.020E-04 | | | | | | | | | 45.1 | 6,816 | 31.29 | 2.6594E-04 | 3.691E+06 | 2.00 | 1.97E+01 |
| | 69 | 14,957 | | | | | 1.252E-02 | 434 | 0.1 | 43 | 2.89E-04 | 0.42 | 1.00 | 2.41 | | | | | | | |
| 16 | | | 430 | 0.0400 | 1.837E-06 | 7.904E-04 | | | | | | | | | 42.7 | 7,246 | 33.27 | 4.1238E-04 | 3.691E+06 | 1.98 | 3.01E+01 |
| | 68 | 14,527 | | | | | 1.331E-02 | 427 | 0.1 | 43 | 3.11E-04 | 0.45 | 1.00 | 2.23 | | | | | | | |
| 17 | | | 424 | 0.0400 | 1.837E-06 | 7.789E-04 | | | | | | | | | 40.5 | 7,670 | 35.22 | 6.1932E-04 | 3.691E+06 | 1.95 | 4.45E+01 |
| | 67 | 14,103 | | | | | 1.409E-02 | 421 | 0.1 | 42 | 3.35E-04 | 0.48 | 1.00 | 2.08 | | | | | | | |
| 18 | | | 418 | 0.0400 | 1.837E-06 | 7.674E-04 | | | | | | | | | 38.4 | 8,088 | 37.14 | 9.0429E-04 | 3.691E+06 | 1.92 | 6.40E+01 |
| | 66 | 13,685 | | | | | 1.485E-02 | 415 | 0.1 | 41 | 3.58E-04 | 0.52 | 1.00 | 1.94 | | | | | | | |
| 19 | | | 412 | 0.0400 | 1.837E-06 | 7.558E-04 | | | | | | | | | 36.5 | 8,500 | 39.03 | 1.2879E-03 | 3.691E+06 | 1.89 | 8.98E+01 |
| | 65 | 13,273 | | | | | 1.561E-02 | 408 | 0.1 | 41 | 3.82E-04 | 0.55 | 1.00 | 1.82 | | | | | | | |
| 20 | | | 405 | 0.0400 | 1.837E-06 | 7.443E-04 | | | | | | | | | 34.7 | 8,905 | 40.89 | 1.7939E-03 | 3.691E+06 | 1.86 | 1.23E+02 |
| | 64 | 12,868 | | | | | 1.635E-02 | 402 | 0.1 | 40 | 4.07E-04 | 0.59 | 1.00 | 1.71 | | | | | | | |
| 21 | | | 399 | 0.0400 | 1.837E-06 | 7.328E-04 | | | | | | | | | 33.0 | 9,304 | 42.72 | 2.4494E-03 | 3.691E+06 | 1.83 | 1.66E+02 |
| | 63 | 12,469 | | | | | 1.709E-02 | 396 | 0.1 | 40 | 4.32E-04 | 0.62 | 1.00 | 1.61 | | | | | | | |
| 22 | | | 393 | 0.0400 | 1.837E-06 | 7.212E-04 | | | | | | | | | 31.4 | 9,697 | 44.52 | 3.2847E-03 | 3.691E+06 | 1.80 | 2.19E+02 |
| | 62 | 12,076 | | | | | 1.781E-02 | 390 | 0.1 | 39 | 4.57E-04 | 0.66 | 1.00 | 1.52 | | | | | | | |
| 23 | | | 386 | 0.0400 | 1.837E-06 | 7.097E-04 | | | | | | | | | 29.8 | 10,083 | 46.30 | 4.3334E-03 | 3.691E+06 | 1.77 | 2.84E+02 |
| | 61 | 11,690 | | | | | 1.852E-02 | 383 | 0.1 | 38 | 4.83E-04 | 0.70 | 1.00 | 1.44 | | | | | | | |
| 24 | | | 380 | 0.0400 | 1.837E-06 | 6.981E-04 | | | | | | | | | 28.4 | 10,463 | 48.04 | 5.6324E-03 | 3.691E+06 | 1.75 | 3.63E+02 |
| | 60 | 11,310 | | | | | 1.922E-02 | 377 | 0.1 | 38 | 5.10E-04 | 0.73 | 1.00 | 1.36 | | | | | | | |
| 25 | | | 374 | 0.0400 | 1.837E-06 | 6.866E-04 | | | | | | | | | 27.0 | 10,837 | 49.76 | 7.2212E-03 | 3.691E+06 | 1.72 | 4.58E+02 |
| | 59 | 10,936 | | | | | 1.990E-02 | 371 | 0.1 | 37 | 5.37E-04 | 0.77 | 1.00 | 1.29 | | | | | | | |
| 26 | | | 368 | 0.0400 | 1.837E-06 | 6.751E-04 | | | | | | | | | 25.7 | 11,205 | 51.44 | 9.1427E-03 | 3.691E+06 | 1.69 | 5.70E+02 |
| | 58 | 10,568 | | | | | 2.058E-02 | 364 | 0.1 | 36 | 5.65E-04 | 0.81 | 1.00 | 1.23 | | | | | | | |
| 27 | | | 361 | 0.0400 | 1.837E-06 | 6.635E-04 | | | | | | | | | 24.5 | 11,566 | 53.10 | 1.1442E-02 | 3.691E+06 | 1.66 | 7.01E+02 |
| | 57 | 10,207 | | | | | 2.124E-02 | 358 | 0.1 | 36 | 5.93E-04 | 0.85 | 1.00 | 1.17 | | | | | | | |
| 28 | | | 355 | 0.0400 | 1.837E-06 | 6.520E-04 | | | | | | | | | 23.3 | 11,921 | 54.73 | 1.4166E-02 | 3.691E+06 | 1.63 | 8.52E+02 |
| | 56 | 9,852 | | | | | 2.189E-02 | 352 | 0.1 | 35 | 6.22E-04 | 0.90 | 1.00 | 1.12 | | | | | | | |
| 29 | | | 349 | 0.0400 | 1.837E-06 | 6.404E-04 | | | | | | | | | 22.2 | 12,270 | 56.33 | 1.7364E-02 | 3.691E+06 | 1.60 | 1.03E+03 |
| | 55 | 9,503 | | | | | 2.253E-02 | 346 | 0.1 | 35 | 6.52E-04 | 0.94 | 1.00 | 1.06 | | | | | | | |
| 30 | | | 342 | 0.0400 | 1.837E-06 | 6.289E-04 | | | | | | | | | 21.2 | 12,612 | 57.91 | 2.1087E-02 | 3.691E+06 | 1.57 | 1.22E+03 |
| | 54 | 9,161 | | | | | 2.316E-02 | 339 | 0.1 | 34 | 6.83E-04 | 0.98 | 1.00 | 1.02 | | | | | | | |
| 31 | | | 336 | 0.0400 | 1.837E-06 | 6.174E-04 | | | | | | | | | 20.1 | 12,948 | 59.45 | 2.5386E-02 | 3.691E+06 | 1.54 | 1.45E+03 |
| | 53 | 8,825 | | | | | 2.378E-02 | 333 | 0.1 | 33 | 7.14E-04 | 1.03 | 1.00 | 0.97 | | | | | | | |
| 32 | | | 330 | 0.0400 | 1.837E-06 | 6.058E-04 | | | | | | | | | 19.2 | 13,278 | 60.96 | 3.0313E-02 | 3.691E+06 | 1.51 | 1.69E+03 |
| | 52 | 8,495 | | | | | 2.439E-02 | 327 | 0.1 | 33 | 7.46E-04 | 1.07 | 1.00 | 0.93 | | | | | | | |
| 33 | | | 324 | 0.0400 | 1.837E-06 | 5.943E-04 | | | | | | | | | 18.2 | 13,602 | 62.45 | 3.5920E-02 | 3.691E+06 | 1.49 | 1.97E+03 |
| | 51 | 8,171 | | | | | 2.498E-02 | 320 | 0.1 | 32 | 7.80E-04 | 1.12 | 1.00 | 0.89 | | | | | | | |
| 34 | | | 317 | 0.0400 | 1.837E-06 | 5.827E-04 | | | | | | | | | 17.3 | 13,919 | 63.91 | 4.2258E-02 | 3.691E+06 | 1.46 | 2.27E+03 |
| | 50 | 7,854 | | | | | 2.556E-02 | 314 | 0.1 | 31 | 8.14E-04 | 1.17 | 1.00 | 0.85 | | | | | | | |
| 35 | | | 311 | 0.0400 | 1.837E-06 | 5.712E-04 | | | | | | | | | 16.5 | 14,230 | 65.34 | 4.9375E-02 | 3.691E+06 | 1.43 | 2.60E+03 |
| | 49 | 7,543 | | | | | 2.613E-02 | 308 | 0.1 | 31 | 8.49E-04 | 1.22 | 1.00 | 0.82 | | | | | | | |
| 36 | | | 305 | 0.0400 | 1.837E-06 | 5.597E-04 | | | | | | | | | 15.7 | 14,535 | 66.73 | 5.7321E-02 | 3.691E+06 | 1.40 | 2.96E+03 |
| | 48 | 7,238 | | | | | 2.669E-02 | 302 | 0.1 | 30 | 8.85E-04 | 1.27 | 1.00 | 0.78 | | | | | | | |
| 37 | | | 298 | 0.0400 | 1.837E-06 | 5.481E-04 | | | | | | | | | 14.9 | 14,833 | 68.10 | 6.6141E-02 | 3.691E+06 | 1.37 | 3.35E+03 |
| | 47 | 6,940 | | | | | 2.724E-02 | 295 | 0.1 | 30 | 9.22E-04 | 1.33 | 1.00 | 0.75 | | | | | | | |
| 38 | | | 292 | 0.0400 | 1.837E-06 | 5.366E-04 | | | | | | | | | 14.1 | 15,125 | 69.45 | 7.5876E-02 | 3.691E+06 | 1.34 | 3.76E+03 |
| | 46 | 6,648 | | | | | 2.778E-02 | 289 | 0.1 | 29 | 9.61E-04 | 1.38 | 1.00 | 0.72 | | | | | | | |
| 39 | | | 286 | 0.0400 | 1.837E-06 | 5.250E-04 | | | | | | | | | 13.4 | 15,411 | 70.76 | 8.6564E-02 | 3.691E+06 | 1.31 | 4.19E+03 |
| | 45 | 6,362 | | | | | 2.830E-02 | 283 | 0.1 | 28 | 1.00E-03 | 1.44 | 1.00 | 0.69 | | | | | | | |
| 40 | | | 280 | 0.0400 | 1.837E-06 | 5.135E-04 | | | | | | | | | 12.7 | 15,691 | 72.04 | 9.8241E-02 | 3.691E+06 | 1.28 | 4.66E+03 |
| | 44 | 6,082 | | | | | 2.882E-02 | 276 | 0.1 | 28 | 1.04E-03 | 1.50 | 1.00 | 0.67 | | | | | | | |
| 41 | | | 273 | 0.0400 | 1.837E-06 | 5.020E-04 | | | | | | | | | 12.1 | 15,964 | 73.30 | 1.1093E-01 | 3.691E+06 | 1.25 | 5.14E+03 |
| | 43 | 5,809 | | | | | 2.932E-02 | 270 | 0.1 | 27 | 1.09E-03 | 1.56 | 1.00 | 0.64 | | | | | | | |
| 42 | | | 267 | 0.0400 | 1.837E-06 | 4.904E-04 | | | | | | | | | 11.4 | 16,231 | 74.52 | 1.2467E-01 | 3.691E+06 | 1.23 | 5.64E+03 |
| | 42 | 5,542 | | | | | 2.981E-02 | 264 | 0.1 | 26 | 1.13E-03 | 1.63 | 1.00 | 0.61 | | | | | | | |

