Appendix S – Closure and Post-Closure Care Plan

ZION LANDFILL, INC.

ZION, ILLINOIS

CLOSURE AND POST-CLOSURE PLAN

May 2022

CLOSURE AND POST-CLOSURE CARE PLAN

TABLE OF CONTENTS

1.0 INTRODUCTION 1

2.0 CLOSURE PLAN (812.114) 2

2.1 Routine Closure Activities 2
2.2 Assumed Closure Date and Premature Closure 4
2.3 Temporary Suspension of Waste 4
2.4 Largest Area Requiring Final Cover 5
2.5 Maximum Inventory of Wastes 5

3.0 POST-CLOSURE CARE PLAN (812.115) 6

3.1 Maintenance and Inspections 6
3.2 Leachate Collection and Management System Operation and Monitoring 7
3.3 Gas Monitoring, Collection and Control 8
3.4 Groundwater Monitoring 8
3.5 Security 9
3.6 Recordkeeping 9
3.7 Evaluation of Data Collected During Post-Closure Care Period 9

4.0 CLOSURE AND POST-CLOSURE CARE COST ESTIMATES (812.116) 10

4.1 Cost Estimates 10
4.2 Financial Assurance 10

EXHIBITS

EXHIBIT 1 – Routine and Premature Closure Schedules

EXHIBIT 2 – Closure and Post-Closure Care Cost Estimates

1.0 INTRODUCTION

This Closure and Post-Closure Care Plan (Plan) describes the closure and post-closure care activities that Zion Landfill, Inc. (Landfill) will perform at the expanded landfill (Site 2 North Expansion). The Plan has been developed to meet the closure and post-closure care plan requirements stipulated in 35 IAC Section 812.114 and 35 IAC Section 812.115 and address the requirements of 35 IAC Section 811.110, 35 IAC Section 811.111, and 35 IAC Section 811.704.

This Plan details the steps necessary for the proper closure of the expanded Landfill in the event of an unplanned, premature closure of the Landfill as well as under the planned, routine closure of the Landfill. Schedules are provided for both of these scenarios. In addition, the steps necessary to care for the Landfill during the post-closure period are described. Cost estimates are presented for closure and post-closure activities, and financial assurance mechanisms (to ensure that funding is available to complete those activities) are described. The Closure Plan is provided in Section 2, and the Post-Closure Care Plan is provided in Section 3. Section 4 provides Closure and Post-Closure Care Cost Estimates.

Drawing D11 shows the configuration of the facility after closure of all phases, including the approximate contours of the final topography of the expanded Landfill. It is noted that the landfill will be closed incrementally and settlement is anticipated to occur after closure. Therefore, the final topography may vary from the topography shown to allow each area being closed to tie into adjacent closed areas. The location of all facility-related structures that will remain as permanent features after closure are also shown on this drawing. Details of the final cover and stormwater management system designs are shown on **Drawing D13** and **Drawings D20 through D25**. The locations of environmental monitoring points are shown on **Drawing D12**, and the location and details of the conceptual landfill gas management system are shown on **Drawing D14** and **Drawings D26 through D27**.

2.0 CLOSURE PLAN (812.114)

2.1 Routine Closure Activities

Routine closure is closure at the end of the intended operating life. Routine closure of the expanded Landfill is estimated to occur in the year 2044[1].

Activities necessary to close the Landfill at the end of the intended operating life are detailed below:

Equipment Decontamination: Equipment decontamination will consist of removing accumulated waste and pressure washing the Landfill equipment that has been in contact with the waste. Wash waters will be collected and either solidified and disposed at the Landfill, or transported to an offsite wastewater treatment plant for treatment and disposal. Equipment used to construct the final cover will not contact waste and, therefore, will not require decontamination.

Remove All Unnecessary Equipment and Structures: All equipment and structures that are not necessary for the post-closure land use will be removed. This will include removing the scales and Landfill operations equipment not necessary for post-closure maintenance activities. If appropriate, buildings such as the office and maintenance buildings may remain onsite to facilitate post-closure care, at the discretion of the Owner.

