

SW119

WESTERN KANE COUNTY
SPECIAL SERVICE DISTRICT NO. 1

P O BOX 36
28 NORTH MAIN STREET
KANAB, UT 84741
(435) 644-5089

express
RECEIVED
DEC 02 2009 *2558*
UTAH DIVISION OF
SOLID & HAZARDOUS WASTE
2009.03652

November 2, 2009

Mr Dennis Downs
Executive Secretary
Division of Solid & Hazardous Waste
P O Box 144880
Salt Lake City, Utah 84114-4880

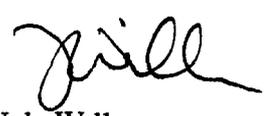
Dear Mr Downs

Enclosed are the necessary permit renewal documents and attachments for the Long Valley Class II Landfill

Western Kane County Special Service District No 1 certifies under penalty of law that the documents and attachments were prepared under the direction of the Special Service District in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted Based on the District's inquiry of those who manage the system or are directly responsible to gather the data, the information submitted is, to the best of my knowledge and belief, true, accurate and complete The District is aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations

If you have any questions or concerns, please contact me at (435) 644-5089 We thank you in advance for your cooperation

Sincerely,



Nyle Wilhs,
Western Kane County Special
Service District No 1

Utah Class II Landfill Permit Application Form

Part I General Information						APPLICANT PLEASE COMPLETE ALL SECTIONS											
I Landfill Type		<input checked="" type="checkbox"/> Class II		II Application Type		<input type="checkbox"/> New Application		<input type="checkbox"/> Facility Expansion		<input type="checkbox"/> Modification							
				<input checked="" type="checkbox"/> Renewal Application													
For Renewal Applications Facility Expansion Applications and Modifications Enter Current Permit Number _____																	
III Facility Name and Location																	
Legal Name of Facility Long Valley Sanitary Landfill																	
Site Address (street or directions to site) 1 Mile South of Glendale on US-89									County Kane								
City				State UT		Zip Code 84729		Telephone (435) 644-5089									
Township 40 S		Range 7 W		Section(s) 26		Quarter/Quarter Section SW		Quarter Section SW									
Mam Gate Latitude degrees 37			minutes 17			seconds 57			Longitude degrees 112			minutes 36			seconds 29		
IV Facility Owner(s) Information																	
Legal Name of Facility Owner Western Kane County Special Service District No 1																	
Address (mailing) 28 North Main																	
City Kanab				State UT		Zip Code 84741		Telephone (435) 644-5089									
V Facility Operator(s) Information																	
Legal Name of Facility Operator Western Kane County Special Service Distnct No 1																	
Address (mailing) 28 North Main																	
City Kanab				State UT		Zip Code 84741		Telephone (435) 644-5089									
VI Property Owner(s) Information																	
Legal Name of Property Owner Western Kane County Special Service District No 1																	
Address (mailing) 28 North Main																	
City Kanab				State UT		Zip Code 84741		Telephone (435) 644-5089									
VII Contact Information																	
Owner Contact						Title											
Address (mailing) 28 North Main																	
City Kanab				State UT		Zip Code 84741		Telephone (435) 644-5089									
Email Address nww@kanab net						Alternative Telephone (cell or other)											
Operator Contact						Title											
Address (mailing) 28 North Main																	
City Kanab				State UT		Zip Code 84741		Telephone (435) 644-5089									
Email Address nww@kanab net						Alternative Telephone (cell or other)											
Property Owner Contact						Title											
Address (mailing) 28 North Main																	
City Kanab				State UT		Zip Code 84741		Telephone (435) 644-5089									
Email Address nww@kanab net						Alternative Telephone (cell or other)											

