

West Des Moines, IA

PROJECT: BV County, FY26-28 On-Call Support, IA 27225284.00      DATE: 5/13/2026

SUBJECT: Buena Vista County Sanitary Landfill - 11-SDP-01-74C - Leachate Collection System Cessation Review      TRANSMITTAL ID: 00001

PURPOSE: For your approval      VIA: Info Exchange

FROM

NAME	COMPANY	EMAIL	PHONE
Sean Marczewski West Des Moines, IA	SCS Engineers	SMarczewski@scsengineers.com	+1-515-631-6152

TO

NAME	COMPANY	EMAIL	PHONE
Mike Smith 502 East 9th Street Des Moines IA 50319-0034 United States	Iowa, State of	mike.smith@dnr.iowa.gov	515-725-8200

REMARKS: Mike -

SCS Engineers, on behalf of the Buena Vista County Solid Waste Commission, is submitting the Leachate Collection System Cessation Review, for the Buena Vista County Sanitary Landfill. If you have any questions or comments regarding this report, please contact me at the number below.

Thanks,

Sean A. Marczewski  
Senior Project Professional  
SCS Engineers  
1690 All-State Court, Suite 100  
West Des Moines, Iowa 50265  
712-661-9682 (C)  
515-631-6152 (O)  
[smarczewski@scsengineers.com](mailto:smarczewski@scsengineers.com)

Driven by **Client Success!**  
[www.scsengineers.com](http://www.scsengineers.com)

**Transmittal**

DATE: 5/13/2026  
TRANSMITTAL ID: 00001

DESCRIPTION OF CONTENTS

QTY	DATED	TITLE	NOTES
1	5/13/2026	20260513_Buena Vista County Sanitary Landfill_Leachate Collection System Cessation Review_v1.0.pdf	

COPIES:

Becky Jolly  
Lori Dicks (Buena Vista County Solid Waste Commission)  
Nathan Ohrt (SCS Engineers)  
Sean Marczewski (SCS Engineers)

May 13, 2026  
File No. 27225284.00

Mr. Mike Smith, P.E.  
Iowa Department of Natural Resources  
Land Quality Bureau  
6200 Park Avenue  
Des Moines, Iowa 50321

Re: Leachate Collection System Cessation Review  
Buena Vista County Sanitary Landfill  
Permit No. 11-SDP-01-74C

Dear Mike:

SCS Engineers, on behalf of the Buena Vista County Solid Waste Commission, has completed a review of the Leachate Collection System Cessation for the Buena Vista County Sanitary Landfill. Please find attached a copy of the Leachate Collection System Cessation Review.

Should you have any questions or need clarification, please contact Sean Marczewski at (712) 661-9682.

Sincerely,



Sean Marczewski  
Senior Project Professional  
SCS Engineers



Nathan Ohrt  
Senior Project Professional  
SCS Engineers

SAM/NPO

copy: Ms. Lori Dicks, Buena Vista County Solid Waste Commission



# Leachate Collection System Cessation Review

Buena Vista County Sanitary Landfill  
Permit No. 11-SDP-01-74C  
Storm Lake, Iowa

Prepared for:

Buena Vista County Solid Waste Commission

**SCS ENGINEERS**

27225284.00 | May 2026

1690 All-State Court, Suite 100  
West Des Moines, IA 50265  
515-631-6160

## Table of Contents

Section	Page
<b>1.0 Introduction.....</b>	<b>2</b>
1.1 Background.....	2
1.2 Reasoning for Leachate Collection .....	3
<b>2.0 Review of Leachate Collection Cessation .....</b>	<b>4</b>
2.1 Leachate Levels and Inspection Observations Since Cessation in 2019.....	4
2.2 Leachate Collection .....	4
2.3 Leachate Quality.....	6
2.4 Leachate Flow Post-Cessation.....	7
2.5 Groundwater Quality.....	7
<b>3.0 Summary and Recommendations .....</b>	<b>7</b>

### Tables

Table 1 – Leachate Disposal Volumes and Modeled Generation

### Figures

Figure 1 – Leachate Collection System

### Attachments

Attachment A – Leachate Level Graphs  
Attachment B – HELP Model Input Parameters and Results  
Attachment C – Leachate Quality Comparison  
Attachment D – 2025 Laboratory Analytical Results

## 1.0 INTRODUCTION

In correspondence dated January 24, 2024 (Doc #108896), the Iowa Department of Natural Resources (DNR) required an evaluation of the impact of shutting off the leachate collection system as part of the process to potentially allow continuing with the current cessation of leachate collection at the Buena Vista County Sanitary Landfill (Landfill). A plan and schedule for completing this evaluation were submitted in correspondence dated May 30, 2024 (Doc #110175) and approved in correspondence dated June 14, 2024 (Doc #110252).

Since approval of the plan and schedule, additional conversations with the DNR have taken place regarding the content requirements and findings necessary to evaluate, and if appropriate, justify the permanent cessation of leachate collection at a landfill in Iowa. Specific to this Landfill's evaluation, the additional conversations led to a further review of site history regarding the reason leachate collection was initiated at the Landfill and the effectiveness or impact of the collection when active. This last item was expanded to include a further review of leachate level stability in the measurement points and leachate quality using existing data in support of the permanent cessation of leachate collection at the Landfill. The findings of this review are discussed herein. A map of the leachate collection system for the Landfill is attached as **Figure 1**.

## 1.1 BACKGROUND

### Site Location

The Landfill property is depicted in **Figure 1**. The Landfill is located 5.5 miles southeast of the City of Storm Lake in the NW  $\frac{1}{4}$  of the NE  $\frac{1}{4}$  of Section 19, T90N, R36W, Buena Vista County, Iowa.

### Facility

The Landfill began operation in 1974. The original landfill consisted of three separate fill areas on the 40-acre property. In 1981, an additional 10 acres of land were purchased for a lateral expansion. Once the lateral expansion commenced, the original landfill was closed by permit in October 1987. The waste stream at the Landfill consisted mainly of municipal solid waste; however, a small percentage of construction and demolition (C&D) waste was also accepted. The expansion plan was followed until 2007, when new landfill regulations were put in place. The landfill was issued with a closure permit on July 2, 2008.

### Geology and Hydrogeology

The 2013 Annual Water Quality Report, dated January 23, 2014 (Doc #79331), prepared by I+S Group, provided the following geological description:

*The landfill is located on a terminal moraine of the Des Moines lobe of late Wisconsin glaciation. The moraine portion of this lobe consists of a heterogeneous glacial till. The glacial outwash material is well sorted and consists of well sorted clean fine to coarse sand and gravel deposits. There are two glacial till units separated by the glacial outwash. The lower till was described as unoxidized with the glacial outwash sands lying above. The glacial outwash sands are overlain with an oxidized glacial till that is approximately 30 feet thick.*

The 2013 Annual Water Quality Report, dated January 23, 2014 (Doc #79331), prepared by I+S Group, provided the following hydrogeological description:

*Based on data collected in the field, the ground water flow in the landfill area appears to be in the south-southeast direction. There is also two separate groundwater flow systems present on the site in the separate sand units. The first sand unit is located on the west side of the landfill area. This unit does contain an unconfined aquifer that is likely connected to the lower sand unit on the east side of the landfill. The second sand unit is located on the east side of the landfill in the upper sand layers. Based on the potentiometric data, it appears that the two layers converge in the southeast corner of the landfill area.*

## **1.2 REASONING FOR LEACHATE COLLECTION**

It is apparent from references to numerous correspondences, reports, etc. that are not contained in the DNR's Electronic Document Retrieval system (DocDNA) that the available early public record for Permit No. 11-SDP-01-74 is not complete. However, the available documents do provide sufficient information to derive a likely reason for the initiation of leachate collection at the Landfill. The following is a general chronological progression toward the implementation of leachate collection at the Landfill.

1. On September 30, 1986 (Doc #24984), a renewed sanitary disposal project permit to operate the Buena Vista County Sanitary Landfill was issued. There were no requirements regarding leachate measurement or collection contained in the renewed permit. The permit expiration date was September 30, 1989.
2. The September 20, 1989 Iowa Administrative Code (IAC) 103.2(12)a. states, "All existing landfills must submit a leachate control plan, as described in paragraph "b" below when any of the following occur:"

Subparagraph (1) of paragraph "a", which is the first of the conditions requiring submittal of a leachate control plan, states, "At the time of permit renewal;"

3. A number of documents outline the development and implementation of a leachate control plan at the Landfill as summarized in the list below:
  - Development of a leachate control plan for the Landfill was originally required in the permit renewal dated June 27, 1990 (Doc #24982).
  - A preliminary plan for a leachate collection system at the Landfill was prepared by Kuehl & Payer, Ltd., dated July 12, 1991 (Doc #26302).
  - The installation of leachate piezometers was reported in documentation dated December 13, 1991 (Doc #26304).
  - Amendment #2 (Doc #242924) to the permit, issued February 9, 1993, approved the Leachate Control Plan (not available on DocDNA).
  - DNR correspondence dated September 16, 1993 (Doc #26296) required a revised Leachate Control System Plan.

- Plans and specifications for the leachate collection system were submitted on August 16, 1995 (Doc #39365).
- Amendment #7 (Doc #39360) to the permit, issued January 11, 1996, approved the revised Leachate Control Systems Plan and specifications (not available on DocDNA).
- Documentation for installation of the leachate collection system and leachate storage lagoon was submitted on November 21, 1996 (Doc #39356) and approved on September 25, 1997 (Doc #39357).

As indicated above, it appears that the leachate collection system was not installed to address a specific environmental concern, such as to control leachate seeps or address groundwater contamination, but rather as part of the requirements for renewal of the sanitary disposal project permit.

## 2.0 REVIEW OF LEACHATE COLLECTION CESSATION

The review of the cessation of leachate collection at the Landfill included the following five items:

- Leachate levels and inspection observations since cessation in 2019.
- Leachate collection.
- Leachate quality.
- Leachate flow post cessation.
- Groundwater quality.

These five items are discussed individually below.

### 2.1 LEACHATE LEVELS AND INSPECTION OBSERVATIONS SINCE CESSATION IN 2019

To evaluate the stability of leachate levels in the Landfill, the liquid levels in the five leachate monitoring wells (LW-1, LW-2, LW-4, LW-5, and LW-6) were reviewed since the cessation of leachate collection in 2019. Graphs of the leachate levels measured since October 2019 are included in **Attachment A**. The graphs indicate that leachate levels have generally remained stable or exhibited a decreasing trend.

The first landfill inspection following cessation of leachate collection in 2019, as reported in the 2020 Annual Engineer Report dated April 28, 2020 (Doc #97598), prepared by Barker Lemar Engineering Consultants, reported no observed leachate seeps and no evidence of former seeps. The subsequent Annual Engineer Reports submitted in 2021, 2022, 2023, 2024, 2025, and 2026 also indicated that no leachate seeps were observed.

### 2.2 LEACHATE COLLECTION

#### HELP Modeling

Hydrologic Evaluation of Landfill Performance (HELP) modeling was completed to estimate leachate generation by the Landfill. Initial HELP model inputs were provided in the 1992 Leachate Control Plan, dated December 23, 1992 (Doc #114250), prepared by Kuehl & Payer, LTD. However,

permeability testing of the 2-foot compacted clay of the final cover began in 1996 to determine permeabilities as reported in the Closure Report dated July 27, 2009 (Doc #4577), prepared by Kuehl & Payer, LTD. A new HELP model was run to estimate the expected leachate generation rate using slope grades, layer thicknesses, and hydraulic conductivity values documented in the Closure Report.

The Eastern Fill Area was split into two sections of minimum (5%) and maximum (25%) cross slope grades. A separate HELP model was run for each area, and the combined percolation through Layer 2 (the 2-foot compacted layer of the final cover) was interpreted as the leachate generation rate.

The specifications for the final cover at the Landfill, as documented in the Closure Report dated July 27, 2009 (Doc #45777), appear to have been intended to meet the requirements of the then current version of Iowa Administrative Code (IAC) 567-103.2(13)b, which consisted of a minimum of 2 feet of compacted soil having a permeability of  $1 \times 10^{-7}$  cm/sec or less overlain by a minimum of 2 feet of uncompacted soil containing sufficient organic matter to support vegetation.

The HELP model run utilized a final cover consisting of two layers: a 24-inch uncompacted soil layer, underlain by a 24-inch compacted layer, totaling a 48-inch final cover. The 24-inch uncompacted layer was obtained from dredge spoils. As dredge spoils are likely to contain a large amount of silt, the standard HELP layer, Silty Loam (Moderate), was chosen, as its properties are likely representative of the spoils. For the 24-inch compacted layer, a range of hydraulic conductivities from  $1.5 \times 10^{-8}$  to  $6.9 \times 10^{-8}$  cm/s was reported in the Closure Report. A hydraulic conductivity of  $6.9 \times 10^{-8}$  cm/s was used and then included in the standard Barrier Soil Liner Layer properties.

The HELP model resulted in an estimated annual average precipitation percolation rate through the final cover of 0.4918 inches/year, or 23,217.7 cubic feet per year. The HELP model input parameters and results can be found in **Attachment B**.

### **Collected Leachate Volumes**

Historically, the amount of liquid collected in the leachate collection system has been greater than anticipated. The 1992 Leachate Control Plan, dated December 23, 1992 (Doc #114250), prepared by Kuehl & Payer, LTD., provided the following description of the observed elevated leachate levels and groundwater seepage in the northwest portion of the Landfill.

*Based on modeling of the present landfill conditions, it was determined that the leachate head measured in leachate monitoring wells #1 and #3 should not exist from normal precipitation. Therefore a review of the landfill site was performed and information was obtained from the landfill operator responsible for operations during the initial filling of this portion of the landfill. His comments in regard to seepage occurring from the cut slopes in the northwest corner of the landfill during preparation, along with the present surface seepage occurring along the northern property line, makes it evident that shallow groundwater is seeping into this portion of the landfill.*

Groundwater seepage into the fill was attempted to be controlled by adding a groundwater cut-off drain on the north side of the fill area. Although this drain was installed, a higher-than-anticipated amount of liquid continued to be collected. A summary of the volume of liquid hauled from the leachate storage lagoon since 2015 and the modeled average annual leachate generation of the Landfill is provided in **Table 1**.

**Table 1. Leachate Disposal Volumes and Modeled Generation**

Year	Leachate Disposal Volume (gallons)
2015	202,000
2016	500,000
2017	53,000
2018	336,000
2019	350,000
2020	279,500
2021	0
2022	0
2023	0
2024	138,600
2025	124,000
HELP Model Average Annual Generation	173,663

The HELP model estimates the average annual percolation through the final cover, which represents the Landfill's leachate generation rate rather than the volume expected to be collected by the leachate collection system. On average, the volume of leachate collected and hauled from the leachate storage lagoon is greater than the modeled annual leachate generation of 173,663 gallons. Additionally, since 2015, annual hauled volumes have frequently exceeded modeled generation by 150,000 gallons and as much as 326,337 gallons in 2016. As the Landfill's leachate system consists of three collection trenches with no drainage layer, complete capture of generated leachate is not anticipated, and another source of liquid, likely groundwater, is being collected by the system.

### **2.3 LEACHATE QUALITY**

To evaluate the quality of the leachate collected at the Landfill compared to acid phase and methanogenic phase leachate, typical leachate compositions were used as documented in Present and Long-Term Composition of MSW Landfill Leachate: A Review (Kjeldsen, et al., 2002), which provides the following description of each phase.

*Landfill leachate contains pollutants that can be categorized into four groups (dissolved organic matter, inorganic macrocomponents, heavy metals, and xenobiotic organic compounds). Existing data show high leachate concentrations of all components in the early acid phase due to strong decomposition and leaching. In the long methanogenic phase a more stable leachate, with lower concentrations and a low BOD/COD-ratio, is observed. Generally, very low concentrations of heavy metals are observed.*

The range and average constituent concentrations for the acid phase and the methanogenic phase were compared to the measured leachate constituent concentrations in the lagoon and piezometers are provided in **Attachment C**, and the laboratory analytical results for the lagoon sample collected in August 2025 are included in **Attachment D**. Generally, measured concentrations in the leachate lagoon and leachate piezometers were below or within the range of typical concentrations in the methanogenic phase. Multiple metal concentrations were not detected in the leachate lagoon

samples since 2016. Also, each volatile compound, semi-volatile compound, and chlorinated hydrocarbon insecticide analyzed were not detected in the August 2025 leachate lagoon sample. These results indicate that the liquid collected in the lagoon is generally benign and may be largely influenced by groundwater.

## **2.4 LEACHATE FLOW POST-CESSATION**

During a site visit in 2021, a small volume of liquid was observed flowing through the final manhole prior to discharge into the leachate lagoon, despite both leachate collection lines being capped immediately upstream of MH-1 and MH-2. A review of the Leachate Control System plans dated August 16, 1995 (Doc #39365) found that the southern collection header connecting the manholes was perforated and installed in a gravel bed. Although the leachate lines leading into MH-1 and MH-2 were capped, liquid may be flowing into and collected by the southern collection header. It appears that since the cessation of the collection system in 2019, the liquid collected in the leachate lagoon is likely largely composed of groundwater and not leachate generated by the Landfill based on the volumes collected and the quality of the leachate.

## **2.5 GROUNDWATER QUALITY**

The intended purpose of the groundwater sampling from monitoring wells surrounding the eastern MSWLF unit is to evaluate whether or not the cessation of leachate collection is having an adverse effect on the groundwater quality. Groundwater at the Landfill is monitored in monitoring wells MW-2, MW-8, and MW-10, and is sampled for Appendix I parameters and total suspended solids on a biennial basis. As reported in the 2025 Biennial Water Quality Report dated April 23, 2026 (Doc #116942), the trends observed during the 2025 reporting period were stable or decreasing, with each of the organic compounds showing decreasing trends. Additionally, statistically significant decreasing trends, using an  $\alpha=0.01$ , were indicated for benzene and cis-1,2-dichloroethene in monitoring well MW-10. In 2025, Appendix I volatile organic compounds were not detected in monitoring wells MW-2 or MW-8, and cis-1,2-dichloroethene was the only detection in monitoring well MW-10. Based on the predominantly steady-to-decreasing concentration trends observed, there is generally limited groundwater impact from the Landfill or leachate cessation.

## **3.0 SUMMARY AND RECOMMENDATIONS**

Based on the post-cessation observations and review of historical records, the liquid currently accumulating in the leachate storage lagoon is most likely not primarily landfill-generated leachate. Hauled volumes have frequently exceeded leachate generation modeled using the HELP model, and earlier documentation identified shallow groundwater seepage into the fill area. In addition, the southern collection header that connects MH-1 and MH-2 is perforated and installed in a gravel bed; therefore, even with the upstream leachate lines capped, groundwater and other subsurface water can be intercepted by the header and conveyed to the lagoon. Lagoon analytical results are generally consistent with dilute, methanogenic-phase characteristics, with many constituents not detected, further supporting that the collected liquid is strongly influenced by groundwater. Additionally, groundwater concentration trends indicate that cessation in 2019 has largely not had an adverse effect on groundwater quality. Collectively, these factors indicate the liquid collected in the lagoon is likely largely composed of groundwater captured by the collection header rather than leachate generated by the Landfill.

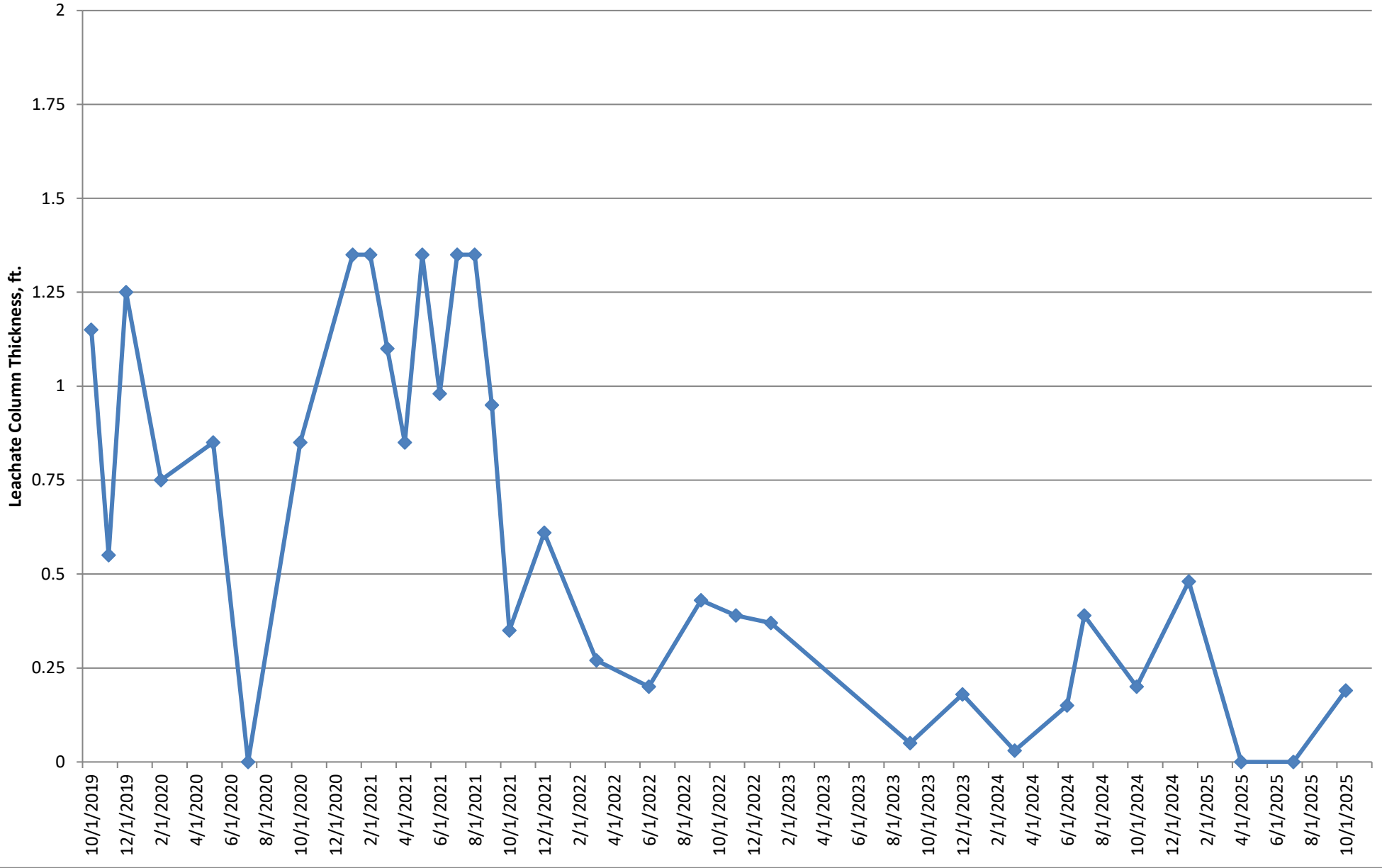
It is recommended that the complete cessation of the leachate collection system and conveyance to the leachate lagoon be approved. Upon approval, a cessation plan will be submitted.