Gas Monitoring, Collection and Control System Components: The gas monitoring, collection and control system will be installed during the Landfill operating period and remain operational at least 30 years after closure and may be discontinued only after conditions described in 35 IAC Section 811.310(c)(4) have been achieved. Any remaining gas collection devices and associated piping will be installed during routine closure, as necessary. The conceptual locations of the gas monitoring, collection and control systems are illustrated on **Drawing D14**; conceptual details are shown on **Drawings D26 through D27**. The location and details may be modified as appropriate and as approved by the Illinois EPA. Construction procedures are contained in the Construction Quality Assurance (CQA) Plan.

Final Cover Subgrade Preparation: The final cover subgrade will consist of a 12-inch minimum thickness intermediate cover soil layer. The majority of the intermediate cover soil layer will have been placed as part of Landfill operations. Additional soil will be placed as needed to attain the full 12-inch thickness.

Final Cover Recompacted Soil Layer: A 24-inch minimum thickness low-permeability barrier soil layer will be placed over the one foot of intermediate cover soil. The low-permeability barrier soil layer will be compacted and placed to meet requirements specified in the CQA Plan. Construction details are illustrated on **Drawing D20**; material, placement and compaction requirements are provided in the CQA Plan.

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[1] The intended operating life is calculated based on projected annual waste receipts from the service area.

Geomembrane Installation: A 40-mil linear low-density polyethylene (LLDPE) geomembrane will be placed over the final cover barrier soil in all areas that have received waste. Details are illustrated on **Drawing D20**. Geomembrane material and installation requirements are provided in the CQA Plan.

Geocomposite Drainage Layer: A geocomposite drainage layer, consisting of a geonet sandwiched between two non-woven needle-punched geotextiles, will be placed immediately above the geomembrane. Construction details are illustrated on **Drawing D20**; material and installation requirements are provided in the CQA Plan.

Protective Cover Soils Layer: A protective cover capable of supporting vegetation, at least 3 feet thick, will be placed over the geocomposite drainage layer. The protective layer will consist of at least 30 inches of general soils meeting requirements specified in the CQA plan and 6 inches of topsoil (i.e. soil capable of supporting vegetation). The protective layer will be placed as soon as possible following installation of the geocomposite drainage layer to prevent desiccation, cracking, freezing or other damage to the subgrade, final cover barrier soil, geomembrane, and geocomposite drainage layer. Details are illustrated on **Drawing D20**. Protective cover soils material, placement and compaction requirements are provided in the CQA Plan.

Seed and Mulch: The final cover and borrow area will be seeded and mulched. Erosion controls and sediment controls, such as silt fencing, erosion control mats, wattles, etc. will be placed as required to minimize erosion until the vegetation becomes established. Seeding and mulching will be conducted in accordance with of the CQA Plan.

Stormwater Management Structures: Stormwater management structures that will be constructed at closure consist of slope drainage terraces, letdown pipes, and associated erosion control features. All other runoff control structures will have been constructed prior to closure. Stormwater management structure locations and details are shown on **Drawings D13, D21, D22, D23, D24, and D25**. All earthwork will be performed in accordance with the CQA Plan, and all surface water control facilities will follow the procedures in the CQA Plan.

CQA Activities: Construction Quality Assurance (CQA) activities will be performed in accordance with the CQA Plan. CQA activities will include final cover barrier soil testing (field and laboratory), field geomembrane and geocomposite drainage layer installation inspection and testing, laboratory geomembrane and geocomposite drainage layer material testing, vegetative soil cover inspection and surveys, structure removal, and preparation of the CQA Acceptance Report.

Deed Notification: A notice of closure will be sent to the IEPA within 30 days after the date that the final volume of waste is received. Owner will record a notification on the deed to the Landfill property upon closure of all units. A copy of this instrument will be placed in the Operating Record. Owner will notify the IEPA that the notification has been recorded and a copy has been placed in the Operating Record. The notification will notify any potential purchaser of the property that the land has been used as a landfill facility and its use is restricted pursuant to 35 IAC Section 811.111(d).

The estimated schedule to perform the routine closure activities is provided in Exhibit 1 (Table 1-1). The schedule shows the total time required to close the site, and the time required for the various closure activities to allow tracking of the progress of closure. Closure activities will be

initiated within 30 days of the date the unit receives the final receipt of waste and, assuming favorable conditions, will be completed within 180 days of beginning closure. An extension to the closure schedule will be requested pursuant to 35 IAC Section 811.110(f)(2), if necessary. Such an extension request will demonstrate that the closure will, by necessity, take longer than 180 days, and the Landfill and/or Owner has taken and will continue to take all necessary steps to prevent threats to human health and the environment from the unclosed portions of the Landfill.