Utah Class II Landfill Permit Application Form

Part I General Information (continued)																																													
VIII. Waste Types (check all that apply)		IX Facility Area																																											
<input checked="" type="checkbox"/> All non-hazardous solid waste OR the following specific waste types <table style="width: 100%; border: none;"> <tr> <td style="width: 33%; border: none;">Waste Type</td> <td style="width: 33%; border: none;">Combined Disposal Unit</td> <td style="width: 33%; border: none;">Monofill Unit</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Municipal Waste</td> <td style="border: none;"><input type="checkbox"/></td> <td style="border: none;"><input type="checkbox"/></td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Construction & Demolition</td> <td style="border: none;"><input type="checkbox"/></td> <td style="border: none;"><input type="checkbox"/></td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Industrial</td> <td style="border: none;"><input type="checkbox"/></td> <td style="border: none;"><input type="checkbox"/></td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Incinerator Ash</td> <td style="border: none;"><input type="checkbox"/></td> <td style="border: none;"><input type="checkbox"/></td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Animals</td> <td style="border: none;"><input type="checkbox"/></td> <td style="border: none;"><input type="checkbox"/></td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Asbestos</td> <td style="border: none;"><input type="checkbox"/></td> <td style="border: none;"><input type="checkbox"/></td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Other _____</td> <td style="border: none;"><input type="checkbox"/></td> <td style="border: none;"><input type="checkbox"/></td> </tr> </table>		Waste Type	Combined Disposal Unit	Monofill Unit	<input type="checkbox"/> Municipal Waste	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Construction & Demolition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Industrial	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Incinerator Ash	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Animals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Asbestos	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Other _____	<input type="checkbox"/>	<input type="checkbox"/>	<table style="width: 100%; border: none;"> <tr> <td style="width: 70%;">Facility Area</td> <td style="width: 10%; text-align: center;"><u>40</u></td> <td style="width: 20%;">acres</td> </tr> <tr> <td>Disposal Area</td> <td style="text-align: center;"><u>10</u></td> <td>acres</td> </tr> <tr> <td>Design Capacity</td> <td></td> <td></td> </tr> <tr> <td style="padding-left: 40px;">Years</td> <td style="text-align: center;"><u>10</u></td> <td></td> </tr> <tr> <td style="padding-left: 40px;">Cubic Yards</td> <td style="text-align: center;">_____</td> <td></td> </tr> <tr> <td style="padding-left: 40px;">Tons</td> <td style="text-align: center;"><u>475200</u></td> <td></td> </tr> </table>		Facility Area	<u>40</u>	acres	Disposal Area	<u>10</u>	acres	Design Capacity			Years	<u>10</u>		Cubic Yards	_____		Tons	<u>475200</u>	
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X Fee and Application Documents																																													
Indicate Documents Attached To This Application		<input type="checkbox"/> Application Fee Amount \$																																											
<input checked="" type="checkbox"/> Facility Map or Maps	<input checked="" type="checkbox"/> Facility Legal Description	<input checked="" type="checkbox"/> Plan of Operation	<input checked="" type="checkbox"/> Waste Description																																										
<input type="checkbox"/> Ground Water Report	<input checked="" type="checkbox"/> Closure Design	<input checked="" type="checkbox"/> Cost Estimates	<input checked="" type="checkbox"/> Financial Assurance																																										
I HEREBY CERTIFY THAT THIS INFORMATION AND ALL ATTACHED PAGES ARE CORRECT AND COMPLETE																																													
Signature of Authorized Owner Representative		Title	Date																																										
 _____		<u>TREASURER</u>	<u>11/02/09</u>																																										
Name typed or printed		Address																																											
<u>Nyle W Willis</u>		<u>28 North Main Kanab Utah 84741</u>																																											
Signature of Authorized Land Owner Representative (if applicable)		Title	Date																																										
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Utah Class II Landfill Permit Application Checklist

Important Note The following checklist is for the permit application and addresses only the requirements of the Division of Solid and Hazardous Waste. Other federal, state, or local agencies may have requirements that the facility must meet. The applicant is responsible to be informed of, and meet, any applicable requirements. Examples of these requirements may include obtaining a conditional use permit, a business license, or a storm water permit. The applicant is reminded that obtaining a permit under the *Solid Waste Permitting and Management Rules* does not exempt the facility from these other requirements.

An application for a permit to construct and operate a landfill is the documentation that the landfill will be located, designed, constructed, operated, and closed in compliance with the requirements of Rules R315-302, R315-303, R315-308, R315-309, and R315-315 of the *Utah Solid Waste Permitting and Management Rules* and the *Utah Solid and Hazardous Waste Act (UCA 19-6-101 through 123)*. The application should be written to be understandable by regulatory agencies, landfill operators, and the general public. The application should also be written so that the landfill operator, after reading it, will be able to operate the landfill according to the requirements with a minimum of additional training.

Copies of the *Solid Waste Permitting and Management Rules*, the *Utah Solid and Hazardous Waste Act*, along with many other useful guidance documents can be obtained by contacting the Division of Solid and Hazardous Waste at 801-538-6170. Most of these documents are available on the Division's web page at www.hazardouswaste.utah.gov. Guidance documents can be found at the solid waste section portion of the web page.

When the application is determined to be complete, the original complete application and one copy of the complete application are required along with an electronic copy.