**Figure 1**  
Leachate Collection System

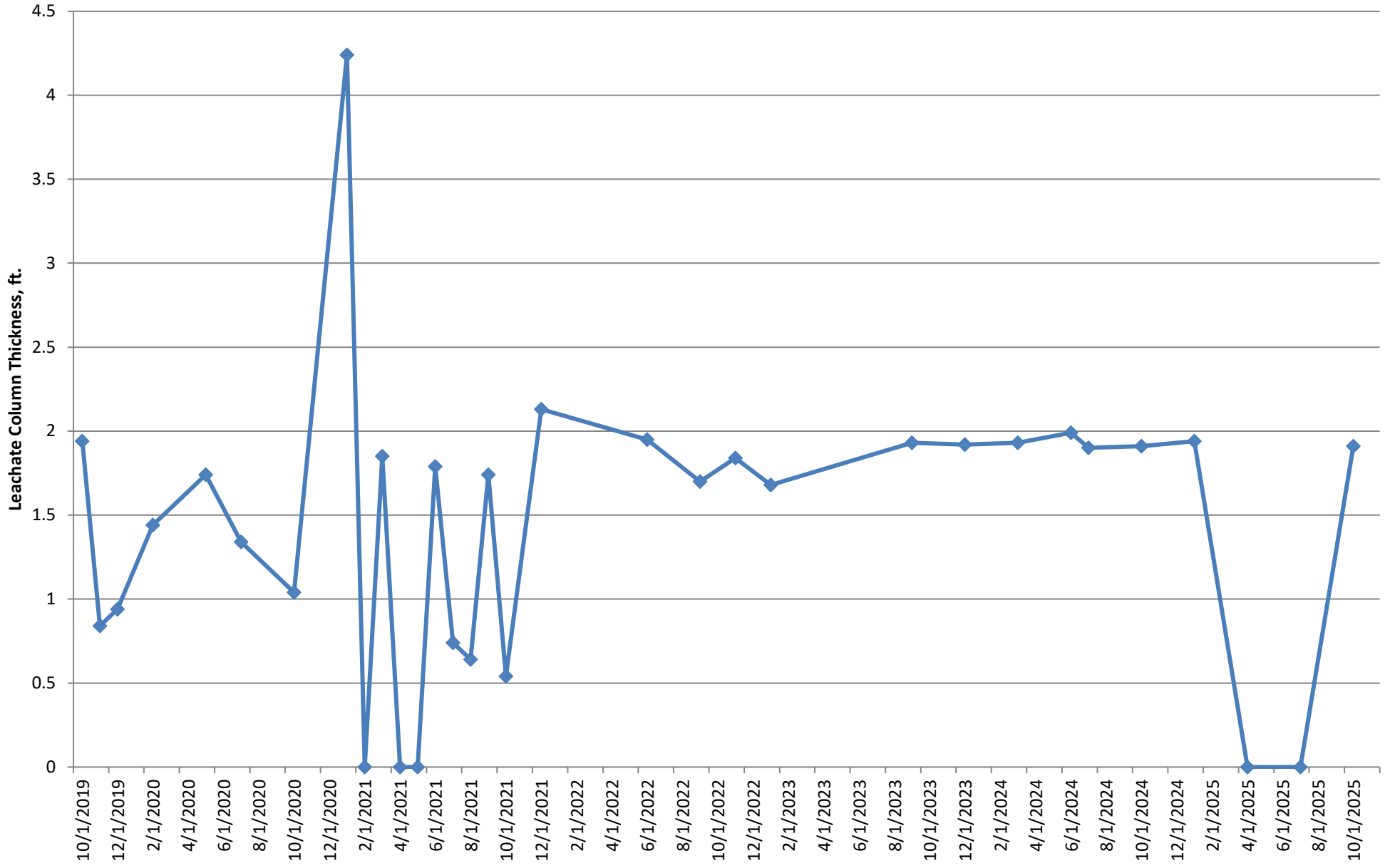


**Attachment A**  
Leachate Level Graphs

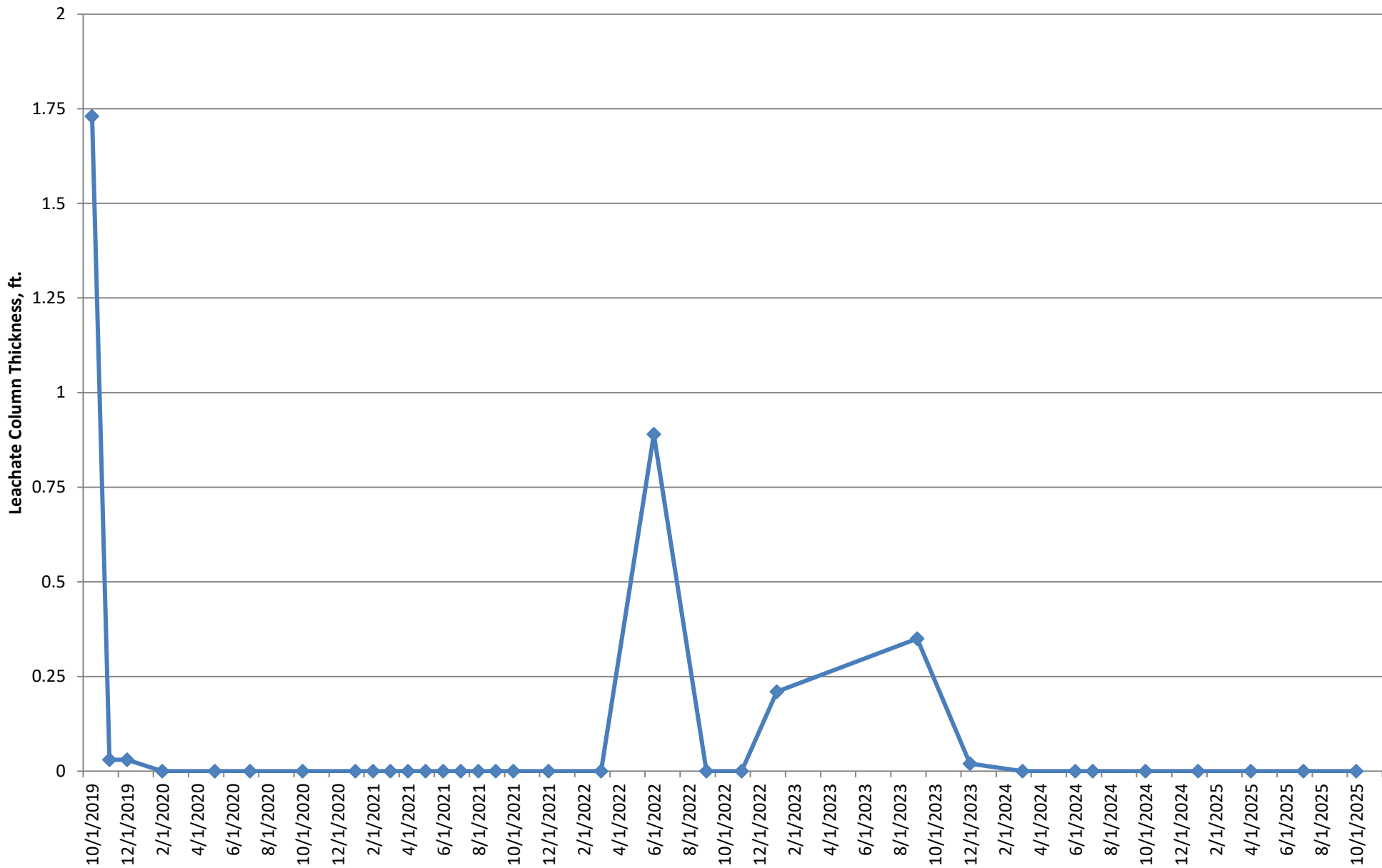
# LW-1



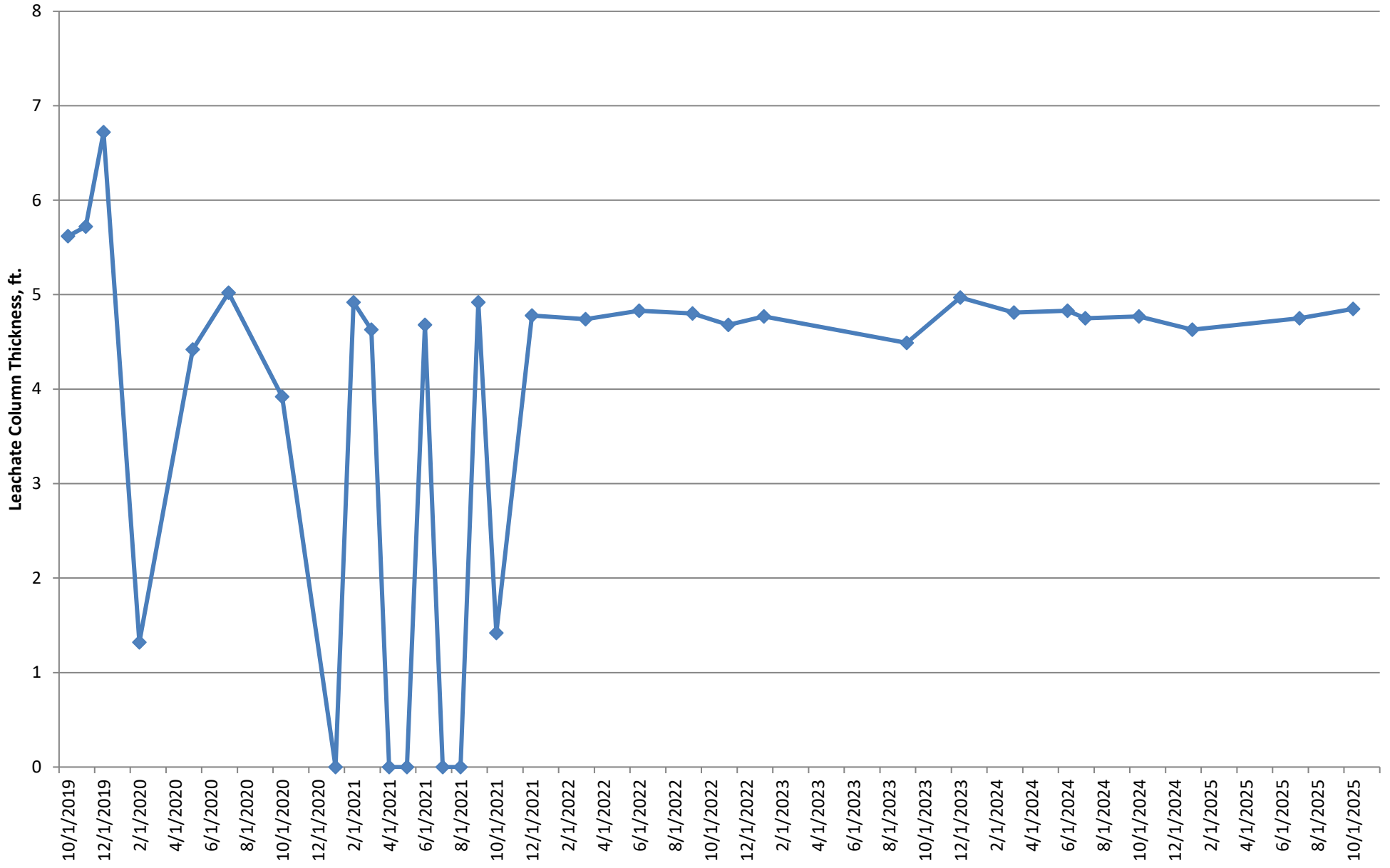
# LW-2



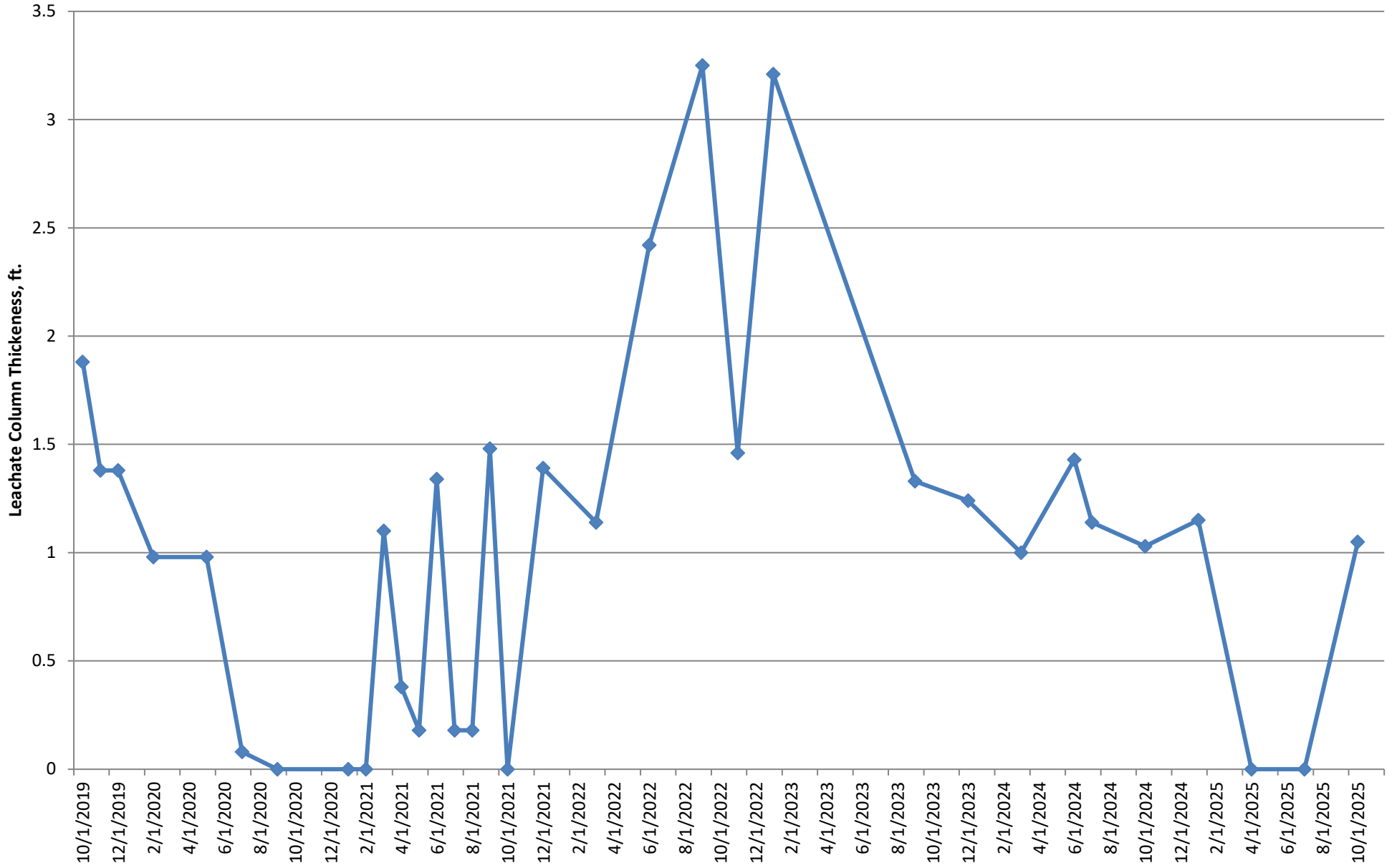
# LW-4



# LW-5



# LW-6



## Attachment B

### HELP Model Input Parameters and Results

### Help Model Input Values

Uncompacted Layer				
Soil Properties (Standard Help)	Silty Loam (Moderate)	"The third borrow source was for material from the City of Storm Lake/LPA dredge spoil site on the NE corner of Storm Lake. This material was used for the uncompacted layer with the majority placed in late 2008 and early 2009. The taking of this material increased the volume available for placement of silt spoil dredged and pumped from the lake." (Doc #45777)		
Thickness	2 Feet	Minumum Uncompacted layer depth, up to 4 feet in locations to meet slope requirments Doc 45777		
Compacted layer				
Hydraulic Conductivity	6.9x10 <sup>-8</sup> cm/s	1.5x10 <sup>-8</sup> to 6.9x10 <sup>-8</sup> cm/s Stated range for 2' compacted layer, used 6.9x10 <sup>-8</sup> for conservation, Doc 45777		
Thickness	2 Feet	Stated compacted layer depth Doc 45777		
General				
High slope area (25%)	9.10 Acres	The final cover was to slope to the north and south on a 5% grade with the perimeter side slopes being 4: 1 or flatter. Areas calculation based on most recent waste boundry. Seperated areas can be found in Appendix __		
Low slope area (5%)	3.98 Acres			
Slope length	357 Feet	1/2 distance of final cover East-West		
Evaporative Zone Depth	36 Inches	Max	the_hydrologic_evaluation_of_landfill_performance_help_4.0_manual_v2	
	22 Inches	Averae		Used
	8 Inches	Min		
Growing season	April 23rd	Storm Lake Climate, Weather By Month, Average Temperature (Iowa, United States) - Weather Spark <a href="#">_____</a>		
	October 9th			

# High Slope

---

**HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE  
HELP MODEL VERSION 4.0 BETA (2018)  
DEVELOPED BY USEPA NATIONAL RISK MANAGEMENT RESEARCH LABORATORY**

---

**Title:** Buena Vista Eastern Fill Area                      **Simulated On:** 4/29/2026 15:02

---

## Layer 1

Type 1 - Vertical Percolation Layer (Cover Soil)

SiL - Silty Loam(Moderate)  
Material Texture Number 23

Thickness	=	24 inches
Porosity	=	0.461 vol/vol
Field Capacity	=	0.36 vol/vol
Wilting Point	=	0.203 vol/vol
Initial Soil Water Content	=	0.2876 vol/vol
Effective Sat. Hyd. Conductivity	=	9.00E-06 cm/sec

## Layer 2

Type 3 - Barrier Soil Liner  
2' compacted layer

Material Texture Number 43

Thickness	=	24 inches
Porosity	=	0.427 vol/vol
Field Capacity	=	0.418 vol/vol
Wilting Point	=	0.367 vol/vol
Initial Soil Water Content	=	0.427 vol/vol
Effective Sat. Hyd. Conductivity	=	6.90E-08 cm/sec

---

**Note:** Initial moisture content of the layers and snow water were computed as nearly steady-state values by HELP.

## General Design and Evaporative Zone Data

SCS Runoff Curve Number	=	90.7
Fraction of Area Allowing Runoff	=	100 %
Area projected on a horizontal plane	=	9.1 acres
Evaporative Zone Depth	=	22 inches
Initial Water in Evaporative Zone	=	6.183 inches
Upper Limit of Evaporative Storage	=	10.142 inches
Lower Limit of Evaporative Storage	=	4.466 inches

Initial Snow Water	=	0.042028 inches
Initial Water in Layer Materials	=	17.151 inches
Total Initial Water	=	17.193 inches
Total Subsurface Inflow	=	0 inches/year

-----

Note: SCS Runoff Curve Number was calculated by HELP.

**Evapotranspiration and Weather Data**

Station Latitude	=	42.65 Degrees
Maximum Leaf Area Index	=	4.5
Start of Growing Season (Julian Date)	=	113 days
End of Growing Season (Julian Date)	=	282 days
Average Wind Speed	=	11 mph
Average 1st Quarter Relative Humidity	=	66 %
Average 2nd Quarter Relative Humidity	=	63 %
Average 3rd Quarter Relative Humidity	=	73 %
Average 4th Quarter Relative Humidity	=	70 %

-----

Note: Evapotranspiration data was obtained for Storm Lake , Iowa

**Normal Mean Monthly Precipitation (inches)**

<u>Jan/Jul</u>	<u>Feb/Aug</u>	<u>Mar/Sep</u>	<u>Apr/Oct</u>	<u>May/Nov</u>	<u>Jun/Dec</u>
0.676682	0.781376	1.938473	3.98976	3.726236	5.853793
4.395242	4.740477	4.07202	2.503443	1.672131	1.080219

-----

Note: Precipitation was simulated based on HELP V4 weather simulation for:  
Lat/Long: 42.65/-95.16

**Normal Mean Monthly Temperature (Degrees Fahrenheit)**

<u>Jan/Jul</u>	<u>Feb/Aug</u>	<u>Mar/Sep</u>	<u>Apr/Oct</u>	<u>May/Nov</u>	<u>Jun/Dec</u>
28.1	30.9	38.5	49.2	64.9	79.8
83.8	79.8	70.3	57.3	42.2	30

-----

Note: Temperature was simulated based on HELP V4 weather simulation for:  
Lat/Long: 42.65/-95.16  
Solar radiation was simulated based on HELP V4 weather simulation for:  
Lat/Long: 42.65/-95.16

353	*		0.00	0.000	0.000	0.2799	0.0000	0.0000	0.00E+00
354	*		0.00	0.000	0.000	0.2799	0.0000	0.0000	0.00E+00
355	*		0.00	0.000	0.000	0.2799	0.0000	0.0000	0.00E+00
356	*		0.00	0.000	0.000	0.2799	0.0000	0.0000	0.00E+00
357	*	*	0.11	0.000	0.037	0.2799	0.0000	0.0000	0.00E+00
358		*	0.23	0.119	0.028	0.2872	0.0000	0.0000	0.00E+00
359	*	*	0.27	0.000	0.027	0.2872	0.0000	0.0000	0.00E+00
360	*	*	0.28	0.000	0.012	0.2872	0.0000	0.0000	0.00E+00
361		*	0.00	0.004	0.034	0.2891	0.0000	0.0000	0.00E+00
362		*	0.00	0.251	0.014	0.2970	0.0000	0.0000	0.00E+00
363	*	*	0.00	0.000	0.000	0.2970	0.0000	0.0000	0.00E+00
364		*	0.00	0.000	0.000	0.2970	0.0000	0.0000	0.00E+00
365	*	*	0.07	0.000	0.030	0.2970	0.0000	0.0000	0.00E+00

\* = Frozen (air or soil)

Annual Totals for Year 1			
	inches	cubic feet	percent
Precipitation	31.31	1,034,188.1	100.00
Runoff	3.273	108,127.6	10.46
Evapotranspiration	27.407	905,319.5	87.54
Percolation/Leakage through Layer 2	0.275685	9,106.7	0.88
Average Head on Top of Layer 2	0.3718	---	---
Change in Water Storage	0.3522	11,634.2	1.12
Soil Water at Start of Year	17.1508	566,541.9	54.78
Soil Water at End of Year	17.5030	578,176.1	55.91
Snow Water at Start of Year	0.0420	1,388.3	0.13
Snow Water at End of Year	0.0420	1,388.3	0.13
Annual Water Budget Balance	0.0000	0.0000	0.00

353	*	0.00	0.000	0.033	0.3863	12.6600	0.0000	3.59E-03
354		0.00	0.000	0.048	0.3840	12.6393	0.0000	3.58E-03
355	*	0.00	0.000	0.000	0.3838	12.6964	0.0000	3.59E-03
356	*	0.00	0.000	0.000	0.3836	12.6609	0.0000	3.59E-03
357	*	0.00	0.000	0.000	0.3835	12.6254	0.0000	3.58E-03
358	*	0.00	0.000	0.000	0.3833	12.5899	0.0000	3.58E-03
359		0.00	0.000	0.033	0.3817	12.6267	0.0000	3.58E-03
360		0.00	0.000	0.054	0.3790	12.6659	0.0000	3.59E-03
361		0.00	0.000	0.040	0.3770	12.5439	0.0000	3.57E-03
362	*	0.00	0.000	0.000	0.3769	12.4642	0.0000	3.57E-03
363	*	0.00	0.000	0.000	0.3767	12.4289	0.0000	3.56E-03
364		0.00	0.000	0.035	0.3750	12.3706	0.0000	3.56E-03
365	*	0.00	0.000	0.000	0.3748	12.2970	0.0000	3.55E-03

\* = Frozen (air or soil)