**TABLE A-24 (CONTINUED)**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA A - ONE HALF ACRE AREA - ESTIMATE YEAR 2025 - LANDFILL POROSITY = 0.1**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multilier ($e^{-kt}$) | Rn-222 Flux Rate from FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-222 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| 43 | | | 261 | 0.0400 | 1.837E-06 | 4.789E-04 | | | | | | | | | 10.8 | 16,492 | 75.72 | 1.3946E-01 | 3.691E+06 | 1.20 | 6.16E+03 |
| | 41 | 5,281 | | | | | 3.029E-02 | 258 | 0.1 | 26 | 1.18E-03 | 1.69 | 1.00 | 0.59 | | | | | | | |
| 44 | | | 254 | 0.0400 | 1.837E-06 | 4.673E-04 | | | | | | | | | 10.2 | 16,746 | 76.89 | 1.5533E-01 | 3.691E+06 | 1.17 | 6.70E+03 |
| | 40 | 5,027 | | | | | 3.076E-02 | 251 | 0.1 | 25 | 1.22E-03 | 1.76 | 1.00 | 0.57 | | | | | | | |
| 45 | | | 248 | 0.0400 | 1.837E-06 | 4.558E-04 | | | | | | | | | 9.6 | 16,995 | 78.03 | 1.7227E-01 | 3.691E+06 | 1.14 | 7.25E+03 |
| | 39 | 4,778 | | | | | 3.121E-02 | 245 | 0.1 | 25 | 1.27E-03 | 1.83 | 1.00 | 0.55 | | | | | | | |
| 46 | | | 242 | 0.0400 | 1.837E-06 | 4.443E-04 | | | | | | | | | 9.1 | 17,237 | 79.14 | 1.9028E-01 | 3.691E+06 | 1.11 | 7.80E+03 |
| | 38 | 4,536 | | | | | 3.166E-02 | 239 | 0.1 | 24 | 1.33E-03 | 1.91 | 1.00 | 0.52 | | | | | | | |
| 47 | | | 236 | 0.0400 | 1.837E-06 | 4.327E-04 | | | | | | | | | 8.6 | 17,472 | 80.22 | 2.0935E-01 | 3.691E+06 | 1.08 | 8.36E+03 |
| | 37 | 4,301 | | | | | 3.209E-02 | 232 | 0.1 | 23 | 1.38E-03 | 1.99 | 1.00 | 0.50 | | | | | | | |
| 48 | | | 229 | 0.0400 | 1.837E-06 | 4.212E-04 | | | | | | | | | 8.1 | 17,702 | 81.27 | 2.2948E-01 | 3.691E+06 | 1.05 | 8.92E+03 |
| | 36 | 4,072 | | | | | 3.251E-02 | 226 | 0.1 | 23 | 1.44E-03 | 2.07 | 1.00 | 0.48 | | | | | | | |
| 49 | | | 223 | 0.0400 | 1.837E-06 | 4.096E-04 | | | | | | | | | 7.6 | 17,925 | 82.30 | 2.5062E-01 | 3.691E+06 | 1.02 | 9.47E+03 |
| | 35 | 3,848 | | | | | 3.292E-02 | 220 | 0.1 | 22 | 1.50E-03 | 2.16 | 1.00 | 0.46 | | | | | | | |
| 50 | | | 217 | 0.0400 | 1.837E-06 | 3.981E-04 | | | | | | | | | 7.1 | 18,141 | 83.29 | 2.7275E-01 | 3.691E+06 | 1.00 | 1.00E+04 |
| | 34 | 3,632 | | | | | 3.332E-02 | 214 | 0.1 | 21 | 1.56E-03 | 2.25 | 1.00 | 0.45 | | | | | | | |
| 51 | | | 210 | 0.0400 | 1.837E-06 | 3.866E-04 | | | | | | | | | 6.7 | 18,352 | 84.26 | 2.9582E-01 | 3.691E+06 | 0.97 | 1.06E+04 |
| | 33 | 3,421 | | | | | 3.370E-02 | 207 | 0.1 | 21 | 1.63E-03 | 2.34 | 1.00 | 0.43 | | | | | | | |
| 52 | | | 204 | 0.0400 | 1.837E-06 | 3.750E-04 | | | | | | | | | 6.3 | 18,556 | 85.20 | 3.1980E-01 | 3.691E+06 | 0.94 | 1.11E+04 |
| | 32 | 3,217 | | | | | 3.408E-02 | 201 | 0.1 | 20 | 1.69E-03 | 2.44 | 1.00 | 0.41 | | | | | | | |
| 53 | | | 198 | 0.0400 | 1.837E-06 | 3.635E-04 | | | | | | | | | 5.8 | 18,754 | 86.11 | 3.4461E-01 | 3.691E+06 | 0.91 | 1.16E+04 |
| | 31 | 3,019 | | | | | 3.444E-02 | 195 | 0.1 | 19 | 1.77E-03 | 2.55 | 1.00 | 0.39 | | | | | | | |
| 54 | | | 192 | 0.0400 | 1.837E-06 | 3.520E-04 | | | | | | | | | 5.4 | 18,946 | 86.99 | 3.7020E-01 | 3.691E+06 | 0.88 | 1.20E+04 |
| | 30 | 2,827 | | | | | 3.479E-02 | 188 | 0.1 | 19 | 1.85E-03 | 2.66 | 1.00 | 0.38 | | | | | | | |
| 55 | | | 185 | 0.0400 | 1.837E-06 | 3.404E-04 | | | | | | | | | 5.1 | 19,131 | 87.84 | 3.9650E-01 | 3.691E+06 | 0.85 | 1.25E+04 |
| | 29 | 2,642 | | | | | 3.513E-02 | 182 | 0.1 | 18 | 1.93E-03 | 2.78 | 1.00 | 0.36 | | | | | | | |
| 56 | | | 179 | 0.0400 | 1.837E-06 | 3.289E-04 | | | | | | | | | 4.7 | 19,310 | 88.66 | 4.2342E-01 | 3.691E+06 | 0.82 | 1.28E+04 |
| | 28 | 2,463 | | | | | 3.546E-02 | 176 | 0.1 | 18 | 2.02E-03 | 2.90 | 1.00 | 0.34 | | | | | | | |
| 57 | | | 173 | 0.0400 | 1.837E-06 | 3.173E-04 | | | | | | | | | 4.4 | 19,483 | 89.45 | 4.5088E-01 | 3.691E+06 | 0.79 | 1.32E+04 |
| | 27 | 2,290 | | | | | 3.578E-02 | 170 | 0.1 | 17 | 2.11E-03 | 3.04 | 1.00 | 0.33 | | | | | | | |
| 58 | | | 167 | 0.0400 | 1.837E-06 | 2.943E-04 | | | | | | | | | 4.0 | 19,649 | 90.22 | 4.7879E-01 | 3.691E+06 | 0.76 | 1.35E+04 |
| | 26 | 2,124 | | | | | 3.608E-02 | 163 | 0.1 | 16 | 2.21E-03 | 3.18 | 1.00 | 0.31 | | | | | | | |
| 59 | | | 160 | 0.0400 | 1.837E-06 | 2.827E-04 | | | | | | | | | 3.7 | 19,810 | 90.95 | 5.0705E-01 | 3.691E+06 | 0.74 | 1.38E+04 |
| | 25 | 1,964 | | | | | 3.636E-02 | 157 | 0.1 | 16 | 2.31E-03 | 3.33 | 1.00 | 0.30 | | | | | | | |
| 60 | | | 154 | 0.0400 | 1.837E-06 | 2.827E-04 | | | | | | | | | 3.4 | 19,963 | 91.66 | 5.3557E-01 | 3.691E+06 | 0.71 | 1.40E+04 |
| | 24 | 1,810 | | | | | 3.664E-02 | 151 | 0.1 | 15 | 2.43E-03 | 3.50 | 1.00 | 0.29 | | | | | | | |
| 61 | | | 148 | 0.0400 | 1.837E-06 | 2.712E-04 | | | | | | | | | 3.1 | 20,111 | 92.34 | 5.6423E-01 | 3.691E+06 | 0.68 | 1.41E+04 |
| | 23 | 1,662 | | | | | 3.691E-02 | 145 | 0.1 | 14 | 2.55E-03 | 3.68 | 1.00 | 0.27 | | | | | | | |
| 62 | | | 141 | 0.0400 | 1.837E-06 | 2.596E-04 | | | | | | | | | 2.9 | 20,253 | 92.99 | 5.9292E-01 | 3.691E+06 | 0.65 | 1.42E+04 |
| | 22 | 1,521 | | | | | 3.717E-02 | 138 | 0.1 | 14 | 2.69E-03 | 3.87 | 1.00 | 0.26 | | | | | | | |
| 63 | | | 135 | 0.0400 | 1.837E-06 | 2.481E-04 | | | | | | | | | 2.6 | 20,388 | 93.61 | 6.2152E-01 | 3.691E+06 | 0.62 | 1.42E+04 |
| | 21 | 1,385 | | | | | 3.742E-02 | 132 | 0.1 | 13 | 2.84E-03 | 4.08 | 1.00 | 0.24 | | | | | | | |
| 64 | | | 129 | 0.0400 | 1.837E-06 | 2.366E-04 | | | | | | | | | 2.4 | 20,516 | 94.20 | 6.4991E-01 | 3.691E+06 | 0.59 | 1.42E+04 |
| | 20 | 1,257 | | | | | 3.766E-02 | 126 | 0.1 | 13 | 3.00E-03 | 4.32 | 1.00 | 0.23 | | | | | | | |
| 65 | | | 123 | 0.0400 | 1.837E-06 | 2.250E-04 | | | | | | | | | 2.1 | 20,639 | 94.76 | 6.7797E-01 | 3.691E+06 | 0.56 | 1.41E+04 |
| | 19 | 1,134 | | | | | 3.788E-02 | 119 | 0.1 | 12 | 3.17E-03 | 4.57 | 1.00 | 0.22 | | | | | | | |
| 66 | | | 116 | 0.0400 | 1.837E-06 | 2.135E-04 | | | | | | | | | 1.9 | 20,755 | 95.29 | 7.0558E-01 | 3.691E+06 | 0.53 | 1.39E+04 |
| | 18 | 1,018 | | | | | 3.809E-02 | 113 | 0.1 | 11 | 3.37E-03 | 4.85 | 1.00 | 0.21 | | | | | | | |
| 67 | | | 110 | 0.0400 | 1.837E-06 | 2.019E-04 | | | | | | | | | 1.7 | 20,865 | 95.80 | 7.3262E-01 | 3.691E+06 | 0.50 | 1.37E+04 |
| | 17 | 908 | | | | | 3.830E-02 | 107 | 0.1 | 11 | 3.59E-03 | 5.16 | 1.00 | 0.19 | | | | | | | |
| 68 | | | 104 | 0.0400 | 1.837E-06 | 1.904E-04 | | | | | | | | | 1.5 | 20,969 | 96.28 | 7.5896E-01 | 3.691E+06 | 0.48 | 1.33E+04 |
| | 16 | 804 | | | | | 3.849E-02 | 101 | 0.1 | 10 | 3.83E-03 | 5.51 | 1.00 | 0.18 | | | | | | | |
| 69 | | | 97 | 0.0400 | 1.837E-06 | 1.789E-04 | | | | | | | | | 1.3 | 21,066 | 96.72 | 7.8449E-01 | 3.691E+06 | 0.45 | 1.29E+04 |
| | 15 | 707 | | | | | 3.867E-02 | 94 | 0.1 | 9 | 4.10E-03 | 5.91 | 1.00 | 0.17 | | | | | | | |
| 70 | | | 91 | 0.0400 | 1.837E-06 | 1.673E-04 | | | | | | | | | 1.2 | 21,157 | 97.14 | 8.0909E-01 | 3.691E+06 | 0.42 | 1.25E+04 |
| | 14 | 616 | | | | | 3.883E-02 | 88 | 0.1 | 9 | 4.41E-03 | 6.36 | 1.00 | 0.16 | | | | | | | |
| 71 | | | 85 | 0.0400 | 1.837E-06 | 1.558E-04 | | | | | | | | | 1.0 | 21,242 | 97.53 | 8.3264E-01 | 3.691E+06 | 0.39 | 1.20E+04 |
| | 13 | 531 | | | | | 3.899E-02 | 82 | 0.1 | 8 | 4.77E-03 | 6.87 | 1.00 | 0.15 | | | | | | | |
| 72 | | | 79 | 0.0400 | 1.837E-06 | 1.442E-04 | | | | | | | | | 0.9 | 21,321 | 97.89 | 8.5504E-01 | 3.691E+06 | 0.36 | 1.14E+04 |
| | 12 | 452 | | | | | 3.913E-02 | 75 | 0.1 | 8 | 5.19E-03 | 7.47 | 1.00 | 0.13 | | | | | | | |
| 73 | | | 72 | 0.0400 | 1.837E-06 | 1.327E-04 | | | | | | | | | 0.7 | 21,393 | 98.22 | 8.7616E-01 | 3.691E+06 | 0.33 | 1.07E+04 |
| | 11 | 380 | | | | | 3.927E-02 | 69 | 0.1 | 7 | 5.68E-03 | 8.18 | 1.00 | 0.12 | | | | | | | |
| 74 | | | 66 | 0.0400 | 1.837E-06 | 1.212E-04 | | | | | | | | | 0.6 | 21,459 | 98.53 | 8.9591E-01 | 3.691E+06 | 0.30 | 1.00E+04 |
| | 10 | 314 | | | | | 3.939E-02 | 63 | 0.1 | 6 | 6.27E-03 | 9.03 | 1.00 | 0.11 | | | | | | | |
| 75 | | | 60 | 0.0400 | 1.837E-06 | 1.096E-04 | | | | | | | | | 0.5 | 21,519 | 98.80 | 9.1420E-01 | 3.691E+06 | 0.27 | 9.25E+03 |
| | 9 | 254 | | | | | 3.950E-02 | 57 | 0.1 | 6 | 6.98E-03 | 10.06 | 1.00 | 0.10 | | | | | | | |
| 76 | | | 53 | 0.0400 | 1.837E-06 | 9.808E-05 | | | | | | | | | 0.4 | 21,572 | 99.04 | 9.3093E-01 | 3.691E+06 | 0.25 | 8.43E+03 |
| | 8 | 201 | | | | | 3.959E-02 | 50 | 0.1 | 5 | 7.88E-03 | 11.34 | 1.00 | 0.09 | | | | | | | |
| 77 | | | 47 | 0.0400 | 1.837E-06 | 8.655E-05 | | | | | | | | | 0.3 | 21,619 | 99.26 | 9.4602E-01 | 3.691E+06 | 0.22 | 7.55E+03 |
| | 7 | 154 | | | | | 3.968E-02 | 44 | 0.1 | 4 | 9.02E-03 | 12.99 | 1.00 | 0.08 | | | | | | | |
| 78 | | | 41 | 0.0400 | 1.837E-06 | 7.501E-05 | | | | | | | | | 0.2 | 21,660 | 99.45 | 9.5940E-01 | 3.691E+06 | 0.19 | 6.64E+03 |
| | 6 | 113 | | | | | 3.976E-02 | 38 | 0.1 | 4 | 1.05E-02 | 15.19 | 1.00 | 0.07 | | | | | | | |
| 79 | | | 35 | 0.0400 | 1.837E-06 | 6.347E-05 | | | | | | | | | 0.2 | 21,695 | 99.61 | 9.7099E-01 | 3.691E+06 | 0.16 | 5.69E+03 |
| | 5 | 79 | | | | | 3.982E-02 | 31 | 0.1 | 3 | 1.27E-02 | 18.25 | 1.00 | 0.05 | | | | | | | |
| 80 | | | 28 | 0.0400 | 1.837E-06 | 5.193E-05 | | | | | | | | | 0.1 | 21,723 | 99.74 | 9.8074E-01 | 3.691E+06 | 0.13 | 4.70E+03 |
| | 4 | 50 | | | | | 3.987E-02 | 25 | 0.1 | 3 | 1.59E-02 | 22.84 | 1.00 | 0.04 | | | | | | | |
| 81 | | | 22 | 0.0400 | 1.837E-06 | 4.039E-05 | | | | | | | | | 0.1 | 21,745 | 99.84 | 9.8860E-01 | 3.691E+06 | 0.10 | 3.68E+03 |
| | 3 | 28 | | | | | 3.991E-02 | 19 | 0.1 | 2 | 2.12E-02 | 30.49 | 1.00 | 0.03 | | | | | | | |
| 82 | | | 16 | 0.0400 | 1.837E-06 | 2.885E-05 | | | | | | | | | 0.030 | 21,760 | 99.91 | 9.9454E-01 | 3.691E+06 | 0.07 | 2.65E+03 |
| | 2 | 13 | | | | | 3.994E-02 | 13 | 0.1 | 1 | 3.18E-02 | 45.77 | 1.00 | 0.02 | | | | | | | |
| 83 | | | 5 | 0.0400 | 1.837E-06 | 1.010E-05 | | | | | | | | | 0.008 | 21,766 | 99.94 | 9.9851E-01 | 3.691E+06 | 0.03 | 9.30E+02 |
| | 1.5 | 7 | | | | | 3.995E-02 | 9 | 0.1 | 1 | 4.24E-02 | 61.04 | 0.50 | 0.01 | | | | | | | |
| 84 | | | 7 | 0.0400 | 1.837E-06 | 1.298E-05 | | | | | | | | | 0.000 | 21,773 | 99.97 | 1.0000E+00 | 3.691E+06 | 0.03 | 1.20E+03 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Considered | pCi/min | 4.675E+05 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Not Considered | pCi/min | 3.691E+06 |

| | | |
|---|---|---|
| Reduction in Rn-222 Flux Due to Decay | % | 87.33 |

**TABLE A-25**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA A - ONE HALF ACRE AREA - ESTIMATE YEAR 2100 - LANDFILL POROSITY = 0.1**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multiliier (e^-kt) | Rn-222 Flux Rate from FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-22 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| | 83.25 | 21,773 | | | | | 0 | | | | 0 | 0 | | | | | | | | | |
| 1 | | | 131 | 0.0013 | 5.739E-08 | 7.494E-06 | | | | | | | | | 6000.5 | 131 | 0.60 | 0.0000E+00 | 5.196E+06 | 0.60 | 0.00E+00 |
| | 83 | 21,642 | | | | | 7.494E-06 | 522 | 0.1 | 52 | 1.44E-07 | 0.00 | 0.25 | 1208.18 | | | | | | | |
| 2 | | | 518 | 0.0013 | 5.739E-08 | 2.975E-05 | | | | | | | | | 4792.4 | 649 | 2.98 | 0.0000E+00 | 5.196E+06 | 2.38 | 0.00E+00 |
| | 82 | 21,124 | | | | | 3.724E-05 | 515 | 0.1 | 52 | 7.23E-07 | 0.00 | 1.00 | 960.68 | | | | | | | |
| 3 | | | 512 | 0.0013 | 5.739E-08 | 2.939E-05 | | | | | | | | | 3831.7 | 1,161 | 5.33 | 2.9617E-304 | 5.196E+06 | 2.35 | 3.62E-299 |
| | 81 | 20,612 | | | | | 6.663E-05 | 509 | 0.1 | 51 | 1.31E-06 | 0.00 | 1.00 | 530.41 | | | | | | | |
| 4 | | | 506 | 0.0013 | 5.739E-08 | 2.903E-05 | | | | | | | | | 3301.3 | 1,667 | 7.65 | 3.0776E-262 | 5.196E+06 | 2.32 | 3.71E-257 |
| | 80 | 20,106 | | | | | 9.566E-05 | 503 | 0.1 | 50 | 1.90E-06 | 0.00 | 1.00 | 364.90 | | | | | | | |
| 5 | | | 500 | 0.0013 | 5.739E-08 | 2.867E-05 | | | | | | | | | 2936.4 | 2,166 | 9.95 | 2.4748E-233 | 5.196E+06 | 2.29 | 2.95E-228 |
| | 79 | 19,607 | | | | | 1.243E-04 | 496 | 0.1 | 50 | 2.50E-06 | 0.00 | 1.00 | 277.25 | | | | | | | |
| 6 | | | 493 | 0.0013 | 5.739E-08 | 2.831E-05 | | | | | | | | | 2659.1 | 2,660 | 12.21 | 2.2691E-211 | 5.196E+06 | 2.26 | 2.67E-206 |
| | 78 | 19,113 | | | | | 1.526E-04 | 490 | 0.1 | 49 | 3.11E-06 | 0.00 | 1.00 | 222.97 | | | | | | | |
| 7 | | | 487 | 0.0013 | 5.739E-08 | 2.795E-05 | | | | | | | | | 2436.2 | 3,147 | 14.45 | 1.0439E-193 | 5.196E+06 | 2.24 | 1.21E-188 |
| | 77 | 18,627 | | | | | 1.806E-04 | 484 | 0.1 | 48 | 3.73E-06 | 0.01 | 1.00 | 186.05 | | | | | | | |
| 8 | | | 481 | 0.0013 | 5.739E-08 | 2.759E-05 | | | | | | | | | 2250.1 | 3,627 | 16.65 | 5.7098E-179 | 5.196E+06 | 2.21 | 6.55E-174 |
| | 76 | 18,146 | | | | | 2.082E-04 | 478 | 0.1 | 48 | 4.36E-06 | 0.01 | 1.00 | 159.30 | | | | | | | |
| 9 | | | 474 | 0.0013 | 5.739E-08 | 2.723E-05 | | | | | | | | | 2090.8 | 4,102 | 18.83 | 2.3741E-166 | 5.196E+06 | 2.18 | 2.69E-161 |
| | 75 | 17,672 | | | | | 2.354E-04 | 471 | 0.1 | 47 | 5.00E-06 | 0.01 | 1.00 | 139.02 | | | | | | | |
| 10 | | | 468 | 0.0013 | 5.739E-08 | 2.687E-05 | | | | | | | | | 1951.8 | 4,570 | 20.98 | 2.4437E-155 | 5.196E+06 | 2.15 | 2.73E-150 |
| | 74 | 17,203 | | | | | 2.623E-04 | 465 | 0.1 | 46 | 5.64E-06 | 0.01 | 1.00 | 123.12 | | | | | | | |
| 11 | | | 462 | 0.0013 | 5.739E-08 | 2.650E-05 | | | | | | | | | 1828.7 | 5,031 | 23.10 | 1.3827E-145 | 5.196E+06 | 2.12 | 1.52E-140 |
| | 73 | 16,742 | | | | | 2.888E-04 | 459 | 0.1 | 46 | 6.30E-06 | 0.01 | 1.00 | 110.30 | | | | | | | |
| 12 | | | 456 | 0.0013 | 5.739E-08 | 2.614E-05 | | | | | | | | | 1718.4 | 5,487 | 25.19 | 7.5606E-137 | 5.196E+06 | 2.09 | 8.22E-132 |
| | 72 | 16,286 | | | | | 3.149E-04 | 452 | 0.1 | 45 | 6.96E-06 | 0.01 | 1.00 | 99.76 | | | | | | | |
| 13 | | | 449 | 0.0013 | 5.739E-08 | 2.578E-05 | | | | | | | | | 1618.6 | 5,936 | 27.26 | 6.0424E-129 | 5.196E+06 | 2.06 | 6.48E-124 |
| | 71 | 15,837 | | | | | 3.407E-04 | 446 | 0.1 | 45 | 7.64E-06 | 0.01 | 1.00 | 90.93 | | | | | | | |
| 14 | | | 443 | 0.0013 | 5.739E-08 | 2.542E-05 | | | | | | | | | 1527.7 | 6,379 | 29.29 | 9.6460E-122 | 5.196E+06 | 2.03 | 1.02E-116 |
| | 70 | 15,394 | | | | | 3.661E-04 | 440 | 0.1 | 44 | 8.32E-06 | 0.01 | 1.00 | 83.43 | | | | | | | |
| 15 | | | 437 | 0.0013 | 5.739E-08 | 2.506E-05 | | | | | | | | | 1444.3 | 6,816 | 31.29 | 3.9165E-115 | 5.196E+06 | 2.00 | 4.08E-110 |
| | 69 | 14,957 | | | | | 3.912E-04 | 434 | 0.1 | 43 | 9.02E-06 | 0.01 | 1.00 | 76.96 | | | | | | | |
| 16 | | | 430 | 0.0013 | 5.739E-08 | 2.470E-05 | | | | | | | | | 1367.3 | 7,246 | 33.27 | 4.8943E-109 | 5.196E+06 | 1.98 | 5.03E-104 |
| | 68 | 14,527 | | | | | 4.159E-04 | 427 | 0.1 | 43 | 9.73E-06 | 0.01 | 1.00 | 71.34 | | | | | | | |
| 17 | | | 424 | 0.0013 | 5.739E-08 | 2.434E-05 | | | | | | | | | 1295.9 | 7,670 | 35.22 | 2.1940E-103 | 5.196E+06 | 1.95 | 2.22E-98 |
| | 67 | 14,103 | | | | | 4.402E-04 | 421 | 0.1 | 42 | 1.05E-05 | 0.02 | 1.00 | 66.41 | | | | | | | |
| 18 | | | 418 | 0.0013 | 5.739E-08 | 2.398E-05 | | | | | | | | | 1229.5 | 8,088 | 37.14 | 3.9976E-98 | 5.196E+06 | 1.92 | 3.98E-93 |
| | 66 | 13,685 | | | | | 4.642E-04 | 415 | 0.1 | 41 | 1.12E-05 | 0.02 | 1.00 | 62.04 | | | | | | | |
| 19 | | | 412 | 0.0013 | 5.739E-08 | 2.362E-05 | | | | | | | | | 1167.5 | 8,500 | 39.03 | 3.2820E-93 | 5.196E+06 | 1.89 | 3.22E-88 |
| | 65 | 13,273 | | | | | 4.878E-04 | 408 | 0.1 | 41 | 1.19E-05 | 0.02 | 1.00 | 58.14 | | | | | | | |
| 20 | | | 405 | 0.0013 | 5.739E-08 | 2.326E-05 | | | | | | | | | 1109.4 | 8,905 | 40.89 | 1.3234E-88 | 5.196E+06 | 1.86 | 1.28E-83 |
| | 64 | 12,868 | | | | | 5.111E-04 | 402 | 0.1 | 40 | 1.27E-05 | 0.02 | 1.00 | 54.64 | | | | | | | |
| 21 | | | 399 | 0.0013 | 5.739E-08 | 2.290E-05 | | | | | | | | | 1054.7 | 9,304 | 42.72 | 2.8183E-84 | 5.196E+06 | 1.83 | 2.68E-79 |
| | 63 | 12,469 | | | | | 5.340E-04 | 396 | 0.1 | 40 | 1.35E-05 | 0.02 | 1.00 | 51.48 | | | | | | | |
| 22 | | | 393 | 0.0013 | 5.739E-08 | 2.254E-05 | | | | | | | | | 1003.2 | 9,697 | 44.52 | 3.3725E-80 | 5.196E+06 | 1.80 | 3.16E-75 |
| | 62 | 12,076 | | | | | 5.565E-04 | 390 | 0.1 | 39 | 1.43E-05 | 0.02 | 1.00 | 48.61 | | | | | | | |
| 23 | | | 386 | 0.0013 | 5.739E-08 | 2.218E-05 | | | | | | | | | 954.6 | 10,083 | 46.30 | 2.3915E-76 | 5.196E+06 | 1.77 | 2.20E-71 |
| | 61 | 11,690 | | | | | 5.787E-04 | 383 | 0.1 | 38 | 1.51E-05 | 0.02 | 1.00 | 45.99 | | | | | | | |
| 24 | | | 380 | 0.0013 | 5.739E-08 | 2.182E-05 | | | | | | | | | 908.6 | 10,463 | 48.04 | 1.0522E-72 | 5.196E+06 | 1.75 | 9.54E-68 |
| | 60 | 11,310 | | | | | 6.005E-04 | 377 | 0.1 | 38 | 1.59E-05 | 0.02 | 1.00 | 43.60 | | | | | | | |
| 25 | | | 374 | 0.0013 | 5.739E-08 | 2.146E-05 | | | | | | | | | 865.0 | 10,837 | 49.76 | 2.9893E-69 | 5.196E+06 | 1.72 | 2.67E-64 |
| | 59 | 10,936 | | | | | 6.220E-04 | 371 | 0.1 | 37 | 1.68E-05 | 0.02 | 1.00 | 41.39 | | | | | | | |
| 26 | | | 368 | 0.0013 | 5.739E-08 | 2.110E-05 | | | | | | | | | 823.6 | 11,205 | 51.44 | 5.6801E-66 | 5.196E+06 | 1.69 | 4.98E-61 |
| | 58 | 10,568 | | | | | 6.431E-04 | 364 | 0.1 | 36 | 1.76E-05 | 0.03 | 1.00 | 39.35 | | | | | | | |
| 27 | | | 361 | 0.0013 | 5.739E-08 | 2.073E-05 | | | | | | | | | 784.3 | 11,566 | 53.10 | 7.4444E-63 | 5.196E+06 | 1.66 | 6.42E-58 |
| | 57 | 10,207 | | | | | 6.638E-04 | 358 | 0.1 | 36 | 1.85E-05 | 0.03 | 1.00 | 37.47 | | | | | | | |
| 28 | | | 355 | 0.0013 | 5.739E-08 | 2.037E-05 | | | | | | | | | 746.8 | 11,921 | 54.73 | 6.9159E-60 | 5.196E+06 | 1.63 | 5.86E-55 |
| | 56 | 9,852 | | | | | 6.842E-04 | 352 | 0.1 | 35 | 1.94E-05 | 0.03 | 1.00 | 35.71 | | | | | | | |
| 29 | | | 349 | 0.0013 | 5.739E-08 | 2.001E-05 | | | | | | | | | 711.1 | 12,270 | 56.33 | 4.6662E-57 | 5.196E+06 | 1.60 | 3.88E-52 |
| | 55 | 9,503 | | | | | 7.042E-04 | 346 | 0.1 | 35 | 2.04E-05 | 0.03 | 1.00 | 34.08 | | | | | | | |
| 30 | | | 342 | 0.0013 | 5.739E-08 | 1.965E-05 | | | | | | | | | 677.0 | 12,612 | 57.91 | 2.3366E-54 | 5.196E+06 | 1.57 | 1.91E-49 |
| | 54 | 9,161 | | | | | 7.238E-04 | 339 | 0.1 | 34 | 2.13E-05 | 0.03 | 1.00 | 32.55 | | | | | | | |
| 31 | | | 336 | 0.0013 | 5.739E-08 | 1.929E-05 | | | | | | | | | 644.5 | 12,948 | 59.45 | 8.8546E-52 | 5.196E+06 | 1.54 | 7.10E-47 |
| | 53 | 8,825 | | | | | 7.431E-04 | 333 | 0.1 | 33 | 2.23E-05 | 0.03 | 1.00 | 31.12 | | | | | | | |
| 32 | | | 330 | 0.0013 | 5.739E-08 | 1.893E-05 | | | | | | | | | 613.4 | 13,278 | 60.96 | 2.5840E-49 | 5.196E+06 | 1.51 | 2.03E-44 |
| | 52 | 8,495 | | | | | 7.621E-04 | 327 | 0.1 | 33 | 2.33E-05 | 0.03 | 1.00 | 29.77 | | | | | | | |
| 33 | | | 324 | 0.0013 | 5.739E-08 | 1.857E-05 | | | | | | | | | 583.6 | 13,602 | 62.45 | 5.8995E-47 | 5.196E+06 | 1.49 | 4.55E-42 |
| | 51 | 8,171 | | | | | 7.806E-04 | 320 | 0.1 | 32 | 2.44E-05 | 0.04 | 1.00 | 28.51 | | | | | | | |
| 34 | | | 317 | 0.0013 | 5.739E-08 | 1.821E-05 | | | | | | | | | 555.1 | 13,919 | 63.91 | 1.0689E-44 | 5.196E+06 | 1.46 | 8.09E-40 |
| | 50 | 7,854 | | | | | 7.988E-04 | 314 | 0.1 | 31 | 2.54E-05 | 0.04 | 1.00 | 27.31 | | | | | | | |
| 35 | | | 311 | 0.0013 | 5.739E-08 | 1.785E-05 | | | | | | | | | 527.8 | 14,230 | 65.34 | 1.5572E-42 | 5.196E+06 | 1.43 | 1.16E-37 |
| | 49 | 7,543 | | | | | 8.167E-04 | 308 | 0.1 | 31 | 2.65E-05 | 0.04 | 1.00 | 26.18 | | | | | | | |
| 36 | | | 305 | 0.0013 | 5.739E-08 | 1.749E-05 | | | | | | | | | 501.6 | 14,535 | 66.73 | 1.8456E-40 | 5.196E+06 | 1.40 | 1.34E-35 |
| | 48 | 7,238 | | | | | 8.342E-04 | 302 | 0.1 | 30 | 2.77E-05 | 0.04 | 1.00 | 25.11 | | | | | | | |
| 37 | | | 298 | 0.0013 | 5.739E-08 | 1.713E-05 | | | | | | | | | 476.5 | 14,833 | 68.10 | 1.7989E-38 | 5.196E+06 | 1.37 | 1.28E-33 |
| | 47 | 6,940 | | | | | 8.513E-04 | 295 | 0.1 | 30 | 2.88E-05 | 0.04 | 1.00 | 24.09 | | | | | | | |
| 38 | | | 292 | 0.0013 | 5.739E-08 | 1.677E-05 | | | | | | | | | 452.4 | 15,125 | 69.45 | 1.4564E-36 | 5.196E+06 | 1.34 | 1.02E-31 |
| | 46 | 6,648 | | | | | 8.681E-04 | 289 | 0.1 | 29 | 3.00E-05 | 0.04 | 1.00 | 23.12 | | | | | | | |
| 39 | | | 286 | 0.0013 | 5.739E-08 | 1.641E-05 | | | | | | | | | 429.3 | 15,411 | 70.76 | 9.8821E-35 | 5.196E+06 | 1.31 | 6.74E-30 |
| | 45 | 6,362 | | | | | 8.845E-04 | 283 | 0.1 | 28 | 3.13E-05 | 0.05 | 1.00 | 22.20 | | | | | | | |
| 40 | | | 280 | 0.0013 | 5.739E-08 | 1.605E-05 | | | | | | | | | 407.1 | 15,691 | 72.04 | 5.6672E-33 | 5.196E+06 | 1.28 | 3.78E-28 |
| | 44 | 6,082 | | | | | 9.005E-04 | 276 | 0.1 | 28 | 3.26E-05 | 0.05 | 1.00 | 21.32 | | | | | | | |
| 41 | | | 273 | 0.0013 | 5.739E-08 | 1.569E-05 | | | | | | | | | 385.8 | 15,964 | 73.30 | 2.7681E-31 | 5.196E+06 | 1.25 | 1.80E-26 |
| | 43 | 5,809 | | | | | 9.162E-04 | 270 | 0.1 | 27 | 3.39E-05 | 0.05 | 1.00 | 20.48 | | | | | | | |
| 42 | | | 267 | 0.0013 | 5.739E-08 | 1.533E-05 | | | | | | | | | 365.3 | 16,231 | 74.52 | 1.1597E-29 | 5.196E+06 | 1.23 | 7.39E-25 |
| | 42 | 5,542 | | | | | 9.315E-04 | 264 | 0.1 | 26 | 3.53E-05 | 0.05 | 1.00 | 19.67 | | | | | | | |