Part II Application Checklist

I. Facility General Information	
Description of Item	Location in Document
Ia General Information - All Facilities	
Completed Part I General information form above	Attached
General description of the facility (R315-310-3(1)(b))	Page 2
Legal description of property (R315-310-3(1)(c))	Page 2
Proof of ownership, lease agreement, or other mechanism (R315-310-3(1)(c))	Exhibit 2b
Area served by the facility including population (R315-310-3(1)(d))	Page 3
A demonstration that the landfill is not a commercial facility	Page 3
Waste type and anticipated daily volume (R315-310-3(1)(d))	Page 3
Ib. Information Required - All New Or Laterally Expanding Facilities	
Intended schedule of construction (R315-302-2(2)(a))	N/A
Name and address of all property owners within 1000 feet of the facility boundary (R315-310-3(2)(i))	N/A
Documentation that a notice of intent to apply for a permit has been sent to all property owners listed above (R315-310-3(2)(ii))	N/A

Utah Class II Landfill Permit Application Checklist

I Facility General Information	
Description of Item	Location In Document
Name of the local government with jurisdiction over the facility site (R315-310-3(2)(iii))	N/A
/c Location Standards - All New And Expanding Facilities	
Documentation that the facility has meet the historcal survey requirement of R315-302-1(2)(f)	N/A
Land use compatibility (R315-302-1(2)(a))	N/A
Maps showing the existing land use, topography, residences, parks, monuments, recreation areas or wilderness areas within 1000 feet of the site boundary	N/A
Certifications that no ecologically or scientifically significant areas or endangered species are present in site area	N/A
List of airports within five miles of facility and distance to each	N/A
Geology (R315-302-1(2)(b))	N/A
Geologic maps showing significant geologic features, faults, and unstable areas	N/A
Maps showing site soils	N/A
Surface water (R315-302-1(2)(c))	N/A
Magnitude of 24 hour 25 year and 100 year storm events	N/A
Average annual rainfall	N/A
Maximum elevation of flood waters proximate to the facility	N/A
Maximum elevation of flood water from 100 year flood for waters proximate to the facility	N/A
Wetlands (R315-302-1(2)(d))	N/A
Ground water (R315-302-1(2)(e))	N/A
/d Plan of Operations – All Facilities (R315-310-3(1)(e) and R315-302-2(2))	
Forms and other information as required in R3315-302-2(3) including a description of on-site waste handling procedures and an example of the form that will be used to record the weights or volumes of waste received (R315-302-2(2)(b) And R315-310-3(1)(f))	Page 3, 5, Exhibit 4a
Schedule for conducting inspections and monitonng, and examples of the forms that will be used to record the results of the inspections and monitonng (R315-302-2(2)(c), R315-302-2(5)(a), and R315-310-3(1)(g))	Page 4, 7, Exhibit 5
Contingency plans in the event of a fire or explosion (R315-302-2(2)(d))	Page 8
Corrective action programs to be initiated if ground water is contaminated (R315-302-2(2)(e))	Page 8
Contingency plans for other releases, e g explosive gases or failure of run-off collection system (R315-302-2(2)(f))	Page 8

Utah Class II Landfill Permit Application Checklist

I. Facility General Information	
Description of Item	Location In Document
Plan to control fugitive dust generated from roads, construction, general operations, and covering the waste (R315-302-2(2)(g))	Page 8
Plan for letter control and collection (R315-302-2(2)(h))	Page 8
Description of maintenance of installed equipment (R315-302-2(2)(i))	Page 9
Procedures for excluding the receipt of prohibited hazardous or PCB containing wastes (R315-302-2(2)(j))	Page 9
Procedures for controlling disease vectors (R315-302-2(2)(k))	Page 9
A plan for alternative waste handling (R315-302-2(2)(l))	Page 10
A general training and safety plan for site operations (R315-302-2(2)(o))	Page 10
Any recycling programs planned at the facility (R315-303-4(6))	Page 10
Closure and post-closure care Plan (R315-302-2(2)(m))	Page 19
Procedures for the handling of special wastes (R315-315)	Page 5
Plans and operation procedures to minimize liquids (R315-303-3(1)(a) and (b))	Page 5
Plans and procedures to address the requirements of R315-303-3(7)(c) through (i) and R315-303-4	N/A
Any other site specific information pertaining to the plan of operation required by the Executive Secretary (R315-302-2(2)(p))	N/A