Annual Totals for Year 2			
	inches	cubic feet	percent
Precipitation	37.26	1,230,676.6	100.00
Runoff	6.355	209,923.4	17.06
Evapotranspiration	28.437	939,346.0	76.33
Percolation/Leakage through Layer 2	0.593914	19,618.8	1.59
Average Head on Top of Layer 2	2.9315	---	---
Change in Water Storage	1.8705	61,788.4	5.02
Soil Water at Start of Year	17.5030	578,176.1	46.98
Soil Water at End of Year	19.4155	641,352.9	52.11
Snow Water at Start of Year	0.0420	1,388.3	0.11
Snow Water at End of Year	0.0000	0.0000	0.00
Annual Water Budget Balance	0.0000	0.0000	0.00

353	*	*	0.08	0.000	0.010	0.2792	0.0000	0.0000	0.00E+00
354	*	*	0.00	0.000	0.005	0.2792	0.0000	0.0000	0.00E+00
355	*	*	0.00	0.000	0.008	0.2792	0.0000	0.0000	0.00E+00
356	*	*	0.00	0.000	0.016	0.2792	0.0000	0.0000	0.00E+00
357	*	*	0.00	0.000	0.009	0.2792	0.0000	0.0000	0.00E+00
358	*	*	0.00	0.000	0.011	0.2792	0.0000	0.0000	0.00E+00
359	*	*	0.07	0.000	0.013	0.2792	0.0000	0.0000	0.00E+00
360	*	*	0.00	0.000	0.012	0.2792	0.0000	0.0000	0.00E+00
361	*	*	0.00	0.000	0.011	0.2792	0.0000	0.0000	0.00E+00
362	*	*	0.00	0.000	0.012	0.2792	0.0000	0.0000	0.00E+00
363	*	*	0.00	0.000	0.019	0.2792	0.0000	0.0000	0.00E+00
364		*	0.00	0.000	0.031	0.2792	0.0000	0.0000	0.00E+00
365	*	*	0.01	0.000	0.010	0.2792	0.0000	0.0000	0.00E+00

\* = Frozen (air or soil)

Annual Totals for Year 3			
	inches	cubic feet	percent
Precipitation	32.35	1,068,660.8	100.00
Runoff	3.136	103,601.4	9.69
Evapotranspiration	30.844	1,018,858.9	95.34
Percolation/Leakage through Layer 2	0.677444	22,378.0	2.09
Average Head on Top of Layer 2	2.1368	---	---
Change in Water Storage	-2.3061	-76,177.5	-7.13
Soil Water at Start of Year	19.4155	641,352.9	60.01
Soil Water at End of Year	17.1094	565,175.4	52.89
Snow Water at Start of Year	0.0000	0.0000	0.00
Snow Water at End of Year	0.0000	0.0000	0.00
Annual Water Budget Balance	0.0000	0.0000	0.00

353	*	0.00	0.000	0.000	0.3062	0.0000	0.0000	0.00E+00
354	*	0.00	0.000	0.000	0.3062	0.0000	0.0000	0.00E+00
355	*	0.00	0.000	0.000	0.3062	0.0000	0.0000	0.00E+00
356		0.43	0.004	0.049	0.3232	0.0000	0.0000	0.00E+00
357		0.14	0.000	0.053	0.3273	0.0000	0.0000	0.00E+00
358		0.14	0.000	0.050	0.3316	0.0000	0.0000	0.00E+00
359		0.00	0.000	0.038	0.3299	0.0000	0.0000	0.00E+00
360		0.09	0.000	0.069	0.3309	0.0000	0.0000	0.00E+00
361		0.00	0.000	0.050	0.3287	0.0000	0.0000	0.00E+00
362		0.00	0.000	0.043	0.3267	0.0000	0.0000	0.00E+00
363		0.00	0.000	0.050	0.3244	0.0000	0.0000	0.00E+00
364		0.00	0.000	0.049	0.3222	0.0000	0.0000	0.00E+00
365		0.00	0.000	0.045	0.3202	0.0000	0.0000	0.00E+00

\* = Frozen (air or soil)

Annual Totals for Year 4			
	inches	cubic feet	percent
Precipitation	33.68	1,112,651.7	100.00
Runoff	4.082	134,849.0	12.12
Evapotranspiration	28.647	946,284.1	85.05
Percolation/Leakage through Layer 2	0.052329	1,728.6	0.16
Average Head on Top of Layer 2	0.0090	---	---
Change in Water Storage	0.9018	29,790.1	2.68
Soil Water at Start of Year	17.1094	565,175.4	50.80
Soil Water at End of Year	18.0112	594,965.4	53.47
Snow Water at Start of Year	0.0000	0.0000	0.00
Snow Water at End of Year	0.0000	0.0000	0.00
Annual Water Budget Balance	0.0000	0.0000	0.00

353	*		0.00	0.000	0.000	0.3302	0.0000	0.0000	0.00E+00
354		*	0.00	0.000	0.000	0.3302	0.0000	0.0000	0.00E+00
355	*	*	0.00	0.000	0.000	0.3302	0.0000	0.0000	0.00E+00
356		*	0.00	0.000	0.000	0.3302	0.0000	0.0000	0.00E+00
357	*	*	0.00	0.000	0.000	0.3302	0.0000	0.0000	0.00E+00
358	*	*	0.00	0.000	0.000	0.3302	0.0000	0.0000	0.00E+00
359	*	*	0.00	0.000	0.000	0.3302	0.0000	0.0000	0.00E+00
360	*	*	0.00	0.000	0.000	0.3302	0.0000	0.0000	0.00E+00
361	*	*	0.00	0.000	0.000	0.3302	0.0000	0.0000	0.00E+00
362	*	*	0.00	0.000	0.000	0.3302	0.0000	0.0000	0.00E+00
363	*	*	0.04	0.000	0.018	0.3302	0.0000	0.0000	0.00E+00
364	*	*	0.37	0.000	0.007	0.3302	0.0000	0.0000	0.00E+00
365	*	*	0.11	0.000	0.010	0.3302	0.0000	0.0000	0.00E+00

\* = Frozen (air or soil)

Annual Totals for Year 5			
	inches	cubic feet	percent
Precipitation	36.55	1,207,204.2	100.00
Runoff	5.363	177,167.6	14.68
Evapotranspiration	30.115	994,779.2	82.40
Percolation/Leakage through Layer 2	0.359111	11,862.5	0.98
Average Head on Top of Layer 2	0.6191	---	---
Change in Water Storage	0.7082	23,395.0	1.94
Soil Water at Start of Year	18.0112	594,965.4	49.28
Soil Water at End of Year	18.2334	602,304.7	49.89
Snow Water at Start of Year	0.0000	0.0000	0.00
Snow Water at End of Year	0.4861	16,055.7	1.33
Annual Water Budget Balance	0.0000	0.0000	0.00

353	*	*	0.00	0.000	0.000	0.3732	1.8393	0.0000	2.53E-03
354		*	0.00	0.000	0.000	0.3732	1.8143	0.0000	2.52E-03
355		*	0.00	0.000	0.000	0.3732	1.7893	0.0000	2.52E-03
356		*	0.00	0.000	0.000	0.3732	1.7644	0.0000	2.52E-03
357	*	*	0.14	0.000	0.028	0.3732	1.7394	0.0000	2.52E-03
358	*	*	0.37	0.000	0.023	0.3732	1.7145	0.0000	2.51E-03
359		*	0.00	0.234	0.000	0.3834	1.6896	0.0000	2.51E-03
360	*	*	0.00	0.000	0.000	0.3834	1.6648	0.0000	2.51E-03
361	*	*	0.00	0.000	0.000	0.3834	1.6399	0.0000	2.51E-03
362	*	*	0.00	0.000	0.000	0.3834	1.6151	0.0000	2.50E-03
363	*	*	0.00	0.000	0.000	0.3834	1.5903	0.0000	2.50E-03
364	*	*	0.00	0.000	0.000	0.3834	1.5655	0.0000	2.50E-03
365	*	*	0.01	0.000	0.011	0.3834	1.5408	0.0000	2.50E-03

\* = Frozen (air or soil)

Annual Totals for Year 6			
	inches	cubic feet	percent
Precipitation	33.87	1,118,814.2	100.00
Runoff	3.060	101,094.1	9.04
Evapotranspiration	29.417	971,720.7	86.85
Percolation/Leakage through Layer 2	0.552360	18,246.1	1.63
Average Head on Top of Layer 2	1.3060	---	---
Change in Water Storage	0.8402	27,753.4	2.48
Soil Water at Start of Year	18.2334	602,304.7	53.83
Soil Water at End of Year	19.5578	646,053.1	57.74
Snow Water at Start of Year	0.4861	16,055.7	1.44
Snow Water at End of Year	0.0018	60.7	0.01
Annual Water Budget Balance	0.0000	0.0000	0.00

353	*	*	0.05	0.000	0.006	0.3936	1.5899	0.0000	2.50E-03
354	*	*	0.00	0.000	0.015	0.3936	1.5652	0.0000	2.50E-03
355	*	*	0.00	0.000	0.018	0.3936	1.5404	0.0000	2.50E-03
356	*	*	0.00	0.000	0.014	0.3936	1.5157	0.0000	2.50E-03
357	*	*	0.00	0.000	0.000	0.3936	1.4910	0.0000	2.49E-03
358	*	*	0.00	0.000	0.000	0.3936	1.4663	0.0000	2.49E-03
359	*	*	0.00	0.000	0.000	0.3936	1.4417	0.0000	2.49E-03
360	*	*	0.00	0.000	0.000	0.3936	1.4171	0.0000	2.49E-03
361	*	*	0.03	0.000	0.033	0.3936	1.3925	0.0000	2.48E-03
362	*	*	0.00	0.000	0.002	0.3936	1.3679	0.0000	2.48E-03
363	*	*	0.07	0.000	0.021	0.3936	1.3433	0.0000	2.48E-03
364	*	*	0.00	0.000	0.010	0.3936	1.3188	0.0000	2.48E-03
365	*	*	0.00	0.000	0.036	0.3936	1.2943	0.0000	2.47E-03

\* = Frozen (air or soil)

Annual Totals for Year 7			
	inches	cubic feet	percent
Precipitation	35.97	1,188,095.5	100.00
Runoff	5.890	194,572.1	16.38
Evapotranspiration	29.035	959,118.6	80.73
Percolation/Leakage through Layer 2	0.839704	27,737.9	2.33
Average Head on Top of Layer 2	3.6174	---	---
Change in Water Storage	0.2018	6,666.9	0.56
Soil Water at Start of Year	19.5578	646,053.1	54.38
Soil Water at End of Year	19.7560	652,600.3	54.93
Snow Water at Start of Year	0.0018	60.7	0.01
Snow Water at End of Year	0.0055	180.4	0.02
Annual Water Budget Balance	0.0000	0.0000	0.00

353			0.00	0.000	0.030	0.2379	0.0000	0.0000	0.00E+00
354			0.14	0.000	0.046	0.2420	0.0000	0.0000	0.00E+00
355	*		0.00	0.000	0.000	0.2420	0.0000	0.0000	0.00E+00
356	*		0.00	0.000	0.016	0.2413	0.0000	0.0000	0.00E+00
357	*		0.30	0.000	0.014	0.2422	0.0000	0.0000	0.00E+00
358	*		0.13	0.000	0.007	0.2431	0.0000	0.0000	0.00E+00
359	*		0.00	0.000	0.009	0.2440	0.0000	0.0000	0.00E+00
360	*		0.00	0.000	0.018	0.2449	0.0000	0.0000	0.00E+00
361	*		0.00	0.000	0.019	0.2458	0.0000	0.0000	0.00E+00
362	*		0.00	0.000	0.017	0.2467	0.0000	0.0000	0.00E+00
363			0.00	0.000	0.020	0.2562	0.0000	0.0000	0.00E+00
364	*	*	0.15	0.000	0.034	0.2562	0.0000	0.0000	0.00E+00
365	*	*	0.01	0.000	0.013	0.2562	0.0000	0.0000	0.00E+00

\* = Frozen (air or soil)

Annual Totals for Year 8			
	inches	cubic feet	percent
Precipitation	28.69	947,768.7	100.00
Runoff	3.051	100,788.9	10.63
Evapotranspiration	27.997	924,816.7	97.58
Percolation/Leakage through Layer 2	0.705328	23,299.1	2.46
Average Head on Top of Layer 2	2.9948	---	---
Change in Water Storage	-3.0617	-101,136.0	-10.67
Soil Water at Start of Year	19.7560	652,600.3	68.86
Soil Water at End of Year	16.6043	548,489.1	57.87
Snow Water at Start of Year	0.0055	180.4	0.02
Snow Water at End of Year	0.0955	3,155.6	0.33
Annual Water Budget Balance	0.0000	0.0000	0.00

353		0.00	0.000	0.008	0.2413	0.0000	0.0000	0.00E+00
354		0.00	0.000	0.016	0.2406	0.0000	0.0000	0.00E+00
355		0.09	0.000	0.050	0.2422	0.0000	0.0000	0.00E+00
356		0.00	0.000	0.028	0.2409	0.0000	0.0000	0.00E+00
357		0.00	0.000	0.019	0.2401	0.0000	0.0000	0.00E+00
358		0.00	0.000	0.007	0.2398	0.0000	0.0000	0.00E+00
359		0.00	0.000	0.007	0.2395	0.0000	0.0000	0.00E+00
360	*	0.11	0.000	0.035	0.2404	0.0000	0.0000	0.00E+00
361		0.00	0.000	0.040	0.2408	0.0000	0.0000	0.00E+00
362	*	0.05	0.000	0.015	0.2417	0.0000	0.0000	0.00E+00
363		0.01	0.000	0.039	0.2414	0.0000	0.0000	0.00E+00
364	*	0.00	0.000	0.000	0.2414	0.0000	0.0000	0.00E+00
365	*	0.05	0.000	0.016	0.2423	0.0000	0.0000	0.00E+00

\* = Frozen (air or soil)

Annual Totals for Year 9			
	inches	cubic feet	percent
Precipitation	31.72	1,047,865.7	100.00
Runoff	4.004	132,269.3	12.62
Evapotranspiration	27.817	918,883.8	87.69
Percolation/Leakage through Layer 2	0.289224	9,553.9	0.91
Average Head on Top of Layer 2	0.3747	---	---
Change in Water Storage	-0.3887	-12,841.3	-1.23
Soil Water at Start of Year	16.6043	548,489.1	52.34
Soil Water at End of Year	16.2980	538,371.9	51.38
Snow Water at Start of Year	0.0955	3,155.6	0.30
Snow Water at End of Year	0.0131	431.5	0.04
Annual Water Budget Balance	0.0000	0.0000	0.00

353		*	0.02	0.046	0.051	0.3611	0.0000	0.0000	0.00E+00
354	*	*	0.03	0.000	0.027	0.3611	0.0000	0.0000	0.00E+00
355		*	0.09	0.017	0.031	0.3628	0.0000	0.0000	0.00E+00
356		*	0.00	0.000	0.000	0.3628	0.0000	0.0000	0.00E+00
357		*	0.00	0.000	0.003	0.3628	0.0000	0.0000	0.00E+00
358	*	*	0.00	0.000	0.000	0.3628	0.0000	0.0000	0.00E+00
359		*	0.00	0.000	0.000	0.3628	0.0000	0.0000	0.00E+00
360	*	*	0.00	0.000	0.000	0.3628	0.0000	0.0000	0.00E+00
361	*	*	0.00	0.000	0.000	0.3628	0.0000	0.0000	0.00E+00
362	*	*	0.00	0.000	0.000	0.3628	0.0000	0.0000	0.00E+00
363		*	0.00	0.000	0.000	0.3628	0.0000	0.0000	0.00E+00
364		*	0.00	0.000	0.000	0.3628	0.0000	0.0000	0.00E+00
365		*	0.00	0.000	0.000	0.3628	0.0000	0.0000	0.00E+00

\* = Frozen (air or soil)

Annual Totals for Year 10			
	inches	cubic feet	percent
Precipitation	35.43	1,170,417.4	100.00
Runoff	5.565	183,835.4	15.71
Evapotranspiration	26.747	883,546.2	75.49
Percolation/Leakage through Layer 2	0.480102	15,859.2	1.36
Average Head on Top of Layer 2	1.4755	---	---
Change in Water Storage	2.6391	87,176.5	7.45
Soil Water at Start of Year	16.2980	538,371.9	46.00
Soil Water at End of Year	18.9501	625,980.0	53.48
Snow Water at Start of Year	0.0131	431.5	0.04
Snow Water at End of Year	0.0000	0.0000	0.00
Annual Water Budget Balance	0.0000	0.0000	0.00

353	*	*	0.00	0.000	0.035	0.4550	1.5614	0.0000	2.50E-03
354	*	*	0.00	0.000	0.013	0.4550	1.5366	0.0000	2.50E-03
355		*	0.00	0.063	0.032	0.4551	1.5119	0.0000	2.49E-03
356	*	*	0.05	0.000	0.036	0.4551	1.4872	0.0000	2.49E-03
357		*	0.00	0.000	0.013	0.4551	1.4625	0.0000	2.49E-03
358	*	*	0.00	0.000	0.000	0.4551	1.4379	0.0000	2.49E-03
359	*	*	0.11	0.000	0.020	0.4551	1.4133	0.0000	2.49E-03
360	*	*	0.06	0.000	0.030	0.4551	1.3887	0.0000	2.48E-03
361		*	0.00	0.061	0.029	0.4554	1.3641	0.0000	2.48E-03
362		*	0.00	0.000	0.025	0.4554	1.3396	0.0000	2.48E-03
363		*	0.02	0.002	0.008	0.4557	1.3150	0.0000	2.48E-03
364		*	0.00	0.000	0.000	0.4557	1.2905	0.0000	2.47E-03
365		*	0.00	0.000	0.000	0.4557	1.2660	0.0000	2.47E-03

\* = Frozen (air or soil)

Annual Totals for Year 11			
	inches	cubic feet	percent
Precipitation	50.12	1,655,699.9	100.00
Runoff	9.870	326,048.7	19.69
Evapotranspiration	37.067	1,224,420.0	73.95
Percolation/Leakage through Layer 2	1.015194	33,534.9	2.03
Average Head on Top of Layer 2	7.2027	---	---
Change in Water Storage	2.1704	71,696.2	4.33
Soil Water at Start of Year	18.9501	625,980.0	37.81
Soil Water at End of Year	21.1206	697,676.1	42.14
Snow Water at Start of Year	0.0000	0.0000	0.00
Snow Water at End of Year	0.0000	0.0000	0.00
Annual Water Budget Balance	0.0000	0.0000	0.00

353	*		0.00	0.000	0.000	0.4014	1.8385	0.0000	2.53E-03
354	*		0.00	0.000	0.000	0.4014	1.8135	0.0000	2.52E-03
355	*		0.00	0.000	0.000	0.4014	1.7885	0.0000	2.52E-03
356	*		0.06	0.003	0.014	0.4033	1.7635	0.0000	2.52E-03
357	*		0.00	0.000	0.004	0.4033	1.7386	0.0000	2.52E-03
358	*		0.00	0.000	0.000	0.4033	1.7137	0.0000	2.51E-03
359	*		0.00	0.000	0.000	0.4033	1.6888	0.0000	2.51E-03
360	*		0.00	0.000	0.000	0.4033	1.6639	0.0000	2.51E-03
361	*	*	0.00	0.000	0.000	0.4033	1.6391	0.0000	2.51E-03
362	*	*	0.02	0.000	0.018	0.4033	1.6143	0.0000	2.50E-03
363	*	*	0.00	0.000	0.000	0.4033	1.5895	0.0000	2.50E-03
364	*	*	0.00	0.000	0.000	0.4033	1.5647	0.0000	2.50E-03
365	*	*	0.02	0.000	0.023	0.4033	1.5400	0.0000	2.50E-03

\* = Frozen (air or soil)

Annual Totals for Year 12			
	inches	cubic feet	percent
Precipitation	36.58	1,208,202.6	100.00
Runoff	4.796	158,440.0	13.11
Evapotranspiration	32.073	1,059,477.4	87.69
Percolation/Leakage through Layer 2	0.833752	27,541.3	2.28
Average Head on Top of Layer 2	4.0623	---	---
Change in Water Storage	-1.1278	-37,256.1	-3.08
Soil Water at Start of Year	21.1206	697,676.1	57.74
Soil Water at End of Year	19.9927	660,420.0	54.66
Snow Water at Start of Year	0.0000	0.0000	0.00
Snow Water at End of Year	0.0000	0.0000	0.00
Annual Water Budget Balance	0.0000	0.0000	0.00

353		0.00	0.000	0.032	0.2835	0.0002	0.0000	6.96E-05
354		0.00	0.000	0.025	0.2823	0.0000	0.0000	0.00E+00
355		0.00	0.000	0.021	0.2814	0.0000	0.0000	0.00E+00
356		0.00	0.000	0.013	0.2808	0.0000	0.0000	0.00E+00
357	*	0.04	0.000	0.032	0.2811	0.0000	0.0000	0.00E+00
358	*	0.05	0.000	0.012	0.2820	0.0000	0.0000	0.00E+00
359		0.02	0.000	0.046	0.2816	0.0000	0.0000	0.00E+00
360	*	0.18	0.000	0.035	0.2825	0.0000	0.0000	0.00E+00
361	*	0.05	0.000	0.027	0.2834	0.0000	0.0000	0.00E+00
362	*	0.00	0.000	0.022	0.2843	0.0000	0.0000	0.00E+00
363	*	0.00	0.000	0.010	0.2852	0.0000	0.0000	0.00E+00
364	*	0.00	0.000	0.035	0.2859	0.0000	0.0000	0.00E+00
365		0.00	0.000	0.019	0.2850	0.0000	0.0000	0.00E+00

\* = Frozen (air or soil)

Annual Totals for Year 13			
	inches	cubic feet	percent
Precipitation	37.55	1,240,307.1	100.00
Runoff	3.564	117,733.0	9.49
Evapotranspiration	35.873	1,184,989.2	95.54
Percolation/Leakage through Layer 2	0.864788	28,566.6	2.30
Average Head on Top of Layer 2	4.9393	---	---
Change in Water Storage	-2.7543	-90,981.6	-7.34
Soil Water at Start of Year	19.9927	660,420.0	53.25
Soil Water at End of Year	17.2385	569,438.4	45.91
Snow Water at Start of Year	0.0000	0.0000	0.00
Snow Water at End of Year	0.0000	0.0000	0.00
Annual Water Budget Balance	0.0000	0.0000	0.00

353		0.00	0.000	0.067	0.3624	5.6829	0.0000	2.90E-03
354		0.19	0.000	0.072	0.3679	5.6240	0.0000	2.90E-03
355		0.00	0.000	0.046	0.3657	5.5787	0.0000	2.89E-03
356	*	0.02	0.000	0.019	0.3655	5.5451	0.0000	2.89E-03
357	*	0.07	0.000	0.010	0.3663	5.5312	0.0000	2.89E-03
358	*	0.00	0.000	0.012	0.3671	5.5224	0.0000	2.89E-03
359	*	0.00	0.000	0.008	0.3669	5.5524	0.0000	2.89E-03
360	*	0.00	0.000	0.000	0.3668	5.5644	0.0000	2.89E-03
361	*	0.00	0.000	0.024	0.3656	5.5738	0.0000	2.89E-03
362		0.00	0.000	0.046	0.3634	5.5793	0.0000	2.89E-03
363		0.00	0.000	0.067	0.3602	5.5891	0.0000	2.89E-03
364		0.00	0.000	0.080	0.3564	5.5975	0.0000	2.89E-03
365		0.00	0.000	0.121	0.3508	5.5740	0.0000	2.89E-03