2.2 Assumed Closure Date and Premature Closure

Premature closure is closure at the "assumed closure date," which is defined as "the point in time when the extent and manner of the facility's development…would make closure the most expensive" (35 IAC Section 811.700(e)). Premature closure assumes full development of the facility has not been completed and capacity has not been fully consumed.

In the event premature closure is required, the Owner will inspect the site conditions and review and modify the Closure Plan as needed to ensure that the site is closed in accordance with applicable requirements of 35 IAC Section 811 and 35 IAC Section 812. The primary site features to be reviewed and evaluated will include slope stability; stormwater drainage; gas monitoring, collection and control devices; final cover barrier soil material borrow area; final cover geomembrane and geocomposite drainage layer installation requirements; and protective cover material borrow source.

Anticipated steps necessary to prematurely close the Landfill are as described for routine closure in the previous section.

The estimated schedule to perform the premature closure activities is provided in Exhibit 1 (Table 1-2). The schedule shows the total time required to close the site and the time required for the various closure activities to allow tracking of the progress of closure. Closure activities will be initiated within 30 days of the date the unit receives the final receipt of waste and, assuming favorable conditions, will be completed within 180 days of beginning closure. An extension to the closure schedule will be requested pursuant to 35 IAC Section 811.110(f)(2), if necessary. In accordance with 35 IAC Section 811.110(e)(2), Owner will request an extension beyond the one-year deadline for closure if the MSWLF unit has remaining capacity to receive additional wastes and there is a reasonable likelihood that the MSWLF unit will receive additional wastes; such an extension must be granted by the IEPA if the MSWLF unit has remaining capacity to receive additional wastes and the Landfill and/or Owner has taken and will continue to take all necessary steps to prevent threats to human health and the environment from the unclosed portions of the Landfill.

2.3 Temporary Suspension of Waste

The Landfill does not intend to temporarily suspend waste acceptance at any time. If this does occur, however, the following minimum steps will be taken to protect human health and the environment:

- Verify that the minimum daily cover has been placed over all exposed waste. If temporary waste suspension is expected to, or will, occur longer than 60 days, place intermediate cover over all wastes that have not received final or intermediate cover;

- Secure the site, place a sign indicating the Landfill status notifying the public of the temporary suspension of waste acceptance;

- Verify that stormwater management controls are in place and operating correctly. Arrange for stormwater pumping if required;

- Inspect the site at least weekly and after each significant rainfall. Repair damaged cover promptly;

- Remove and dispose of any illegally-dumped waste on or adjacent to the Landfill;

- Maintain all groundwater, surface water, leachate, and LFG monitoring activities scheduled during the temporary suspension of waste; and

- Decontaminate any equipment leaving the site in accordance with the Closure Plan.

In the event that waste receipts are suspended, the Landfill will begin closure activities no later than one year after the most recent date that waste is received, unless an extension is requested from and granted by the IEPA.

2.4 Largest Area Requiring Final Cover

The existing landfill and proposed expansion will be operated such that contemporaneous operations and closure will occur throughout the life of the landfill. Final cover will be installed in stages in compliance with 35 IAC Section 811.314. The largest area requiring final cover during the life of the expanded Landfill will vary as development and closure occurs. At least once each year, the largest area requiring final cover is reviewed and identified based on site conditions. The area is then specified in the premature closure cost estimate, which is updated at least annually in accordance with the facility's IEPA permit (see Exhibit 2 for the premature closure cost estimate).

2.5 Maximum Inventory of Wastes

The maximum inventory of waste in storage at any time is summarized below:

- Landfill: the maximum inventory of waste disposed at the Landfill when it is fully developed will be approximately 30.9 million cubic yards.

- Leachate: the maximum volume of leachate that may be contained at the facility is currently equal to the capacity of the leachate storage tank(s); as of the date of this Plan, leachate storage tank capacity is approximately 229,000 gallons, including (2) 32,000 gallon tanks and one 165,000 gallon tank. The existing 165,000 gallon tank will be replaced and relocated to the northwest corner of the expansion footprint when development of the expansion begins. The maximum volume of leachate storage for the expansion will be equal to the cumulative storage of the installed tanks, which will be at least 229,000 gallons.