II. Facility Technical Information	
Description of Item	Location In Document
IIa Maps – All Facilities	
Topographic map drawn to the required scale with contours showing the boundaries of the landfill unit, ground water monitoring well locations, gas monitoring points, and the borrow and fill areas (R315-310-4(2)(a)(i))	See Topographic Map
Most recent U S Geological Survey topographic map, 7-1/2 minute series, showing the waste facility boundary, the property boundary, surface drainage channels, any existing utilities and structures within one-fourth mile of the site, and the direction of the prevailing winds (R315-310-4(2)(a)(ii))	Attached
IIb Geohydrological Assessment (R315-310-4(2)(b))	
Local and regional geology and hydrology including faults, unstable slopes and subsidence areas on site (R315-310-4(2)(b)(i))	Page 12
Evaluation of bedrock and soil types and properties including permeability rates (R315-310-4(2)(b)(ii))	Page 13
Depth to ground water (R315-310-4(2)(b)(iii))	Page 13
Quantity, location, and construction of any private or public wells on-site or within 2,000 feet of the facility boundary (R315-310-4(2)(b)(v))	Page 13

Utah Class II Landfill Permit Application Checklist

// Facility Technical Information	
Description of Item	Location In Document
Tabulation of all water rights for ground water and surface water on-site and within 2,000 feet of the facility boundary (R315-310-4(2)(b)(vi))	Page 13
Identification and description of all surface waters on-site and within one mile of the facility boundary (R315-310-4(2)(b)(vii))	Page 14
For an existing facility, identification of impacts upon the ground water and surface water from leachate discharges (R315-310-4(2)(b)(viii))	Page 14
Calculation of site water balance (R315-310-4(2)(b)(ix))	Page 14
//e Engineering Report - Plans, Specifications, And Calculations – All Facilities	Page 16
Documentation that the facility will meet all of the performance standards of R315-303-2	Page 16
Engineering reports required to meet the location standards of R315-302-1 including documentation of any demonstration or exemption made for any location standard (R315-310-4(2)(c)(i))	Page 16
Anticipated facility life and the basis for calculating the facility's life (R315-310-4(2)(c)(ii))	Page 16
Unit design to include cover design, fill methods, and elevation of final cover including plans and drawings signed and sealed by a professional engineer registered in the State of Utah, when required (R315-303-3(3), R315-303-3(6) and (7)(a), R315-310-3(1)(b) and R315-310-4(2)(c)(iii))	Attached
Equipment requirements and availability (R315-310-4(2)(c)(iii))	Page 17
Identification of borrow sources for daily and final cover and for soil liners (R315-310-4(2)(c)(iv))	Page 17
Run-On and run-off diversion designs (R315-303-3(1)(c), (d) and (e))	Page 18
Landfill gas monitoring and control plan that meets the requirements of Subsection R315-303-3(5) (R315-310-4(2)(c)(vii))	Page 18
Slope stability analysis for static and under the anticipated seismic event for the facility (R315-310-4(2)(b)(i) and R315-302-1(2)(b)(ii))	N/A
Design and location of run-on and run-off control systems (R315-310-4(2)(c)(viii))	Attached
//d Closure Plan – All Facilities (R315-310-3(1)(h))	
Closure Plan (R315-302-3(2) and (3))	Page 19
Closure schedule (R315-310-4(2)(d)(i))	Page 19
Design of final cover (R315-310-4(2)(c)(iii))	Page 19
Capacity of site in volume and tonnage (R315-310-4(2)(d)(ii))	Page 20
Final inspection by regulatory agencies (R315-310-4(2)(d)(iii))	Page 21
//e Post-Closure Care Plan – All Facilities (R315-310-3(1)(h))	
Post-Closure Plan (R315-302-3(5) and (6))	Page 19
Site monitoring of landfill gases, ground water, and surface water, if required (R315-310-4(2)(e)(i))	Page 21

Utah Class II Landfill Permit Application Checklist

// Facility Technical Information	
Description of Item	Location In Document
Changes to record of title, land use, and zoning restrictions (R315-310-4(2)(e)(ii))	Page 21
Maintenance activities to maintain cover and run-on/run-off control systems (R315-310-4(2)(e)(iii))	Page 21
List the name, address, and telephone number of the person or office to contact about the facility during the post-closure care period (R315-310-4(2)(e)(vi))	Page 22
/// Financial Assurance – All Facilities (R315-310-3(1)(j))	
Identification of closure costs including cost calculations (R315-310-4(2)(d)(iv))	Page 23
Identification of post-closure care costs including cost calculations (R315-310-4(2)(e)(iv))	Page 23
Identification of the financial assurance mechanism that meets the requirements of Rule R315-309 and the date that the mechanism will become effective (R315-309-1(1))	Page 23

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PERMIT RENEWAL APPLICATION
LONG VALLEY SANITARY LANDFILL

April, 2010

PREPARED BY: BEEHIVE ENTERPRISES, INC.