**TABLE A-25 (CONTINUED)**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA A - ONE HALF ACRE AREA - ESTIMATE YEAR 2100 - LANDFILL POROSITY = 0.1**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multiplier ($e^{-kt}$) | Rn-222 Flux Rate from FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-22 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| 43 | | | 261 | 0.0013 | 5.739E-08 | 1.497E-05 | | | | | | | | | 345.6 | 16,492 | 75.72 | 4.1949E-28 | 5.196E+06 | 1.20 | 2.61E-23 |
| | 41 | 5,281 | | | | | 9.465E-04 | 258 | 0.1 | 26 | 3.67E-05 | 0.05 | 1.00 | 18.90 | | | | | | | |
| 44 | | | 254 | 0.0013 | 5.739E-08 | 1.460E-05 | | | | | | | | | 326.7 | 16,746 | 76.89 | 1.3181E-26 | 5.196E+06 | 1.17 | 8.00E-22 |
| | 40 | 5,027 | | | | | 9.611E-04 | 251 | 0.1 | 25 | 3.82E-05 | 0.06 | 1.00 | 18.16 | | | | | | | |
| 45 | | | 248 | 0.0013 | 5.739E-08 | 1.424E-05 | | | | | | | | | 308.5 | 16,995 | 78.03 | 3.6178E-25 | 5.196E+06 | 1.14 | 2.14E-20 |
| | 39 | 4,778 | | | | | 9.754E-04 | 245 | 0.1 | 25 | 3.98E-05 | 0.06 | 1.00 | 17.45 | | | | | | | |
| 46 | | | 242 | 0.0013 | 5.739E-08 | 1.388E-05 | | | | | | | | | 291.1 | 17,237 | 79.14 | 8.7198E-24 | 5.196E+06 | 1.11 | 5.03E-19 |
| | 38 | 4,536 | | | | | 9.892E-04 | 239 | 0.1 | 24 | 4.14E-05 | 0.06 | 1.00 | 16.76 | | | | | | | |
| 47 | | | 236 | 0.0013 | 5.739E-08 | 1.352E-05 | | | | | | | | | 274.3 | 17,472 | 80.22 | 1.8545E-22 | 5.196E+06 | 1.08 | 1.04E-17 |
| | 37 | 4,301 | | | | | 1.003E-03 | 232 | 0.1 | 23 | 4.31E-05 | 0.06 | 1.00 | 16.10 | | | | | | | |
| 48 | | | 229 | 0.0013 | 5.739E-08 | 1.316E-05 | | | | | | | | | 258.2 | 17,702 | 81.27 | 3.4961E-21 | 5.196E+06 | 1.05 | 1.91E-16 |
| | 36 | 4,072 | | | | | 1.016E-03 | 226 | 0.1 | 23 | 4.49E-05 | 0.06 | 1.00 | 15.46 | | | | | | | |
| 49 | | | 223 | 0.0013 | 5.739E-08 | 1.280E-05 | | | | | | | | | 242.8 | 17,925 | 82.30 | 5.8666E-20 | 5.196E+06 | 1.02 | 3.12E-15 |
| | 35 | 3,848 | | | | | 1.029E-03 | 220 | 0.1 | 22 | 4.68E-05 | 0.07 | 1.00 | 14.85 | | | | | | | |
| 50 | | | 217 | 0.0013 | 5.739E-08 | 1.244E-05 | | | | | | | | | 227.9 | 18,141 | 83.29 | 8.7973E-19 | 5.196E+06 | 1.00 | 4.55E-14 |
| | 34 | 3,632 | | | | | 1.041E-03 | 214 | 0.1 | 21 | 4.87E-05 | 0.07 | 1.00 | 14.25 | | | | | | | |
| 51 | | | 210 | 0.0013 | 5.739E-08 | 1.208E-05 | | | | | | | | | 213.7 | 18,352 | 84.26 | 1.1832E-17 | 5.196E+06 | 0.97 | 5.94E-13 |
| | 33 | 3,421 | | | | | 1.053E-03 | 207 | 0.1 | 21 | 5.08E-05 | 0.07 | 1.00 | 13.67 | | | | | | | |
| 52 | | | 204 | 0.0013 | 5.739E-08 | 1.172E-05 | | | | | | | | | 200.0 | 18,556 | 85.20 | 1.4322E-16 | 5.196E+06 | 0.94 | 6.98E-12 |
| | 32 | 3,217 | | | | | 1.065E-03 | 201 | 0.1 | 20 | 5.30E-05 | 0.08 | 1.00 | 13.11 | | | | | | | |
| 53 | | | 198 | 0.0013 | 5.739E-08 | 1.136E-05 | | | | | | | | | 186.9 | 18,754 | 86.11 | 1.5653E-15 | 5.196E+06 | 0.91 | 7.39E-11 |
| | 31 | 3,019 | | | | | 1.076E-03 | 195 | 0.1 | 19 | 5.53E-05 | 0.08 | 1.00 | 12.57 | | | | | | | |
| 54 | | | 192 | 0.0013 | 5.739E-08 | 1.100E-05 | | | | | | | | | 174.3 | 18,946 | 86.99 | 1.5492E-14 | 5.196E+06 | 0.88 | 7.08E-10 |
| | 30 | 2,827 | | | | | 1.087E-03 | 188 | 0.1 | 19 | 5.77E-05 | 0.08 | 1.00 | 12.04 | | | | | | | |
| 55 | | | 185 | 0.0013 | 5.739E-08 | 1.064E-05 | | | | | | | | | 162.3 | 19,131 | 87.84 | 1.3923E-13 | 5.196E+06 | 0.85 | 6.16E-09 |
| | 29 | 2,642 | | | | | 1.098E-03 | 182 | 0.1 | 18 | 6.03E-05 | 0.09 | 1.00 | 11.52 | | | | | | | |
| 56 | | | 179 | 0.0013 | 5.739E-08 | 1.028E-05 | | | | | | | | | 150.8 | 19,310 | 88.66 | 1.1394E-12 | 5.196E+06 | 0.82 | 4.87E-08 |
| | 28 | 2,463 | | | | | 1.108E-03 | 176 | 0.1 | 18 | 6.30E-05 | 0.09 | 1.00 | 11.02 | | | | | | | |
| 57 | | | 173 | 0.0013 | 5.739E-08 | 9.917E-06 | | | | | | | | | 139.7 | 19,483 | 89.45 | 8.5104E-12 | 5.196E+06 | 0.79 | 3.51E-07 |
| | 27 | 2,290 | | | | | 1.118E-03 | 170 | 0.1 | 17 | 6.59E-05 | 0.09 | 1.00 | 10.54 | | | | | | | |
| 58 | | | 167 | 0.0013 | 5.739E-08 | 9.195E-06 | | | | | | | | | 129.2 | 19,649 | 90.22 | 5.8152E-11 | 5.196E+06 | 0.76 | 2.31E-06 |
| | 26 | 2,124 | | | | | 1.127E-03 | 163 | 0.1 | 16 | 6.90E-05 | 0.10 | 1.00 | 10.06 | | | | | | | |
| 59 | | | 160 | 0.0013 | 5.739E-08 | 8.835E-06 | | | | | | | | | 119.1 | 19,810 | 90.95 | 3.6451E-10 | 5.196E+06 | 0.74 | 1.39E-05 |
| | 25 | 1,964 | | | | | 1.136E-03 | 157 | 0.1 | 16 | 7.23E-05 | 0.10 | 1.00 | 9.60 | | | | | | | |
| 60 | | | 154 | 0.0013 | 5.739E-08 | 8.835E-06 | | | | | | | | | 109.5 | 19,963 | 91.66 | 2.1001E-09 | 5.196E+06 | 0.71 | 7.71E-05 |
| | 24 | 1,810 | | | | | 1.145E-03 | 151 | 0.1 | 15 | 7.59E-05 | 0.11 | 1.00 | 9.15 | | | | | | | |
| 61 | | | 148 | 0.0013 | 5.739E-08 | 8.474E-06 | | | | | | | | | 100.4 | 20,111 | 92.34 | 1.1136E-08 | 5.196E+06 | 0.68 | 3.92E-04 |
| | 23 | 1,662 | | | | | 1.153E-03 | 145 | 0.1 | 14 | 7.98E-05 | 0.11 | 1.00 | 8.70 | | | | | | | |
| 62 | | | 141 | 0.0013 | 5.739E-08 | 8.114E-06 | | | | | | | | | 91.7 | 20,253 | 92.99 | 5.4439E-08 | 5.196E+06 | 0.65 | 1.84E-03 |
| | 22 | 1,521 | | | | | 1.162E-03 | 138 | 0.1 | 14 | 8.40E-05 | 0.12 | 1.00 | 8.26 | | | | | | | |
| 63 | | | 135 | 0.0013 | 5.739E-08 | 7.753E-06 | | | | | | | | | 83.4 | 20,388 | 93.61 | 2.4577E-07 | 5.196E+06 | 0.62 | 7.92E-03 |
| | 21 | 1,385 | | | | | 1.169E-03 | 132 | 0.1 | 13 | 8.86E-05 | 0.13 | 1.00 | 7.84 | | | | | | | |
| 64 | | | 129 | 0.0013 | 5.739E-08 | 7.392E-06 | | | | | | | | | 75.6 | 20,516 | 94.20 | 1.0262E-06 | 5.196E+06 | 0.59 | 3.15E-02 |
| | 20 | 1,257 | | | | | 1.177E-03 | 126 | 0.1 | 13 | 9.36E-05 | 0.13 | 1.00 | 7.42 | | | | | | | |
| 65 | | | 123 | 0.0013 | 5.739E-08 | 7.032E-06 | | | | | | | | | 68.2 | 20,639 | 94.76 | 3.9691E-06 | 5.196E+06 | 0.56 | 1.16E-01 |
| | 19 | 1,134 | | | | | 1.184E-03 | 119 | 0.1 | 12 | 9.92E-05 | 0.14 | 1.00 | 7.00 | | | | | | | |
| 66 | | | 116 | 0.0013 | 5.739E-08 | 6.671E-06 | | | | | | | | | 61.2 | 20,755 | 95.29 | 1.4238E-05 | 5.196E+06 | 0.53 | 3.95E-01 |
| | 18 | 1,018 | | | | | 1.190E-03 | 113 | 0.1 | 11 | 1.05E-04 | 0.15 | 1.00 | 6.60 | | | | | | | |
| 67 | | | 110 | 0.0013 | 5.739E-08 | 6.311E-06 | | | | | | | | | 54.6 | 20,865 | 95.80 | 4.7432E-05 | 5.196E+06 | 0.50 | 1.24E+00 |
| | 17 | 908 | | | | | 1.197E-03 | 107 | 0.1 | 11 | 1.12E-04 | 0.16 | 1.00 | 6.20 | | | | | | | |
| 68 | | | 104 | 0.0013 | 5.739E-08 | 5.950E-06 | | | | | | | | | 48.4 | 20,969 | 96.28 | 1.4691E-04 | 5.196E+06 | 0.48 | 3.63E+00 |
| | 16 | 804 | | | | | 1.203E-03 | 101 | 0.1 | 10 | 1.20E-04 | 0.17 | 1.00 | 5.80 | | | | | | | |
| 69 | | | 97 | 0.0013 | 5.739E-08 | 5.589E-06 | | | | | | | | | 42.6 | 21,066 | 96.72 | 4.2352E-04 | 5.196E+06 | 0.45 | 9.84E+00 |
| | 15 | 707 | | | | | 1.208E-03 | 94 | 0.1 | 9 | 1.28E-04 | 0.18 | 1.00 | 5.42 | | | | | | | |
| 70 | | | 91 | 0.0013 | 5.739E-08 | 5.229E-06 | | | | | | | | | 37.2 | 21,157 | 97.14 | 1.1375E-03 | 5.196E+06 | 0.42 | 2.47E+01 |
| | 14 | 616 | | | | | 1.214E-03 | 88 | 0.1 | 9 | 1.38E-04 | 0.20 | 1.00 | 5.03 | | | | | | | |
| 71 | | | 85 | 0.0013 | 5.739E-08 | 4.868E-06 | | | | | | | | | 32.1 | 21,242 | 97.53 | 2.8491E-03 | 5.196E+06 | 0.39 | 5.77E+01 |
| | 13 | 531 | | | | | 1.218E-03 | 82 | 0.1 | 8 | 1.49E-04 | 0.21 | 1.00 | 4.66 | | | | | | | |
| 72 | | | 79 | 0.0013 | 5.739E-08 | 4.508E-06 | | | | | | | | | 27.5 | 21,321 | 97.89 | 6.6603E-03 | 5.196E+06 | 0.36 | 1.25E+02 |
| | 12 | 452 | | | | | 1.223E-03 | 75 | 0.1 | 8 | 1.62E-04 | 0.23 | 1.00 | 4.28 | | | | | | | |
| 73 | | | 72 | 0.0013 | 5.739E-08 | 4.147E-06 | | | | | | | | | 23.2 | 21,393 | 98.22 | 1.4543E-02 | 5.196E+06 | 0.33 | 2.51E+02 |
| | 11 | 380 | | | | | 1.227E-03 | 69 | 0.1 | 7 | 1.78E-04 | 0.26 | 1.00 | 3.91 | | | | | | | |
| 74 | | | 66 | 0.0013 | 5.739E-08 | 3.786E-06 | | | | | | | | | 19.3 | 21,459 | 98.53 | 2.9683E-02 | 5.196E+06 | 0.30 | 4.67E+02 |
| | 10 | 314 | | | | | 1.231E-03 | 63 | 0.1 | 6 | 1.96E-04 | 0.28 | 1.00 | 3.54 | | | | | | | |
| 75 | | | 60 | 0.0013 | 5.739E-08 | 3.426E-06 | | | | | | | | | 15.7 | 21,519 | 98.80 | 5.6666E-02 | 5.196E+06 | 0.27 | 8.07E+02 |
| | 9 | 254 | | | | | 1.234E-03 | 57 | 0.1 | 6 | 2.18E-04 | 0.31 | 1.00 | 3.18 | | | | | | | |
| 76 | | | 53 | 0.0013 | 5.739E-08 | 3.065E-06 | | | | | | | | | 12.6 | 21,572 | 99.04 | 1.0124E-01 | 5.196E+06 | 0.25 | 1.29E+03 |
| | 8 | 201 | | | | | 1.237E-03 | 50 | 0.1 | 5 | 2.46E-04 | 0.35 | 1.00 | 2.82 | | | | | | | |
| 77 | | | 47 | 0.0013 | 5.739E-08 | 2.705E-06 | | | | | | | | | 9.7 | 21,619 | 99.26 | 1.6937E-01 | 5.196E+06 | 0.22 | 1.90E+03 |
| | 7 | 154 | | | | | 1.240E-03 | 44 | 0.1 | 4 | 2.82E-04 | 0.41 | 1.00 | 2.46 | | | | | | | |
| 78 | | | 41 | 0.0013 | 5.739E-08 | 2.344E-06 | | | | | | | | | 7.3 | 21,660 | 99.45 | 2.6543E-01 | 5.196E+06 | 0.19 | 2.59E+03 |
| | 6 | 113 | | | | | 1.242E-03 | 38 | 0.1 | 4 | 3.30E-04 | 0.47 | 1.00 | 2.11 | | | | | | | |
| 79 | | | 35 | 0.0013 | 5.739E-08 | 1.983E-06 | | | | | | | | | 5.2 | 21,695 | 99.61 | 3.8983E-01 | 5.196E+06 | 0.16 | 3.21E+03 |
| | 5 | 79 | | | | | 1.244E-03 | 31 | 0.1 | 3 | 3.96E-04 | 0.57 | 1.00 | 1.75 | | | | | | | |
| 80 | | | 28 | 0.0013 | 5.739E-08 | 1.623E-06 | | | | | | | | | 3.4 | 21,723 | 99.74 | 5.3673E-01 | 5.196E+06 | 0.13 | 3.62E+03 |
| | 4 | 50 | | | | | 1.246E-03 | 25 | 0.1 | 3 | 4.96E-04 | 0.71 | 1.00 | 1.40 | | | | | | | |
| 81 | | | 22 | 0.0013 | 5.739E-08 | 1.262E-06 | | | | | | | | | 2.0 | 21,745 | 99.84 | 6.9297E-01 | 5.196E+06 | 0.10 | 3.64E+03 |
| | 3 | 28 | | | | | 1.247E-03 | 19 | 0.1 | 2 | 6.62E-04 | 0.95 | 1.00 | 1.05 | | | | | | | |
| 82 | | | 16 | 0.0013 | 5.739E-08 | 9.015E-07 | | | | | | | | | 0.961 | 21,760 | 99.91 | 8.3917E-01 | 5.196E+06 | 0.07 | 3.14E+03 |
| | 2 | 13 | | | | | 1.248E-03 | 13 | 0.1 | 1 | 9.93E-04 | 1.43 | 1.00 | 0.70 | | | | | | | |
| 83 | | | 5 | 0.0013 | 5.739E-08 | 3.155E-07 | | | | | | | | | 0.262 | 21,766 | 99.94 | 9.5331E-01 | 5.196E+06 | 0.03 | 1.25E+03 |
| | 1.5 | 7 | | | | | 1.248E-03 | 9 | 0.1 | 1 | 1.32E-03 | 1.91 | 0.50 | 0.26 | | | | | | | |
| 84 | | | 7 | 0.0013 | 5.739E-08 | 4.057E-07 | | | | | | | | | 0.000 | 21,773 | 99.97 | 1.0000E+00 | 5.196E+06 | 0.03 | 1.69E+03 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Considered | pCi/min | 2.408E+04 |
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Not Considered | pCi/min | 5.196E+06 |
| Reduction in Rn-222 Flux Due to Decay | % | 99.54 |