\* = Frozen (air or soil)

Annual Totals for Year 14			
	inches	cubic feet	percent
Precipitation	33.35	1,101,689.6	100.00
Runoff	2.869	94,781.0	8.60
Evapotranspiration	28.694	947,863.4	86.04
Percolation/Leakage through Layer 2	0.138358	4,570.4	0.41
Average Head on Top of Layer 2	0.5141	---	---
Change in Water Storage	1.6491	54,474.9	4.94
Soil Water at Start of Year	17.2385	569,438.4	51.69
Soil Water at End of Year	18.8876	623,913.2	56.63
Snow Water at Start of Year	0.0000	0.0000	0.00
Snow Water at End of Year	0.0000	0.0000	0.00
Annual Water Budget Balance	0.0000	0.0000	0.00

353	*		0.01	0.000	0.011	0.3597	8.8599	0.0000	3.21E-03
354	*		0.43	0.000	0.016	0.3604	8.8281	0.0000	3.21E-03
355	*		0.04	0.000	0.006	0.3612	8.7963	0.0000	3.21E-03
356	*		0.00	0.000	0.003	0.3619	8.7646	0.0000	3.20E-03
357	*		0.00	0.000	0.010	0.3627	8.7329	0.0000	3.20E-03
358	*	*	0.00	0.000	0.000	0.3627	3.6675	0.0000	2.71E-03
359		*	0.00	0.122	0.000	0.3738	1.9636	0.0000	2.54E-03
360	*	*	0.00	0.000	0.000	0.3738	1.9385	0.0000	2.54E-03
361		*	0.00	0.000	0.000	0.3738	1.9133	0.0000	2.53E-03
362		*	0.00	0.000	0.000	0.3738	1.8883	0.0000	2.53E-03
363		*	0.00	0.000	0.000	0.3738	1.8632	0.0000	2.53E-03
364	*	*	0.03	0.000	0.032	0.3738	1.8382	0.0000	2.53E-03
365	*	*	0.00	0.000	0.000	0.3738	1.8132	0.0000	2.52E-03

\* = Frozen (air or soil)

Annual Totals for Year 15			
	inches	cubic feet	percent
Precipitation	32.93	1,087,918.6	100.00
Runoff	4.419	145,970.8	13.42
Evapotranspiration	27.322	902,521.1	82.96
Percolation/Leakage through Layer 2	0.708921	23,417.8	2.15
Average Head on Top of Layer 2	1.7757	---	---
Change in Water Storage	0.4846	16,008.9	1.47
Soil Water at Start of Year	18.8876	623,913.2	57.35
Soil Water at End of Year	19.3722	639,922.1	58.82
Snow Water at Start of Year	0.0000	0.0000	0.00
Snow Water at End of Year	0.0000	0.0000	0.00
Annual Water Budget Balance	0.0000	0.0000	0.00

353	*		0.02	0.000	0.008	0.3840	1.1238	0.0000	2.46E-03
354	*		0.00	0.000	0.000	0.3840	1.0995	0.0000	2.45E-03
355	*	*	0.00	0.000	0.000	0.3840	1.0752	0.0000	2.45E-03
356	*	*	0.01	0.000	0.015	0.3840	1.0509	0.0000	2.45E-03
357		*	0.00	0.000	0.000	0.3840	1.0267	0.0000	2.45E-03
358		*	0.00	0.000	0.000	0.3840	1.0025	0.0000	2.45E-03
359		*	0.00	0.000	0.000	0.3840	0.9783	0.0000	2.44E-03
360		*	0.26	0.141	0.008	0.3892	0.9541	0.0000	2.44E-03
361		*	0.00	0.000	0.000	0.3892	0.9299	0.0000	2.44E-03
362		*	0.00	0.000	0.000	0.3892	0.9058	0.0000	2.44E-03
363		*	0.00	0.000	0.000	0.3892	0.8817	0.0000	2.43E-03
364		*	0.00	0.000	0.000	0.3892	0.8576	0.0000	2.43E-03
365		*	0.00	0.000	0.000	0.3892	0.8336	0.0000	2.43E-03

\* = Frozen (air or soil)

Annual Totals for Year 16			
	inches	cubic feet	percent
Precipitation	37.12	1,226,183.2	100.00
Runoff	6.394	211,223.9	17.23
Evapotranspiration	29.700	981,093.9	80.01
Percolation/Leakage through Layer 2	0.787226	26,004.4	2.12
Average Head on Top of Layer 2	2.0098	---	---
Change in Water Storage	0.2380	7,860.9	0.64
Soil Water at Start of Year	19.3722	639,922.1	52.19
Soil Water at End of Year	19.6102	647,783.1	52.83
Snow Water at Start of Year	0.0000	0.0000	0.00
Snow Water at End of Year	0.0000	0.0000	0.00
Annual Water Budget Balance	0.0000	0.0000	0.00

353			0.09	0.000	0.060	0.2876	0.0000	0.0000	0.00E+00
354			0.00	0.000	0.052	0.2854	0.0000	0.0000	0.00E+00
355			0.00	0.000	0.043	0.2834	0.0020	0.0000	8.19E-04
356	*		0.00	0.000	0.000	0.2834	0.0000	0.0000	0.00E+00
357	*		0.00	0.000	0.002	0.2834	0.0000	0.0000	0.00E+00
358	*		0.24	0.000	0.003	0.2843	0.0000	0.0000	0.00E+00
359	*		0.00	0.000	0.010	0.2852	0.0000	0.0000	0.00E+00
360	*	*	0.00	0.000	0.012	0.2852	0.0000	0.0000	0.00E+00
361	*	*	0.00	0.000	0.013	0.2852	0.0000	0.0000	0.00E+00
362	*	*	0.02	0.000	0.014	0.2852	0.0000	0.0000	0.00E+00
363		*	0.00	0.000	0.036	0.2852	0.0000	0.0000	0.00E+00
364		*	0.00	0.003	0.051	0.2887	0.0000	0.0000	0.00E+00
365	*	*	0.00	0.000	0.000	0.2887	0.0000	0.0000	0.00E+00

\* = Frozen (air or soil)

Annual Totals for Year 17			
	inches	cubic feet	percent
Precipitation	45.74	1,510,886.0	100.00
Runoff	8.802	290,771.7	19.25
Evapotranspiration	38.526	1,272,624.6	84.23
Percolation/Leakage through Layer 2	0.700428	23,137.2	1.53
Average Head on Top of Layer 2	2.6985	---	---
Change in Water Storage	-2.2901	-75,647.5	-5.01
Soil Water at Start of Year	19.6102	647,783.1	42.87
Soil Water at End of Year	17.3201	572,135.6	37.87
Snow Water at Start of Year	0.0000	0.0000	0.00
Snow Water at End of Year	0.0000	0.0000	0.00
Annual Water Budget Balance	0.0000	0.0000	0.00

353		0.00	0.000	0.061	0.3053	0.0007	0.0000	2.76E-04
354		0.00	0.000	0.089	0.3012	0.0000	0.0000	0.00E+00
355		0.08	0.000	0.088	0.3009	0.0000	0.0000	0.00E+00
356		0.02	0.000	0.068	0.2986	0.0010	0.0000	3.86E-04
357		0.02	0.000	0.058	0.2968	0.0000	0.0000	0.00E+00
358		0.17	0.000	0.052	0.3020	0.0000	0.0000	0.00E+00
359		0.00	0.000	0.043	0.3000	0.0009	0.0000	3.48E-04
360		0.02	0.000	0.044	0.2990	0.0007	0.0000	2.75E-04
361		0.14	0.000	0.041	0.3035	0.0000	0.0000	0.00E+00
362		0.29	0.000	0.039	0.3148	0.0000	0.0000	0.00E+00
363		0.00	0.000	0.061	0.3120	0.0000	0.0000	0.00E+00
364	*	0.00	0.000	0.000	0.3120	0.0000	0.0000	0.00E+00
365	*	0.00	0.000	0.033	0.3106	0.0000	0.0000	0.00E+00

\* = Frozen (air or soil)

Annual Totals for Year 18			
	inches	cubic feet	percent
Precipitation	36.18	1,195,055.0	100.00
Runoff	6.892	227,668.4	19.05
Evapotranspiration	28.439	939,430.2	78.61
Percolation/Leakage through Layer 2	0.366201	12,096.7	1.01
Average Head on Top of Layer 2	0.5292	---	---
Change in Water Storage	0.4801	15,859.7	1.33
Soil Water at Start of Year	17.3201	572,135.6	47.88
Soil Water at End of Year	17.8002	587,995.3	49.20
Snow Water at Start of Year	0.0000	0.0000	0.00
Snow Water at End of Year	0.0000	0.0000	0.00
Annual Water Budget Balance	0.0000	0.0000	0.00

353	*	0.04	0.000	0.021	0.3082	0.0000	0.0000	0.00E+00
354	*	0.00	0.000	0.003	0.3082	0.0000	0.0000	0.00E+00
355	*	0.00	0.000	0.000	0.3082	0.0000	0.0000	0.00E+00
356		0.00	0.000	0.039	0.3064	0.0000	0.0000	0.00E+00
357		0.00	0.000	0.031	0.3050	0.0003	0.0000	1.27E-04
358	*	0.00	0.000	0.024	0.3039	0.0000	0.0000	0.00E+00
359		0.00	0.000	0.025	0.3028	0.0002	0.0000	7.41E-05
360	*	0.00	0.000	0.000	0.3028	0.0000	0.0000	0.00E+00
361		0.00	0.000	0.027	0.3015	0.0000	0.0000	0.00E+00
362	*	0.03	0.000	0.018	0.3019	0.0000	0.0000	0.00E+00
363	*	0.00	0.000	0.000	0.3019	0.0000	0.0000	0.00E+00
364	*	0.08	0.000	0.008	0.3028	0.0000	0.0000	0.00E+00
365	*	0.13	0.000	0.000	0.3037	0.0000	0.0000	0.00E+00

\* = Frozen (air or soil)

Annual Totals for Year 19			
	inches	cubic feet	percent
Precipitation	29.68	980,435.7	100.00
Runoff	1.955	64,569.9	6.59
Evapotranspiration	27.690	914,667.6	93.29
Percolation/Leakage through Layer 2	0.019872	656.4	0.07
Average Head on Top of Layer 2	0.0004	---	---
Change in Water Storage	0.0164	541.7	0.06
Soil Water at Start of Year	17.8002	587,995.3	59.97
Soil Water at End of Year	17.6486	582,986.8	59.46
Snow Water at Start of Year	0.0000	0.0000	0.00
Snow Water at End of Year	0.1680	5,550.2	0.57
Annual Water Budget Balance	0.0000	0.0000	0.00

353	*	*	0.01	0.000	0.009	0.2951	0.0000	0.0000	0.00E+00
354	*	*	0.01	0.000	0.013	0.2951	0.0000	0.0000	0.00E+00
355		*	0.00	0.000	0.004	0.2952	0.0000	0.0000	0.00E+00
356		*	0.02	0.000	0.012	0.2953	0.0000	0.0000	0.00E+00
357		*	0.01	0.000	0.007	0.2954	0.0000	0.0000	0.00E+00
358		*	0.00	0.000	0.000	0.2954	0.0000	0.0000	0.00E+00
359	*	*	0.00	0.000	0.000	0.2954	0.0000	0.0000	0.00E+00
360	*	*	0.00	0.000	0.000	0.2954	0.0000	0.0000	0.00E+00
361	*	*	0.00	0.000	0.000	0.2954	0.0000	0.0000	0.00E+00
362	*	*	0.00	0.000	0.000	0.2954	0.0000	0.0000	0.00E+00
363		*	0.00	0.000	0.000	0.2954	0.0000	0.0000	0.00E+00
364		*	0.00	0.000	0.000	0.2954	0.0000	0.0000	0.00E+00
365	*	*	0.00	0.000	0.000	0.2954	0.0000	0.0000	0.00E+00

\* = Frozen (air or soil)

Annual Totals for Year 20			
	inches	cubic feet	percent
Precipitation	36.55	1,207,258.2	100.00
Runoff	6.285	207,603.9	17.20
Evapotranspiration	30.280	1,000,235.7	82.85
Percolation/Leakage through Layer 2	0.333119	11,003.9	0.91
Average Head on Top of Layer 2	0.5261	---	---
Change in Water Storage	-0.3507	-11,585.4	-0.96
Soil Water at Start of Year	17.6486	582,986.8	48.29
Soil Water at End of Year	17.4659	576,951.6	47.79
Snow Water at Start of Year	0.1680	5,550.2	0.46
Snow Water at End of Year	0.0000	0.0000	0.00
Annual Water Budget Balance	0.0000	0.0000	0.00

353		*	0.00	0.000	0.047	0.2388	0.0000	0.0000	0.00E+00
354		*	0.00	0.000	0.000	0.2388	0.0000	0.0000	0.00E+00
355		*	0.00	0.000	0.000	0.2388	0.0000	0.0000	0.00E+00
356		*	0.00	0.000	0.000	0.2388	0.0000	0.0000	0.00E+00
357		*	0.00	0.000	0.000	0.2388	0.0000	0.0000	0.00E+00
358	*	*	0.00	0.000	0.000	0.2388	0.0000	0.0000	0.00E+00
359	*	*	0.00	0.000	0.000	0.2388	0.0000	0.0000	0.00E+00
360		*	0.00	0.000	0.000	0.2388	0.0000	0.0000	0.00E+00
361		*	0.00	0.000	0.000	0.2388	0.0000	0.0000	0.00E+00
362		*	0.00	0.000	0.000	0.2388	0.0000	0.0000	0.00E+00
363		*	0.00	0.000	0.000	0.2388	0.0000	0.0000	0.00E+00
364		*	0.00	0.000	0.000	0.2388	0.0000	0.0000	0.00E+00
365	*	*	0.18	0.000	0.025	0.2388	0.0000	0.0000	0.00E+00

\* = Frozen (air or soil)

Annual Totals for Year 21			
	inches	cubic feet	percent
Precipitation	23.64	780,896.9	100.00
Runoff	2.623	86,635.2	11.09
Evapotranspiration	21.696	716,689.4	91.78
Percolation/Leakage through Layer 2	0.415005	13,708.8	1.76
Average Head on Top of Layer 2	1.2034	---	---
Change in Water Storage	-1.0940	-36,136.5	-4.63
Soil Water at Start of Year	17.4659	576,951.6	73.88
Soil Water at End of Year	16.2218	535,854.6	68.62
Snow Water at Start of Year	0.0000	0.0000	0.00
Snow Water at End of Year	0.1502	4,960.5	0.64
Annual Water Budget Balance	0.0000	0.0000	0.00

353	*		0.00	0.000	0.000	0.3254	0.0000	0.0000	0.00E+00
354	*	*	0.00	0.000	0.000	0.3254	0.0000	0.0000	0.00E+00
355	*	*	0.13	0.000	0.033	0.3254	0.0000	0.0000	0.00E+00
356		*	0.00	0.003	0.053	0.3274	0.0000	0.0000	0.00E+00
357	*	*	0.00	0.000	0.000	0.3274	0.0000	0.0000	0.00E+00
358		*	0.00	0.000	0.000	0.3274	0.0000	0.0000	0.00E+00
359		*	0.00	0.000	0.000	0.3274	0.0000	0.0000	0.00E+00
360		*	0.00	0.000	0.000	0.3274	0.0000	0.0000	0.00E+00
361		*	0.00	0.000	0.000	0.3274	0.0000	0.0000	0.00E+00
362		*	0.12	0.009	0.037	0.3308	0.0000	0.0000	0.00E+00
363		*	0.11	0.008	0.036	0.3339	0.0000	0.0000	0.00E+00
364		*	0.00	0.000	0.000	0.3339	0.0000	0.0000	0.00E+00
365	*	*	0.00	0.000	0.000	0.3339	0.0000	0.0000	0.00E+00

\* = Frozen (air or soil)

Annual Totals for Year 22			
	inches	cubic feet	percent
Precipitation	31.65	1,045,493.9	100.00
Runoff	6.662	220,075.5	21.05
Evapotranspiration	23.046	761,293.1	72.82
Percolation/Leakage through Layer 2	0.000542	17.9	0.00
Average Head on Top of Layer 2	0.0000	---	---
Change in Water Storage	1.9407	64,107.4	6.13
Soil Water at Start of Year	16.2218	535,854.6	51.25
Soil Water at End of Year	18.3127	604,922.5	57.86
Snow Water at Start of Year	0.1502	4,960.5	0.47
Snow Water at End of Year	0.0000	0.0000	0.00
Annual Water Budget Balance	0.0000	0.0000	0.00

353	*	*	0.00	0.000	0.000	0.3518	0.0000	0.0000	0.00E+00
354		*	0.00	0.000	0.000	0.3518	0.0000	0.0000	0.00E+00
355		*	0.00	0.000	0.000	0.3518	0.0000	0.0000	0.00E+00
356		*	0.31	0.113	0.019	0.3600	0.0000	0.0000	0.00E+00
357	*	*	0.07	0.000	0.035	0.3600	0.0000	0.0000	0.00E+00
358		*	0.01	0.000	0.044	0.3600	0.0000	0.0000	0.00E+00
359		*	0.00	0.000	0.000	0.3600	0.0000	0.0000	0.00E+00
360	*	*	0.00	0.000	0.001	0.3600	0.0000	0.0000	0.00E+00
361	*	*	0.03	0.000	0.011	0.3600	0.0000	0.0000	0.00E+00
362	*	*	0.00	0.000	0.014	0.3600	0.0000	0.0000	0.00E+00
363	*	*	0.00	0.000	0.005	0.3600	0.0000	0.0000	0.00E+00
364	*	*	0.00	0.000	0.000	0.3600	0.0000	0.0000	0.00E+00
365		*	0.01	0.000	0.007	0.3601	0.0000	0.0000	0.00E+00

\* = Frozen (air or soil)

Annual Totals for Year 23			
	inches	cubic feet	percent
Precipitation	38.77	1,280,694.0	100.00
Runoff	7.059	233,169.1	18.21
Evapotranspiration	30.686	1,013,640.5	79.15
Percolation/Leakage through Layer 2	0.448548	14,816.9	1.16
Average Head on Top of Layer 2	1.6182	---	---
Change in Water Storage	0.5772	19,067.6	1.49
Soil Water at Start of Year	18.3127	604,922.5	47.23
Soil Water at End of Year	18.8899	623,990.1	48.72
Snow Water at Start of Year	0.0000	0.0000	0.00
Snow Water at End of Year	0.0000	0.0000	0.00
Annual Water Budget Balance	0.0000	0.0000	0.00

353	*	*	0.14	0.000	0.027	0.2866	0.0000	0.0000	0.00E+00
354	*	*	0.00	0.000	0.029	0.2866	0.0000	0.0000	0.00E+00
355	*	*	0.00	0.000	0.020	0.2866	0.0000	0.0000	0.00E+00
356		*	0.01	0.005	0.031	0.2911	0.0000	0.0000	0.00E+00
357	*	*	0.00	0.000	0.000	0.2911	0.0000	0.0000	0.00E+00
358	*	*	0.00	0.000	0.005	0.2911	0.0000	0.0000	0.00E+00
359	*	*	0.00	0.000	0.000	0.2911	0.0000	0.0000	0.00E+00
360	*	*	0.00	0.000	0.000	0.2911	0.0000	0.0000	0.00E+00
361		*	0.00	0.000	0.000	0.2911	0.0000	0.0000	0.00E+00
362		*	0.00	0.000	0.000	0.2911	0.0000	0.0000	0.00E+00
363		*	0.00	0.000	0.000	0.2911	0.0000	0.0000	0.00E+00
364		*	0.11	0.002	0.022	0.2951	0.0000	0.0000	0.00E+00
365		*	0.10	0.001	0.022	0.2985	0.0000	0.0000	0.00E+00

\* = Frozen (air or soil)

Annual Totals for Year 24			
	inches	cubic feet	percent
Precipitation	28.87	953,610.0	100.00
Runoff	3.055	100,913.5	10.58
Evapotranspiration	26.696	881,833.5	92.47
Percolation/Leakage through Layer 2	0.473642	15,645.8	1.64
Average Head on Top of Layer 2	1.3252	---	---
Change in Water Storage	-1.3557	-44,782.9	-4.70
Soil Water at Start of Year	18.8899	623,990.1	65.43
Soil Water at End of Year	17.5342	579,207.3	60.74
Snow Water at Start of Year	0.0000	0.0000	0.00
Snow Water at End of Year	0.0000	0.0000	0.00
Annual Water Budget Balance	0.0000	0.0000	0.00

353		0.00	0.000	0.014	0.2472	0.0000	0.0000	0.00E+00
354	*	0.36	0.000	0.035	0.2481	0.0000	0.0000	0.00E+00
355		0.32	0.003	0.000	0.2760	0.0000	0.0000	0.00E+00
356		0.00	0.000	0.019	0.2752	0.0000	0.0000	0.00E+00
357		0.15	0.000	0.052	0.2797	0.0000	0.0000	0.00E+00
358		0.00	0.000	0.020	0.2788	0.0000	0.0000	0.00E+00
359	*	0.01	0.000	0.006	0.2788	0.0000	0.0000	0.00E+00
360	*	0.00	0.000	0.011	0.2783	0.0000	0.0000	0.00E+00
361		0.00	0.000	0.023	0.2773	0.0000	0.0000	0.00E+00
362	*	0.00	0.000	0.000	0.2773	0.0000	0.0000	0.00E+00
363	*	0.00	0.000	0.000	0.2773	0.0000	0.0000	0.00E+00
364	*	0.00	0.000	0.000	0.2773	0.0000	0.0000	0.00E+00
365	*	0.01	0.000	0.010	0.2773	0.0000	0.0000	0.00E+00

\* = Frozen (air or soil)

Annual Totals for Year 25			
	inches	cubic feet	percent
Precipitation	37.50	1,238,884.0	100.00
Runoff	6.335	209,247.9	16.89
Evapotranspiration	31.349	1,035,540.4	83.59
Percolation/Leakage through Layer 2	0.286659	9,469.2	0.76
Average Head on Top of Layer 2	0.3160	---	---
Change in Water Storage	-0.4654	-15,373.5	-1.24
Soil Water at Start of Year	17.5342	579,207.3	46.75
Soil Water at End of Year	17.0688	563,833.7	45.51
Snow Water at Start of Year	0.0000	0.0000	0.00
Snow Water at End of Year	0.0000	0.0000	0.00
Annual Water Budget Balance	0.0000	0.0000	0.00

353	*		0.00	0.000	0.000	0.2752	0.0000	0.0000	0.00E+00
354	*		0.18	0.000	0.014	0.2761	0.0000	0.0000	0.00E+00
355	*		0.00	0.000	0.015	0.2770	0.0000	0.0000	0.00E+00
356	*		0.00	0.000	0.014	0.2778	0.0000	0.0000	0.00E+00
357	*		0.00	0.000	0.006	0.2787	0.0000	0.0000	0.00E+00
358	*		0.00	0.000	0.003	0.2796	0.0000	0.0000	0.00E+00
359	*	*	0.06	0.000	0.003	0.2796	0.0000	0.0000	0.00E+00
360	*	*	0.01	0.000	0.000	0.2796	0.0000	0.0000	0.00E+00
361	*	*	0.00	0.000	0.018	0.2796	0.0000	0.0000	0.00E+00
362	*	*	0.16	0.000	0.009	0.2796	0.0000	0.0000	0.00E+00
363	*	*	0.00	0.000	0.021	0.2796	0.0000	0.0000	0.00E+00
364	*	*	0.00	0.000	0.031	0.2796	0.0000	0.0000	0.00E+00
365		*	0.00	0.012	0.022	0.2848	0.0000	0.0000	0.00E+00