**RENEWAL APPLICATION FOR THE
LONG VALLEY SANITARY LANDFILL**

April, 2010

**PREPARED BY BEEHIVE ENTERPRISES, INC
PANGUITCH, UTAH**

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EXHIBITS

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Exhibit #2b	Property Deed
Exhibit #3	Service District Boundaries
Exhibit #4a-b	Daily Record Forms
Exhibit #5	Quarterly Inspection Log
Exhibit #6	Onsite Soil Data
Exhibit #7	Well and Water Right Documentation
Exhibit #8	Proposed Cell Progression
Exhibit #9a-b	Conceptual Designs
Exhibit #10	Topographic Map
Exhibit #11	Financial Assurance Data

APPLICATION

INTRODUCTION

This report serves as the repermitting application for the Long Valley Sanitary Landfill located near the community of Orderville, Utah in what is known as Long Valley. The purpose of the report is to comply with the Administrative Rules of the Utah Solid and Hazardous Waste Committee, Utah Department of Environmental Quality.

The Utah Division of Solid and Hazardous Waste has issued a Municipal Landfill permit to the Western Kane County Special Service District (hereafter referred to as the District) for operation of the Long Valley solid waste disposal facility near Orderville, Utah. The site is an acceptable location, and the owner desires to renew the facility permit.

Approximately 10 acres were originally obtained and an additional 30 acres have been acquired by the District for operation of a Class II facility. At some future date, when Class II operation becomes infeasible, the facility will be converted to Class IV status. The landfill currently accepts waste from Orderville, Alton, Glendale, Mount Carmel, and the District's northwestern region. It is capable of servicing the area's current and future needs throughout the life of the permit. The proposed site is centrally located and is capable of being expanded to service national park units and state parks if interagency agreements are reached in the future. In addition, the proposed site is relatively isolated, has sloping topography, and has positive characteristics when considering precipitation, available cover material, and soil permeability. Exhibit 1 is a general vicinity map depicting the proposed site. Exhibits have been extracted from the 1997 permitting documents unless otherwise noted.

RESPONSIBLE PARTIES

The applicant, property owner, and responsible party for site operation is

Western Kane County Special Service
District No. 1
28 North Main
Kanab, Utah 84741
Attn: Nyle Wilhs
Phone (801) 644-5089

Technical questions and comments regarding the application can be directed to

Brian B Bremner
P O Box 59
Panguitch, Utah 84759

It should be noted the District is continually in the process of developing cooperative solid waste disposal agreements with other governmental entities within its boundaries. Future agreements and alternate ownership/operation scenarios may require modification of this section of the permit. In addition, the District may contract site operations with private entities. The District will notify the Executive Secretary of any changes in responsible party status at least 30 days prior to their effective date.

GENERAL DESCRIPTION

The Long Valley Sanitary landfill is a Class II natural attenuation facility designed to fulfill the current and future solid waste disposal needs of the District. The facility encompasses a total of 40 acres and contemplates service to Orderville, Alton, Glendale, Mount Carmel, and the District's northwestern region. Annual average waste volumes are estimated at less than 20 tons per day, and precipitation is less than 25 inches per year.

No other reasonably practical alternative exists for disposal of the District's solid waste in this region. Hauling distances to Kanab are cost prohibitive and Garfield County's Johns Valley landfill is not currently available for the District's use. Other county facilities are too remote, or tipping fees are not within the District's financial capabilities.

Adequate capacity exists and subsurface geohydrology is sufficient to permit expansion to Class I status (with the addition of appropriate liners and leachate collection systems) and acceptance of waste in volumes exceeding 20 tons per day. However long term plans contemplate conversion of the Long Valley landfill to a Class IV facility. Modifications to the permit will be made as necessary to accommodate the changing role of the District in solid waste collection and disposal. Facility plans are included in other sections of this document. The facility is currently operational, so no construction specifications are necessary.