**TABLE A-26**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA A - ONE QUARTER ACRE AREA - ESTIMATE YEAR 2000 - LANDFILL POROSITY = 0.1**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multilier (e^-kt) | Rn-222 Flux Rate from FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-22 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| | 58.80 | 10,862 | | | | | 0 | | | | 0 | 0 | | | | | | | | | |
| 1 | | | 294 | 0.07063 | 6.485E-06 | 1.904E-03 | | | | | | | | | 43.9 | 294 | 2.68 | 3.3279E-04 | 3.011E+06 | 2.68 | 2.69E+01 |
| | 58 | 10,568 | | | | | 1.904E-03 | 364 | 0.1 | 36 | 5.22E-05 | 0.08 | 0.80 | 10.63 | | | | | | | |
| 2 | | | 361 | 0.07063 | 6.485E-06 | 2.343E-03 | | | | | | | | | 33.3 | 655 | 5.99 | 2.3153E-03 | 3.011E+06 | 3.30 | 2.30E+02 |
| | 57 | 10,207 | | | | | 4.247E-03 | 358 | 0.1 | 36 | 1.19E-04 | 0.17 | 1.00 | 5.86 | | | | | | | |
| 3 | | | 355 | 0.07063 | 6.485E-06 | 2.302E-03 | | | | | | | | | 27.4 | 1,010 | 9.23 | 6.7378E-03 | 3.011E+06 | 3.25 | 6.59E+02 |
| | 56 | 9,852 | | | | | 6.549E-03 | 352 | 0.1 | 35 | 1.86E-04 | 0.27 | 1.00 | 3.73 | | | | | | | |
| 4 | | | 349 | 0.07063 | 6.485E-06 | 2.262E-03 | | | | | | | | | 23.7 | 1,359 | 12.42 | 1.3307E-02 | 3.011E+06 | 3.19 | 1.28E+03 |
| | 55 | 9,503 | | | | | 8.811E-03 | 346 | 0.1 | 35 | 2.55E-04 | 0.37 | 1.00 | 2.72 | | | | | | | |
| 5 | | | 342 | 0.07063 | 6.485E-06 | 2.221E-03 | | | | | | | | | 21.0 | 1,701 | 15.55 | 2.1869E-02 | 3.011E+06 | 3.13 | 2.06E+03 |
| | 54 | 9,161 | | | | | 1.103E-02 | 339 | 0.1 | 34 | 3.25E-04 | 0.47 | 1.00 | 2.14 | | | | | | | |
| 6 | | | 336 | 0.07063 | 6.485E-06 | 2.180E-03 | | | | | | | | | 18.8 | 2,037 | 18.63 | 3.2287E-02 | 3.011E+06 | 3.07 | 2.99E+03 |
| | 53 | 8,825 | | | | | 1.321E-02 | 333 | 0.1 | 33 | 3.97E-04 | 0.57 | 1.00 | 1.75 | | | | | | | |
| 7 | | | 330 | 0.07063 | 6.485E-06 | 2.139E-03 | | | | | | | | | 17.1 | 2,367 | 21.64 | 4.4431E-02 | 3.011E+06 | 3.02 | 4.04E+03 |
| | 52 | 8,495 | | | | | 1.535E-02 | 327 | 0.1 | 33 | 4.70E-04 | 0.68 | 1.00 | 1.48 | | | | | | | |
| 8 | | | 324 | 0.07063 | 6.485E-06 | 2.099E-03 | | | | | | | | | 15.6 | 2,691 | 24.60 | 5.8180E-02 | 3.011E+06 | 2.96 | 5.18E+03 |
| | 51 | 8,171 | | | | | 1.745E-02 | 320 | 0.1 | 32 | 5.45E-04 | 0.78 | 1.00 | 1.28 | | | | | | | |
| 9 | | | 317 | 0.07063 | 6.485E-06 | 2.058E-03 | | | | | | | | | 14.3 | 3,008 | 27.50 | 7.3417E-02 | 3.011E+06 | 2.90 | 6.41E+03 |
| | 50 | 7,854 | | | | | 1.951E-02 | 314 | 0.1 | 31 | 6.21E-04 | 0.89 | 1.00 | 1.12 | | | | | | | |
| 10 | | | 311 | 0.07063 | 6.485E-06 | 2.017E-03 | | | | | | | | | 13.2 | 3,319 | 30.35 | 9.0031E-02 | 3.011E+06 | 2.84 | 7.71E+03 |
| | 49 | 7,543 | | | | | 2.152E-02 | 308 | 0.1 | 31 | 6.99E-04 | 1.01 | 1.00 | 0.99 | | | | | | | |
| 11 | | | 305 | 0.00063 | 6.485E-06 | 1.976E-03 | | | | | | | | | 12.2 | 3,624 | 33.14 | 1.0791E-01 | 3.011E+06 | 2.79 | 9.05E+03 |
| | 48 | 7,238 | | | | | 2.350E-02 | 302 | 0.1 | 30 | 7.79E-04 | 1.12 | 1.00 | 0.89 | | | | | | | |
| 12 | | | 298 | 0.00063 | 6.485E-06 | 1.936E-03 | | | | | | | | | 11.3 | 3,922 | 35.86 | 1.2696E-01 | 3.011E+06 | 2.73 | 1.04E+04 |
| | 47 | 6,940 | | | | | 2.544E-02 | 295 | 0.1 | 30 | 8.61E-04 | 1.24 | 1.00 | 0.81 | | | | | | | |
| 13 | | | 292 | 0.00063 | 6.485E-06 | 1.895E-03 | | | | | | | | | 10.5 | 4,214 | 38.54 | 1.4708E-01 | 3.011E+06 | 2.67 | 1.18E+04 |
| | 46 | 6,648 | | | | | 2.733E-02 | 289 | 0.1 | 29 | 9.46E-04 | 1.36 | 1.00 | 0.73 | | | | | | | |
| 14 | | | 286 | 0.00063 | 6.485E-06 | 1.854E-03 | | | | | | | | | 9.8 | 4,500 | 41.15 | 1.6816E-01 | 3.011E+06 | 2.61 | 1.32E+04 |
| | 45 | 6,362 | | | | | 2.918E-02 | 283 | 0.1 | 28 | 1.03E-03 | 1.49 | 1.00 | 0.67 | | | | | | | |
| 15 | | | 280 | 0.00063 | 6.485E-06 | 1.813E-03 | | | | | | | | | 9.1 | 4,780 | 43.71 | 1.9011E-01 | 3.011E+06 | 2.56 | 1.46E+04 |
| | 44 | 6,082 | | | | | 3.100E-02 | 276 | 0.1 | 28 | 1.12E-03 | 1.61 | 1.00 | 0.62 | | | | | | | |
| 16 | | | 273 | 0.00063 | 6.485E-06 | 1.773E-03 | | | | | | | | | 8.5 | 5,053 | 46.21 | 2.1285E-01 | 3.011E+06 | 2.50 | 1.60E+04 |
| | 43 | 5,809 | | | | | 3.277E-02 | 270 | 0.1 | 27 | 1.21E-03 | 1.75 | 1.00 | 0.57 | | | | | | | |
| 17 | | | 267 | 0.00063 | 6.485E-06 | 1.732E-03 | | | | | | | | | 7.9 | 5,320 | 48.65 | 2.3628E-01 | 3.011E+06 | 2.44 | 1.74E+04 |
| | 42 | 5,542 | | | | | 3.450E-02 | 264 | 0.1 | 26 | 1.31E-03 | 1.88 | 1.00 | 0.53 | | | | | | | |
| 18 | | | 261 | 0.00063 | 6.485E-06 | 1.691E-03 | | | | | | | | | 7.4 | 5,581 | 51.03 | 2.6032E-01 | 3.011E+06 | 2.38 | 1.87E+04 |
| | 41 | 5,281 | | | | | 3.619E-02 | 258 | 0.1 | 26 | 1.40E-03 | 2.02 | 1.00 | 0.49 | | | | | | | |
| 19 | | | 254 | 0.00063 | 6.485E-06 | 1.650E-03 | | | | | | | | | 6.9 | 5,835 | 53.36 | 2.8488E-01 | 3.011E+06 | 2.33 | 2.00E+04 |
| | 40 | 5,027 | | | | | 3.784E-02 | 251 | 0.1 | 25 | 1.51E-03 | 2.17 | 1.00 | 0.46 | | | | | | | |
| 20 | | | 248 | 0.00063 | 6.485E-06 | 1.610E-03 | | | | | | | | | 6.4 | 6,084 | 55.63 | 3.0988E-01 | 3.011E+06 | 2.27 | 2.12E+04 |
| | 39 | 4,778 | | | | | 3.945E-02 | 245 | 0.1 | 25 | 1.61E-03 | 2.32 | 1.00 | 0.43 | | | | | | | |
| 21 | | | 242 | 0.00063 | 6.485E-06 | 1.569E-03 | | | | | | | | | 6.0 | 6,325 | 57.84 | 3.3524E-01 | 3.011E+06 | 2.21 | 2.23E+04 |
| | 38 | 4,536 | | | | | 4.102E-02 | 239 | 0.1 | 24 | 1.72E-03 | 2.47 | 1.00 | 0.40 | | | | | | | |
| 22 | | | 236 | 0.00063 | 6.485E-06 | 1.528E-03 | | | | | | | | | 5.6 | 6,561 | 59.99 | 3.6089E-01 | 3.011E+06 | 2.15 | 2.34E+04 |
| | 37 | 4,301 | | | | | 4.255E-02 | 232 | 0.1 | 23 | 1.83E-03 | 2.64 | 1.00 | 0.38 | | | | | | | |
| 23 | | | 229 | 0.00063 | 6.485E-06 | 1.487E-03 | | | | | | | | | 5.2 | 6,790 | 62.09 | 3.8675E-01 | 3.011E+06 | 2.10 | 2.44E+04 |
| | 36 | 4,072 | | | | | 4.404E-02 | 226 | 0.1 | 23 | 1.95E-03 | 2.80 | 1.00 | 0.36 | | | | | | | |
| 24 | | | 223 | 0.00063 | 6.485E-06 | 1.447E-03 | | | | | | | | | 4.9 | 7,013 | 64.13 | 4.1275E-01 | 3.011E+06 | 2.04 | 2.53E+04 |
| | 35 | 3,848 | | | | | 4.548E-02 | 220 | 0.1 | 22 | 2.07E-03 | 2.98 | 1.00 | 0.34 | | | | | | | |
| 25 | | | 217 | 0.00063 | 6.485E-06 | 1.406E-03 | | | | | | | | | 4.5 | 7,230 | 66.11 | 4.3882E-01 | 3.011E+06 | 1.98 | 2.62E+04 |
| | 34 | 3,632 | | | | | 4.689E-02 | 214 | 0.1 | 21 | 2.19E-03 | 3.16 | 1.00 | 0.32 | | | | | | | |
| 26 | | | 210 | 0.00063 | 6.485E-06 | 1.365E-03 | | | | | | | | | 4.2 | 7,441 | 68.04 | 4.6489E-01 | 3.011E+06 | 1.92 | 2.69E+04 |
| | 33 | 3,421 | | | | | 4.826E-02 | 207 | 0.1 | 21 | 2.33E-03 | 3.35 | 1.00 | 0.30 | | | | | | | |
| 27 | | | 204 | 0.00063 | 6.485E-06 | 1.324E-03 | | | | | | | | | 3.9 | 7,645 | 69.91 | 4.9089E-01 | 3.011E+06 | 1.87 | 2.76E+04 |
| | 32 | 3,217 | | | | | 4.958E-02 | 201 | 0.1 | 20 | 2.47E-03 | 3.55 | 1.00 | 0.28 | | | | | | | |
| 28 | | | 198 | 0.00063 | 6.485E-06 | 1.284E-03 | | | | | | | | | 3.6 | 7,843 | 71.72 | 5.1676E-01 | 3.011E+06 | 1.81 | 2.82E+04 |
| | 31 | 3,019 | | | | | 5.086E-02 | 195 | 0.1 | 19 | 2.61E-03 | 3.76 | 1.00 | 0.27 | | | | | | | |
| 29 | | | 192 | 0.00063 | 6.485E-06 | 1.243E-03 | | | | | | | | | 3.4 | 8,034 | 73.47 | 5.4245E-01 | 3.011E+06 | 1.75 | 2.86E+04 |
| | 30 | 2,827 | | | | | 5.211E-02 | 188 | 0.1 | 19 | 2.76E-03 | 3.98 | 1.00 | 0.25 | | | | | | | |