3.0 POST-CLOSURE CARE PLAN (812.115)

The Owner will monitor and maintain the expanded Landfill for a minimum period of 30 years following closure. **Drawings D11, D12, and D14** are provided to show the final grades, structures, and monitoring devices to remain during the post-closure care period. As previously noted, the landfill will be closed incrementally and settlement is anticipated to occur after closure. Therefore, the final topography may vary from the topography shown to allow each area being closed to tie into adjacent closed areas.

All wastes and waste residues will be treated, removed from the site, or disposed at a properly permitted facility within 30 days after receipt of the final volume of waste. All equipment and structures not necessary for the post-closure land use will also be removed. This will include removing the scales and Landfill operations equipment not necessary for post-closure maintenance activities. If appropriate, the office building, maintenance building, landfill gas collection and control equipment, and leachate loadout and storage area may remain onsite to facilitate post-closure care, at the discretion of the Owner.

The proposed end use of the site will be a natural area of passive open space. The post-closure use of the site will not disturb the integrity of the final cover, liner, any other components of the containment system, or the function of the monitoring systems. The Owner will submit the appropriate applications to the IEPA if it decides to pursue any other land use or any disturbance at the site. Any approved disturbance at the site will demonstrate that the integrity of the final cover, liner, or other component of the containment system, including any removal of waste, will not increase the potential threat to human health or the environment. Any other use is subject to IEPA approval.

3.1 Maintenance and Inspections

The Owner will conduct a visual inspection of all vegetated surfaces for a minimum period of 30 years after closure, or as otherwise approved by the IEPA. Inspections will be conducted quarterly during the first 5 years following closure, and annually thereafter.

The following features shall be inspected:

- Landfill cover for rills, gullies, and crevices;
- Vegetation for evidence of failure or damage, such as due to erosion or LFG stress;
- Existing woodlands and proposed landscaping and trees for evidence of damage, such as due to erosion or storm damage;
- Evidence of excessive landfill settlement, such as standing water, cracks, poor drainage, depressions, holes, etc.
- Landfill gas extraction well alignments for readjustments as necessary;
- Drainage channel erosion and scour;
- Culverts for crushing, clogging, and excessive corrosion;

- Stormwater detention basins for vegetation, erosion, sedimentation / need for dredging, etc.; and

- Site boundary fence, gates, and locks for evidence of damage and disrepair.

Features will be maintained in accordance with the following specifications:

- All rills, gullies and crevices 6 inches or deeper that are identified will be filled. Desiccation cracking of soil that normally occurs during extremely dry weather does not warrant corrective actions provided the desiccation cracks heal during wet weather.

- All eroded and scoured drainage channels will be repaired, and lining material will be replaced as necessary. Areas identified as particularly susceptible to erosion will be re-graded as necessary to minimize such susceptibility.

- As required by the conditions of the Siting Ordinance, existing woodlands and proposed landscaping and trees planned as part of the Site 2 North Expansion will be maintained and replaced as necessary.

- All holes and depressions created by settling will be filled and re-contoured to prevent standing water.

- Stormwater culverts and basins shall be maintained to pass the design stormwater runoff. This may require removing debris buildup at culvert entrances, remove excessive sediment buildup, and/or reline or replace culverts that have failed structurally.

- All re-worked surfaces, and areas with failed or eroded vegetation in excess of 100 square feet cumulatively, will be re-vegetated in accordance with the approved Closure Plan.

- The final cover will be mowed annually to prevent trees, brush, shrubs, and other deep-rooted vegetation from becoming established.

- Site boundary fencing, gates, and locks will be repaired as required to maintain site security.

3.2 Leachate Collection and Management System Operation and Monitoring

The Landfill will collect and manage leachate for a minimum of 30 years after closure, or as otherwise approved by the IEPA. Operating and maintaining the leachate management system will include the following primary tasks:

- Maintaining the air compressor used to supply the air for the pneumatic leachate removal pumps (if used). Routine air compressor maintenance typically consists of changing oil and belts, and draining condensed water in the compressed air reservoir tank. Routine maintenance will be conducted in accordance with the procedures and schedules recommended by the air compressor manufacturer.

- Maintaining the leachate collection pumps and leachate transfer pump to ensure efficient operation. Maintenance generally consists of removing any excessive build-up of scale. Routine maintenance will be conducted in accordance with the procedures and schedules recommended by the pump manufacturer and as otherwise required.