LEGAL DESCRIPTION

The current site is legally described as the Southeast 1/4 of the Southwest 1/4 of the Southwest 1/4, Section 26, Township 40 South Range 7 West, Salt Lake Base and Meridian. Recently acquired acreage includes the Southwest 1/4 of the Southwest 1/4 of the Southwest 1/4 in Section 26, the Northeast 1/4 of the Northwest 1/4 of the Northwest 1/4, Section 35, and the Northwest 1/4 of the Northeast 1/4 of the Northwest 1/4 Section 35, Township 40 South, Range 7 West. Exhibit 2a depicts the proposed site's relationship to adjacent sections, townships and ranges. The District currently owns the land where the Long Valley landfill is located. A copy of the

property deed for the landfill site is included as Exhibit 2b

The facility's main gate is located at 112° 36' 29" longitude and 37° 17' 57" latitude (the northwest corner of the Southeast 1/4 of the Southwest 1/4 of the Southwest 1/4, Section 26, Township 40 South Range 7 West) Lands surrounding the facility are considered multiple use land and are controlled by the federal government The closest private land exists approximately 1/8th mile northwest of the site in Section 26, Township 40 South, Range 7 west

No formal zoning ordinances exist for the landfill When located in unincorporated Kane County, the landfill was zoned in an agricultural area However the landfill itself had no designation The location was recently annexed into Glendale and is a grandfathered use Future policies and ordinances will accommodate the Kanab Sanitary Landfill as they are adopted

WASTE TYPES/AREA TO BE SERVED

Waste accepted by the Long Valley Sanitary Landfill will be comprised of nonhazardous municipal solid waste Waste will be comprised of household waste, commercial waste, nonhazardous sludge, small quantity generator waste, and industrial wastes approved by the permit Special waste shall be accepted and handled in accordance with Administrative Rule R315-315 and the conditions of this permit

The service area may consist of all lands within the legal boundaries of the District and other areas the District is willing to serve but is generally limited to a population of about 1500 living in the northwestern portion of Kane County The Long Valley Sanitary Landfill may accept waste generated outside the service area if an appropriate agreement or memorandum of understanding has been executed Appropriate agreements will also be sought from governmental entities and solid waste managers within District boundaries Exhibit 3 illustrates the Service District Boundaries

The Western Kane County Special Service District exists to provide solid waste services and is the owner and operator of the landfill The District is a legal body politic in the State of Utah As such, the District is a tax exempt division of government and cannot provide public services on a commercial basis Revenues generated at the landfill are used only for solid waste management activities

REQUIRED FORMS

The daily record form used to record weights of volumes of waste received required by Subsection R315-302-2(3)(a)(i) is included as Exhibit 4a The form for recording inspections for hazardous and PCB wastes is included as Exhibit 4b

INSPECTIONS

The owner or operator will inspect the facility to prevent malfunctions, deterioration, operation errors, and discharges which may result in the release of wastes to the environment or a threat to human health, including landfill gas monitoring as required by regulations. The owner or operator will conduct these inspections at least once each quarter and will complete the inspection log included as Exhibit 5. The inspection log will be kept for a minimum of 3 years from the date of inspection.

The Executive Secretary or any duly authorized officer, employee or representative of the Board may, at any reasonable time the facility is open and upon presentation of acceptable credentials, enter the facility for inspection purposes. Certified copies of all sampling, monitoring, and testing records, including photographic, video, and electronic data, and all data, communications, and results of the inspection shall be furnished to the owner and to the operator within 30 days of the inspection. A written summary of the inspection containing a list of any deficiencies and recommended actions will be furnished to the owner and to the operator as soon as practicable. In addition, the inspector may discuss potential problems and make preliminary recommendations prior to leaving the facility.

FINANCIAL ASSURANCE

A detailed financial assurance plan as required by R315-309 is included in other sections of this document. The District has established an escrow account for financial assurance sufficient to assure adequate closure, post-closure care, and corrective action, if required. The District is also in the process of passing the Local Government Test. It is anticipated that the test will be passed as part of the 2008 audit process. If the District is unable to pass the Local Government Test, the District will contribute minimum payments of \$20,000 per year until the account achieves a balance of \$111,000.

PLAN OF OPERATION

INTRODUCTION

This document constitutes the plan of operation for the Long valley Sanitary Landfill and is intended to comply with guideline R315-302-2(2) of the Utah Division of Solid and Hazardous Waste Administrative Rules. Technical questions and comments may be directed to

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Phone (801) 676-1119

INTENDED SCHEDULE OF CONSTRUCTION

The Long Valley Sanitary Landfill is capable of meeting solid waste disposal needs for the District for many years. The landfill is operating, so the intended construction schedule contemplates continuing operations throughout the active life of the landfill. This application is required for renewal of the permit. The current cell is planned for a capacity of approximately 5 to 10 years and will be expanded within the permitted area in an ongoing manner as portions of the cell attain final elevation. A schedule, listing major activities for the next 10 years of operation, is found below. The schedule may be updated as part of the regular permit review process.