\* = Frozen (air or soil)

Annual Totals for Year 26			
	inches	cubic feet	percent
Precipitation	32.72	1,080,710.6	100.00
Runoff	4.875	161,042.2	14.90
Evapotranspiration	27.621	912,392.9	84.43
Percolation/Leakage through Layer 2	0.013696	452.4	0.04
Average Head on Top of Layer 2	0.0001	---	---
Change in Water Storage	0.2066	6,823.1	0.63
Soil Water at Start of Year	17.0688	563,833.7	52.17
Soil Water at End of Year	17.2337	569,280.1	52.68
Snow Water at Start of Year	0.0000	0.0000	0.00
Snow Water at End of Year	0.0417	1,376.7	0.13
Annual Water Budget Balance	0.0000	0.0000	0.00

353		0.00	0.000	0.058	0.3516	0.0000	0.0000	0.00E+00
354		0.00	0.000	0.056	0.3491	0.0000	0.0000	0.00E+00
355	*	0.00	0.000	0.026	0.3479	0.0000	0.0000	0.00E+00
356	*	0.09	0.000	0.019	0.3487	0.0000	0.0000	0.00E+00
357		0.16	0.000	0.019	0.3575	0.0000	0.0000	0.00E+00
358		0.01	0.000	0.041	0.3561	0.0018	0.0000	5.87E-04
359	*	0.00	0.000	0.000	0.3553	0.0818	0.0000	2.36E-03
360	*	0.13	0.000	0.019	0.3556	0.2128	0.0000	2.37E-03
361		0.00	0.000	0.038	0.3572	0.3483	0.0000	2.38E-03
362	*	0.01	0.000	0.010	0.3563	0.5170	0.0000	2.40E-03
363	*	0.00	0.000	0.000	0.3554	0.6740	0.0000	2.41E-03
364	*	0.00	0.000	0.000	0.3546	0.8425	0.0000	2.43E-03
365	*	0.00	0.000	0.026	0.3528	0.9721	0.0000	2.44E-03

\* = Frozen (air or soil)

Annual Totals for Year 27			
	inches	cubic feet	percent
Precipitation	41.91	1,384,276.4	100.00
Runoff	5.269	174,046.5	12.57
Evapotranspiration	34.632	1,143,997.0	82.64
Percolation/Leakage through Layer 2	0.444263	14,675.4	1.06
Average Head on Top of Layer 2	2.0799	---	---
Change in Water Storage	1.5608	51,557.5	3.72
Soil Water at Start of Year	17.2337	569,280.1	41.12
Soil Water at End of Year	18.8361	622,214.4	44.95
Snow Water at Start of Year	0.0417	1,376.7	0.10
Snow Water at End of Year	0.0000	0.0000	0.00
Annual Water Budget Balance	0.0000	0.0000	0.00

353	*	*	0.42	0.000	0.023	0.3482	0.0000	0.0000	0.00E+00
354	*	*	0.00	0.000	0.030	0.3482	0.0000	0.0000	0.00E+00
355	*	*	0.00	0.000	0.026	0.3482	0.0000	0.0000	0.00E+00
356	*	*	0.00	0.000	0.011	0.3482	0.0000	0.0000	0.00E+00
357	*	*	0.00	0.000	0.005	0.3482	0.0000	0.0000	0.00E+00
358	*	*	0.00	0.000	0.003	0.3482	0.0000	0.0000	0.00E+00
359	*	*	0.00	0.000	0.002	0.3482	0.0000	0.0000	0.00E+00
360	*	*	0.00	0.000	0.004	0.3482	0.0000	0.0000	0.00E+00
361	*	*	0.06	0.000	0.000	0.3482	0.0000	0.0000	0.00E+00
362		*	0.03	0.029	0.000	0.3521	0.0000	0.0000	0.00E+00
363	*	*	0.00	0.000	0.033	0.3521	0.0000	0.0000	0.00E+00
364	*	*	0.00	0.000	0.012	0.3521	0.0000	0.0000	0.00E+00
365		*	0.00	0.000	0.036	0.3521	0.0000	0.0000	0.00E+00

\* = Frozen (air or soil)

Annual Totals for Year 28			
	inches	cubic feet	percent
Precipitation	40.16	1,326,682.5	100.00
Runoff	8.645	285,576.3	21.53
Evapotranspiration	30.534	1,008,620.0	76.03
Percolation/Leakage through Layer 2	0.707632	23,375.2	1.76
Average Head on Top of Layer 2	2.7482	---	---
Change in Water Storage	0.2758	9,111.0	0.69
Soil Water at Start of Year	18.8361	622,214.4	46.90
Soil Water at End of Year	18.7146	618,199.8	46.60
Snow Water at Start of Year	0.0000	0.0000	0.00
Snow Water at End of Year	0.3973	13,125.6	0.99
Annual Water Budget Balance	0.0000	0.0000	0.00

353	*		0.09	0.000	0.010	0.3891	4.8635	0.0000	2.82E-03
354	*		0.00	0.000	0.005	0.3898	5.2561	0.0000	2.86E-03
355	*	*	0.00	0.000	0.026	0.3898	2.8480	0.0000	2.63E-03
356	*	*	0.00	0.000	0.014	0.3898	1.9644	0.0000	2.54E-03
357		*	0.00	0.000	0.000	0.3898	1.9392	0.0000	2.54E-03
358		*	0.00	0.000	0.000	0.3898	1.9141	0.0000	2.53E-03
359		*	0.00	0.000	0.000	0.3898	1.8891	0.0000	2.53E-03
360		*	0.00	0.000	0.000	0.3898	1.8640	0.0000	2.53E-03
361		*	0.00	0.000	0.000	0.3898	1.8390	0.0000	2.53E-03
362		*	0.00	0.000	0.000	0.3898	1.8140	0.0000	2.52E-03
363	*	*	0.00	0.000	0.000	0.3898	1.7890	0.0000	2.52E-03
364	*	*	0.00	0.000	0.000	0.3898	1.7640	0.0000	2.52E-03
365	*	*	0.00	0.000	0.000	0.3898	1.7391	0.0000	2.52E-03

\* = Frozen (air or soil)

Annual Totals for Year 29			
	inches	cubic feet	percent
Precipitation	36.05	1,190,807.8	100.00
Runoff	3.493	115,393.0	9.69
Evapotranspiration	31.512	1,040,931.3	87.41
Percolation/Leakage through Layer 2	0.437502	14,452.0	1.21
Average Head on Top of Layer 2	0.4554	---	---
Change in Water Storage	0.6064	20,031.5	1.68
Soil Water at Start of Year	18.7146	618,199.8	51.91
Soil Water at End of Year	19.7184	651,356.9	54.70
Snow Water at Start of Year	0.3973	13,125.6	1.10
Snow Water at End of Year	0.0000	0.0000	0.00
Annual Water Budget Balance	0.0000	0.0000	0.00

353		0.00	0.000	0.088	0.2498	0.0000	0.0000	0.00E+00
354		0.00	0.000	0.043	0.2479	0.0000	0.0000	0.00E+00
355	*	0.00	0.000	0.000	0.2479	0.0000	0.0000	0.00E+00
356		0.00	0.000	0.045	0.2458	0.0000	0.0000	0.00E+00
357	*	0.00	0.000	0.004	0.2458	0.0000	0.0000	0.00E+00
358		0.09	0.000	0.053	0.2474	0.0000	0.0000	0.00E+00
359		0.15	0.000	0.061	0.2515	0.0000	0.0000	0.00E+00
360	*	0.13	0.000	0.038	0.2524	0.0000	0.0000	0.00E+00
361		0.22	0.000	0.007	0.2655	0.0000	0.0000	0.00E+00
362		0.00	0.000	0.047	0.2633	0.0000	0.0000	0.00E+00
363	*	0.00	0.000	0.000	0.2633	0.0000	0.0000	0.00E+00
364	*	0.00	0.000	0.000	0.2633	0.0000	0.0000	0.00E+00
365	*	0.00	0.000	0.000	0.2633	0.0000	0.0000	0.00E+00

\* = Frozen (air or soil)

Annual Totals for Year 30			
	inches	cubic feet	percent
Precipitation	39.01	1,288,594.3	100.00
Runoff	10.314	340,705.1	26.44
Evapotranspiration	30.933	1,021,812.0	79.30
Percolation/Leakage through Layer 2	0.719187	23,756.9	1.84
Average Head on Top of Layer 2	2.5466	---	---
Change in Water Storage	-2.9570	-97,679.7	-7.58
Soil Water at Start of Year	19.7184	651,356.9	50.55
Soil Water at End of Year	16.7613	553,677.2	42.97
Snow Water at Start of Year	0.0000	0.0000	0.00
Snow Water at End of Year	0.0000	0.0000	0.00
Annual Water Budget Balance	0.0000	0.0000	0.00

**Average Annual Totals Summary**

**Title:** Buena Vista Eastern Fill Area  
**Simulated on:** 4/29/2026 15:04

	Average Annual Totals for Years 1 - 30*			
	(inches)	[std dev]	(cubic feet)	(percent)
Precipitation	35.43	[5.15]	1,170,354.3	100.00
Runoff	5.265	[2.201]	173,928.1	14.86
Evapotranspiration	29.694	[3.566]	980,891.6	83.81
Subprofile1				
Percolation/leakage through Layer 2	0.484658	[0.277452]	16,009.7	1.37
Average Head on Top of Layer 2	1.7463	[1.6696]	---	---
Water storage				
Change in water storage	-0.0144	[1.5389]	-475.1	-0.04

\* Note: Average inches are converted to volume based on the user-specified area.

**Peak Values Summary**

**Title:** Buena Vista Eastern Fill Area  
**Simulated on:** 4/29/2026 15:05

	Peak Values for Years 1 - 30*	
	(inches)	(cubic feet)
Precipitation	5.40	178,355.4
Runoff	3.433	113,400.8
Subprofile1		
Percolation/leakage through Layer 2	0.004665	154.1
Average head on Layer 2	23.7005	
Other Parameters		
Snow water	2.8941	95,602.0
Maximum vegetation soil water	0.4610 (vol/vol)	
Minimum vegetation soil water	0.2030 (vol/vol)	

**Final Water Storage in Landfill Profile at End of Simulation Period**

**Title:** Buena Vista Eastern Fill Area  
**Simulated on:** 4/29/2026 15:05  
**Simulation period:** 30 years

Layer	Final Water Storage	
	(inches)	(vol/vol)
1	6.5133	0.2714
2	10.2480	0.4270
Snow water	0.0000	---

## Low Slope

---

**HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE**  
**HELP MODEL VERSION 4.0 BETA (2018)**  
**DEVELOPED BY USEPA NATIONAL RISK MANAGEMENT RESEARCH LABORATORY**

---

**Title:** Buena Vista Eastern Fill Area                      **Simulated On:** 4/29/2026 14:55

---

### Layer 1

Type 1 - Vertical Percolation Layer (Cover Soil)

SiL - Silty Loam(Moderate)

Material Texture Number 23

Thickness	=	24 inches
Porosity	=	0.461 vol/vol
Field Capacity	=	0.36 vol/vol
Wilting Point	=	0.203 vol/vol
Initial Soil Water Content	=	0.2882 vol/vol
Effective Sat. Hyd. Conductivity	=	9.00E-06 cm/sec

### Layer 2

Type 3 - Barrier Soil Liner

2' compacted layer

Material Texture Number 43

Thickness	=	24 inches
Porosity	=	0.427 vol/vol
Field Capacity	=	0.418 vol/vol
Wilting Point	=	0.367 vol/vol
Initial Soil Water Content	=	0.427 vol/vol
Effective Sat. Hyd. Conductivity	=	6.90E-08 cm/sec

---

**Note:** Initial moisture content of the layers and snow water were computed as nearly steady-state values by HELP.

### General Design and Evaporative Zone Data

SCS Runoff Curve Number	=	90.3
Fraction of Area Allowing Runoff	=	100 %
Area projected on a horizontal plane	=	3.98 acres
Evaporative Zone Depth	=	22 inches
Initial Water in Evaporative Zone	=	6.196 inches
Upper Limit of Evaporative Storage	=	10.142 inches
Lower Limit of Evaporative Storage	=	4.466 inches

Initial Snow Water = 0.042028 inches  
 Initial Water in Layer Materials = 17.164 inches  
 Total Initial Water = 17.206 inches  
 Total Subsurface Inflow = 0 inches/year

Note: SCS Runoff Curve Number was calculated by HELP.

**Evapotranspiration and Weather Data**

Station Latitude = 42.65 Degrees  
 Maximum Leaf Area Index = 4.5  
 Start of Growing Season (Julian Date) = 113 days  
 End of Growing Season (Julian Date) = 282 days  
 Average Wind Speed = 11 mph  
 Average 1st Quarter Relative Humidity = 66 %  
 Average 2nd Quarter Relative Humidity = 63 %  
 Average 3rd Quarter Relative Humidity = 73 %  
 Average 4th Quarter Relative Humidity = 70 %

Note: Evapotranspiration data was obtained for Storm Lake , Iowa

**Normal Mean Monthly Precipitation (inches)**

<u>Jan/Jul</u>	<u>Feb/Aug</u>	<u>Mar/Sep</u>	<u>Apr/Oct</u>	<u>May/Nov</u>	<u>Jun/Dec</u>
0.676682	0.781376	1.938473	3.98976	3.726236	5.853793
4.395242	4.740477	4.07202	2.503443	1.672131	1.080219

Note: Precipitation was simulated based on HELP V4 weather simulation for:  
 Lat/Long: 42.65/-95.16

**Normal Mean Monthly Temperature (Degrees Fahrenheit)**

<u>Jan/Jul</u>	<u>Feb/Aug</u>	<u>Mar/Sep</u>	<u>Apr/Oct</u>	<u>May/Nov</u>	<u>Jun/Dec</u>
28.1	30.9	38.5	49.2	64.9	79.8
83.8	79.8	70.3	57.3	42.2	30

Note: Temperature was simulated based on HELP V4 weather simulation for:  
 Lat/Long: 42.65/-95.16  
 Solar radiation was simulated based on HELP V4 weather simulation for:  
 Lat/Long: 42.65/-95.16

353	*		0.00	0.000	0.000	0.2805	0.0000	0.0000	0.00E+00
354	*		0.00	0.000	0.000	0.2805	0.0000	0.0000	0.00E+00
355	*		0.00	0.000	0.000	0.2805	0.0000	0.0000	0.00E+00
356	*		0.00	0.000	0.000	0.2805	0.0000	0.0000	0.00E+00
357	*	*	0.11	0.000	0.037	0.2805	0.0000	0.0000	0.00E+00
358		*	0.23	0.119	0.028	0.2877	0.0000	0.0000	0.00E+00
359	*	*	0.27	0.000	0.027	0.2877	0.0000	0.0000	0.00E+00
360	*	*	0.28	0.000	0.012	0.2877	0.0000	0.0000	0.00E+00
361		*	0.00	0.004	0.034	0.2897	0.0000	0.0000	0.00E+00
362		*	0.00	0.252	0.014	0.2976	0.0000	0.0000	0.00E+00
363	*	*	0.00	0.000	0.000	0.2976	0.0000	0.0000	0.00E+00
364		*	0.00	0.000	0.000	0.2976	0.0000	0.0000	0.00E+00
365	*	*	0.07	0.000	0.030	0.2976	0.0000	0.0000	0.00E+00

\* = Frozen (air or soil)

Annual Totals for Year 1			
	inches	cubic feet	percent
Precipitation	31.31	452,315.2	100.00
Runoff	3.140	45,367.6	10.03
Evapotranspiration	27.509	397,437.0	87.87
Percolation/Leakage through Layer 2	0.308187	4,452.5	0.98
Average Head on Top of Layer 2	0.4895	---	---
Change in Water Storage	0.3501	5,058.1	1.12
Soil Water at Start of Year	17.1644	247,980.7	54.82
Soil Water at End of Year	17.5145	253,038.8	55.94
Snow Water at Start of Year	0.0420	607.2	0.13
Snow Water at End of Year	0.0420	607.2	0.13
Annual Water Budget Balance	0.0000	0.0000	0.00

353	*	0.00	0.000	0.033	0.3881	12.6594	0.0000	3.59E-03
354		0.00	0.000	0.049	0.3857	12.6742	0.0000	3.59E-03
355	*	0.00	0.000	0.000	0.3855	12.8202	0.0000	3.60E-03
356	*	0.00	0.000	0.000	0.3854	12.7846	0.0000	3.60E-03
357	*	0.00	0.000	0.000	0.3852	12.7490	0.0000	3.59E-03
358	*	0.00	0.000	0.000	0.3850	12.7134	0.0000	3.59E-03
359		0.00	0.000	0.033	0.3834	12.7855	0.0000	3.60E-03
360		0.00	0.000	0.055	0.3807	12.8695	0.0000	3.61E-03
361		0.00	0.000	0.041	0.3787	12.7464	0.0000	3.59E-03
362	*	0.00	0.000	0.000	0.3785	12.6660	0.0000	3.59E-03
363	*	0.00	0.000	0.000	0.3784	12.6306	0.0000	3.58E-03
364		0.00	0.000	0.035	0.3766	12.5718	0.0000	3.58E-03
365	*	0.00	0.000	0.000	0.3764	12.4976	0.0000	3.57E-03

\* = Frozen (air or soil)

Annual Totals for Year 2			
	inches	cubic feet	percent
Precipitation	37.26	538,252.0	100.00
Runoff	6.164	89,048.1	16.54
Evapotranspiration	28.597	413,151.4	76.76
Percolation/Leakage through Layer 2	0.600255	8,672.1	1.61
Average Head on Top of Layer 2	3.0918	---	---
Change in Water Storage	1.8952	27,380.3	5.09
Soil Water at Start of Year	17.5145	253,038.8	47.01
Soil Water at End of Year	19.4517	281,026.3	52.21
Snow Water at Start of Year	0.0420	607.2	0.11
Snow Water at End of Year	0.0000	0.0000	0.00
Annual Water Budget Balance	0.0000	0.0000	0.00

353	*	*	0.08	0.000	0.010	0.2811	0.0000	0.0000	0.00E+00
354	*	*	0.00	0.000	0.005	0.2811	0.0000	0.0000	0.00E+00
355	*	*	0.00	0.000	0.008	0.2811	0.0000	0.0000	0.00E+00
356	*	*	0.00	0.000	0.016	0.2811	0.0000	0.0000	0.00E+00
357	*	*	0.00	0.000	0.009	0.2811	0.0000	0.0000	0.00E+00
358	*	*	0.00	0.000	0.011	0.2811	0.0000	0.0000	0.00E+00
359	*	*	0.07	0.000	0.013	0.2811	0.0000	0.0000	0.00E+00
360	*	*	0.00	0.000	0.012	0.2811	0.0000	0.0000	0.00E+00
361	*	*	0.00	0.000	0.011	0.2811	0.0000	0.0000	0.00E+00
362	*	*	0.00	0.000	0.012	0.2811	0.0000	0.0000	0.00E+00
363	*	*	0.00	0.000	0.019	0.2811	0.0000	0.0000	0.00E+00
364		*	0.00	0.000	0.031	0.2811	0.0000	0.0000	0.00E+00
365	*	*	0.01	0.000	0.010	0.2811	0.0000	0.0000	0.00E+00

\* = Frozen (air or soil)

Annual Totals for Year 3			
	inches	cubic feet	percent
Precipitation	32.35	467,392.3	100.00
Runoff	2.938	42,451.7	9.08
Evapotranspiration	31.034	448,367.0	95.93
Percolation/Leakage through Layer 2	0.677378	9,786.4	2.09
Average Head on Top of Layer 2	2.1888	---	---
Change in Water Storage	-2.2989	-33,212.8	-7.11
Soil Water at Start of Year	19.4517	281,026.3	60.13
Soil Water at End of Year	17.1528	247,813.5	53.02
Snow Water at Start of Year	0.0000	0.0000	0.00
Snow Water at End of Year	0.0000	0.0000	0.00
Annual Water Budget Balance	0.0000	0.0000	0.00

353	*	0.00	0.000	0.000	0.3086	0.0000	0.0000	0.00E+00
354	*	0.00	0.000	0.000	0.3086	0.0000	0.0000	0.00E+00
355	*	0.00	0.000	0.000	0.3086	0.0000	0.0000	0.00E+00
356		0.43	0.003	0.049	0.3257	0.0000	0.0000	0.00E+00
357		0.14	0.000	0.053	0.3299	0.0000	0.0000	0.00E+00
358		0.14	0.000	0.050	0.3342	0.0000	0.0000	0.00E+00
359		0.00	0.000	0.038	0.3324	0.0000	0.0000	0.00E+00
360		0.09	0.000	0.070	0.3334	0.0000	0.0000	0.00E+00
361		0.00	0.000	0.052	0.3311	0.0000	0.0000	0.00E+00
362		0.00	0.000	0.044	0.3291	0.0000	0.0000	0.00E+00
363		0.00	0.000	0.051	0.3267	0.0000	0.0000	0.00E+00
364		0.00	0.000	0.050	0.3245	0.0000	0.0000	0.00E+00
365		0.00	0.000	0.046	0.3224	0.0000	0.0000	0.00E+00

\* = Frozen (air or soil)

Annual Totals for Year 4			
	inches	cubic feet	percent
Precipitation	33.68	486,632.3	100.00
Runoff	3.925	56,709.4	11.65
Evapotranspiration	28.781	415,810.2	85.45
Percolation/Leakage through Layer 2	0.069435	1,003.2	0.21
Average Head on Top of Layer 2	0.0207	---	---
Change in Water Storage	0.9074	13,109.6	2.69
Soil Water at Start of Year	17.1528	247,813.5	50.92
Soil Water at End of Year	18.0602	260,923.1	53.62
Snow Water at Start of Year	0.0000	0.0000	0.00
Snow Water at End of Year	0.0000	0.0000	0.00
Annual Water Budget Balance	0.0000	0.0000	0.00

353	*		0.00	0.000	0.000	0.3317	0.0000	0.0000	0.00E+00
354		*	0.00	0.000	0.000	0.3317	0.0000	0.0000	0.00E+00
355	*	*	0.00	0.000	0.000	0.3317	0.0000	0.0000	0.00E+00
356		*	0.00	0.000	0.000	0.3317	0.0000	0.0000	0.00E+00
357	*	*	0.00	0.000	0.000	0.3317	0.0000	0.0000	0.00E+00
358	*	*	0.00	0.000	0.000	0.3317	0.0000	0.0000	0.00E+00
359	*	*	0.00	0.000	0.000	0.3317	0.0000	0.0000	0.00E+00
360	*	*	0.00	0.000	0.000	0.3317	0.0000	0.0000	0.00E+00
361	*	*	0.00	0.000	0.000	0.3317	0.0000	0.0000	0.00E+00
362	*	*	0.00	0.000	0.000	0.3317	0.0000	0.0000	0.00E+00
363	*	*	0.04	0.000	0.018	0.3317	0.0000	0.0000	0.00E+00
364	*	*	0.37	0.000	0.007	0.3317	0.0000	0.0000	0.00E+00
365	*	*	0.11	0.000	0.010	0.3317	0.0000	0.0000	0.00E+00