**TABLE A-26 (CONTINUED)**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA A - ONE QUARTER ACRE AREA - ESTIMATE YEAR 2000 - LANDFILL POROSITY = 0.1**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multilier (e^-kt) | Rn-222 Flux Rate frrom FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-22 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| 28 | | | 198 | 0.00063 | 6.485E-06 | 1.284E-03 | | | | | | | | | 3.6 | 7,843 | 71.72 | 5.1676E-01 | 3.011E+06 | 1.81 | 2.82E+04 |
| | 31 | 3,019 | | | | | 5.086E-02 | 195 | 0.1 | 19 | 2.61E-03 | 3.76 | 1.00 | 0.27 | | | | | | | |
| 29 | | | 192 | 0.00063 | 6.485E-06 | 1.243E-03 | | | | | | | | | 3.4 | 8,034 | 73.47 | 5.4245E-01 | 3.011E+06 | 1.75 | 2.86E+04 |
| | 30 | 2,827 | | | | | 5.211E-02 | 188 | 0.1 | 19 | 2.76E-03 | 3.98 | 1.00 | 0.25 | | | | | | | |
| 30 | | | 185 | 0.00063 | 6.485E-06 | 1.202E-03 | | | | | | | | | 3.1 | 8,220 | 75.16 | 5.6788E-01 | 3.011E+06 | 1.69 | 2.90E+04 |
| | 29 | 2,642 | | | | | 5.331E-02 | 182 | 0.1 | 18 | 2.93E-03 | 4.21 | 1.00 | 0.24 | | | | | | | |
| 31 | | | 179 | 0.00063 | 6.485E-06 | 1.161E-03 | | | | | | | | | 2.9 | 8,399 | 76.80 | 5.9301E-01 | 3.011E+06 | 1.64 | 2.92E+04 |
| | 28 | 2,463 | | | | | 5.447E-02 | 176 | 0.1 | 18 | 3.10E-03 | 4.46 | 1.00 | 0.22 | | | | | | | |
| 32 | | | 173 | 0.00063 | 6.485E-06 | 1.121E-03 | | | | | | | | | 2.6 | 8,572 | 78.38 | 6.1777E-01 | 3.011E+06 | 1.58 | 2.94E+04 |
| | 27 | 2,290 | | | | | 5.559E-02 | 170 | 0.1 | 17 | 3.28E-03 | 4.72 | 1.00 | 0.21 | | | | | | | |
| 33 | | | 167 | 0.00063 | 6.485E-06 | 1.080E-03 | | | | | | | | | 2.4 | 8,738 | 79.90 | 6.4212E-01 | 3.011E+06 | 1.52 | 2.94E+04 |
| | 26 | 2,124 | | | | | 5.667E-02 | 163 | 0.1 | 16 | 3.47E-03 | 5.00 | 1.00 | 0.20 | | | | | | | |
| 34 | | | 160 | 0.00063 | 6.485E-06 | 1.039E-03 | | | | | | | | | 2.2 | 8,898 | 81.37 | 6.6600E-01 | 3.011E+06 | 1.47 | 2.94E+04 |
| | 25 | 1,964 | | | | | 5.771E-02 | 157 | 0.1 | 16 | 3.67E-03 | 5.29 | 1.00 | 0.19 | | | | | | | |
| 35 | | | 154 | 0.00063 | 6.485E-06 | 9.983E-04 | | | | | | | | | 2.0 | 9,052 | 82.78 | 6.8936E-01 | 3.011E+06 | 1.41 | 2.92E+04 |
| | 24 | 1,810 | | | | | 5.871E-02 | 151 | 0.1 | 15 | 3.89E-03 | 5.61 | 1.00 | 0.18 | | | | | | | |
| 36 | | | 148 | 0.00063 | 6.485E-06 | 9.576E-04 | | | | | | | | | 1.9 | 9,200 | 84.13 | 7.1216E-01 | 3.011E+06 | 1.35 | 2.90E+04 |
| | 23 | 1,662 | | | | | 5.966E-02 | 145 | 0.1 | 14 | 4.13E-03 | 5.95 | 1.00 | 0.17 | | | | | | | |
| 37 | | | 141 | 0.00063 | 6.485E-06 | 9.168E-04 | | | | | | | | | 1.7 | 9,341 | 85.42 | 7.3435E-01 | 3.011E+06 | 1.29 | 2.86E+04 |
| | 22 | 1,521 | | | | | 6.058E-02 | 138 | 0.1 | 14 | 4.38E-03 | 6.31 | 1.00 | 0.16 | | | | | | | |
| 38 | | | 135 | 0.00063 | 6.485E-06 | 8.761E-04 | | | | | | | | | 1.5 | 9,476 | 86.65 | 7.5588E-01 | 3.011E+06 | 1.24 | 2.81E+04 |
| | 21 | 1,385 | | | | | 6.146E-02 | 132 | 0.1 | 13 | 4.66E-03 | 6.71 | 1.00 | 0.15 | | | | | | | |
| 39 | | | 129 | 0.00063 | 6.485E-06 | 8.353E-04 | | | | | | | | | 1.4 | 9,605 | 87.83 | 7.7672E-01 | 3.011E+06 | 1.18 | 2.75E+04 |
| | 20 | 1,257 | | | | | 6.229E-02 | 126 | 0.1 | 13 | 4.96E-03 | 7.14 | 1.00 | 0.14 | | | | | | | |
| 40 | | | 123 | 0.00063 | 6.485E-06 | 7.946E-04 | | | | | | | | | 1.2 | 9,728 | 88.95 | 7.9682E-01 | 3.011E+06 | 1.12 | 2.69E+04 |
| | 19 | 1,134 | | | | | 6.309E-02 | 119 | 0.1 | 12 | 5.28E-03 | 7.61 | 1.00 | 0.13 | | | | | | | |
| 41 | | | 116 | 0.00063 | 6.485E-06 | 7.538E-04 | | | | | | | | | 1.1 | 9,844 | 90.01 | 8.1615E-01 | 3.011E+06 | 1.06 | 2.61E+04 |
| | 18 | 1,018 | | | | | 6.384E-02 | 113 | 0.1 | 11 | 5.64E-03 | 8.13 | 1.00 | 0.12 | | | | | | | |
| 42 | | | 110 | 0.00063 | 6.485E-06 | 7.131E-04 | | | | | | | | | 1.0 | 9,954 | 91.02 | 8.3468E-01 | 3.011E+06 | 1.01 | 2.53E+04 |
| | 17 | 908 | | | | | 6.455E-02 | 107 | 0.1 | 11 | 6.04E-03 | 8.70 | 1.00 | 0.11 | | | | | | | |
| 43 | | | 104 | 0.00063 | 6.485E-06 | 6.724E-04 | | | | | | | | | 0.9 | 10,058 | 91.97 | 8.5235E-01 | 3.011E+06 | 0.95 | 2.43E+04 |
| | 16 | 804 | | | | | 6.523E-02 | 101 | 0.1 | 10 | 6.49E-03 | 9.34 | 1.00 | 0.11 | | | | | | | |
| 44 | | | 97 | 0.00063 | 6.485E-06 | 6.316E-04 | | | | | | | | | 0.8 | 10,155 | 92.86 | 8.6916E-01 | 3.011E+06 | 0.89 | 2.33E+04 |
| | 15 | 707 | | | | | 6.586E-02 | 94 | 0.1 | 9 | 6.99E-03 | 10.06 | 1.00 | 0.10 | | | | | | | |
| 45 | | | 91 | 0.00063 | 6.485E-06 | 5.909E-04 | | | | | | | | | 0.7 | 10,246 | 93.69 | 8.8506E-01 | 3.011E+06 | 0.83 | 2.22E+04 |
| | 14 | 616 | | | | | 6.645E-02 | 88 | 0.1 | 9 | 7.55E-03 | 10.88 | 1.00 | 0.09 | | | | | | | |
| 46 | | | 85 | 0.00063 | 6.485E-06 | 5.501E-04 | | | | | | | | | 0.6 | 10,331 | 94.47 | 9.0002E-01 | 3.011E+06 | 0.78 | 2.10E+04 |
| | 13 | 531 | | | | | 6.700E-02 | 82 | 0.1 | 8 | 8.20E-03 | 11.81 | 1.00 | 0.08 | | | | | | | |
| 47 | | | 79 | 0.00063 | 6.485E-06 | 5.094E-04 | | | | | | | | | 0.5 | 10,410 | 95.19 | 9.1403E-01 | 3.011E+06 | 0.72 | 1.98E+04 |
| | 12 | 452 | | | | | 6.751E-02 | 75 | 0.1 | 8 | 8.95E-03 | 12.89 | 1.00 | 0.08 | | | | | | | |
| 48 | | | 72 | 0.00063 | 6.485E-06 | 4.686E-04 | | | | | | | | | 0.4 | 10,482 | 95.85 | 9.2705E-01 | 3.011E+06 | 0.66 | 1.84E+04 |
| | 11 | 380 | | | | | 6.798E-02 | 69 | 0.1 | 7 | 9.84E-03 | 14.16 | 1.00 | 0.07 | | | | | | | |
| 49 | | | 66 | 0.00063 | 6.485E-06 | 4.279E-04 | | | | | | | | | 0.3 | 10,548 | 96.45 | 9.3907E-01 | 3.011E+06 | 0.60 | 1.71E+04 |
| | 10 | 314 | | | | | 6.841E-02 | 63 | 0.1 | 6 | 1.09E-02 | 15.68 | 1.00 | 0.06 | | | | | | | |
| 50 | | | 60 | 0.00063 | 6.485E-06 | 3.871E-04 | | | | | | | | | 0.3 | 10,607 | 97.00 | 9.5006E-01 | 3.011E+06 | 0.55 | 1.56E+04 |
| | 9 | 254 | | | | | 6.879E-02 | 57 | 0.1 | 6 | 1.22E-02 | 17.52 | 1.00 | 0.06 | | | | | | | |
| 51 | | | 53 | 0.00063 | 6.485E-06 | 3.464E-04 | | | | | | | | | 0.2 | 10,661 | 97.48 | 9.6000E-01 | 3.011E+06 | 0.49 | 1.41E+04 |
| | 8 | 201 | | | | | 6.914E-02 | 50 | 0.1 | 5 | 1.38E-02 | 19.81 | 1.00 | 0.05 | | | | | | | |
| 52 | | | 47 | 0.00063 | 6.485E-06 | 3.056E-04 | | | | | | | | | 0.2 | 10,708 | 97.91 | 9.6888E-01 | 3.011E+06 | 0.43 | 1.26E+04 |
| | 7 | 154 | | | | | 6.944E-02 | 44 | 0.1 | 4 | 1.58E-02 | 22.74 | 1.00 | 0.04 | | | | | | | |
| 53 | | | 41 | 0.00063 | 6.485E-06 | 2.649E-04 | | | | | | | | | 0.1 | 10,749 | 98.29 | 9.7669E-01 | 3.011E+06 | 0.37 | 1.10E+04 |
| | 6 | 113 | | | | | 6.971E-02 | 38 | 0.1 | 4 | 1.85E-02 | 26.63 | 1.00 | 0.04 | | | | | | | |
| 54 | | | 35 | 0.00063 | 6.485E-06 | 2.241E-04 | | | | | | | | | 0.1 | 10,783 | 98.60 | 9.8340E-01 | 3.011E+06 | 0.32 | 9.36E+03 |
| | 5 | 79 | | | | | 6.993E-02 | 31 | 0.1 | 3 | 2.23E-02 | 32.06 | 1.00 | 0.03 | | | | | | | |
| 55 | | | 28 | 0.00063 | 6.485E-06 | 1.834E-04 | | | | | | | | | 0.1 | 10,812 | 98.86 | 9.8901E-01 | 3.011E+06 | 0.26 | 7.70E+03 |
| | 4 | 50 | | | | | 7.012E-02 | 25 | 0.1 | 3 | 2.79E-02 | 40.17 | 1.00 | 0.02 | | | | | | | |
| 56 | | | 22 | 0.00063 | 6.485E-06 | 1.426E-04 | | | | | | | | | 0.0 | 10,834 | 99.06 | 9.9351E-01 | 3.011E+06 | 0.20 | 6.02E+03 |
| | 3 | 28 | | | | | 7.026E-02 | 19 | 0.1 | 2 | 3.73E-02 | 53.67 | 1.00 | 0.02 | | | | | | | |
| 57 | | | 16 | 0.00063 | 6.485E-06 | 1.019E-04 | | | | | | | | | 0.0 | 10,849 | 99.21 | 9.9689E-01 | 3.011E+06 | 0.14 | 4.31E+03 |
| | 2 | 13 | | | | | 7.036E-02 | 13 | 0.1 | 1 | 5.60E-02 | 80.63 | 1.00 | 0.01 | | | | | | | |
| 58 | | | 5 | 0.00063 | 6.485E-06 | 3.565E-05 | | | | | | | | | 0.0 | 10,855 | 99.26 | 9.9915E-01 | 3.011E+06 | 0.05 | 1.51E+03 |
| | 1.5 | 7 | | | | | 7.040E-02 | 9 | 0.1 | 1 | 7.47E-02 | 107.56 | 0.50 | 0.00 | | | | | | | |
| 59 | | | 7 | 0.00063 | 6.485E-06 | 4.584E-05 | | | | | | | | | 0.0 | 10,862 | 99.32 | 1.0000E+00 | 3.011E+06 | 0.06 | 1.95E+03 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Considered | pCi/min | 1.013E+06 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Not Considered | pCi/min | 3.011E+06 |

| | | |
|---|---|---|
| Reduction in Rn-222 Flux Due to Decay (%) | % | 66.34 |

**TABLE A-27**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA A - ONE QUARTER ACRE AREA - ESTIMATE YEAR 2025 - LANDFILL POROSITY = 0.1**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multilier (e^-kt) | Rn-222 Flux Rate from FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-22 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| | 58.80 | 10,862 | | | | | 0 | | | | 0 | 0 | | | | | | | | | |
| 1 | | | 294 | 0.02000 | 1.837E-06 | 5.391E-04 | | | | | | | | | 155.0 | 294 | 2.68 | 5.2351E-13 | 3.691E+06 | 2.68 | 5.19E-08 |
| | 58 | 10,568 | | | | | 5.391E-04 | 364 | 0.1 | 36 | 1.48E-05 | 0.02 | 0.80 | 37.55 | | | | | | | |
| 2 | | | 361 | 0.02000 | 1.837E-06 | 6.635E-04 | | | | | | | | | 117.5 | 655 | 5.99 | 4.9402E-10 | 3.691E+06 | 3.30 | 6.02E-05 |
| | 57 | 10,207 | | | | | 1.203E-03 | 358 | 0.1 | 36 | 3.36E-05 | 0.05 | 1.00 | 20.68 | | | | | | | |
| 3 | | | 355 | 0.02000 | 1.837E-06 | 6.520E-04 | | | | | | | | | 96.8 | 1,010 | 9.23 | 2.1476E-08 | 3.691E+06 | 3.25 | 2.57E-03 |
| | 56 | 9,852 | | | | | 1.855E-03 | 352 | 0.1 | 35 | 5.27E-05 | 0.08 | 1.00 | 13.18 | | | | | | | |
| 4 | | | 349 | 0.02000 | 1.837E-06 | 6.404E-04 | | | | | | | | | 83.6 | 1,359 | 12.42 | 2.3747E-07 | 3.691E+06 | 3.19 | 2.79E-02 |
| | 55 | 9,503 | | | | | 2.495E-03 | 346 | 0.1 | 35 | 7.22E-05 | 0.10 | 1.00 | 9.62 | | | | | | | |
| 5 | | | 342 | 0.02000 | 1.837E-06 | 6.289E-04 | | | | | | | | | 74.0 | 1,701 | 15.55 | 1.3726E-06 | 3.691E+06 | 3.13 | 1.59E-01 |
| | 54 | 9,161 | | | | | 3.124E-03 | 339 | 0.1 | 34 | 9.21E-05 | 0.13 | 1.00 | 7.54 | | | | | | | |
| 6 | | | 336 | 0.02000 | 1.837E-06 | 6.174E-04 | | | | | | | | | 66.5 | 2,037 | 18.63 | 5.4327E-06 | 3.691E+06 | 3.07 | 6.16E-01 |
| | 53 | 8,825 | | | | | 3.741E-03 | 333 | 0.1 | 33 | 1.12E-04 | 0.16 | 1.00 | 6.18 | | | | | | | |
| 7 | | | 330 | 0.02000 | 1.837E-06 | 6.058E-04 | | | | | | | | | 60.3 | 2,367 | 21.64 | 1.6775E-05 | 3.691E+06 | 3.02 | 1.87E+00 |
| | 52 | 8,495 | | | | | 4.347E-03 | 327 | 0.1 | 33 | 1.33E-04 | 0.19 | 1.00 | 5.22 | | | | | | | |
| 8 | | | 324 | 0.02000 | 1.837E-06 | 5.943E-04 | | | | | | | | | 55.1 | 2,691 | 24.60 | 4.3462E-05 | 3.691E+06 | 2.96 | 4.75E+00 |
| | 51 | 8,171 | | | | | 4.941E-03 | 320 | 0.1 | 32 | 1.54E-04 | 0.22 | 1.00 | 4.50 | | | | | | | |
| 9 | | | 317 | 0.02000 | 1.837E-06 | 5.827E-04 | | | | | | | | | 50.6 | 3,008 | 27.50 | 9.8821E-05 | 3.691E+06 | 2.90 | 1.06E+01 |
| | 50 | 7,854 | | | | | 5.524E-03 | 314 | 0.1 | 31 | 1.76E-04 | 0.25 | 1.00 | 3.95 | | | | | | | |
| 10 | | | 311 | 0.02000 | 1.837E-06 | 5.712E-04 | | | | | | | | | 46.6 | 3,319 | 30.35 | 2.0309E-04 | 3.691E+06 | 2.84 | 2.13E+01 |
| | 49 | 7,543 | | | | | 6.095E-03 | 308 | 0.1 | 31 | 1.98E-04 | 0.29 | 1.00 | 3.51 | | | | | | | |
| 11 | | | 305 | 0.00063 | 1.837E-06 | 5.597E-04 | | | | | | | | | 43.1 | 3,624 | 33.14 | 3.8508E-04 | 3.691E+06 | 2.79 | 3.96E+01 |
| | 48 | 7,238 | | | | | 6.655E-03 | 302 | 0.1 | 30 | 2.21E-04 | 0.32 | 1.00 | 3.15 | | | | | | | |
| 12 | | | 298 | 0.00063 | 1.837E-06 | 5.481E-04 | | | | | | | | | 40.0 | 3,922 | 35.86 | 6.8368E-04 | 3.691E+06 | 2.73 | 6.89E+01 |
| | 47 | 6,940 | | | | | 7.203E-03 | 295 | 0.1 | 30 | 2.44E-04 | 0.35 | 1.00 | 2.85 | | | | | | | |
| 13 | | | 292 | 0.00063 | 1.837E-06 | 5.366E-04 | | | | | | | | | 37.1 | 4,214 | 38.54 | 1.1492E-03 | 3.691E+06 | 2.67 | 1.13E+02 |
| | 46 | 6,648 | | | | | 7.740E-03 | 289 | 0.1 | 29 | 2.68E-04 | 0.39 | 1.00 | 2.59 | | | | | | | |
| 14 | | | 286 | 0.00063 | 1.837E-06 | 5.250E-04 | | | | | | | | | 34.5 | 4,500 | 41.15 | 1.8442E-03 | 3.691E+06 | 2.61 | 1.78E+02 |
| | 45 | 6,362 | | | | | 8.265E-03 | 283 | 0.1 | 28 | 2.92E-04 | 0.42 | 1.00 | 2.38 | | | | | | | |
| 15 | | | 280 | 0.00063 | 1.837E-06 | 5.135E-04 | | | | | | | | | 32.1 | 4,780 | 43.71 | 2.8445E-03 | 3.691E+06 | 2.56 | 2.68E+02 |
| | 44 | 6,082 | | | | | 8.778E-03 | 276 | 0.1 | 28 | 3.18E-04 | 0.46 | 1.00 | 2.19 | | | | | | | |
| 16 | | | 273 | 0.00063 | 1.837E-06 | 5.020E-04 | | | | | | | | | 30.0 | 5,053 | 46.21 | 4.2390E-03 | 3.691E+06 | 2.50 | 3.91E+02 |
| | 43 | 5,809 | | | | | 9.280E-03 | 270 | 0.1 | 27 | 3.43E-04 | 0.49 | 1.00 | 2.02 | | | | | | | |
| 17 | | | 267 | 0.00063 | 1.837E-06 | 4.904E-04 | | | | | | | | | 27.9 | 5,320 | 48.65 | 6.1293E-03 | 3.691E+06 | 2.44 | 5.52E+02 |
| | 42 | 5,542 | | | | | 9.771E-03 | 264 | 0.1 | 26 | 3.70E-04 | 0.53 | 1.00 | 1.88 | | | | | | | |
| 18 | | | 261 | 0.00063 | 1.837E-06 | 4.789E-04 | | | | | | | | | 26.1 | 5,581 | 51.03 | 8.6296E-03 | 3.691E+06 | 2.38 | 7.59E+02 |
| | 41 | 5,281 | | | | | 1.025E-02 | 258 | 0.1 | 26 | 3.98E-04 | 0.57 | 1.00 | 1.75 | | | | | | | |
| 19 | | | 254 | 0.00063 | 1.837E-06 | 4.673E-04 | | | | | | | | | 24.3 | 5,835 | 53.36 | 1.1865E-02 | 3.691E+06 | 2.33 | 1.02E+03 |
| | 40 | 5,027 | | | | | 1.072E-02 | 251 | 0.1 | 25 | 4.26E-04 | 0.61 | 1.00 | 1.63 | | | | | | | |
| 20 | | | 248 | 0.00063 | 1.837E-06 | 4.558E-04 | | | | | | | | | 22.7 | 6,084 | 55.63 | 1.5969E-02 | 3.691E+06 | 2.27 | 1.34E+03 |
| | 39 | 4,778 | | | | | 1.117E-02 | 245 | 0.1 | 25 | 4.56E-04 | 0.66 | 1.00 | 1.52 | | | | | | | |
| 21 | | | 242 | 0.00063 | 1.837E-06 | 4.443E-04 | | | | | | | | | 21.2 | 6,325 | 57.84 | 2.1082E-02 | 3.691E+06 | 2.21 | 1.72E+03 |
| | 38 | 4,536 | | | | | 1.162E-02 | 239 | 0.1 | 24 | 4.87E-04 | 0.70 | 1.00 | 1.43 | | | | | | | |
| 22 | | | 236 | 0.00063 | 1.837E-06 | 4.327E-04 | | | | | | | | | 19.7 | 6,561 | 59.99 | 2.7351E-02 | 3.691E+06 | 2.15 | 2.18E+03 |
| | 37 | 4,301 | | | | | 1.205E-02 | 232 | 0.1 | 23 | 5.18E-04 | 0.75 | 1.00 | 1.34 | | | | | | | |
| 23 | | | 229 | 0.00063 | 1.837E-06 | 4.212E-04 | | | | | | | | | 18.4 | 6,790 | 62.09 | 3.4923E-02 | 3.691E+06 | 2.10 | 2.70E+03 |
| | 36 | 4,072 | | | | | 1.247E-02 | 226 | 0.1 | 23 | 5.51E-04 | 0.79 | 1.00 | 1.26 | | | | | | | |
| 24 | | | 223 | 0.00063 | 1.837E-06 | 4.096E-04 | | | | | | | | | 17.1 | 7,013 | 64.13 | 4.3943E-02 | 3.691E+06 | 2.04 | 3.31E+03 |
| | 35 | 3,848 | | | | | 1.288E-02 | 220 | 0.1 | 22 | 5.86E-04 | 0.84 | 1.00 | 1.19 | | | | | | | |
| 25 | | | 217 | 0.00063 | 1.837E-06 | 3.981E-04 | | | | | | | | | 15.9 | 7,230 | 66.11 | 5.4552E-02 | 3.691E+06 | 1.98 | 3.99E+03 |
| | 34 | 3,632 | | | | | 1.328E-02 | 214 | 0.1 | 21 | 6.22E-04 | 0.90 | 1.00 | 1.12 | | | | | | | |
| 26 | | | 210 | 0.00063 | 1.837E-06 | 3.866E-04 | | | | | | | | | 14.8 | 7,441 | 68.04 | 6.6883E-02 | 3.691E+06 | 1.92 | 4.75E+03 |
| | 33 | 3,421 | | | | | 1.367E-02 | 207 | 0.1 | 21 | 6.59E-04 | 0.95 | 1.00 | 1.05 | | | | | | | |
| 27 | | | 204 | 0.00063 | 1.837E-06 | 3.750E-04 | | | | | | | | | 13.8 | 7,645 | 69.91 | 8.1056E-02 | 3.691E+06 | 1.87 | 5.59E+03 |
| | 32 | 3,217 | | | | | 1.404E-02 | 201 | 0.1 | 20 | 6.98E-04 | 1.01 | 1.00 | 0.99 | | | | | | | |
| 28 | | | 198 | 0.00063 | 1.837E-06 | 3.635E-04 | | | | | | | | | 12.8 | 7,843 | 71.72 | 9.7177E-02 | 3.691E+06 | 1.81 | 6.49E+03 |
| | 31 | 3,019 | | | | | 1.440E-02 | 195 | 0.1 | 19 | 7.39E-04 | 1.06 | 1.00 | 0.94 | | | | | | | |
| 29 | | | 192 | 0.00063 | 1.837E-06 | 3.520E-04 | | | | | | | | | 11.8 | 8,034 | 73.47 | 1.1533E-01 | 3.691E+06 | 1.75 | 7.46E+03 |
| | 30 | 2,827 | | | | | 1.476E-02 | 188 | 0.1 | 19 | 7.83E-04 | 1.13 | 1.00 | 0.89 | | | | | | | |