- Maintaining the leachate flow meters. Routine maintenance and inspection will be conducted in accordance with procedures and schedules recommended by the flow meter manufacturer and as otherwise required.

- Cleaning leachate collection piping as necessary to remove sediment and to open clogged perforations. Leachate pipe cleanout will consist of injecting water at high pressure into the leachate collection piping. Access to the piping will be provided by the leachate collection pipe cleanouts.

- Discharging collected stormwater from the leachate storage tank secondary containment on an as-needed basis in order to maintain the necessary secondary containment volume. Stormwater will be inspected for evidence of contamination by leachate prior to discharge. If contaminated, the stormwater will be disposed as leachate. Otherwise, collected stormwater will be discharged.

Leachate extracted during the post-closure care period will continue to be transported offsite to a properly permitted wastewater treatment facility for treatment and disposal. Representative samples of leachate will be collected from the leachate collection wells/sumps as required by the Landfill's IEPA permit. Parameters to be monitored and sampling frequency will be in accordance with current regulations specified in 35 IAC Section 811.309(g).

3.3 Gas Monitoring, Collection and Control

Landfill gas monitoring will be performed in accordance with current regulations specified in 35 IAC Section 811.310(a)-(d) and the Landfill's IEPA permit throughout the 30-year post-closure care period. The required monitoring period may be reduced by the IEPA upon a demonstration that the reduced period is sufficient to protect human health and the environment. Details of the landfill gas monitoring activities are provided in the Environmental Monitoring Plan. Landfill gas monitoring locations are illustrated on **Drawing D14**.

Landfill gas will be collected and controlled throughout the post-closure care period as required to meet the standards specified in 35 IAC Section 811.311(d)(11). The landfill gas collection and control system is designed to function for the entire design period, and includes provisions to allow the system to accommodate changing gas flow rates or composition. The landfill gas collection and control system is shown on **Drawing D14**, with system details shown on **Drawings D26 and 27**.

The landfill gas collection and control system will be operated and maintained to ensure the landfill gas is managed in accordance with IEPA regulations. These activities will include routine monitoring of the gas extraction wellheads for vacuum and gas quality, adjusting wellhead and header valves to ensure that the collection system is balanced, and maintaining the mechanical components of the system (e.g. blowers, valves, flares, etc.).

3.4 Groundwater Monitoring

Groundwater monitoring will be performed in accordance with the Landfill's IEPA permit throughout the 30-year post-closure care period. The required monitoring period may be reduced by the IEPA upon a demonstration that the reduced period is sufficient to protect human health

and the environment. Groundwater monitoring activities are detailed in the Environmental Monitoring Plan. Groundwater monitoring locations are illustrated on **Drawing D12**.

3.5 Security

Fencing, gates and other required security measures will be inspected and maintained during the post-closure period to prevent any unauthorized access to the Landfill.

3.6 Recordkeeping

All inspection records, data, corrective action records, leachate monitoring data, landfill gas monitoring data, groundwater monitoring data, surface monitoring data, etc. will be maintained with the Operating Record. A copy of the Post-Closure Care Plan will also be made part of the Operating Record.

3.7 Evaluation of Data Collected During Post-Closure Care Period

The Landfill is responsible for ensuring that all data collected in accordance with this Plan is properly reviewed, evaluated, and acted upon.

All groundwater, landfill gas, and leachate monitoring data and inspection records will be reviewed by the Landfill and/or Owner or other designated authority as the data becomes available. Data review will consist of conducting the required statistical analyses (groundwater data) and comparing the results to the established standards. Any deviations from the standards will be reported to the IEPA as required. Any deviations requiring corrective actions will be promptly corrected.

All inspection reports, monitoring data, and reports on corrective actions will be reviewed as necessary for certification of closure. This review will ensure that the collected data are checked and that all required corrective actions are properly implemented.

4.0 CLOSURE AND POST-CLOSURE CARE COST ESTIMATES (812.116)

4.1 Cost Estimates

Closure and post-closure care cost estimates have been prepared in accordance with the applicable requirements of 35 IAC Section 811. The closure cost estimate includes the following itemized costs: 1) the cost of applying final cover to the closure area; 2) the cost to complete landfill gas monitoring and collection systems; 3) the cost to complete runoff control structures; and, 4) the cost of certification of closure. The closure cost estimate assumes that closure is initiated on the assumed closure date, under a premature closure condition. Premature closure costs will change as site development progresses, as they are dependent on the acreage of the currently active phase and the number of former phases that have already been closed. In accordance with the existing facility's IEPA permit, premature closure costs are updated annually and when necessary as modifications to the permit are proposed, and this practice will continue for the expanded Landfill. The premature closure cost estimate is therefore based on the current site status as development progresses. The most recent estimate of the cost of premature final closure is contained in Exhibit 2 (Table 1).