\* = Frozen (air or soil)

Annual Totals for Year 5			
	inches	cubic feet	percent
Precipitation	36.55	527,986.0	100.00
Runoff	5.165	74,626.6	14.13
Evapotranspiration	30.301	437,774.2	82.91
Percolation/Leakage through Layer 2	0.388587	5,614.1	1.06
Average Head on Top of Layer 2	0.7843	---	---
Change in Water Storage	0.6902	9,971.2	1.89
Soil Water at Start of Year	18.0602	260,923.1	49.42
Soil Water at End of Year	18.2643	263,872.1	49.98
Snow Water at Start of Year	0.0000	0.0000	0.00
Snow Water at End of Year	0.4861	7,022.2	1.33
Annual Water Budget Balance	0.0000	0.0000	0.00

353	*	*	0.00	0.000	0.000	0.3773	1.8391	0.0000	2.53E-03
354		*	0.00	0.000	0.000	0.3773	1.8141	0.0000	2.52E-03
355		*	0.00	0.000	0.000	0.3773	1.7891	0.0000	2.52E-03
356		*	0.00	0.000	0.000	0.3773	1.7642	0.0000	2.52E-03
357	*	*	0.14	0.000	0.028	0.3773	1.7392	0.0000	2.52E-03
358	*	*	0.37	0.000	0.023	0.3773	1.7143	0.0000	2.51E-03
359		*	0.00	0.235	0.000	0.3875	1.6894	0.0000	2.51E-03
360	*	*	0.00	0.000	0.000	0.3875	1.6646	0.0000	2.51E-03
361	*	*	0.00	0.000	0.000	0.3875	1.6397	0.0000	2.51E-03
362	*	*	0.00	0.000	0.000	0.3875	1.6149	0.0000	2.50E-03
363	*	*	0.00	0.000	0.000	0.3875	1.5901	0.0000	2.50E-03
364	*	*	0.00	0.000	0.000	0.3875	1.5653	0.0000	2.50E-03
365	*	*	0.01	0.000	0.011	0.3875	1.5406	0.0000	2.50E-03

\* = Frozen (air or soil)

Annual Totals for Year 6			
	inches	cubic feet	percent
Precipitation	33.87	489,327.6	100.00
Runoff	2.921	42,206.0	8.63
Evapotranspiration	29.460	425,617.5	86.98
Percolation/Leakage through Layer 2	0.589854	8,521.9	1.74
Average Head on Top of Layer 2	1.5167	---	---
Change in Water Storage	0.8986	12,982.2	2.65
Soil Water at Start of Year	18.2643	263,872.1	53.93
Soil Water at End of Year	19.6471	283,849.9	58.01
Snow Water at Start of Year	0.4861	7,022.2	1.44
Snow Water at End of Year	0.0018	26.6	0.01
Annual Water Budget Balance	0.0000	0.0000	0.00

353	*	*	0.05	0.000	0.006	0.3961	1.5898	0.0000	2.50E-03
354	*	*	0.00	0.000	0.015	0.3961	1.5651	0.0000	2.50E-03
355	*	*	0.00	0.000	0.018	0.3961	1.5403	0.0000	2.50E-03
356	*	*	0.00	0.000	0.014	0.3961	1.5156	0.0000	2.50E-03
357	*	*	0.00	0.000	0.000	0.3961	1.4909	0.0000	2.49E-03
358	*	*	0.00	0.000	0.000	0.3961	1.4662	0.0000	2.49E-03
359	*	*	0.00	0.000	0.000	0.3961	1.4416	0.0000	2.49E-03
360	*	*	0.00	0.000	0.000	0.3961	1.4170	0.0000	2.49E-03
361	*	*	0.03	0.000	0.033	0.3961	1.3924	0.0000	2.48E-03
362	*	*	0.00	0.000	0.002	0.3961	1.3678	0.0000	2.48E-03
363	*	*	0.07	0.000	0.021	0.3961	1.3432	0.0000	2.48E-03
364	*	*	0.00	0.000	0.010	0.3961	1.3187	0.0000	2.48E-03
365	*	*	0.00	0.000	0.036	0.3961	1.2942	0.0000	2.47E-03

\* = Frozen (air or soil)

Annual Totals for Year 7			
	inches	cubic feet	percent
Precipitation	35.97	519,628.6	100.00
Runoff	5.705	82,425.7	15.86
Evapotranspiration	29.251	422,606.9	81.33
Percolation/Leakage through Layer 2	0.842699	12,174.8	2.34
Average Head on Top of Layer 2	3.7015	---	---
Change in Water Storage	0.1676	2,421.1	0.47
Soil Water at Start of Year	19.6471	283,849.9	54.63
Soil Water at End of Year	19.8111	286,218.7	55.08
Snow Water at Start of Year	0.0018	26.6	0.01
Snow Water at End of Year	0.0055	78.9	0.02
Annual Water Budget Balance	0.0000	0.0000	0.00

353			0.00	0.000	0.030	0.2398	0.0000	0.0000	0.00E+00
354			0.14	0.000	0.046	0.2439	0.0000	0.0000	0.00E+00
355	*		0.00	0.000	0.000	0.2439	0.0000	0.0000	0.00E+00
356	*		0.00	0.000	0.016	0.2432	0.0000	0.0000	0.00E+00
357	*		0.30	0.000	0.014	0.2441	0.0000	0.0000	0.00E+00
358	*		0.13	0.000	0.007	0.2450	0.0000	0.0000	0.00E+00
359	*		0.00	0.000	0.009	0.2459	0.0000	0.0000	0.00E+00
360	*		0.00	0.000	0.018	0.2467	0.0000	0.0000	0.00E+00
361	*		0.00	0.000	0.019	0.2476	0.0000	0.0000	0.00E+00
362	*		0.00	0.000	0.017	0.2485	0.0000	0.0000	0.00E+00
363			0.00	0.000	0.020	0.2581	0.0000	0.0000	0.00E+00
364	*	*	0.15	0.000	0.034	0.2581	0.0000	0.0000	0.00E+00
365	*	*	0.01	0.000	0.013	0.2581	0.0000	0.0000	0.00E+00

\* = Frozen (air or soil)

Annual Totals for Year 8			
	inches	cubic feet	percent
Precipitation	28.69	414,518.6	100.00
Runoff	2.928	42,306.3	10.21
Evapotranspiration	28.120	406,265.4	98.01
Percolation/Leakage through Layer 2	0.718508	10,380.6	2.50
Average Head on Top of Layer 2	3.1041	---	---
Change in Water Storage	-3.0756	-44,433.7	-10.72
Soil Water at Start of Year	19.8111	286,218.7	69.05
Soil Water at End of Year	16.6455	240,483.7	58.02
Snow Water at Start of Year	0.0055	78.9	0.02
Snow Water at End of Year	0.0955	1,380.1	0.33
Annual Water Budget Balance	0.0000	0.0000	0.00

353		0.00	0.000	0.008	0.2412	0.0000	0.0000	0.00E+00
354		0.00	0.000	0.017	0.2404	0.0000	0.0000	0.00E+00
355		0.09	0.000	0.050	0.2420	0.0000	0.0000	0.00E+00
356		0.00	0.000	0.029	0.2407	0.0000	0.0000	0.00E+00
357		0.00	0.000	0.019	0.2399	0.0000	0.0000	0.00E+00
358		0.00	0.000	0.007	0.2396	0.0000	0.0000	0.00E+00
359		0.00	0.000	0.007	0.2392	0.0000	0.0000	0.00E+00
360	*	0.11	0.000	0.035	0.2401	0.0000	0.0000	0.00E+00
361		0.00	0.000	0.040	0.2406	0.0000	0.0000	0.00E+00
362	*	0.05	0.000	0.015	0.2415	0.0000	0.0000	0.00E+00
363		0.01	0.000	0.040	0.2411	0.0000	0.0000	0.00E+00
364	*	0.00	0.000	0.000	0.2411	0.0000	0.0000	0.00E+00
365	*	0.05	0.000	0.016	0.2420	0.0000	0.0000	0.00E+00

\* = Frozen (air or soil)

Annual Totals for Year 9			
	inches	cubic feet	percent
Precipitation	31.72	458,297.3	100.00
Runoff	3.857	55,730.0	12.16
Evapotranspiration	27.992	404,412.4	88.24
Percolation/Leakage through Layer 2	0.307450	4,441.9	0.97
Average Head on Top of Layer 2	0.4821	---	---
Change in Water Storage	-0.4352	-6,286.9	-1.37
Soil Water at Start of Year	16.6455	240,483.7	52.47
Soil Water at End of Year	16.2928	235,388.2	51.36
Snow Water at Start of Year	0.0955	1,380.1	0.30
Snow Water at End of Year	0.0131	188.7	0.04
Annual Water Budget Balance	0.0000	0.0000	0.00

353		*	0.02	0.046	0.051	0.3628	0.0000	0.0000	0.00E+00
354	*	*	0.03	0.000	0.027	0.3628	0.0000	0.0000	0.00E+00
355		*	0.09	0.018	0.031	0.3645	0.0000	0.0000	0.00E+00
356		*	0.00	0.000	0.000	0.3645	0.0000	0.0000	0.00E+00
357		*	0.00	0.000	0.003	0.3645	0.0000	0.0000	0.00E+00
358	*	*	0.00	0.000	0.000	0.3645	0.0000	0.0000	0.00E+00
359		*	0.00	0.000	0.000	0.3645	0.0000	0.0000	0.00E+00
360	*	*	0.00	0.000	0.000	0.3645	0.0000	0.0000	0.00E+00
361	*	*	0.00	0.000	0.000	0.3645	0.0000	0.0000	0.00E+00
362	*	*	0.00	0.000	0.000	0.3645	0.0000	0.0000	0.00E+00
363		*	0.00	0.000	0.000	0.3645	0.0000	0.0000	0.00E+00
364		*	0.00	0.000	0.000	0.3645	0.0000	0.0000	0.00E+00
365		*	0.00	0.000	0.000	0.3645	0.0000	0.0000	0.00E+00

\* = Frozen (air or soil)

Annual Totals for Year 10			
	inches	cubic feet	percent
Precipitation	35.43	511,896.8	100.00
Runoff	5.399	78,008.4	15.24
Evapotranspiration	26.862	388,089.3	75.81
Percolation/Leakage through Layer 2	0.488185	7,053.0	1.38
Average Head on Top of Layer 2	1.5359	---	---
Change in Water Storage	2.6819	38,746.1	7.57
Soil Water at Start of Year	16.2928	235,388.2	45.98
Soil Water at End of Year	18.9877	274,323.1	53.59
Snow Water at Start of Year	0.0131	188.7	0.04
Snow Water at End of Year	0.0000	0.0000	0.00
Annual Water Budget Balance	0.0000	0.0000	0.00

353	*	*	0.00	0.000	0.035	0.4557	1.5613	0.0000	2.50E-03
354	*	*	0.00	0.000	0.013	0.4557	1.5365	0.0000	2.50E-03
355		*	0.00	0.067	0.032	0.4557	1.5118	0.0000	2.49E-03
356	*	*	0.05	0.000	0.036	0.4557	1.4871	0.0000	2.49E-03
357		*	0.00	0.000	0.013	0.4557	1.4625	0.0000	2.49E-03
358	*	*	0.00	0.000	0.000	0.4557	1.4378	0.0000	2.49E-03
359	*	*	0.11	0.000	0.020	0.4557	1.4132	0.0000	2.49E-03
360	*	*	0.06	0.000	0.030	0.4557	1.3886	0.0000	2.48E-03
361		*	0.00	0.064	0.029	0.4559	1.3640	0.0000	2.48E-03
362		*	0.00	0.000	0.025	0.4559	1.3395	0.0000	2.48E-03
363		*	0.02	0.003	0.008	0.4562	1.3149	0.0000	2.48E-03
364		*	0.00	0.000	0.000	0.4562	1.2904	0.0000	2.47E-03
365		*	0.00	0.000	0.000	0.4562	1.2660	0.0000	2.47E-03

\* = Frozen (air or soil)

Annual Totals for Year 11			
	inches	cubic feet	percent
Precipitation	50.12	724,141.3	100.00
Runoff	9.771	141,164.9	19.49
Evapotranspiration	37.183	537,202.2	74.18
Percolation/Leakage through Layer 2	1.025140	14,810.6	2.05
Average Head on Top of Layer 2	7.4649	---	---
Change in Water Storage	2.1432	30,963.6	4.28
Soil Water at Start of Year	18.9877	274,323.1	37.88
Soil Water at End of Year	21.1309	305,286.6	42.16
Snow Water at Start of Year	0.0000	0.0000	0.00
Snow Water at End of Year	0.0000	0.0000	0.00
Annual Water Budget Balance	0.0000	0.0000	0.00

353	*		0.00	0.000	0.000	0.4031	1.8384	0.0000	2.53E-03
354	*		0.00	0.000	0.000	0.4031	1.8134	0.0000	2.52E-03
355	*		0.00	0.000	0.000	0.4031	1.7884	0.0000	2.52E-03
356	*		0.06	0.003	0.014	0.4050	1.7634	0.0000	2.52E-03
357	*		0.00	0.000	0.004	0.4050	1.7385	0.0000	2.52E-03
358	*		0.00	0.000	0.000	0.4050	1.7136	0.0000	2.51E-03
359	*		0.00	0.000	0.000	0.4050	1.6887	0.0000	2.51E-03
360	*		0.00	0.000	0.000	0.4050	1.6638	0.0000	2.51E-03
361	*	*	0.00	0.000	0.000	0.4050	1.6390	0.0000	2.51E-03
362	*	*	0.02	0.000	0.018	0.4050	1.6142	0.0000	2.50E-03
363	*	*	0.00	0.000	0.000	0.4050	1.5894	0.0000	2.50E-03
364	*	*	0.00	0.000	0.000	0.4050	1.5646	0.0000	2.50E-03
365	*	*	0.02	0.000	0.023	0.4050	1.5399	0.0000	2.50E-03

\* = Frozen (air or soil)

Annual Totals for Year 12			
	inches	cubic feet	percent
Precipitation	36.58	528,422.7	100.00
Runoff	4.629	66,877.9	12.66
Evapotranspiration	32.210	465,344.1	88.06
Percolation/Leakage through Layer 2	0.837694	12,102.5	2.29
Average Head on Top of Layer 2	4.1320	---	---
Change in Water Storage	-1.1007	-15,901.8	-3.01
Soil Water at Start of Year	21.1309	305,286.6	57.77
Soil Water at End of Year	20.0302	289,384.8	54.76
Snow Water at Start of Year	0.0000	0.0000	0.00
Snow Water at End of Year	0.0000	0.0000	0.00
Annual Water Budget Balance	0.0000	0.0000	0.00

353		0.00	0.000	0.033	0.2854	0.0000	0.0000	0.00E+00
354		0.00	0.000	0.026	0.2842	0.0000	0.0000	0.00E+00
355		0.00	0.000	0.021	0.2833	0.0000	0.0000	0.00E+00
356		0.00	0.000	0.013	0.2827	0.0000	0.0000	0.00E+00
357	*	0.04	0.000	0.032	0.2830	0.0000	0.0000	0.00E+00
358	*	0.05	0.000	0.012	0.2838	0.0000	0.0000	0.00E+00
359		0.02	0.000	0.046	0.2835	0.0000	0.0000	0.00E+00
360	*	0.18	0.000	0.035	0.2844	0.0000	0.0000	0.00E+00
361	*	0.05	0.000	0.027	0.2853	0.0000	0.0000	0.00E+00
362	*	0.00	0.000	0.022	0.2862	0.0000	0.0000	0.00E+00
363	*	0.00	0.000	0.010	0.2871	0.0000	0.0000	0.00E+00
364	*	0.00	0.000	0.035	0.2878	0.0000	0.0000	0.00E+00
365		0.00	0.000	0.019	0.2869	0.0000	0.0000	0.00E+00

\* = Frozen (air or soil)

Annual Totals for Year 13			
	inches	cubic feet	percent
Precipitation	37.55	542,464.0	100.00
Runoff	3.437	49,650.1	9.15
Evapotranspiration	35.990	519,955.5	95.85
Percolation/Leakage through Layer 2	0.871194	12,586.5	2.32
Average Head on Top of Layer 2	5.0825	---	---
Change in Water Storage	-2.7498	-39,728.2	-7.32
Soil Water at Start of Year	20.0302	289,384.8	53.35
Soil Water at End of Year	17.2804	249,656.7	46.02
Snow Water at Start of Year	0.0000	0.0000	0.00
Snow Water at End of Year	0.0000	0.0000	0.00
Annual Water Budget Balance	0.0000	0.0000	0.00

353		0.00	0.000	0.068	0.3654	6.4527	0.0000	2.98E-03
354		0.19	0.000	0.072	0.3708	6.3674	0.0000	2.97E-03
355		0.00	0.000	0.046	0.3686	6.2917	0.0000	2.96E-03
356	*	0.02	0.000	0.019	0.3685	6.2432	0.0000	2.96E-03
357	*	0.07	0.000	0.010	0.3692	6.2370	0.0000	2.96E-03
358	*	0.00	0.000	0.012	0.3700	6.2243	0.0000	2.96E-03
359	*	0.00	0.000	0.008	0.3699	6.2203	0.0000	2.96E-03
360	*	0.00	0.000	0.000	0.3697	6.2257	0.0000	2.96E-03
361	*	0.00	0.000	0.024	0.3685	6.2769	0.0000	2.96E-03
362		0.00	0.000	0.047	0.3663	6.3224	0.0000	2.97E-03
363		0.00	0.000	0.068	0.3630	6.3490	0.0000	2.97E-03
364		0.00	0.000	0.081	0.3592	6.3613	0.0000	2.97E-03
365		0.00	0.000	0.121	0.3536	6.4209	0.0000	2.97E-03

\* = Frozen (air or soil)

Annual Totals for Year 14			
	inches	cubic feet	percent
Precipitation	33.35	481,837.9	100.00
Runoff	2.697	38,960.6	8.09
Evapotranspiration	28.842	416,693.9	86.48
Percolation/Leakage through Layer 2	0.144056	2,081.2	0.43
Average Head on Top of Layer 2	0.6317	---	---
Change in Water Storage	1.6683	24,102.2	5.00
Soil Water at Start of Year	17.2804	249,656.7	51.81
Soil Water at End of Year	18.9487	273,758.8	56.82
Snow Water at Start of Year	0.0000	0.0000	0.00
Snow Water at End of Year	0.0000	0.0000	0.00
Annual Water Budget Balance	0.0000	0.0000	0.00

353	*		0.01	0.000	0.011	0.3635	9.5010	0.0000	3.28E-03
354	*		0.43	0.000	0.016	0.3643	9.4685	0.0000	3.27E-03
355	*		0.04	0.000	0.006	0.3650	9.4362	0.0000	3.27E-03
356	*		0.00	0.000	0.003	0.3658	9.4038	0.0000	3.27E-03
357	*		0.00	0.000	0.010	0.3665	9.3715	0.0000	3.26E-03
358	*	*	0.00	0.000	0.000	0.3665	3.8269	0.0000	2.72E-03
359		*	0.00	0.123	0.000	0.3775	1.9634	0.0000	2.54E-03
360	*	*	0.00	0.000	0.000	0.3775	1.9383	0.0000	2.54E-03
361		*	0.00	0.000	0.000	0.3775	1.9132	0.0000	2.53E-03
362		*	0.00	0.000	0.000	0.3775	1.8881	0.0000	2.53E-03
363		*	0.00	0.000	0.000	0.3775	1.8631	0.0000	2.53E-03
364	*	*	0.03	0.000	0.032	0.3775	1.8380	0.0000	2.53E-03
365	*	*	0.00	0.000	0.000	0.3775	1.8130	0.0000	2.52E-03

\* = Frozen (air or soil)

Annual Totals for Year 15			
	inches	cubic feet	percent
Precipitation	32.93	475,814.9	100.00
Runoff	4.230	61,117.9	12.84
Evapotranspiration	27.490	397,155.8	83.47
Percolation/Leakage through Layer 2	0.707417	10,220.3	2.15
Average Head on Top of Layer 2	1.9241	---	---
Change in Water Storage	0.5067	7,320.9	1.54
Soil Water at Start of Year	18.9487	273,758.8	57.53
Soil Water at End of Year	19.4554	281,079.8	59.07
Snow Water at Start of Year	0.0000	0.0000	0.00
Snow Water at End of Year	0.0000	0.0000	0.00
Annual Water Budget Balance	0.0000	0.0000	0.00

353	*		0.02	0.000	0.008	0.3882	1.1236	0.0000	2.46E-03
354		*	0.00	0.000	0.000	0.3882	1.0993	0.0000	2.45E-03
355	*	*	0.00	0.000	0.000	0.3882	1.0750	0.0000	2.45E-03
356	*	*	0.01	0.000	0.015	0.3882	1.0507	0.0000	2.45E-03
357		*	0.00	0.000	0.000	0.3882	1.0265	0.0000	2.45E-03
358		*	0.00	0.000	0.000	0.3882	1.0022	0.0000	2.45E-03
359		*	0.00	0.000	0.000	0.3882	0.9780	0.0000	2.44E-03
360		*	0.26	0.141	0.008	0.3934	0.9539	0.0000	2.44E-03
361		*	0.00	0.000	0.000	0.3934	0.9297	0.0000	2.44E-03
362		*	0.00	0.000	0.000	0.3934	0.9056	0.0000	2.44E-03
363		*	0.00	0.000	0.000	0.3934	0.8815	0.0000	2.43E-03
364		*	0.00	0.000	0.000	0.3934	0.8574	0.0000	2.43E-03
365		*	0.00	0.000	0.000	0.3934	0.8333	0.0000	2.43E-03

\* = Frozen (air or soil)

Annual Totals for Year 16			
	inches	cubic feet	percent
Precipitation	37.12	536,286.7	100.00
Runoff	6.207	89,672.8	16.72
Evapotranspiration	29.822	430,843.7	80.34
Percolation/Leakage through Layer 2	0.844977	12,207.7	2.28
Average Head on Top of Layer 2	2.3539	---	---
Change in Water Storage	0.2466	3,562.5	0.66
Soil Water at Start of Year	19.4554	281,079.8	52.41
Soil Water at End of Year	19.7020	284,642.3	53.08
Snow Water at Start of Year	0.0000	0.0000	0.00
Snow Water at End of Year	0.0000	0.0000	0.00
Annual Water Budget Balance	0.0000	0.0000	0.00

353			0.09	0.000	0.060	0.2913	0.0000	0.0000	0.00E+00
354			0.00	0.000	0.052	0.2891	0.0000	0.0000	0.00E+00
355			0.00	0.000	0.043	0.2871	0.0037	0.0000	1.32E-03
356	*		0.00	0.000	0.000	0.2871	0.0000	0.0000	0.00E+00
357	*		0.00	0.000	0.002	0.2871	0.0000	0.0000	0.00E+00
358	*		0.24	0.000	0.003	0.2880	0.0000	0.0000	0.00E+00
359	*		0.00	0.000	0.010	0.2889	0.0000	0.0000	0.00E+00
360	*	*	0.00	0.000	0.012	0.2889	0.0000	0.0000	0.00E+00
361	*	*	0.00	0.000	0.013	0.2889	0.0000	0.0000	0.00E+00
362	*	*	0.02	0.000	0.014	0.2889	0.0000	0.0000	0.00E+00
363		*	0.00	0.000	0.036	0.2889	0.0000	0.0000	0.00E+00
364		*	0.00	0.003	0.051	0.2924	0.0000	0.0000	0.00E+00
365	*	*	0.00	0.000	0.000	0.2924	0.0000	0.0000	0.00E+00