January, 2010	Submit revised permit from Solid and Hazardous Waste
June, 2010	Obtain revised permit
June, 2010 to June, 2020	Close portions of the landfill reaching final elevation and expand cell to provide additional disposal space

HANDLING PROCEDURES

During the active life of the landfill material designated for disposal will be brought to the working face where it will be dumped, spread, and compacted. No later than the end of each day's operation, waste will be covered with a minimum of 6 inches of earthen material, or with an alternate daily cover approved by the Executive Secretary. Currently proposed alternate daily covers include a temporary synthetic cover (tarp) with a minimum nominal thickness of 8 mils and a minimum tensile grab strength of 100 lbs. The cover will be removed at least weekly, and waste will be covered with 6" of earthen material. Covering operations shall minimize the possibility of infiltration. Procedures for the handling of specific wastes including but not limited to dead animals,

large appliances, car bodies and asbestos are delineated below

The landfill currently accepts only non friable asbestos waste for disposal. Although not currently planned, friable asbestos wastes may be accepted if the conditions of UAC R 315-315-2 are satisfied as follows: a) the asbestos waste is adequately wetted and properly containerized by double bagging and sealing in 6 mil or thicker plastic bags to prevent fiber release and b) asbestos waste containers are generated, and tagged with a warning label that conforms to the requirements of 40 CFR Part 61.149(2)

If properly transported and packaged, asbestos waste which meets the above criteria is received at the landfill, the operator will

- Verify the quantities of waste received, sign off on the waste shipment record, and send a copy of the waste shipment record to the generator within 30 days,
- Require vehicles that have transported asbestos waste to be marked with warning signs as specified in 40 CFR Part 61.149(d)(1)(iii),
- Inspect the load to verify that the asbestos waste is properly contained in leak-proof containers and properly labeled,
- Place asbestos containers at the bottom of the active face with sufficient care to avoid breaking the containers,
- Cover the waste within 18 hours with a minimum of six inches of material that does not contain asbestos,
- Provide barriers to limit public access to the asbestos disposal area until the waste has been covered with six inches of material which does not contain asbestos, and
- Place warning signs at the entrance and around the perimeter of the asbestos disposal area which comply with 40 CFR 61.154(b)

If the attendant believes the condition of an incoming asbestos load is such that significant amounts of fiber may be released during disposal, the attendant will notify the local and regional health departments and the Executive Secretary. If the wastes are not properly containerized, and the landfill operator inadvertently accepts the load, the operator shall thoroughly soak the asbestos material with a water spray prior to unloading, rinse out the haul truck, dispose of the waste near the base of the active face, and immediately cover the waste prior to compaction with six inches of non-asbestos material in a manner sufficient to prevent fiber release.

Ash will be transported in such a manner to prevent leakage or the release of fugitive dust. The landfill operator will unload the transport vehicles at the bottom of the working face and keep the

ash wetted, if necessary, to prevent fugitive emissions prior to covering, and within 24 hours, the operator will completely cover the ash with a minimum of 6 inches of other non-ash landfill waste or a minimum of 6 inches of material containing no waste or use other methods or materials, if necessary, to control fugitive dust

Bulky waste such as automobile bodies, furniture, and appliances will be crushed and then pushed onto the working face near the bottom of the cell or into a separate disposal area

The landfill will minimize liquids by prohibiting containerized liquids or waste containing free liquids in containers larger than five gallons, non containerized liquids, and /or sludges containing free liquids. No waste treatment plant sludge, digested waste water treatment plant sludge, or septage containing free liquids will be disposed in portions of the landfill containing other solid waste. Water treatment plant sludge, digested waste water treatment plant sludge, or septage containing no free liquids will be placed at or near the bottom of the landfill working face and covered with other solid waste or other suitable cover material

Dead animals received at the facility will be deposited onto the working face at or near the bottom of the cell with other solid waste, or into a separate disposal trench provided they are covered daily with a minimum of 6 inches of earth to prevent odors and the propagation and harborage of rodents and insects

Areas of the landfill that have not received waste for a period of more than 60 days will be covered with an intermediate cover that consists of a minimum of 12 inches of earthen material

INSPECTIONS AND MONITORING

Inspection and monitoring at the Long Valley Sanitary Landfill will be conducted in two components: 1) routine and 2) compliance. Routine inspections will be conducted on incoming material on a random basis to prohibit receipt of unacceptable wastes. In addition, random checks will be made during deposition, spreading, and covering operations to ensure protection of the environment and absence of nuisances. Unacceptable waste screening inspections will be made by trained personnel on 1% of the public using the facility and will be recorded on the appropriate forms (see Exhibit 4b). Operational inspections will be made by supervisory landfill personnel.