The post-closure care cost estimate includes the itemized costs of carrying out all of the activities described in the Post-Closure Care Plan. The post-closure care cost estimate is based on currently permitted groundwater monitoring frequencies and assumes leachate and landfill gas collection will continue throughout the 30-year post-closure period. The most recent estimate of the cost of post-closure care is contained in Exhibit 2 (Table 2).

The cost estimates have not been reduced by any allowance for the salvage value of equipment or the resale value of land or landfill gas, nor has a discount rate been applied. They reflect current third party costs, and assume the IEPA will contract for all closure and post-closure care work. Cost estimates will be revised annually as development progresses and whenever a change in the cost estimates occur or the Closure Plan or Post-Closure Care Plan is modified.

4.2 Financial Assurance

Financial assurance will be provided in accordance with IEPA regulations to ensure that sufficient funds are available to complete Landfill closure and post-closure care. The amount of financial assurance that is required at any time is based on the Landfill area which has been granted operating authorization and, of that area, how much final cover and other closure work remains to be completed and approved by the IEPA. The IEPA reviews and must approve all cost estimates prior to issuing operating authorization for new Landfill cells.

EXHIBIT 1

ROUTINE AND PREMATURE CLOSURE SCHEDULES

TABLE 1-1
ESTIMATED TIME REQUIRED FOR ROUTINE CLOSURE (MONTHS)

Task	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6
1. Notify Agency						
2. Equipment Decontamination						
3. Low Permeability Cover (24 inches)						
4. Geomembrane and Geocomposite Drainage Layer Placement						
5. Protective Cover (36 inches)						
6. LFG Probes / Wells / Piping System						
7. Grading						
8. Vegetation						
9. Certification of Closure						

Note: Estimated times assume favorable weather conditions

TABLE 1-2
ESTIMATED TIME REQUIRED FOR PREMATURE CLOSURE (MONTHS)

Task	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6
1. Agency Determination that Premature Closure is Necessary						
2. Equipment Decontamination						
3. Backfilling of Excavated Cell						
4. Low Permeability Cover (24 inches)						
5. Geomembrane and Geocomposite Drainage Layer Placement						
6. Protective Cover (36 inches)						
7. LFG Probes / Wells / Piping System						
8. Grading						
9. Vegetation						
10. Certification of Closure						

Note: Estimated times assume favorable weather conditions.

EXHIBIT 2

CLOSURE AND POST-CLOSURE CARE COST ESTIMATES

Table 1
Premature Closure Cost Estimate*
Zion Landfill

Premature Closure Cost Estimate[(1)]				
Item	Unit	Quantity	Unit Cost	Total
Mobilizations	LS	1	$56,003	$56,003
Clay Cover	CY	225,544	$5.67	$1,278,834
Geomembrane	SF	3,044,844	$0.425	$1,294,059
Geocomposite	SF	3,044,844	$0.418	$1,272,745
Protective Soil	CY	281,930	$4.99	$1,406,831
Topsoil	CY	56,386	$6.29	$354,668
Surface Water Management:				
Miscellaneous Structures	Lin ft.	1,357	$239.80	$325,409
Miscellaneous Grading/Installations	LS	1	$27,350	$27,350
Seeding	Acre	69.90	$1,510	$105,549
Gas Wells	Lin ft.	3,282	$106.98	$351,108
Gas Laterals	Lin ft.	9,142	$35.24	$322,164
CQA	Acre	69.90	$12,585	$879,692
Total (2021 Dollars)				**$7,674,412**

Note

1.) The 2020 premature closure cost estimate provided for final cover construction and landfill gas collection system installation over 60.8-acres of unclosed airspace through cells 10a and 10b. The site will construct 9.1-acres of cell 10c in 2021 and the premature closure cost estimate accounts for this new airspace. The 2021 premature closure cost estimate thus provides for final cover construction over 69.9-acres.