\* = Frozen (air or soil)

Annual Totals for Year 17			
	inches	cubic feet	percent
Precipitation	45.74	660,805.1	100.00
Runoff	8.499	122,781.5	18.58
Evapotranspiration	38.825	560,914.1	84.88
Percolation/Leakage through Layer 2	0.716847	10,356.6	1.57
Average Head on Top of Layer 2	2.9497	---	---
Change in Water Storage	-2.3012	-33,247.1	-5.03
Soil Water at Start of Year	19.7020	284,642.3	43.08
Soil Water at End of Year	17.4007	251,395.3	38.04
Snow Water at Start of Year	0.0000	0.0000	0.00
Snow Water at End of Year	0.0000	0.0000	0.00
Annual Water Budget Balance	0.0000	0.0000	0.00

353		0.00	0.000	0.061	0.3058	0.0000	0.0000	0.00E+00
354		0.00	0.000	0.089	0.3018	0.0000	0.0000	0.00E+00
355		0.08	0.000	0.104	0.3008	0.0000	0.0000	0.00E+00
356		0.02	0.000	0.088	0.2976	0.0018	0.0000	6.56E-04
357		0.02	0.000	0.068	0.2952	0.0000	0.0000	0.00E+00
358		0.17	0.000	0.058	0.3002	0.0000	0.0000	0.00E+00
359		0.00	0.000	0.047	0.2980	0.0000	0.0000	0.00E+00
360		0.02	0.000	0.047	0.2968	0.0013	0.0000	5.23E-04
361		0.14	0.000	0.044	0.3012	0.0000	0.0000	0.00E+00
362		0.29	0.000	0.041	0.3124	0.0000	0.0000	0.00E+00
363		0.00	0.000	0.061	0.3096	0.0000	0.0000	0.00E+00
364	*	0.00	0.000	0.000	0.3096	0.0000	0.0000	0.00E+00
365	*	0.00	0.000	0.033	0.3081	0.0000	0.0000	0.00E+00

\* = Frozen (air or soil)

Annual Totals for Year 18			
	inches	cubic feet	percent
Precipitation	36.18	522,672.4	100.00
Runoff	6.792	98,126.3	18.77
Evapotranspiration	28.594	413,115.6	79.04
Percolation/Leakage through Layer 2	0.444859	6,427.1	1.23
Average Head on Top of Layer 2	0.6614	---	---
Change in Water Storage	0.3463	5,003.5	0.96
Soil Water at Start of Year	17.4007	251,395.3	48.10
Soil Water at End of Year	17.7471	256,398.7	49.06
Snow Water at Start of Year	0.0000	0.0000	0.00
Snow Water at End of Year	0.0000	0.0000	0.00
Annual Water Budget Balance	0.0000	0.0000	0.00

353	*	0.04	0.000	0.021	0.3113	0.0000	0.0000	0.00E+00
354	*	0.00	0.000	0.003	0.3113	0.0000	0.0000	0.00E+00
355	*	0.00	0.000	0.000	0.3113	0.0000	0.0000	0.00E+00
356		0.00	0.000	0.039	0.3096	0.0000	0.0000	0.00E+00
357		0.00	0.000	0.031	0.3081	0.0000	0.0000	0.00E+00
358	*	0.00	0.000	0.024	0.3070	0.0000	0.0000	0.00E+00
359		0.00	0.000	0.025	0.3059	0.0000	0.0000	0.00E+00
360	*	0.00	0.000	0.000	0.3059	0.0002	0.0000	1.00E-04
361		0.00	0.000	0.027	0.3047	0.0000	0.0000	0.00E+00
362	*	0.03	0.000	0.018	0.3050	0.0000	0.0000	0.00E+00
363	*	0.00	0.000	0.000	0.3050	0.0000	0.0000	0.00E+00
364	*	0.08	0.000	0.008	0.3059	0.0000	0.0000	0.00E+00
365	*	0.13	0.000	0.000	0.3068	0.0000	0.0000	0.00E+00

\* = Frozen (air or soil)

Annual Totals for Year 19			
	inches	cubic feet	percent
Precipitation	29.68	428,805.9	100.00
Runoff	1.833	26,482.8	6.18
Evapotranspiration	27.700	400,191.0	93.33
Percolation/Leakage through Layer 2	0.008861	128.0	0.03
Average Head on Top of Layer 2	0.0001	---	---
Change in Water Storage	0.1387	2,004.1	0.47
Soil Water at Start of Year	17.7471	256,398.7	59.79
Soil Water at End of Year	17.7177	255,975.4	59.69
Snow Water at Start of Year	0.0000	0.0000	0.00
Snow Water at End of Year	0.1680	2,427.4	0.57
Annual Water Budget Balance	0.0000	0.0000	0.00

353	*	*	0.01	0.000	0.009	0.2955	0.0000	0.0000	0.00E+00
354	*	*	0.01	0.000	0.013	0.2955	0.0000	0.0000	0.00E+00
355		*	0.00	0.000	0.004	0.2955	0.0000	0.0000	0.00E+00
356		*	0.02	0.000	0.012	0.2957	0.0000	0.0000	0.00E+00
357		*	0.01	0.000	0.007	0.2957	0.0000	0.0000	0.00E+00
358		*	0.00	0.000	0.000	0.2957	0.0000	0.0000	0.00E+00
359	*	*	0.00	0.000	0.000	0.2957	0.0000	0.0000	0.00E+00
360	*	*	0.00	0.000	0.000	0.2957	0.0000	0.0000	0.00E+00
361	*	*	0.00	0.000	0.000	0.2957	0.0000	0.0000	0.00E+00
362	*	*	0.00	0.000	0.000	0.2957	0.0000	0.0000	0.00E+00
363		*	0.00	0.000	0.000	0.2957	0.0000	0.0000	0.00E+00
364		*	0.00	0.000	0.000	0.2957	0.0000	0.0000	0.00E+00
365	*	*	0.00	0.000	0.000	0.2957	0.0000	0.0000	0.00E+00

\* = Frozen (air or soil)

Annual Totals for Year 20			
	inches	cubic feet	percent
Precipitation	36.55	528,009.6	100.00
Runoff	6.125	88,489.2	16.76
Evapotranspiration	30.492	440,524.9	83.43
Percolation/Leakage through Layer 2	0.342187	4,943.7	0.94
Average Head on Top of Layer 2	0.5923	---	---
Change in Water Storage	-0.4117	-5,948.1	-1.13
Soil Water at Start of Year	17.7177	255,975.4	48.48
Soil Water at End of Year	17.4741	252,454.7	47.81
Snow Water at Start of Year	0.1680	2,427.4	0.46
Snow Water at End of Year	0.0000	0.0000	0.00
Annual Water Budget Balance	0.0000	0.0000	0.00

353		*	0.00	0.000	0.047	0.2387	0.0000	0.0000	0.00E+00
354		*	0.00	0.000	0.000	0.2387	0.0000	0.0000	0.00E+00
355		*	0.00	0.000	0.000	0.2387	0.0000	0.0000	0.00E+00
356		*	0.00	0.000	0.000	0.2387	0.0000	0.0000	0.00E+00
357		*	0.00	0.000	0.000	0.2387	0.0000	0.0000	0.00E+00
358	*	*	0.00	0.000	0.000	0.2387	0.0000	0.0000	0.00E+00
359	*	*	0.00	0.000	0.000	0.2387	0.0000	0.0000	0.00E+00
360		*	0.00	0.000	0.000	0.2387	0.0000	0.0000	0.00E+00
361		*	0.00	0.000	0.000	0.2387	0.0000	0.0000	0.00E+00
362		*	0.00	0.000	0.000	0.2387	0.0000	0.0000	0.00E+00
363		*	0.00	0.000	0.000	0.2387	0.0000	0.0000	0.00E+00
364		*	0.00	0.000	0.000	0.2387	0.0000	0.0000	0.00E+00
365	*	*	0.18	0.000	0.025	0.2387	0.0000	0.0000	0.00E+00

\* = Frozen (air or soil)

Annual Totals for Year 21			
	inches	cubic feet	percent
Precipitation	23.64	341,535.1	100.00
Runoff	2.492	36,003.8	10.54
Evapotranspiration	21.835	315,455.8	92.36
Percolation/Leakage through Layer 2	0.417001	6,024.6	1.76
Average Head on Top of Layer 2	1.2014	---	---
Change in Water Storage	-1.1039	-15,949.0	-4.67
Soil Water at Start of Year	17.4741	252,454.7	73.92
Soil Water at End of Year	16.2200	234,336.1	68.61
Snow Water at Start of Year	0.0000	0.0000	0.00
Snow Water at End of Year	0.1502	2,169.5	0.64
Annual Water Budget Balance	0.0000	0.0000	0.00

353	*		0.00	0.000	0.000	0.3250	0.0000	0.0000	0.00E+00
354	*	*	0.00	0.000	0.000	0.3250	0.0000	0.0000	0.00E+00
355	*	*	0.13	0.000	0.033	0.3250	0.0000	0.0000	0.00E+00
356		*	0.00	0.003	0.053	0.3271	0.0000	0.0000	0.00E+00
357	*	*	0.00	0.000	0.000	0.3271	0.0000	0.0000	0.00E+00
358		*	0.00	0.000	0.000	0.3271	0.0000	0.0000	0.00E+00
359		*	0.00	0.000	0.000	0.3271	0.0000	0.0000	0.00E+00
360		*	0.00	0.000	0.000	0.3271	0.0000	0.0000	0.00E+00
361		*	0.00	0.000	0.000	0.3271	0.0000	0.0000	0.00E+00
362		*	0.12	0.009	0.036	0.3305	0.0000	0.0000	0.00E+00
363		*	0.11	0.008	0.035	0.3336	0.0000	0.0000	0.00E+00
364		*	0.00	0.000	0.000	0.3336	0.0000	0.0000	0.00E+00
365	*	*	0.00	0.000	0.000	0.3336	0.0000	0.0000	0.00E+00

\* = Frozen (air or soil)

Annual Totals for Year 22			
	inches	cubic feet	percent
Precipitation	31.65	457,260.0	100.00
Runoff	6.516	94,138.1	20.59
Evapotranspiration	23.193	335,071.6	73.28
Percolation/Leakage through Layer 2	0.003805	55.0	0.01
Average Head on Top of Layer 2	0.0000	---	---
Change in Water Storage	1.9377	27,995.3	6.12
Soil Water at Start of Year	16.2200	234,336.1	51.25
Soil Water at End of Year	18.3079	264,501.0	57.84
Snow Water at Start of Year	0.1502	2,169.5	0.47
Snow Water at End of Year	0.0000	0.0000	0.00
Annual Water Budget Balance	0.0000	0.0000	0.00

353	*	*	0.00	0.000	0.000	0.3540	0.0000	0.0000	0.00E+00
354		*	0.00	0.000	0.000	0.3540	0.0000	0.0000	0.00E+00
355		*	0.00	0.000	0.000	0.3540	0.0000	0.0000	0.00E+00
356		*	0.31	0.113	0.018	0.3622	0.0000	0.0000	0.00E+00
357	*	*	0.07	0.000	0.035	0.3622	0.0000	0.0000	0.00E+00
358		*	0.01	0.000	0.044	0.3622	0.0000	0.0000	0.00E+00
359		*	0.00	0.000	0.000	0.3622	0.0000	0.0000	0.00E+00
360	*	*	0.00	0.000	0.001	0.3622	0.0000	0.0000	0.00E+00
361	*	*	0.03	0.000	0.011	0.3622	0.0000	0.0000	0.00E+00
362	*	*	0.00	0.000	0.014	0.3622	0.0000	0.0000	0.00E+00
363	*	*	0.00	0.000	0.005	0.3622	0.0000	0.0000	0.00E+00
364	*	*	0.00	0.000	0.000	0.3622	0.0000	0.0000	0.00E+00
365		*	0.01	0.000	0.007	0.3623	0.0000	0.0000	0.00E+00

\* = Frozen (air or soil)

Annual Totals for Year 23			
	inches	cubic feet	percent
Precipitation	38.77	560,127.7	100.00
Runoff	6.864	99,172.5	17.71
Evapotranspiration	30.820	445,263.8	79.49
Percolation/Leakage through Layer 2	0.455783	6,584.9	1.18
Average Head on Top of Layer 2	1.6376	---	---
Change in Water Storage	0.6303	9,106.5	1.63
Soil Water at Start of Year	18.3079	264,501.0	47.22
Soil Water at End of Year	18.9382	273,607.5	48.85
Snow Water at Start of Year	0.0000	0.0000	0.00
Snow Water at End of Year	0.0000	0.0000	0.00
Annual Water Budget Balance	0.0000	0.0000	0.00

353	*	*	0.14	0.000	0.027	0.2875	0.0000	0.0000	0.00E+00
354	*	*	0.00	0.000	0.029	0.2875	0.0000	0.0000	0.00E+00
355	*	*	0.00	0.000	0.020	0.2875	0.0000	0.0000	0.00E+00
356		*	0.01	0.005	0.031	0.2920	0.0000	0.0000	0.00E+00
357	*	*	0.00	0.000	0.000	0.2920	0.0000	0.0000	0.00E+00
358	*	*	0.00	0.000	0.005	0.2920	0.0000	0.0000	0.00E+00
359	*	*	0.00	0.000	0.000	0.2920	0.0000	0.0000	0.00E+00
360	*	*	0.00	0.000	0.000	0.2920	0.0000	0.0000	0.00E+00
361		*	0.00	0.000	0.000	0.2920	0.0000	0.0000	0.00E+00
362		*	0.00	0.000	0.000	0.2920	0.0000	0.0000	0.00E+00
363		*	0.00	0.000	0.000	0.2920	0.0000	0.0000	0.00E+00
364		*	0.11	0.002	0.022	0.2960	0.0000	0.0000	0.00E+00
365		*	0.10	0.001	0.022	0.2994	0.0000	0.0000	0.00E+00

\* = Frozen (air or soil)

Annual Totals for Year 24			
	inches	cubic feet	percent
Precipitation	28.87	417,073.4	100.00
Runoff	2.963	42,801.6	10.26
Evapotranspiration	26.813	387,375.6	92.88
Percolation/Leakage through Layer 2	0.476367	6,882.3	1.65
Average Head on Top of Layer 2	1.3915	---	---
Change in Water Storage	-1.3834	-19,986.0	-4.79
Soil Water at Start of Year	18.9382	273,607.5	65.60
Soil Water at End of Year	17.5548	253,621.4	60.81
Snow Water at Start of Year	0.0000	0.0000	0.00
Snow Water at End of Year	0.0000	0.0000	0.00
Annual Water Budget Balance	0.0000	0.0000	0.00

353		0.00	0.000	0.014	0.2479	0.0000	0.0000	0.00E+00
354	*	0.36	0.000	0.035	0.2488	0.0000	0.0000	0.00E+00
355		0.32	0.001	0.000	0.2768	0.0000	0.0000	0.00E+00
356		0.00	0.000	0.019	0.2760	0.0000	0.0000	0.00E+00
357		0.15	0.000	0.052	0.2805	0.0000	0.0000	0.00E+00
358		0.00	0.000	0.020	0.2796	0.0000	0.0000	0.00E+00
359	*	0.01	0.000	0.006	0.2796	0.0000	0.0000	0.00E+00
360	*	0.00	0.000	0.011	0.2791	0.0000	0.0000	0.00E+00
361		0.00	0.000	0.024	0.2780	0.0000	0.0000	0.00E+00
362	*	0.00	0.000	0.000	0.2780	0.0000	0.0000	0.00E+00
363	*	0.00	0.000	0.000	0.2780	0.0000	0.0000	0.00E+00
364	*	0.00	0.000	0.000	0.2780	0.0000	0.0000	0.00E+00
365	*	0.01	0.000	0.010	0.2781	0.0000	0.0000	0.00E+00

\* = Frozen (air or soil)

Annual Totals for Year 25			
	inches	cubic feet	percent
Precipitation	37.50	541,841.6	100.00
Runoff	6.170	89,141.9	16.45
Evapotranspiration	31.504	455,154.2	84.00
Percolation/Leakage through Layer 2	0.299302	4,324.1	0.80
Average Head on Top of Layer 2	0.3724	---	---
Change in Water Storage	-0.4692	-6,778.7	-1.25
Soil Water at Start of Year	17.5548	253,621.4	46.81
Soil Water at End of Year	17.0856	246,842.7	45.56
Snow Water at Start of Year	0.0000	0.0000	0.00
Snow Water at End of Year	0.0000	0.0000	0.00
Annual Water Budget Balance	0.0000	0.0000	0.00

353	*		0.00	0.000	0.000	0.2758	0.0000	0.0000	0.00E+00
354	*		0.18	0.000	0.014	0.2767	0.0000	0.0000	0.00E+00
355	*		0.00	0.000	0.015	0.2776	0.0000	0.0000	0.00E+00
356	*		0.00	0.000	0.014	0.2785	0.0000	0.0000	0.00E+00
357	*		0.00	0.000	0.006	0.2794	0.0000	0.0000	0.00E+00
358	*		0.00	0.000	0.003	0.2803	0.0000	0.0000	0.00E+00
359	*	*	0.06	0.000	0.003	0.2803	0.0000	0.0000	0.00E+00
360	*	*	0.01	0.000	0.000	0.2803	0.0000	0.0000	0.00E+00
361	*	*	0.00	0.000	0.018	0.2803	0.0000	0.0000	0.00E+00
362	*	*	0.16	0.000	0.009	0.2803	0.0000	0.0000	0.00E+00
363	*	*	0.00	0.000	0.021	0.2803	0.0000	0.0000	0.00E+00
364	*	*	0.00	0.000	0.031	0.2803	0.0000	0.0000	0.00E+00
365		*	0.00	0.012	0.022	0.2855	0.0000	0.0000	0.00E+00

\* = Frozen (air or soil)

Annual Totals for Year 26			
	inches	cubic feet	percent
Precipitation	32.72	472,662.4	100.00
Runoff	4.762	68,802.7	14.56
Evapotranspiration	27.687	400,002.0	84.63
Percolation/Leakage through Layer 2	0.062537	903.5	0.19
Average Head on Top of Layer 2	0.0145	---	---
Change in Water Storage	0.2045	2,954.2	0.63
Soil Water at Start of Year	17.0856	246,842.7	52.22
Soil Water at End of Year	17.2484	249,194.8	52.72
Snow Water at Start of Year	0.0000	0.0000	0.00
Snow Water at End of Year	0.0417	602.1	0.13
Annual Water Budget Balance	0.0000	0.0000	0.00

353		0.00	0.000	0.061	0.3492	0.0000	0.0000	0.00E+00
354		0.00	0.000	0.059	0.3465	0.0000	0.0000	0.00E+00
355	*	0.00	0.000	0.028	0.3453	0.0000	0.0000	0.00E+00
356	*	0.09	0.000	0.019	0.3461	0.0000	0.0000	0.00E+00
357		0.16	0.000	0.019	0.3549	0.0000	0.0000	0.00E+00
358		0.01	0.000	0.042	0.3535	0.0000	0.0000	0.00E+00
359	*	0.00	0.000	0.000	0.3534	0.0050	0.0000	1.60E-03
360	*	0.13	0.000	0.019	0.3539	0.0330	0.0000	2.35E-03
361		0.00	0.000	0.038	0.3557	0.1205	0.0000	2.36E-03
362	*	0.01	0.000	0.010	0.3548	0.2784	0.0000	2.37E-03
363	*	0.00	0.000	0.000	0.3541	0.4362	0.0000	2.39E-03
364	*	0.00	0.000	0.000	0.3535	0.5525	0.0000	2.40E-03
365	*	0.00	0.000	0.027	0.3518	0.6448	0.0000	2.41E-03

\* = Frozen (air or soil)

Annual Totals for Year 27			
	inches	cubic feet	percent
Precipitation	41.91	605,430.8	100.00
Runoff	5.021	72,541.2	11.98
Evapotranspiration	34.950	504,935.0	83.40
Percolation/Leakage through Layer 2	0.447025	6,458.3	1.07
Average Head on Top of Layer 2	2.1748	---	---
Change in Water Storage	1.4879	21,496.3	3.55
Soil Water at Start of Year	17.2484	249,194.8	41.16
Soil Water at End of Year	18.7780	271,293.2	44.81
Snow Water at Start of Year	0.0417	602.1	0.10
Snow Water at End of Year	0.0000	0.0000	0.00
Annual Water Budget Balance	0.0000	0.0000	0.00

353	*	*	0.42	0.000	0.023	0.3497	0.0000	0.0000	0.00E+00
354	*	*	0.00	0.000	0.030	0.3497	0.0000	0.0000	0.00E+00
355	*	*	0.00	0.000	0.026	0.3497	0.0000	0.0000	0.00E+00
356	*	*	0.00	0.000	0.011	0.3497	0.0000	0.0000	0.00E+00
357	*	*	0.00	0.000	0.005	0.3497	0.0000	0.0000	0.00E+00
358	*	*	0.00	0.000	0.003	0.3497	0.0000	0.0000	0.00E+00
359	*	*	0.00	0.000	0.002	0.3497	0.0000	0.0000	0.00E+00
360	*	*	0.00	0.000	0.004	0.3497	0.0000	0.0000	0.00E+00
361	*	*	0.06	0.000	0.000	0.3497	0.0000	0.0000	0.00E+00
362		*	0.03	0.029	0.000	0.3536	0.0000	0.0000	0.00E+00
363	*	*	0.00	0.000	0.033	0.3536	0.0000	0.0000	0.00E+00
364	*	*	0.00	0.000	0.012	0.3536	0.0000	0.0000	0.00E+00
365		*	0.00	0.000	0.036	0.3536	0.0000	0.0000	0.00E+00

\* = Frozen (air or soil)

Annual Totals for Year 28			
	inches	cubic feet	percent
Precipitation	40.16	580,241.4	100.00
Runoff	8.452	122,106.2	21.04
Evapotranspiration	30.688	443,368.2	76.41
Percolation/Leakage through Layer 2	0.655485	9,470.1	1.63
Average Head on Top of Layer 2	2.6632	---	---
Change in Water Storage	0.3666	5,296.9	0.91
Soil Water at Start of Year	18.7780	271,293.2	46.76
Soil Water at End of Year	18.7473	270,849.4	46.68
Snow Water at Start of Year	0.0000	0.0000	0.00
Snow Water at End of Year	0.3973	5,740.7	0.99
Annual Water Budget Balance	0.0000	0.0000	0.00

353	*		0.09	0.000	0.010	0.3917	5.4142	0.0000	2.88E-03
354	*		0.00	0.000	0.005	0.3925	7.2593	0.0000	3.06E-03
355	*	*	0.00	0.000	0.026	0.3925	3.3685	0.0000	2.68E-03
356	*	*	0.00	0.000	0.014	0.3925	1.9639	0.0000	2.54E-03
357		*	0.00	0.000	0.000	0.3925	1.9387	0.0000	2.54E-03
358		*	0.00	0.000	0.000	0.3925	1.9136	0.0000	2.53E-03
359		*	0.00	0.000	0.000	0.3925	1.8886	0.0000	2.53E-03
360		*	0.00	0.000	0.000	0.3925	1.8635	0.0000	2.53E-03
361		*	0.00	0.000	0.000	0.3925	1.8385	0.0000	2.53E-03
362		*	0.00	0.000	0.000	0.3925	1.8135	0.0000	2.52E-03
363	*	*	0.00	0.000	0.000	0.3925	1.7885	0.0000	2.52E-03
364	*	*	0.00	0.000	0.000	0.3925	1.7635	0.0000	2.52E-03
365	*	*	0.00	0.000	0.000	0.3925	1.7386	0.0000	2.52E-03