**TABLE A-27 (CONTINUED)**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA A - ONE QUARTER ACRE AREA - ESTIMATE YEAR 2025 - LANDFILL POROSITY = 0.1**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multililier (e^-kt) | Rn-222 Flux Rate from FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-22 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| 30 | | | 185 | 0.00063 | 1.837E-06 | 3.404E-04 | | | | | | | | | 11.0 | 8,220 | 75.16 | 1.3559E-01 | 3.691E+06 | 1.69 | 8.48E+03 |
| | 29 | 2,642 | | | | | 1.510E-02 | 182 | 0.1 | 18 | 8.28E-04 | 1.19 | 1.00 | 0.84 | | | | | | | |
| 31 | | | 179 | 0.00063 | 1.837E-06 | 3.289E-04 | | | | | | | | | 10.1 | 8,399 | 76.80 | 1.5799E-01 | 3.691E+06 | 1.64 | 9.55E+03 |
| | 28 | 2,463 | | | | | 1.542E-02 | 176 | 0.1 | 18 | 8.77E-04 | 1.26 | 1.00 | 0.79 | | | | | | | |
| 32 | | | 173 | 0.00063 | 1.837E-06 | 3.173E-04 | | | | | | | | | 9.3 | 8,572 | 78.38 | 1.8254E-01 | 3.691E+06 | 1.58 | 1.06E+04 |
| | 27 | 2,290 | | | | | 1.574E-02 | 170 | 0.1 | 17 | 9.28E-04 | 1.34 | 1.00 | 0.75 | | | | | | | |
| 33 | | | 167 | 0.00063 | 1.837E-06 | 3.058E-04 | | | | | | | | | 8.6 | 8,738 | 79.90 | 2.0924E-01 | 3.691E+06 | 1.52 | 1.18E+04 |
| | 26 | 2,124 | | | | | 1.605E-02 | 163 | 0.1 | 16 | 9.82E-04 | 1.41 | 1.00 | 0.71 | | | | | | | |
| 34 | | | 160 | 0.00063 | 1.837E-06 | 2.943E-04 | | | | | | | | | 7.9 | 8,898 | 81.37 | 2.3804E-01 | 3.691E+06 | 1.47 | 1.29E+04 |
| | 25 | 1,964 | | | | | 1.634E-02 | 157 | 0.1 | 16 | 1.04E-03 | 1.50 | 1.00 | 0.67 | | | | | | | |
| 35 | | | 154 | 0.00063 | 1.837E-06 | 2.827E-04 | | | | | | | | | 7.2 | 9,052 | 82.78 | 2.6886E-01 | 3.691E+06 | 1.41 | 1.40E+04 |
| | 24 | 1,810 | | | | | 1.663E-02 | 151 | 0.1 | 15 | 1.10E-03 | 1.59 | 1.00 | 0.63 | | | | | | | |
| 36 | | | 148 | 0.00063 | 1.837E-06 | 2.712E-04 | | | | | | | | | 6.6 | 9,200 | 84.13 | 3.0159E-01 | 3.691E+06 | 1.35 | 1.50E+04 |
| | 23 | 1,662 | | | | | 1.690E-02 | 145 | 0.1 | 14 | 1.17E-03 | 1.68 | 1.00 | 0.59 | | | | | | | |
| 37 | | | 141 | 0.00063 | 1.837E-06 | 2.596E-04 | | | | | | | | | 6.0 | 9,341 | 85.42 | 3.3610E-01 | 3.691E+06 | 1.29 | 1.60E+04 |
| | 22 | 1,521 | | | | | 1.716E-02 | 138 | 0.1 | 14 | 1.24E-03 | 1.79 | 1.00 | 0.56 | | | | | | | |
| 38 | | | 135 | 0.00063 | 1.837E-06 | 2.481E-04 | | | | | | | | | 5.4 | 9,476 | 86.65 | 3.7222E-01 | 3.691E+06 | 1.24 | 1.70E+04 |
| | 21 | 1,385 | | | | | 1.740E-02 | 132 | 0.1 | 13 | 1.32E-03 | 1.90 | 1.00 | 0.53 | | | | | | | |
| 39 | | | 129 | 0.00063 | 1.837E-06 | 2.366E-04 | | | | | | | | | 4.9 | 9,605 | 87.83 | 4.0973E-01 | 3.691E+06 | 1.18 | 1.78E+04 |
| | 20 | 1,257 | | | | | 1.764E-02 | 126 | 0.1 | 13 | 1.40E-03 | 2.02 | 1.00 | 0.49 | | | | | | | |
| 40 | | | 123 | 0.00063 | 1.837E-06 | 2.250E-04 | | | | | | | | | 4.4 | 9,728 | 88.95 | 4.4842E-01 | 3.691E+06 | 1.12 | 1.85E+04 |
| | 19 | 1,134 | | | | | 1.787E-02 | 119 | 0.1 | 12 | 1.50E-03 | 2.15 | 1.00 | 0.46 | | | | | | | |
| 41 | | | 116 | 0.00063 | 1.837E-06 | 2.135E-04 | | | | | | | | | 3.9 | 9,844 | 90.01 | 4.8803E-01 | 3.691E+06 | 1.06 | 1.91E+04 |
| | 18 | 1,018 | | | | | 1.808E-02 | 113 | 0.1 | 11 | 1.60E-03 | 2.30 | 1.00 | 0.43 | | | | | | | |
| 42 | | | 110 | 0.00063 | 1.837E-06 | 2.019E-04 | | | | | | | | | 3.5 | 9,954 | 91.02 | 5.2828E-01 | 3.691E+06 | 1.01 | 1.96E+04 |
| | 17 | 908 | | | | | 1.828E-02 | 107 | 0.1 | 11 | 1.71E-03 | 2.46 | 1.00 | 0.41 | | | | | | | |
| 43 | | | 104 | 0.00063 | 1.837E-06 | 1.904E-04 | | | | | | | | | 3.1 | 10,058 | 91.97 | 5.6886E-01 | 3.691E+06 | 0.95 | 1.99E+04 |
| | 16 | 804 | | | | | 1.847E-02 | 101 | 0.1 | 10 | 1.84E-03 | 2.65 | 1.00 | 0.38 | | | | | | | |
| 44 | | | 97 | 0.00063 | 1.837E-06 | 1.789E-04 | | | | | | | | | 2.7 | 10,155 | 92.86 | 6.0946E-01 | 3.691E+06 | 0.89 | 2.00E+04 |
| | 15 | 707 | | | | | 1.865E-02 | 94 | 0.1 | 9 | 1.98E-03 | 2.85 | 1.00 | 0.35 | | | | | | | |
| 45 | | | 91 | 0.00063 | 1.837E-06 | 1.673E-04 | | | | | | | | | 2.4 | 10,246 | 93.69 | 6.4974E-01 | 3.691E+06 | 0.83 | 2.00E+04 |
| | 14 | 616 | | | | | 1.882E-02 | 88 | 0.1 | 9 | 2.14E-03 | 3.08 | 1.00 | 0.32 | | | | | | | |
| 46 | | | 85 | 0.00063 | 1.837E-06 | 1.558E-04 | | | | | | | | | 2.0 | 10,331 | 94.47 | 6.8938E-01 | 3.691E+06 | 0.78 | 1.97E+04 |
| | 13 | 531 | | | | | 1.897E-02 | 82 | 0.1 | 8 | 2.32E-03 | 3.34 | 1.00 | 0.30 | | | | | | | |
| 47 | | | 79 | 0.00063 | 1.837E-06 | 1.442E-04 | | | | | | | | | 1.7 | 10,410 | 95.19 | 7.2801E-01 | 3.691E+06 | 0.72 | 1.93E+04 |
| | 12 | 452 | | | | | 1.912E-02 | 75 | 0.1 | 8 | 2.54E-03 | 3.65 | 1.00 | 0.27 | | | | | | | |
| 48 | | | 72 | 0.00063 | 1.837E-06 | 1.327E-04 | | | | | | | | | 1.5 | 10,482 | 95.85 | 7.6531E-01 | 3.691E+06 | 0.66 | 1.87E+04 |
| | 11 | 380 | | | | | 1.925E-02 | 69 | 0.1 | 7 | 2.79E-03 | 4.01 | 1.00 | 0.25 | | | | | | | |
| 49 | | | 66 | 0.00063 | 1.837E-06 | 1.212E-04 | | | | | | | | | 1.2 | 10,548 | 96.45 | 8.0091E-01 | 3.691E+06 | 0.60 | 1.78E+04 |
| | 10 | 314 | | | | | 1.937E-02 | 63 | 0.1 | 6 | 3.08E-03 | 4.44 | 1.00 | 0.23 | | | | | | | |
| 50 | | | 60 | 0.00063 | 1.837E-06 | 1.096E-04 | | | | | | | | | 1.0 | 10,607 | 97.00 | 8.3451E-01 | 3.691E+06 | 0.55 | 1.68E+04 |
| | 9 | 254 | | | | | 1.948E-02 | 57 | 0.1 | 6 | 3.44E-03 | 4.96 | 1.00 | 0.20 | | | | | | | |
| 51 | | | 53 | 0.00063 | 1.837E-06 | 9.808E-05 | | | | | | | | | 0.8 | 10,661 | 97.48 | 8.6576E-01 | 3.691E+06 | 0.49 | 1.56E+04 |
| | 8 | 201 | | | | | 1.958E-02 | 50 | 0.1 | 5 | 3.90E-03 | 5.61 | 1.00 | 0.18 | | | | | | | |
| 52 | | | 47 | 0.00063 | 1.837E-06 | 8.655E-05 | | | | | | | | | 0.6 | 10,708 | 97.91 | 8.9438E-01 | 3.691E+06 | 0.43 | 1.42E+04 |
| | 7 | 154 | | | | | 1.967E-02 | 44 | 0.1 | 4 | 4.47E-03 | 6.44 | 1.00 | 0.16 | | | | | | | |
| 53 | | | 41 | 0.00063 | 1.837E-06 | 7.501E-05 | | | | | | | | | 0.5 | 10,749 | 98.29 | 9.2008E-01 | 3.691E+06 | 0.37 | 1.27E+04 |
| | 6 | 113 | | | | | 1.974E-02 | 38 | 0.1 | 4 | 5.24E-03 | 7.54 | 1.00 | 0.13 | | | | | | | |
| 54 | | | 35 | 0.00063 | 1.837E-06 | 6.347E-05 | | | | | | | | | 0.3 | 10,783 | 98.60 | 9.4260E-01 | 3.691E+06 | 0.32 | 1.10E+04 |
| | 5 | 79 | | | | | 1.980E-02 | 31 | 0.1 | 3 | 6.30E-03 | 9.08 | 1.00 | 0.11 | | | | | | | |
| 55 | | | 28 | 0.00063 | 1.837E-06 | 5.193E-05 | | | | | | | | | 0.2 | 10,812 | 98.86 | 9.6174E-01 | 3.691E+06 | 0.26 | 9.18E+03 |
| | 4 | 50 | | | | | 1.986E-02 | 25 | 0.1 | 3 | 7.90E-03 | 11.38 | 1.00 | 0.09 | | | | | | | |
| 56 | | | 22 | 0.00063 | 1.837E-06 | 4.039E-05 | | | | | | | | | 0.1 | 10,834 | 99.06 | 9.7728E-01 | 3.691E+06 | 0.20 | 7.25E+03 |
| | 3 | 28 | | | | | 1.990E-02 | 19 | 0.1 | 2 | 1.06E-02 | 15.20 | 1.00 | 0.07 | | | | | | | |
| 57 | | | 16 | 0.00063 | 1.837E-06 | 2.885E-05 | | | | | | | | | 0.1 | 10,849 | 99.21 | 9.8908E-01 | 3.691E+06 | 0.14 | 5.24E+03 |
| | 2 | 13 | | | | | 1.993E-02 | 13 | 0.1 | 1 | 1.59E-02 | 22.83 | 1.00 | 0.04 | | | | | | | |
| 58 | | | 5 | 0.00063 | 1.837E-06 | 1.010E-05 | | | | | | | | | 0.0 | 10,855 | 99.26 | 9.9701E-01 | 3.691E+06 | 0.05 | 1.85E+03 |
| | 1.5 | 7 | | | | | 1.994E-02 | 9 | 0.1 | 1 | 2.12E-02 | 30.46 | 0.50 | 0.02 | | | | | | | |
| 59 | | | 7 | 0.00063 | 1.837E-06 | 1.298E-05 | | | | | | | | | 0.0 | 10,862 | 99.32 | 1.0000E+00 | 3.691E+06 | 0.06 | 2.39E+03 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Considered | pCi/min | 4.651E+05 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Not Considered | pCi/min | 3.691E+06 |