** Premature closure quantities, unit costs, and cost estimate from IEPA Log #2021-271 addressing permit condition X.6 and providing the annual update of the premature closure, decommissioning, and post-closure care cost estimates for the Zion Lnadfill. Premature closure costs will continue to be updated to reflect current and proposed development and closure needs on an annual basis, including incorporation of the proposed Site 2 North Expansion as it is permitted and constructed.*

Table 2

Post-Closure Care Cost Estimate*

Zion Landfill Post-Closure Care Cost Estimate for Area to be filled through 2022				
Item	Unit	Quantity	Unit Cost	Annual Cost
Inspections	Each	4	$897	$3,588
Monitoring				
15 Quarterly Groundwater Wells				
Sampling	Samples	60	157.27	$9,436
List G1	Samples	30	$132.50	$3,975
List G1 and G2	Samples	30	$327.50	$9,825
35 Semi-Annual Groundwater Wells				
Semi-Annual Sampling	Samples	70	157.27	$11,009
List G1 and G2	Samples	70	$327.50	$22,925
Gas				
Probes	Hour	4	$49.03	$196
Quarterly Surface Scan	Each	4	$2,800	$11,200
Leachate				
Sampling	Each	2	150.87	$302
Leachate Level Measurements	Each	32	$24	$768
List L2	Each	1	$1,702.50	$1,703
Lists L2 and L3	Each	1	$1,797.50	$1,798
Storm Water	Each	12	$1,390	$16,680
Maintenance				
Final Cover	Hour	60	$282.72	$16,963
Vegetation Repair	Acre	3	$1,697	$5,091
Mowing	Acre	158	$56.00	$8,848
Leachate System	LS	1	$16,801	$16,801
Miscellaneous Repairs	LS	1	$26,396	$26,396
Gas Extraction System	LS	1	$4,154	$4,154
Landscaping Maintenance and Replacement	LS	1	$50,000	$50,000
Operation				
Leachate Disposal	Gallons	1,500,000	$0.0990	$148,500
Gas/Leachate Extraction System	LS	1	$24,542	$24,542
Sedimentation Basin Cleaning	LS	1	$9,439	$9,439
Leachate System Cleaning	LS	0.25	$4,908	$1,227
Snow Removal	LS	1	$11,201	$11,201
Reporting /Record Keeping	LS	1	$21,077	$21,077
Total Annual Cost (2021 Dollars)				$437,644

Decommissioning Costs		
Well and Probe Decomissioning	76 wells and perimeter probes x $703/well =	$53,428
Gas System Decommissioning	Estimated Lump Sum =	$283,793
Total Decommissioning Cost (2020 Dollars)		$337,221

Leachate Storage Tank Maintenance Costs		
Item	Unit	
Inspecting & Cleaning (one 165,000 gal. & two 32,000 gal., based on a frequency of once every ten years of service, approximately 3 times during the 30 year period)	Estimated Lump Sum =	$63,347
Exterior Painting (one 165,000 gal & two 32,000 gal., based on a frequency of once every fifteen years of service, approximately 2 times during the 30 year period)	Estimated Lump Sum =	$23,462
Interior Coating (one 165,000 gal & two 32,000 gal., based on a frequency of once every fifteen years of service, approximately 2 times during the 30 year period)	Estimated Lump Sum =	$46,924
Total Leachate Storage Tank Maintenance Cost (2021 Dollars)		$133,733

* Post-closure care quantities, unit costs, and cost estimate from IEPA Log #2021-271. Post-closure care costs will continue to be updated on an annual basis, including incorporation of the proposed Site 2 North Expansion as it is permitted and constructed.

Table 3
Summary of Required Financial Assurance*
Zion Landfill

Premature Closure		
Total Closure (2020 Dollars)	$	7,674,412

Decomissioning		
Total Decommissioning (2020 Dollars)	$	337,221

Leachate Storage Tank Maintenance		
Total Leachate Storage Tank Maintenance (2020 Dollars)	$	133,733

Post-Closure Care				
Component	Unit Cost	Unit	Quantity	Cost
Total Post-Closure Care (2020 Dollars)	$ 437,644	Lump Sum	30	$ 13,129,320

Total = (2020 Dollars)	$	21,274,686

* Summary of required financial assurance from IEPA Log #2021-271. The financial assurance summary will continue to be updated on an annual basis, including incorporation of the proposed Site 2 North Expansion as it is permitted and constructed.