\* = Frozen (air or soil)

Annual Totals for Year 29			
	inches	cubic feet	percent
Precipitation	36.05	520,814.8	100.00
Runoff	3.311	47,831.7	9.18
Evapotranspiration	31.612	456,712.4	87.69
Percolation/Leakage through Layer 2	0.494723	7,147.5	1.37
Average Head on Top of Layer 2	0.6697	---	---
Change in Water Storage	0.6315	9,123.3	1.75
Soil Water at Start of Year	18.7473	270,849.4	52.00
Soil Water at End of Year	19.7761	285,713.4	54.86
Snow Water at Start of Year	0.3973	5,740.7	1.10
Snow Water at End of Year	0.0000	0.0000	0.00
Annual Water Budget Balance	0.0000	0.0000	0.00

353		0.00	0.000	0.089	0.2543	0.0000	0.0000	0.00E+00
354		0.00	0.000	0.043	0.2523	0.0000	0.0000	0.00E+00
355	*	0.00	0.000	0.000	0.2523	0.0000	0.0000	0.00E+00
356		0.00	0.000	0.046	0.2502	0.0000	0.0000	0.00E+00
357	*	0.00	0.000	0.004	0.2502	0.0000	0.0000	0.00E+00
358		0.09	0.000	0.053	0.2518	0.0000	0.0000	0.00E+00
359		0.15	0.000	0.061	0.2559	0.0000	0.0000	0.00E+00
360	*	0.13	0.000	0.038	0.2568	0.0000	0.0000	0.00E+00
361		0.22	0.000	0.007	0.2699	0.0000	0.0000	0.00E+00
362		0.00	0.000	0.047	0.2678	0.0000	0.0000	0.00E+00
363	*	0.00	0.000	0.000	0.2678	0.0000	0.0000	0.00E+00
364	*	0.00	0.000	0.000	0.2678	0.0000	0.0000	0.00E+00
365	*	0.00	0.000	0.000	0.2678	0.0000	0.0000	0.00E+00

\* = Frozen (air or soil)

Annual Totals for Year 30			
	inches	cubic feet	percent
Precipitation	39.01	563,583.0	100.00
Runoff	10.118	146,173.8	25.94
Evapotranspiration	31.087	449,130.5	79.69
Percolation/Leakage through Layer 2	0.721606	10,425.3	1.85
Average Head on Top of Layer 2	2.5908	---	---
Change in Water Storage	-2.9172	-42,146.7	-7.48
Soil Water at Start of Year	19.7761	285,713.4	50.70
Soil Water at End of Year	16.8589	243,566.7	43.22
Snow Water at Start of Year	0.0000	0.0000	0.00
Snow Water at End of Year	0.0000	0.0000	0.00
Annual Water Budget Balance	0.0000	0.0000	0.00

**Average Annual Totals Summary**

**Title:** Buena Vista Eastern Fill Area  
**Simulated on:** 4/29/2026 14:58

	Average Annual Totals for Years 1 - 30*			
	(inches)	[std dev]	(cubic feet)	(percent)
Precipitation	35.43	[5.15]	511,869.2	100.00
Runoff	5.101	[2.186]	73,697.2	14.40
Evapotranspiration	29.841	[3.591]	431,131.4	84.23
Subprofile1				
Percolation/leakage through Layer 2	0.498913	[0.274329]	7,208.0	1.41
Average Head on Top of Layer 2	1.8475	[1.7018]	---	---
Water storage				
Change in water storage	-0.0116	[1.5408]	-167.4	-0.03

\* Note: Average inches are converted to volume based on the user-specified area.

**Peak Values Summary**


**Title:** Buena Vista Eastern Fill Area  
**Simulated on:** 4/29/2026 14:58

	Peak Values for Years 1 - 30*	
	(inches)	(cubic feet)
Precipitation	5.40	78,006.0
Runoff	3.367	48,645.7
Subprofile1		
Percolation/leakage through Layer 2	0.004692	67.8
Average head on Layer 2	23.9831	
Other Parameters		
Snow water	2.8941	41,812.8
Maximum vegetation soil water	0.4610 (vol/vol)	
Minimum vegetation soil water	0.2030 (vol/vol)	

**Final Water Storage in Landfill Profile at End of Simulation Period**

**Title:** Buena Vista Eastern Fill Area  
**Simulated on:** 4/29/2026 14:58  
**Simulation period:** 30 years

Layer	Final Water Storage	
	(inches)	(vol/vol)
1	6.6109	0.2755
2	10.2480	0.4270
Snow water	0.0000	---



**Attachment C**  
Leachate Quality Comparison

Parameter	Acid Phase		Methanogenic Phase		Average	Lagoon					
	Average	Range	Average	Range		3/29/2016	4/10/2017	5/15/2018	9/22/2022	3/20/2024	8/11/2025
	pH	6.1	4.5-7.5	8		7.5-9.0			8.02		8.6
Biological Oxygen Demand (BOD <sub>5</sub> )	13,000	4,000-40,000	180	20-550		13		12	21	< 11.5	4.21
Chemical Oxygen Demand (COD)	22,000	6,000-60,000	3,000	500-4,500					220		
BOD <sub>5</sub> /COD	0.58		0.06						0.10		
Ammonia as N (mg/L)					740	25		15	2.06	13.5	3.06
Cadmium (mg/L)					0.005	<0.0008	<0.0008	<0.0008		< 0.0004	<0.0004
Chromium (mg/L)					0.28	<0.0020	<0.0020	0.0024		< 0.002	<0.002
Copper (mg/L)					0.065	<0.0020	<0.0020	0.104		< 0.002	<0.002
Lead (mg/L)					0.09	<0.0008	<0.0008	<0.0008		< 0.001	<0.001
Nickel (mg/L)					0.17	0.0322	0.0342	<0.004		0.0254	0.0135
Zinc (mg/L)	5	0.1-120	0.6	0.03-4		<0.0080	<0.0080	<0.0080		0.00917	0.00702
Manganese (mg/L)	25	0.3-65	0.7	0.03-45							
Sodium (mg/L)					1,340						
Potassium (mg/L)					1,085						
Calcium (mg/L)	1,200	10-2,500	60	20-600							
Magnesium (mg/L)	470	50-1,150	180	40-350							
Iron (mg/L)	780	20-2,100	15	3-280		8.9	1.82	7.52		6.78	0.882
Chloride (mg/L)					2,120						
Sulfate (mg/L)	500	70-1,750	80	10-420							

Lower than both ranges or average  
Methanogenic Range  
Acid Range

Parameter	Acid Phase		Methanogenic Phase		Average	LW-1/2		LW-5/6		LW-4	LW-5	LW-6
	Average	Range	Average	Range		10/7/2019	9/30/2021	10/7/2019	9/30/2021	9/22/2015		
	pH	6.1	4.5-7.5	8		7.5-9.0						
Biological Oxygen Demand (BOD <sub>5</sub> )	13,000	4,000-40,000	180	20-550		196	60.1	52.7	41.3			
Chemical Oxygen Demand (COD)	22,000	6,000-60,000	3,000	500-4,500		773	1,970	807	1,460			
BOD <sub>5</sub> /COD	0.58		0.06			0.25	0.03	0.07	0.03			
Ammonia as N (mg/L)					740	99.9	186	314	515			
Cadmium (mg/L)					0.005							
Chromium (mg/L)					0.28							
Copper (mg/L)					0.065							
Lead (mg/L)					0.09							
Nickel (mg/L)					0.17							
Zinc (mg/L)	5	0.1-120	0.6	0.03-4								
Manganese (mg/L)	25	0.3-65	0.7	0.03-45						3.32*	0.144*	0.821*
Sodium (mg/L)					1,340					436	3,200	575
Potassium (mg/L)					1,085					66.9	489	94.2
Calcium (mg/L)	1,200	10-2,500	60	20-600						359*	349*	207*
Magnesium (mg/L)	470	50-1,150	180	40-350						124	511	148
Iron (mg/L)	780	20-2,100	15	3-280						104	32.8	62.3
Chloride (mg/L)					2,120					659	4,830	974
Sulfate (mg/L)	500	70-1,750	80	10-420							8.24	23.7

Lower than both ranges or average  
Methanogenic Range  
Acid Range  
Above Average

\* In range for both Acid and Methanogenic phases, compared to average.

## Attachment D

### 2025 Laboratory Analytical Results



## Certificate of Analysis

Report Date: 8-18-2025  
Report Number: 25-230-0038  
Lab ID Number: 25026057

Buena Vista County Solid Waste Commission  
PO Box 1051  
Storm Lake, IA 50588

Date Submitted: 8-11-2025  
Date Received: 8-11-2025  
Contact: Lori Dicks

**Sample Description:** Leachate Pond Grab  
**Sampled:** 8-11-2025 @ 7:45 by LD  
**Received:** 8-11-2025 @ 8:57 by SKS (18.5°C)

Test Requested	Result	Analysis Date / Time	Analyst	Method
BOD (mg/L)	4.21	8-13-2025 7:43	MOM	SM 5210B - 2011
Total Kjeldahl Nitrogen (mg/L)	5.37	8-14-2025 8:02	BMG	CFR PAI-DK03
Total Suspended Solids (mg/L)	5.5	8-12-2025 7:58	MOM	SM 2540 D - 2011
Ammonia as N (mg/L)	3.06	8-14-2025 9:03	ELW	SM 4500 NH3C - 2011
Arsenic (ppm)	< 0.02	8-13-2025 15:02	ELW	EPA 200.8 (mod)
Barium (ppm)	0.195	8-13-2025 15:02	ELW	EPA 200.8 (mod)
Cadmium (ppm)	< 0.0004	8-13-2025 15:02	ELW	EPA 200.8 (mod)
Chromium (ppm)	< 0.002	8-13-2025 15:02	ELW	EPA 200.8 (mod)
Copper (ppm)	< 0.002	8-13-2025 15:02	ELW	EPA 200.8 (mod)
Iron (ppm)	0.882	8-13-2025 15:42	ELW	SM 3120 B - 2011
Lead (ppm)	< 0.001	8-13-2025 15:02	ELW	EPA 200.8 (mod)
Nickel (ppm)	0.0135	8-13-2025 15:02	ELW	EPA 200.8 (mod)
pH	7.85	8-11-2025 14:58	SEW	SM 4500-H B - 2011
Selenium (ppm)	0.00643	8-13-2025 15:02	ELW	EPA 200.8 (mod)
Silver (ppm)	< 0.002	8-13-2025 15:02	ELW	EPA 200.8 (mod)
Total Dissolved Solids (mg/L)	786	8-13-2025 12:11	JWM	SM 2540C - 2011
Zinc (ppm)	0.00702	8-13-2025 15:02	ELW	EPA 200.8 (mod)

**Comments**

Foundation Analytical Lab (IDNR Lab #396, USEPA Lab #IA01138) is certified by the Iowa Department of Natural Resources for the testing of wastewater and drinking water.

Upon receipt sample met requirements for analysis EXCEPT maximum hold time exceeded (pH).

Respectfully submitted by

**Molly Lundsgaard**  
Laboratory Administrator

**\*\* End Certificate of Analysis \*\***

Samples were received in acceptable condition unless denoted in the comments section of this report. Any temperature(s) recorded at receipt are +/- 1°C. All data for this report has been approved by Foundation Analytical Laboratory Management. The results depicted in this report apply to samples as submitted. It is not possible for Foundation Analytical Laboratory to guarantee that a test result obtained on a particular sample will be the same on any other sample unless all conditions affecting the sample are the same, including sampling by Foundation Analytical Laboratory. As a mutual protection to clients, the public, and ourselves, all reports are submitted as the confidential property of clients, and authorization for publication of statements, conclusions or extracts from or regarding our reports is reserved pending our written approval.



Collection Location leachate pond 26026057		Collector and Phone dicks lori	Client Reference buena vista csw	Accession # 2698624
STORM LAKE, IA		Collected 2025-08-11 07:57	Received 2025-08-13 13:15	Project
Report To	ABBI ORGEN FOUNDATION ANALYTICAL LABORATORY			Sample Description wastewater
	723 SLEEZER RD CHEROKEE, IA 51012-			Sample Type Non-Drinking Water
				Sample Source
				Sample Note(s) 1

RESULTS OF ANALYSIS - FINAL REPORT

TEST	RESULT (mg/L)	QUANT LIMIT	ANALYSIS NOTE(S)
Total Organic Carbon, SM 5310 B			
<b>Total Organic Carbon</b>	<b>27</b>	<b>0.5</b>	
Mercury, EPA 245.2			
<b>Mercury</b>	<b>&lt;0.00020</b>	<b>0.0002</b>	

TEST	RESULT (ug/L)	QUANT LIMIT	ANALYSIS NOTE(S)
GCMS Volatiles, EPA 624			
<b>Chloromethane</b>	<b>&lt;5</b>	<b>5</b>	
<b>Bromomethane</b>	<b>&lt;5</b>	<b>5</b>	
<b>Vinyl chloride</b>	<b>&lt;5</b>	<b>5</b>	
<b>Chloroethane</b>	<b>&lt;5</b>	<b>5</b>	
<b>Methylene chloride</b>	<b>&lt;5</b>	<b>5</b>	
<b>1,1-Dichloroethene</b>	<b>&lt;5</b>	<b>5</b>	
<b>1,1-Dichloroethane</b>	<b>&lt;5</b>	<b>5</b>	
<b>Total 1,2-Dichloroethenes</b>	<b>&lt;5</b>	<b>5</b>	
<b>Chloroform</b>	<b>&lt;5</b>	<b>5</b>	
<b>1,2-Dichloroethane</b>	<b>&lt;5</b>	<b>5</b>	
<b>1,1,1-Trichloroethane</b>	<b>&lt;5</b>	<b>5</b>	
<b>Carbon tetrachloride</b>	<b>&lt;5</b>	<b>5</b>	
<b>Bromodichloromethane</b>	<b>&lt;5</b>	<b>5</b>	
<b>1,2-Dichloropropane</b>	<b>&lt;5</b>	<b>5</b>	
<b>cis-1,3-Dichloropropene</b>	<b>&lt;5</b>	<b>5</b>	
<b>Trichloroethene</b>	<b>&lt;5</b>	<b>5</b>	
<b>Dibromochloromethane</b>	<b>&lt;5</b>	<b>5</b>	
<b>1,1,2-Trichloroethane</b>	<b>&lt;5</b>	<b>5</b>	
<b>Benzene</b>	<b>&lt;5</b>	<b>5</b>	
<b>trans-1,3-Dichloropropene</b>	<b>&lt;5</b>	<b>5</b>	
<b>Bromoform</b>	<b>&lt;5</b>	<b>5</b>	
<b>Tetrachloroethene</b>	<b>&lt;5</b>	<b>5</b>	
<b>1,1,2,2-Tetrachloroethane</b>	<b>&lt;5</b>	<b>5</b>	
<b>Toluene</b>	<b>&lt;5</b>	<b>5</b>	
<b>Chlorobenzene</b>	<b>&lt;5</b>	<b>5</b>	
<b>Ethylbenzene</b>	<b>&lt;5</b>	<b>5</b>	
GCMS Volatiles, EPA 624 AAC			
<b>Acrolein</b>	<b>&lt;20.</b>	<b>20.</b>	
<b>Acrylonitrile</b>	<b>&lt;20.</b>	<b>20.</b>	
<b>2-Chloroethylvinyl ether</b>	<b>&lt;20.</b>	<b>20.</b>	

GCMS Semivolatiles, EPA 625



Collection Location	Collector	Client Reference	Accession #
leachate pond 26026057	dicks lori	buena vista csw	2698624

GCMS Semivolatiles, EPA 625

Phenol	<5	5
bis(2-Chloroethyl)ether	<5	5
2-Chlorophenol	<5	5
1,3-Dichlorobenzene	<5	5
1,4-Dichlorobenzene	<5	5
1,2-Dichlorobenzene	<5	5
2-Methylphenol	<5	5
2,2'-oxybis(1-Chloropropane)	<5	5
4-Methylphenol	<5	5
N-Nitroso-di-n-propylamine	<5	5
Hexachloroethane	<5	5
Nitrobenzene	<5	5
Isophorone	<5	5
2-Nitrophenol	<5	5
2,4-Dimethylphenol	<5	5
bis(2-Chloroethoxy) methane	<5	5
2,4-Dichlorophenol	<5	5
1,2,4-Trichlorobenzene	<5	5
Naphthalene	<5	5
4-Chloroaniline	<5	5
Hexachlorobutadiene	<5	5
4-Chloro-3-methylphenol	<5	5
2-Methylnaphthalene	<5	5
Hexachlorocyclopentadiene	<5	5
2,4,6-Trichlorophenol	<5	5
2,4,5-Trichlorophenol	<5	5
2-Chloronaphthalene	<5	5
2-Nitroaniline	<5	5
Dimethyl phthalate	<5	5
Acenaphthylene	<5	5
2,6-Dinitrotoluene	<5	5
3-Nitroaniline	<5	5
Acenaphthene	<5	5
2,4-Dinitrophenol	<5	5
4-Nitrophenol	<5	5
Dibenzofuran	<5	5
2,4-Dinitrotoluene	<5	5
Diethyl phthalate	<5	5
Fluorene	<5	5
4-Chlorophenyl phenyl ether	<5	5
4-Nitroaniline	<5	5
4,6-Dinitro-2-methylphenol	<5	5
N-Nitrosodiphenylamine	<5	5
4-Bromophenyl phenyl ether	<5	5
Hexachlorobenzene	<5	5
Pentachlorophenol	<5	5
Phenanthrene	<5	5
Carbazole	<5	5
Anthracene	<5	5
Di-n-butyl phthalate	<5	5
Fluoranthene	<5	5
Pyrene	<5	5
Butyl benzyl phthalate	<5	5
Benzo(a)anthracene	<5	5
3,3'-Dichlorobenzidine	<5	5

Collection Location leachate pond 26026057	Collector dicks lori	Client Reference buena vista csw	Accession # 2698624
---	-------------------------	-------------------------------------	------------------------

<u>TEST</u>	<u>RESULT (ug/L)</u>	<u>QUANT LIMIT</u>	<u>ANALYSIS NOTE(S)</u>
Chrysene	<5	5	
bis(2-Ethylhexyl)phthalate	<5	5	
Di-n-octyl phthalate	<5	5	
Benzo(b)fluoranthene	<5	5	
Benzo(k)fluoranthene	<5	5	
Benzo(a)pyrene	<5	5	
Indeno(1,2,3-cd)pyrene	<5	5	
Dibenzo(a,h)anthracene	<5	5	
Benzo(g,h,i)perylene	<5	5	
N-Nitrosodimethylamine	<5	5	
Benzidine	<5	5	
<i>Chlorinated Hydrocarbon Insecticides, EPA 608</i>			
Aldrin	<0.05	0.05	
alpha-BHC	<0.05	0.05	
beta-BHC	<0.05	0.05	
delta-BHC	<0.05	0.05	
Lindane	<0.05	0.05	
4,4'-DDD	<0.05	0.05	
4,4'-DDE	<0.05	0.05	
4,4'-DDT	<0.05	0.05	
Dieldrin	<0.05	0.05	
Endosulfan I	<0.05	0.05	
Endosulfan II	<0.05	0.05	
Endosulfan sulfate	<0.05	0.05	
Endrin	<0.05	0.05	
Endrin aldehyde	<0.05	0.05	
Endrin ketone	<0.05	0.05	
Heptachlor	<0.05	0.05	
Heptachlor epoxide	<0.05	0.05	
Methoxychlor	<0.05	0.05	
Chlordane	<0.05	0.05	
Toxaphene	<0.5	0.5	
Aroclor 1016	<0.5	0.5	
Aroclor 1221	<0.5	0.5	
Aroclor 1232	<0.5	0.5	
Aroclor 1242	<0.5	0.5	
Aroclor 1248	<0.5	0.5	
Aroclor 1254	<0.5	0.5	
Aroclor 1260	<0.5	0.5	

**SAMPLE AND ANALYSIS NOTES**

1. Unless otherwise noted, the sample met container and preservation requirements for the analysis requested. Please review carefully your sample results for additional analyte comments or method exceptions.

**ANALYSIS INFORMATION**

<u>TEST</u>	<u>ANALYZED</u>	<u>SITE</u>	<u>RELEASED</u>	<u>ANALYSIS PREP</u>
1. Total Organic Carbon, SM 5310 B	2025-09-08 09:45 AJB	3201	2025-09-09 11:14 JAE	
2. Mercury, EPA 245.2	2025-08-27 14:01 SGB	3201	2025-08-28 13:45 BRW	
3. GCMS Volatiles, EPA 624	2025-08-13 15:43 LJL	3200	2025-08-15 10:41 TGC	
4. GCMS Volatiles, EPA 624 AAC	2025-08-13 16:36 LJL	3200	2025-08-15 10:41 TGC	
5. GCMS Semivolatiles, EPA 625	2025-08-21 11:18 VER	3200	2025-08-21 15:52 TGC	Test 6

<b>Collection Location</b> leachate pond 26026057	<b>Collector</b> dicks lori	<b>Client Reference</b> buena vista csw	<b>Accession #</b> 2698624
--	--------------------------------	--	-------------------------------

<b>TEST</b>	<b>ANALYZED</b>	<b>SITE</b>	<b>RELEASED</b>	<b>ANALYSIS PREP</b>
6. Prep by Separatory Funnel, EPA 625	2025-08-18 08:36 NH	3200	2025-08-19 07:53 MES	
7. Chlorinated Hydrocarbon Insecticides, EPA 608	2025-08-20 20:06 VER	3200	2025-08-21 15:44 TGC	Test 8
8. Prep by Separatory Funnel, EPA 608	2025-08-18 08:22 MW	3200	2025-08-19 07:53 MES	

**DESCRIPTION OF UNITS**

mg/L = Milligrams per Liter  
 ug/L = Micrograms per Liter

**SITE(S) PERFORMING TESTING**

- 3201 STATE HYGIENIC LAB AT THE UNIV. OF IOWA, IOWA LABORATORIES COMPLEX, 2220 S ANKENY BLVD, ANKENY, IA 50023; Phone 515/725-1600; Fax 515/725-1642; Dustin M. May, Ph.D., Associate Director; Michael A. Pentella, Ph.D., D(ABMM), Director; IOWA ENVIRONMENTAL LAB ID #397; CLIA ID Number 16D0709302
- 3200 STATE HYGIENIC LAB AT THE UNIV. OF IOWA, UNIVERSITY OF IOWA RESEARCH PARK, 2490 CROSSPARK RD, CORALVILLE, IA 52241; Phone 319/335-4500; Fax 319/335-4555; Dustin M. May, Ph.D., Associate Director; Michael A. Pentella, Ph.D., D(ABMM), Director; IOWA ENVIRONMENTAL LAB ID #027; CLIA ID Number 16D0648109

The result(s) of this report relate only to the items analyzed. Where the laboratory has not been responsible for the sampling stage the results apply only to the sample as received. This report shall not be reproduced except in full without the written approval of the laboratory. If you have any questions, please call Client Services at 800/421-IOWA (4692) or 319/335-4500.