| | | |
|---|---|---|
| Reduction in Rn-222 Flux Due to Decay (%) | % | 87.40 |

**TABLE A-28**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA A - ONE QUARTER ACRE AREA - ESTIMATE YEAR 2100 - LANDFILL POROSITY = 0.1**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multilier (e^-kt) | Rn-222 Flux Rate from FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-22 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| | 58.80 | 10,862 | | | | | 0 | | | | 0 | 0 | | | | | | | | | |
| 1 | | | 294 | 0.00063 | 5.739E-08 | 1.685E-05 | | | | | | | | | 4,961 | 294 | 2.68 | 0.0000E+00 | 5.196E+06 | 2.68 | 0.00E+00 |
| | 58 | 10,568 | | | | | 1.685E-05 | 364 | 0.1 | 36 | 4.62E-07 | 0.00 | 0.80 | 1,202 | | | | | | | |
| 2 | | | 361 | 0.00063 | 5.739E-08 | 2.073E-05 | | | | | | | | | 3,759 | 655 | 5.99 | 1.5840E-298 | 5.196E+06 | 3.30 | 2.72E-293 |
| | 57 | 10,207 | | | | | 3.758E-05 | 358 | 0.1 | 36 | 1.05E-06 | 0.00 | 1.00 | 662 | | | | | | | |
| 3 | | | 355 | 0.00063 | 5.739E-08 | 2.037E-05 | | | | | | | | | 3,098 | 1,010 | 9.23 | 4.1910E-246 | 5.196E+06 | 3.25 | 7.07E-241 |
| | 56 | 9,852 | | | | | 5.796E-05 | 352 | 0.1 | 35 | 1.65E-06 | 0.00 | 1.00 | 422 | | | | | | | |
| 4 | | | 349 | 0.00063 | 5.739E-08 | 2.001E-05 | | | | | | | | | 2,676 | 1,359 | 12.42 | 1.0464E-212 | 5.196E+06 | 3.19 | 1.73E-207 |
| | 55 | 9,503 | | | | | 7.797E-05 | 346 | 0.1 | 35 | 2.26E-06 | 0.00 | 1.00 | 308 | | | | | | | |
| 5 | | | 342 | 0.00063 | 5.739E-08 | 1.965E-05 | | | | | | | | | 2,368 | 1,701 | 15.55 | 2.5192E-188 | 5.196E+06 | 3.13 | 4.10E-183 |
| | 54 | 9,161 | | | | | 9.762E-05 | 339 | 0.1 | 34 | 2.88E-06 | 0.00 | 1.00 | 241 | | | | | | | |
| 6 | | | 336 | 0.00063 | 5.739E-08 | 1.929E-05 | | | | | | | | | 2,127 | 2,037 | 18.63 | 3.3142E-169 | 5.196E+06 | 3.07 | 5.29E-164 |
| | 53 | 8,825 | | | | | 1.169E-04 | 333 | 0.1 | 33 | 3.51E-06 | 0.01 | 1.00 | 198 | | | | | | | |
| 7 | | | 330 | 0.00063 | 5.739E-08 | 1.893E-05 | | | | | | | | | 1,929 | 2,367 | 21.64 | 1.5452E-153 | 5.196E+06 | 3.02 | 2.42E-148 |
| | 52 | 8,495 | | | | | 1.358E-04 | 327 | 0.1 | 33 | 4.16E-06 | 0.01 | 1.00 | 167 | | | | | | | |
| 8 | | | 324 | 0.00063 | 5.739E-08 | 1.857E-05 | | | | | | | | | 1,762 | 2,691 | 24.60 | 2.6278E-140 | 5.196E+06 | 2.96 | 4.04E-135 |
| | 51 | 8,171 | | | | | 1.544E-04 | 320 | 0.1 | 32 | 4.82E-06 | 0.01 | 1.00 | 144 | | | | | | | |
| 9 | | | 317 | 0.00063 | 5.739E-08 | 1.821E-05 | | | | | | | | | 1,618 | 3,008 | 27.50 | 6.8417E-129 | 5.196E+06 | 2.90 | 1.03E-123 |
| | 50 | 7,854 | | | | | 1.726E-04 | 314 | 0.1 | 31 | 5.49E-06 | 0.01 | 1.00 | 126 | | | | | | | |
| 10 | | | 311 | 0.00063 | 5.739E-08 | 1.785E-05 | | | | | | | | | 1,492 | 3,319 | 30.35 | 7.0192E-119 | 5.196E+06 | 2.84 | 1.04E-113 |
| | 49 | 7,543 | | | | | 1.905E-04 | 308 | 0.1 | 31 | 6.19E-06 | 0.01 | 1.00 | 112 | | | | | | | |
| 11 | | | 305 | 0.00063 | 5.739E-08 | 1.749E-05 | | | | | | | | | 1,379 | 3,624 | 33.14 | 5.4677E-110 | 5.196E+06 | 2.79 | 7.92E-105 |
| | 48 | 7,238 | | | | | 2.080E-04 | 302 | 0.1 | 30 | 6.90E-06 | 0.01 | 1.00 | 100.71 | | | | | | | |
| 12 | | | 298 | 0.00063 | 5.739E-08 | 1.713E-05 | | | | | | | | | 1,279 | 3,922 | 35.86 | 5.1925E-102 | 5.196E+06 | 2.73 | 7.36E-97 |
| | 47 | 6,940 | | | | | 2.251E-04 | 295 | 0.1 | 30 | 7.62E-06 | 0.01 | 1.00 | 91.11 | | | | | | | |
| 13 | | | 292 | 0.00063 | 5.739E-08 | 1.677E-05 | | | | | | | | | 1,187 | 4,214 | 38.54 | 8.5574E-95 | 5.196E+06 | 2.67 | 1.19E-89 |
| | 46 | 6,648 | | | | | 2.419E-04 | 289 | 0.1 | 29 | 8.37E-06 | 0.01 | 1.00 | 82.99 | | | | | | | |
| 14 | | | 286 | 0.00063 | 5.739E-08 | 1.641E-05 | | | | | | | | | 1,105 | 4,500 | 41.15 | 3.2067E-88 | 5.196E+06 | 2.61 | 4.36E-83 |
| | 45 | 6,362 | | | | | 2.583E-04 | 283 | 0.1 | 28 | 9.13E-06 | 0.01 | 1.00 | 76.02 | | | | | | | |
| 15 | | | 280 | 0.00063 | 5.739E-08 | 1.605E-05 | | | | | | | | | 1,028 | 4,780 | 43.71 | 3.3755E-82 | 5.196E+06 | 2.56 | 4.48E-77 |
| | 44 | 6,082 | | | | | 2.743E-04 | 276 | 0.1 | 28 | 9.92E-06 | 0.01 | 1.00 | 69.99 | | | | | | | |
| 16 | | | 273 | 0.00063 | 5.739E-08 | 1.569E-05 | | | | | | | | | 958 | 5,053 | 46.21 | 1.1812E-76 | 5.196E+06 | 2.50 | 1.53E-71 |
| | 43 | 5,809 | | | | | 2.900E-04 | 270 | 0.1 | 27 | 1.07E-05 | 0.02 | 1.00 | 64.70 | | | | | | | |
| 17 | | | 267 | 0.00063 | 5.739E-08 | 1.533E-05 | | | | | | | | | 894 | 5,320 | 48.65 | 1.5749E-71 | 5.196E+06 | 2.44 | 2.00E-66 |
| | 42 | 5,542 | | | | | 3.053E-04 | 264 | 0.1 | 26 | 1.16E-05 | 0.02 | 1.00 | 60.02 | | | | | | | |
| 18 | | | 261 | 0.00063 | 5.739E-08 | 1.497E-05 | | | | | | | | | 834 | 5,581 | 51.03 | 8.9484E-67 | 5.196E+06 | 2.38 | 1.11E-61 |
| | 41 | 5,281 | | | | | 3.203E-04 | 258 | 0.1 | 26 | 1.24E-05 | 0.02 | 1.00 | 55.85 | | | | | | | |
| 19 | | | 254 | 0.00063 | 5.739E-08 | 1.460E-05 | | | | | | | | | 778 | 5,835 | 53.36 | 2.3778E-62 | 5.196E+06 | 2.33 | 2.87E-57 |
| | 40 | 5,027 | | | | | 3.349E-04 | 251 | 0.1 | 25 | 1.33E-05 | 0.02 | 1.00 | 52.11 | | | | | | | |
| 20 | | | 248 | 0.00063 | 5.739E-08 | 1.424E-05 | | | | | | | | | 726 | 6,084 | 55.63 | 3.1950E-58 | 5.196E+06 | 2.27 | 3.77E-53 |
| | 39 | 4,778 | | | | | 3.491E-04 | 245 | 0.1 | 25 | 1.42E-05 | 0.02 | 1.00 | 48.74 | | | | | | | |
| 21 | | | 242 | 0.00063 | 5.739E-08 | 1.388E-05 | | | | | | | | | 677 | 6,325 | 57.84 | 2.3192E-54 | 5.196E+06 | 2.21 | 2.67E-49 |
| | 38 | 4,536 | | | | | 3.630E-04 | 239 | 0.1 | 24 | 1.52E-05 | 0.02 | 1.00 | 45.67 | | | | | | | |
| 22 | | | 236 | 0.00063 | 5.739E-08 | 1.352E-05 | | | | | | | | | 631 | 6,561 | 59.99 | 9.6237E-51 | 5.196E+06 | 2.15 | 1.08E-45 |
| | 37 | 4,301 | | | | | 3.766E-04 | 232 | 0.1 | 23 | 1.62E-05 | 0.02 | 1.00 | 42.87 | | | | | | | |
| 23 | | | 229 | 0.00063 | 5.739E-08 | 1.316E-05 | | | | | | | | | 589 | 6,790 | 62.09 | 2.3968E-47 | 5.196E+06 | 2.10 | 2.61E-42 |
| | 36 | 4,072 | | | | | 3.897E-04 | 226 | 0.1 | 23 | 1.72E-05 | 0.02 | 1.00 | 40.31 | | | | | | | |
| 24 | | | 223 | 0.00063 | 5.739E-08 | 1.280E-05 | | | | | | | | | 548 | 7,013 | 64.13 | 3.7369E-44 | 5.196E+06 | 2.04 | 3.96E-39 |
| | 35 | 3,848 | | | | | 4.025E-04 | 220 | 0.1 | 22 | 1.83E-05 | 0.03 | 1.00 | 37.94 | | | | | | | |
| 25 | | | 217 | 0.00063 | 5.739E-08 | 1.244E-05 | | | | | | | | | 510 | 7,230 | 66.11 | 3.7843E-41 | 5.196E+06 | 1.98 | 3.90E-36 |
| | 34 | 3,632 | | | | | 4.150E-04 | 214 | 0.1 | 21 | 1.94E-05 | 0.03 | 1.00 | 35.75 | | | | | | | |
| 26 | | | 210 | 0.00063 | 5.739E-08 | 1.208E-05 | | | | | | | | | 475 | 7,441 | 68.04 | 2.5707E-38 | 5.196E+06 | 1.92 | 2.57E-33 |
| | 33 | 3,421 | | | | | 4.270E-04 | 207 | 0.1 | 21 | 2.06E-05 | 0.03 | 1.00 | 33.72 | | | | | | | |
| 27 | | | 204 | 0.00063 | 5.739E-08 | 1.172E-05 | | | | | | | | | 441 | 7,645 | 69.91 | 1.2052E-35 | 5.196E+06 | 1.87 | 1.17E-30 |
| | 32 | 3,217 | | | | | 4.388E-04 | 201 | 0.1 | 20 | 2.18E-05 | 0.03 | 1.00 | 31.82 | | | | | | | |
| 28 | | | 198 | 0.00063 | 5.739E-08 | 1.136E-05 | | | | | | | | | 409 | 7,843 | 71.72 | 3.9991E-33 | 5.196E+06 | 1.81 | 3.76E-28 |
| | 31 | 3,019 | | | | | 4.501E-04 | 195 | 0.1 | 19 | 2.31E-05 | 0.03 | 1.00 | 30.05 | | | | | | | |
| 29 | | | 192 | 0.00063 | 5.739E-08 | 1.100E-05 | | | | | | | | | 379 | 8,034 | 73.47 | 9.6038E-31 | 5.196E+06 | 1.75 | 8.74E-26 |
| | 30 | 2,827 | | | | | 4.611E-04 | 188 | 0.1 | 19 | 2.45E-05 | 0.04 | 1.00 | 28.39 | | | | | | | |

**TABLE A-28 (CONTINUED)**
**RADON DECAY ESTIMATES - SEAWAY FUSRAP AREA A - ONE QUARTER ACRE AREA - ESTIMATE YEAR 2100 - LANDFILL POROSITY = 0.1**

| Area Number | Radius R | Area of Circle at Radius R | Area Between Concentric Circles | Gas Generation Rate per 1 Foot of Landfill Thickness | Gas Generation Rate per Landfill Volume | Gas Flow from this Area | Cummulative Gas Flow at Cross Section | Gross Cross Section Area | Porosity | Effective Cross Section Area | Gas Velocity at Cross Section | Gas Velocity at Cross Section | Distance Between Sections | Time of Travel Between Sections | Cummulative Time of Travel from This Area to the Gas Well | Area Beyond Radius R | Area Beyond Radius R as % of Total Area | Decay Multilier (e^-kt) | Rn-222 Flux Rate from FUSRAP Area A - Decay Not Considered | Area Between Concentric Circles as % of Total Area | Rn-22 Flux Rate from this Area at the Gas Well - Decay Considered |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | ft2 | ft2 | ft3/min-ft | ft3/min-ft3 | ft3/min | ft3/min | ft2 | | ft2 | ft/min | ft/day | ft | days | days | ft2 | ft2 | | pCi/min-acre | | pCi/min |
| 30 | | | 185 | 0.00063 | 5.739E-08 | 1.064E-05 | | | | | | | | | 351 | 8,220 | 75.16 | 1.7029E-28 | 5.196E+06 | 1.69 | 1.50E-23 |
| | 29 | 2,642 | | | | | 4.718E-04 | 182 | 0.1 | 18 | 2.59E-05 | 0.04 | 1.00 | 26.82 | | | | | | | |
| 31 | | | 179 | 0.00063 | 5.739E-08 | 1.028E-05 | | | | | | | | | 324 | 8,399 | 76.80 | 2.2696E-26 | 5.196E+06 | 1.64 | 1.93E-21 |
| | 28 | 2,463 | | | | | 4.820E-04 | 176 | 0.1 | 18 | 2.74E-05 | 0.04 | 1.00 | 25.35 | | | | | | | |
| 32 | | | 173 | 0.00063 | 5.739E-08 | 9.917E-06 | | | | | | | | | 298 | 8,572 | 78.38 | 2.3106E-24 | 5.196E+06 | 1.58 | 1.90E-19 |
| | 27 | 2,290 | | | | | 4.919E-04 | 170 | 0.1 | 17 | 2.90E-05 | 0.04 | 1.00 | 23.95 | | | | | | | |
| 33 | | | 167 | 0.00063 | 5.739E-08 | 9.556E-06 | | | | | | | | | 274 | 8,738 | 79.90 | 1.8228E-22 | 5.196E+06 | 1.52 | 1.44E-17 |
| | 26 | 2,124 | | | | | 5.015E-04 | 163 | 0.1 | 16 | 3.07E-05 | 0.04 | 1.00 | 22.62 | | | | | | | |
| 34 | | | 160 | 0.00063 | 5.739E-08 | 9.195E-06 | | | | | | | | | 252 | 8,898 | 81.37 | 1.1290E-20 | 5.196E+06 | 1.47 | 8.59E-16 |
| | 25 | 1,964 | | | | | 5.107E-04 | 157 | 0.1 | 16 | 3.25E-05 | 0.05 | 1.00 | 21.36 | | | | | | | |
| 35 | | | 154 | 0.00063 | 5.739E-08 | 8.835E-06 | | | | | | | | | 230 | 9,052 | 82.78 | 5.5555E-19 | 5.196E+06 | 1.41 | 4.06E-14 |
| | 24 | 1,810 | | | | | 5.195E-04 | 151 | 0.1 | 15 | 3.45E-05 | 0.05 | 1.00 | 20.16 | | | | | | | |
| 36 | | | 148 | 0.00063 | 5.739E-08 | 8.474E-06 | | | | | | | | | 210 | 9,200 | 84.13 | 2.1950E-17 | 5.196E+06 | 1.35 | 1.54E-12 |
| | 23 | 1,662 | | | | | 5.280E-04 | 145 | 0.1 | 14 | 3.65E-05 | 0.05 | 1.00 | 19.01 | | | | | | | |
| 37 | | | 141 | 0.00063 | 5.739E-08 | 8.114E-06 | | | | | | | | | 191 | 9,341 | 85.42 | 7.0316E-16 | 5.196E+06 | 1.29 | 4.72E-11 |
| | 22 | 1,521 | | | | | 5.361E-04 | 138 | 0.1 | 14 | 3.88E-05 | 0.06 | 1.00 | 17.91 | | | | | | | |
| 38 | | | 135 | 0.00063 | 5.739E-08 | 7.753E-06 | | | | | | | | | 173 | 9,476 | 86.65 | 1.8426E-14 | 5.196E+06 | 1.24 | 1.18E-09 |
| | 21 | 1,385 | | | | | 5.439E-04 | 132 | 0.1 | 13 | 4.12E-05 | 0.06 | 1.00 | 16.85 | | | | | | | |
| 39 | | | 129 | 0.00063 | 5.739E-08 | 7.392E-06 | | | | | | | | | 157 | 9,605 | 87.83 | 3.9812E-13 | 5.196E+06 | 1.18 | 2.44E-08 |
| | 20 | 1,257 | | | | | 5.513E-04 | 126 | 0.1 | 13 | 4.39E-05 | 0.06 | 1.00 | 15.83 | | | | | | | |
| 40 | | | 123 | 0.00063 | 5.739E-08 | 7.032E-06 | | | | | | | | | 141 | 9,728 | 88.95 | 7.1451E-12 | 5.196E+06 | 1.12 | 4.16E-07 |
| | 19 | 1,134 | | | | | 5.583E-04 | 119 | 0.1 | 12 | 4.68E-05 | 0.07 | 1.00 | 14.85 | | | | | | | |
| 41 | | | 116 | 0.00063 | 5.739E-08 | 6.671E-06 | | | | | | | | | 126 | 9,844 | 90.01 | 1.0723E-10 | 5.196E+06 | 1.06 | 5.92E-06 |
| | 18 | 1,018 | | | | | 5.650E-04 | 113 | 0.1 | 11 | 5.00E-05 | 0.07 | 1.00 | 13.90 | | | | | | | |
| 42 | | | 110 | 0.00063 | 5.739E-08 | 6.311E-06 | | | | | | | | | 112 | 9,954 | 91.02 | 1.3537E-09 | 5.196E+06 | 1.01 | 7.07E-05 |
| | 17 | 908 | | | | | 5.713E-04 | 107 | 0.1 | 11 | 5.35E-05 | 0.08 | 1.00 | 12.98 | | | | | | | |
| 43 | | | 104 | 0.00063 | 5.739E-08 | 5.950E-06 | | | | | | | | | 99 | 10,058 | 91.97 | 1.4457E-08 | 5.196E+06 | 0.95 | 7.12E-04 |
| | 16 | 804 | | | | | 5.772E-04 | 101 | 0.1 | 10 | 5.74E-05 | 0.08 | 1.00 | 12.09 | | | | | | | |
| 44 | | | 97 | 0.00063 | 5.739E-08 | 5.589E-06 | | | | | | | | | 87 | 10,155 | 92.86 | 1.3127E-07 | 5.196E+06 | 0.89 | 6.07E-03 |
| | 15 | 707 | | | | | 5.828E-04 | 94 | 0.1 | 9 | 6.18E-05 | 0.09 | 1.00 | 11.2 | | | | | | | |
| 45 | | | 91 | 0.00063 | 5.739E-08 | 5.229E-06 | | | | | | | | | 76 | 10,246 | 93.69 | 1.0180E-06 | 5.196E+06 | 0.83 | 4.41E-02 |
| | 14 | 616 | | | | | 5.880E-04 | 88 | 0.1 | 9 | 6.69E-05 | 0.10 | 1.00 | 10.4 | | | | | | | |
| 46 | | | 85 | 0.00063 | 5.739E-08 | 4.868E-06 | | | | | | | | | 65 | 10,331 | 94.47 | 6.7707E-06 | 5.196E+06 | 0.78 | 2.73E-01 |
| | 13 | 531 | | | | | 5.929E-04 | 82 | 0.1 | 8 | 7.26E-05 | 0.10 | 1.00 | 9.6 | | | | | | | |
| 47 | | | 79 | 0.00063 | 5.739E-08 | 4.508E-06 | | | | | | | | | 56 | 10,410 | 95.19 | 3.8768E-05 | 5.196E+06 | 0.72 | 1.45E+00 |
| | 12 | 452 | | | | | 5.974E-04 | 75 | 0.1 | 8 | 7.92E-05 | 0.11 | 1.00 | 8.8 | | | | | | | |
| 48 | | | 72 | 0.00063 | 5.739E-08 | 4.147E-06 | | | | | | | | | 47 | 10,482 | 95.85 | 1.9175E-04 | 5.196E+06 | 0.66 | 6.58E+00 |
| | 11 | 380 | | | | | 6.016E-04 | 69 | 0.1 | 7 | 8.70E-05 | 0.13 | 1.00 | 8.0 | | | | | | | |
| 49 | | | 66 | 0.00063 | 5.739E-08 | 3.786E-06 | | | | | | | | | 39 | 10,548 | 96.45 | 8.2179E-04 | 5.196E+06 | 0.60 | 2.58E+01 |
| | 10 | 314 | | | | | 6.054E-04 | 63 | 0.1 | 6 | 9.63E-05 | 0.14 | 1.00 | 7.2 | | | | | | | |
| 50 | | | 60 | 0.00063 | 5.739E-08 | 3.426E-06 | | | | | | | | | 31.7 | 10,607 | 97.00 | 3.0601E-03 | 5.196E+06 | 0.55 | 8.68E+01 |
| | 9 | 254 | | | | | 6.088E-04 | 57 | 0.1 | 6 | 1.08E-04 | 0.16 | 1.00 | 6.5 | | | | | | | |
| 51 | | | 53 | 0.00063 | 5.739E-08 | 3.065E-06 | | | | | | | | | 25.3 | 10,661 | 97.48 | 9.9248E-03 | 5.196E+06 | 0.49 | 2.52E+02 |
| | 8 | 201 | | | | | 6.118E-04 | 50 | 0.1 | 5 | 1.22E-04 | 0.18 | 1.00 | 5.7 | | | | | | | |
| 52 | | | 47 | 0.00063 | 5.739E-08 | 2.705E-06 | | | | | | | | | 19.6 | 10,708 | 97.91 | 2.8097E-02 | 5.196E+06 | 0.43 | 6.29E+02 |
| | 7 | 154 | | | | | 6.146E-04 | 44 | 0.1 | 4 | 1.40E-04 | 0.20 | 1.00 | 5.0 | | | | | | | |
| 53 | | | 41 | 0.00063 | 5.739E-08 | 2.344E-06 | | | | | | | | | 14.6 | 10,749 | 98.29 | 6.9559E-02 | 5.196E+06 | 0.37 | 1.35E+03 |
| | 6 | 113 | | | | | 6.169E-04 | 38 | 0.1 | 4 | 1.64E-04 | 0.24 | 1.00 | 4.2 | | | | | | | |
| 54 | | | 35 | 0.00063 | 5.739E-08 | 1.983E-06 | | | | | | | | | 10.4 | 10,783 | 98.60 | 1.5085E-01 | 5.196E+06 | 0.32 | 2.48E+03 |
| | 5 | 79 | | | | | 6.189E-04 | 31 | 0.1 | 3 | 1.97E-04 | 0.28 | 1.00 | 3.5 | | | | | | | |
| 55 | | | 28 | 0.00063 | 5.739E-08 | 1.623E-06 | | | | | | | | | 6.8 | 10,812 | 98.86 | 2.8693E-01 | 5.196E+06 | 0.26 | 3.85E+03 |
| | 4 | 50 | | | | | 6.205E-04 | 25 | 0.1 | 3 | 2.47E-04 | 0.36 | 1.00 | 2.8 | | | | | | | |
| 56 | | | 22 | 0.00063 | 5.739E-08 | 1.262E-06 | | | | | | | | | 4.0 | 10,834 | 99.06 | 4.7929E-01 | 5.196E+06 | 0.20 | 5.01E+03 |
| | 3 | 28 | | | | | 6.218E-04 | 19 | 0.1 | 2 | 3.30E-04 | 0.47 | 1.00 | 2.1 | | | | | | | |
| 57 | | | 16 | 0.00063 | 5.739E-08 | 9.015E-07 | | | | | | | | | 1.9 | 10,849 | 99.21 | 7.0367E-01 | 5.196E+06 | 0.14 | 5.25E+03 |
| | 2 | 13 | | | | | 6.227E-04 | 13 | 0.1 | 1 | 4.96E-04 | 0.71 | 1.00 | 1.4 | | | | | | | |
| 58 | | | 5 | 0.00063 | 5.739E-08 | 3.155E-07 | | | | | | | | | 0.5 | 10,855 | 99.26 | 9.0863E-01 | 5.196E+06 | 0.05 | 2.37E+03 |
| | 1.5 | 7 | | | | | 6.230E-04 | 9 | 0.1 | 1 | 6.61E-04 | 0.95 | 0.50 | 0.5 | | | | | | | |
| 59 | | | 7 | 0.00063 | 5.739E-08 | 4.057E-07 | | | | | | | | | 0.0 | 10,862 | 99.32 | 1.0000E+00 | 5.196E+06 | 0.06 | 3.36E+03 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Considered | pCi/min | 2.467E+04 |

| | | |
|---|---|---|
| TOTAL Rn-222 Flux Remaining in Landfill Gas at Well - Decay Not Considered | pCi/min | 5.196E+06 |

| | | |
|---|---|---|
| Reduction in Rn-222 Flux Due to Decay (%) | % | 99.53 |

**TABLE A-29**
**SUMMARY OF RADON-222 DECAY ESTIMATES - SEAWAY FUSRAP AREA A**

| TABLE | YEAR | AREA OF INFLUENCE | LANDFILL POROSITY | ESTIMATED RADON-222 REDUCTION DUE TO DECAY |
|---|---|---|---|---|
| | | ACRES | | % |
| A-20 | 2000 | 1 | 0.1 | 66.12 |
| A-23 | 2000 | 0.5 | 0.1 | 66.14 |
| A-26 | 2000 | 0.25 | 0.1 | 66.34 |
| A-11 | 2000 | 1 | 0.2 | 79.61 |
| A-14 | 2000 | 0.5 | 0.2 | 79.62 |
| A-17 | 2000 | 0.25 | 0.2 | 79.73 |
| A-2 | 2000 | 1 | 0.3 | 85.41 |
| A-5 | 2000 | 0.5 | 0.3 | 85.42 |
| A-8 | 2000 | 0.25 | 0.3 | 85.50 |
| A-21 | 2025 | 1 | 0.1 | 87.32 |
| A-24 | 2025 | 0.5 | 0.1 | 87.33 |
| A-27 | 2025 | 0.25 | 0.1 | 87.40 |
| A-12 | 2025 | 1 | 0.2 | 93.23 |
| A-15 | 2025 | 0.5 | 0.2 | 93.23 |
| A-18 | 2025 | 0.25 | 0.2 | 93.26 |
| A-3 | 2025 | 1 | 0.3 | 95.38 |
| A-6 | 2025 | 0.5 | 0.3 | 95.38 |
| A-9 | 2025 | 0.25 | 0.3 | 95.40 |
| A-28 | 2100 | 0.25 | 0.1 | 99.53 |
| A-22 | 2100 | 1 | 0.1 | 99.54 |
| A-25 | 2100 | 0.5 | 0.1 | 99.54 |
| A-19 | 2100 | 0.25 | 0.2 | 99.75 |
| A-13 | 2100 | 1 | 0.2 | 99.76 |
| A-16 | 2100 | 0.5 | 0.2 | 99.76 |
| A-10 | 2100 | 0.25 | 0.3 | 99.82 |
| A-4 | 2100 | 1 | 0.3 | 99.84 |
| A-7 | 2100 | 0.5 | 0.3 | 99.84 |

# APPENDIX B

# EXAMPLE OF Rn-222 FLUX CALCULATIONS

# APPENDIX B
# EXAMPLE OF Rn-222 FLUX CALCULATIONS

## B.1 Overview

The following example illustrates how the estimates of Rn-222 flux to landfill gas from the FUSRAP area and from the entire landfill were determined. In the example, gas generation for the year 2000 is based on the gas generation rates using AP-42 defaults. Duplicate copies of Tables 1A and 2A from the main text are included at the end of this Appendix for reference.

## B.2 Rn-222 Flux From Horizontal Surfaces

From the USACE Technical Memorandum on radiological risks (USACE 2000), it is estimated that the maximum Rn-222 flux rate in Area A of the FUSRAP area is 6.5 $pCi/m^2/s$ in the year 2000. This converts to 390 $pCi/m^2/min$, and using a conversion factor of 10.76 $ft^2/m^2$, an Rn-222 emission rate of 36 $pCi/ft^2/min$ is calculated. Using a conversion factor of 43,560 $ft^2/acre$, the Rn-222 emission rate is determined to be $1.578 \times 10^6$ pCi/min/acre in Area A. A similar calculation is conducted for Areas B and C using the Area B and C flux rate of 1.6 $pCi/m^2/s$ (USACE 2000).

In the assessment, each extraction well is assumed to service a one-acre area, and as described in Section 4.2, the MED material is assumed to be a horizontal layer 3 feet thick encompassing one acre. Landfill gas is assumed to move both above and below this horizontal layer as it moves toward the extraction well. Thus, the potential emissions of Rn-222 to the landfill gas is determined for a well in Area A by multiplying the Rn-222 flux rate of $1.578 \times 10^6$ pCi/min/acre by 2 acres to calculate an Rn-222 flux rate of $3.157 \times 10^6$ pCi/min potentially present to the landfill gas at the well if Rn-222 decay is not considered. As described in Section 4.3 and detailed in Appendix A, when Rn-222 is taken into account in the year 2000 estimates, the actual Rn-222 flux reaching the well is estimated to be 35% of flux calculated if Rn-222 is not considered. Thus, with Rn-222 considered, the estimated Rn-222 flux reaching the well from horizontal surfaces is 35% of $3.157 \times 10^6$ or $1.105 \times 10^6$ pCi/min. A similar calculation is performed for Areas B and C and the estimated Rn-222 flux reaching the well from horizontal surfaces in Areas B and C is $2.720 \times 10^5$ pCi/min. These estimates are for a one-acre area in Areas A and Areas B and C. See Table 2A.

## B.3 Rn-222 Flux Directly to Extraction Well

Since wells placed in the FUSRAP area are assumed to pass through the MED material, it was assumed that Rn-222 flux from the MED layer would be emitted directly to landfill gas in a gas well without any decay. The stone layer around each well is assumed to be 3 ft in diameter, resulting in a perimeter of 9.4 ft and a calculated total area in contact with MED of 28 $ft^2$ (9.4 ft perimeter area x 3 ft thickness in contact with the MED material). Using the 36 $pCi/ft^2/min$ Rn-222 flux rate calculated above, the Rn-222 flux directly to landfill gas in a well

is estimated to be 1.024 x $10^3$ pCi/min to Area A. (Note: the 1.024 x $10^3$ is taken from the Table 2A spreadsheet. In the table, the decimals are not shown and the actual Rn-222 flux rate is 36.23 and the contact area is 28.27, resulting in a calculated flux rate of 1.024 x $10^3$). A similar calculation was conducted for Areas B and C, resulting in an estimate of 2.522 x $10^2$ pCi/min of Rn-222 emitted directly to a well in Areas B and C. These estimates are for a one-acre area.

## B.4 Background Rn-222 Flux in Landfill Gas

As described in Section 4.4, based on NYSDEC sampling in 1996, it is assumed that a background level of 200 pCi/L of Rn-222 would be present in any landfill gas from the Niagara Landfill. This background level is added to the Rn-222 estimates attributed to MED material. In the year 2000, the estimated landfill gas flow in the FUSRAP area is estimated to be 6.7 $ft^3$/min/acre using the AP-42 defaults. The background level of 200 pCi/L of Rn-222 is equal to an Rn-222 concentration of 5,664 pCi/$ft^3$ (200 pCi/L x 28.31 L/$ft^3$). The background Rn-222 flux is calculated be 6.7 $ft^3$/min x 5,664 pCi/$ft^3$ = 3.794 x $10^4$ pCi/min for a one-acre area in the FUSRAP area.

## B.5 Total Rn-222 Flux in Landfill Gas from the FUSRAP Area

The total Rn-222 flux from a one-acre area of Area A of the FUSRAP area in the year 2000 is the total of: the Rn-222 flux from horizontal surfaces (1.105 x $10^6$ pCi/min); the Rn-222 flux directly to the well (1.024 x $10^3$ pCi/min); and the background Rn-222 flux (3.794 x $10^4$ pCi/min). This total equals 1.1438 x $10^6$ pCi/min per acre for Area A. A similar calculation performed for Areas B and C results in a total of 3.1014 x $10^5$ pCi/min per acre.

Since Area A is 9 acres in size, the total Rn-222 flux from Area A is 9 x 1.438 x $10^6$ = 1.0294 x $10^7$ pCi/min. Since Areas B and C are 3 acres in size, the total Rn-222 flux from Areas B and C is 3 x 3.1014 x $10^5$ = 9.3043 x $10^5$ pCi/min.

Adding the totals of Area A and Areas B and C results in a total estimated Rn-222 flux in landfill gas from the FUSRAP area of 1.1224 x $10^7$ pCi/min.

## B.6 Total Rn-222 Flux in Landfill Gas Conveyed to the Landfill Gas Flare

The total Rn-222 flux in landfill gas conveyed to the landfill gas flare is the total of the following:

- Rn-222 flux in landfill gas from the FUSRAP area, 1.1224 x $10^7$ pCi/min, from above
- Background Rn-222 flux in gas from the non-FUSRAP area of the northern portion of the landfill. Gas flow of 114 $ft^3$/min at a concentration of 5,664 pCi/$ft^3$ = 6.4547 x $10^6$ pCi/min.

- Background concentration of Rn-222 in landfill gas from the southern portion of the landfill. Gas flow of 677 $ft^3$/min at a concentration of 5,662 pci/$ft^3$ = $3.8332 \times 10^6$ pCi/min.

Summing these estimates results in total estimated Rn-222 flux to the landfill gas flare of $1.5703 \times 10^7$ pCi/min as shown in Table 2A.

**TABLE 1A**
**LANDFILL GAS GENERATION ESTIMATES USING USEPA's LandGEM MODEL AND AP-42 DEFAULT VALUES**
**NIARAGA LANDFILL - SEAWAY SITE**

| YEAR | REFUSE IN PLACE PER ACRE (NORTHERN PORTION OF THE LANDFILL) Mg | TOTAL GAS GENERATION PER ACRE (NORTHERN PORTION OF THE LANDFILL) ft3/min | FUSRAP AREA ACREAGE (AREAS A, B and C, COMBINED) Acre | TOTAL GAS GENERATION FUSRAP AREA ft3/min | NON FUSRAP AREA ACREAGE (NORTHERN PORTION OF THE LANDFILL) Acre | TOTAL GAS GENERATION NON FUSRAP AREA (NORTHERN PORTION OF THE LANDFILL) ft3/min | TOTAL GAS GENERATION (SOUTHERN PORTION OF THE LANDFILL - SEE TEXT) ft3/min | TOTAL GAS GENERATION NIAGARA LANDFILL ft3/min |
|---|---|---|---|---|---|---|---|---|
| 1975 | 8.00E+03 | 4.3 | 12 | 52 | 17 | 73 | | |
| 1976 | 1.60E+04 | 8.4 | 12 | 101 | 17 | 143 | | |
| 1977 | 2.40E+04 | 12.4 | 12 | 149 | 17 | 211 | | |
| 1978 | 3.20E+04 | 16.2 | 12 | 195 | 17 | 276 | | |
| 1979 | 3.20E+04 | 15.6 | 12 | 187 | 17 | 265 | | |
| 1980 | 3.20E+04 | 15.0 | 12 | 180 | 17 | 254 | | |
| 1990 | 3.20E+04 | 10.0 | 12 | 120 | 17 | 171 | | |
| 1995 | 3.20E+04 | 8.2 | 12 | 99 | 17 | 140 | | |
| 1996 | 3.20E+04 | 7.9 | 12 | 95 | 17 | 134 | 1,200 | |
| 1997 | 3.20E+04 | 7.6 | 12 | 91 | 17 | 129 | 860 | |
| 1998 | 3.20E+04 | 7.3 | 12 | 87 | 17 | 124 | 733 | |
| 1999 | 3.20E+04 | 7.0 | 12 | 84 | 17 | 119 | 704 | 907 |
| 2000 | 3.20E+04 | 6.7 | 12 | 81 | 17 | 114 | 677 | 872 |
| 2005 | 3.20E+04 | 5.5 | 12 | 66 | 17 | 94 | 554 | 714 |
| 2010 | 3.20E+04 | 4.5 | 12 | 54 | 17 | 77 | 454 | 584 |
| 2025 | 3.20E+04 | 2.5 | 12 | 30 | 17 | 42 | 249 | 321 |
| 2050 | 3.20E+04 | 0.9 | 12 | 11 | 17 | 15 | 92 | 118 |
| 2100 | 3.20E+04 | 0.1 | 12 | 1 | 17 | 2 | 12 | 16 |

**TABLE 2A**
**LANDFILL GAS RADON-222 ESTIMATES**
**LANDFILL GAS GENERATION BASED ON LandGEM MODEL AP-42 DEFAULT VALUES**
**2000**
**SEAWAY SITE**

| **RADON-222 FLUX RATES** | | | | |
|---|---|---|---|---|
| **FUSRAP AREA** | **AREA A** | | **AREA B and C** | |
| Year | 2000 | | 2000 | |
| Radon Flux | 6.5 | pCi/m2/s | 1.6 | pCi/m2/s |
| Radon Flux | 390 | pCi/m2/min | 96 | pCi/m2/min |
| Conversion | 10.76 | ft2/m2 | 10.76 | ft2/m2 |
| Radon Flux | 36 | pCi/ft2/min | 9 | pCi/ft2/min |
| Conversion | 43,560 | Ft2/acre | 43,560 | Ft2/acre |
| Radon Flux | 1.578E+06 | pCi/acre/min | 3.885E+05 | pCi/acre/min |
| **RADON FLUX FROM HORIZONTAL SURFACES** | | | | |
| Landfilled Area | 1 | Acres | 1 | Acres |
| Radon Flux to Gas from Horizontal Surface | 1.578E+06 | pCi/min | 3.885E+05 | pCi/min |
| Number of Surfaces | 2 | | 2 | |
| Total Radon Flux to Gas from Horizontal Surfaces - 1 Acre Area - Decay Not Considered | 3.157E+06 | pCi/min | 7.770E+05 | pCi/min |
| Multiplier to Account for Radon-222 Decay Prior to Gas Well | 0.35 | | 0.35 | |
| Total Rn-222 Flux Reaching Gas Well from Horizontal Surfaces, Decay Considered | 1.105E+06 | pCi/min | 2.720E+05 | pCi/min |
| **RADON FLUX DIRECTLY TO EXTRACTION WELL** | | | | |
| Well Diamater (including stone collection area) | 3 | ft | 3 | ft |
| Well Perimeter | 9.4 | ft | 9.4 | ft |
| Well Depth in Contact with MED Material | 3 | ft | 3 | ft |
| MED Contact Area per Well | 28 | ft2 | 28 | ft2 |
| Wells per Acre | 1 | | 1 | |
| Total MED Contact Area | 28 | ft2 | 28 | ft2 |
| Radon Flux Directly to Extraction Well 1 Acre Area | 1.024E+03 | pCi/min | 2.522E+02 | pCi/min |
| Total Landfil Gas Flow 1 Acre | 6.7 | ft3/min | 6.7 | ft3/min |
| Background Radon Concentration in Landfill Gas | 200 | pCi/L | 200 | pCi/L |
| Background Radon Concentration in Landfill Gas | 5,662 | pCi/ft3 | 5,662 | pCi/ft3 |
| Background Radon Flux in Landfill Gas | 3.794E+04 | pCi/min | 3.794E+04 | pCi/min |
| **Radon Flux to Landfill Gas fron FUSRAP Area - 1 Acre Area** | 1.1438E+06 | pCi/min | 3.1014E+05 | pCi/min |
| **TOTAL RADON FLUX** | **Totals** | | **Totals** | |
| FUSRAP Area Size | 9 | Acres | 3 | Acres |
| Total Radon Flux from FUSRAP Areas | 1.0294E+07 | pCi/min | 9.3043E+05 | pCi/min |
| **Total Radon Flux from the FUSRAP Area (Areas A, B and C, Combined, including Background)** | 1.1224E+07 | pCi/min | | |
| Landfill Gas Flow from Non-FUSRAP Area - Northern Portion of Landfill | 114.0 | ft3/min | | |
| Background Radon Concentration in Landfill Gas | 5,662 | pCi/ft3 | | |
| **Background Radon Flux in Gas Flow from Non-FUSRAP Area - Northern Portion of Landfill** | 6.4547E+05 | pCi/min | | |
| Landfill Gas Flow from Southern Portion of the Landfill | 677.0 | ft3/min | | |
| Background Radon Concentration in Landfill Gas | 5,662 | pCi/ft3 | | |
| **Background Radon Flux Landfill in Gas Flow from Southern Portion of Landfill** | 3.8332E+06 | pCi/min | | |
| **Total Radon Flux in Landfill Gas Conveyed to the Flare** | 1.5703E+07 | pCi/min | | |