Compliance inspections will be conducted quarterly to assess the integrity of cover, the condition of side slopes and vegetative cover, and the impacts of erosion. In addition, a detailed annual inspection will be conducted to verify compliance with all permit conditions and state and federal regulations. All inspection records will be kept at the landfill or the closest reasonable location for the current calendar year. Within 30 days of the end of the calendar year, annual records will be transferred to the District offices and will be stored for a minimum of three years.

FIRE/EXPLOSION CONTINGENCY PLAN

In the event of fire or explosion which prevents the use of the active area of the Long Valley Sanitary Landfill, an alternate area of the landfill will be designated for temporary disposal. If use of the alternate area extends beyond one week, a plan of operation acceptable to the Executive Secretary will be developed.

CORRECTIVE ACTION FOR CONTAMINATED GROUND WATER

This section describes corrective actions to be taken by owners and operators to regain compliance with protection levels for the Long Valley Sanitary Landfill in the event concentration limits are exceeded in a down gradient well as a result of landfill operations.

No monitoring wells are proposed for the Long Valley Landfill. However, if the concentrations of parameters in down gradient wells exceed the concentration limits as a result of landfill operations and as substantiated by confirmatory analyses, owners and operators of the Long Valley Sanitary Landfill will implement a corrective action program as outlined in R315-308.

CONTINGENCY PLAN FOR OTHER RELEASES

This section describes corrective actions to be taken by the Long Valley Sanitary Landfill to regain compliance with the protection levels of the permit in the event releases are discovered and acceptable concentration limits are exceeded.

When the concentration of parameters exceed acceptable limits as substantiated by confirmatory analyses, owners and operators of the Long Valley Sanitary Landfill will implement a corrective action program approved by the Executive Secretary.

DUST CONTROL / AIR QUALITY

Fugitive dust is not anticipated to reach unacceptable levels at the Long Valley Sanitary Landfill. If fugitive dust exceeds acceptable levels, actions will be implemented to reduce dust. These actions may include watering access roads, developing wind breaks, altering management scenarios, or other appropriate measures.

LITTER CONTROL

Litter is controlled through use of best management practices. Active areas and working faces are limited, waste is covered shortly after deposition, and blowing trash is confined as much as practical.

In addition, 300 feet of litter control fencing has been established along the northern edge of the active area. However, high winds occasionally occur at the landfill. Unacceptable litter escaping the litter control fencing will be picked following the high wind season and at least quarterly.

EQUIPMENT MAINTENANCE

Active collection systems for leachate and / or explosive gases are not proposed for the Long Valley Sanitary Landfill. Therefore, no maintenance will be required for these items. Maintenance of equipment used in day to day operations will be performed by landfill employees or contracted mechanics.

EXCLUSION OF HAZARDOUS WASTE

As a small rural landfill, the Long Valley facility is in a favorable position regarding exclusion of hazardous waste. During periods when the landfill is not open to the public, waste will be observed as it is removed from the collection vehicle. The waste will be further examined for hazardous materials as it is being spread by the operator and compacted. Appropriate notations regarding hazardous waste will be made on the Daily Record forms. If hazardous materials are found, the collection vehicle driver will be notified and the unacceptable substance will be removed from the landfill.

During periods when the landfill is open for public disposal at least one percent of the vehicles and other suspicious loads will be directed to dispose of their material near the working face. The waste generator will be detained while the load is inspected. For large loads, the waste will be spread and landfill operators will walk through the waste. If prohibited hazardous or prohibited waste containing PCB's are encountered they will not be accepted. Considering population served, waste volumes generated, and complexity of the solid waste stream these measures are considered to be adequate.

A section documenting the results of the formal inspections outlined above has been included as part of the daily record forms (see Exhibit 4b). Including hazardous/PCB waste records on the daily record forms will allow landfill managers to incorporate inspections into their daily routine and will permit regulators to review inspection patterns efficiently while examining waste volumes.

DISEASE VECTOR CONTROL

The primary method for disease vector control at the Long Valley Sanitary Landfill will be providing appropriate cover at the close of each day's operation. The cover will consist of a 6 inch minimum layer of earthen material or an alternate daily cover.

Rodents and other vermin will not be permitted to burrow in the active area of the landfill, and trapping or extinction methods will be implemented to protect the integrity of the disease vector control program

ALTERNATIVE DISPOSAL

Alternative waste handling procedures for periods when the landfill is not in operation will be similar to procedures for fires and explosions. Waste will be deposited in the alternate disposal site and covered with an alternate daily cover. Procedures will continue in this manner until operations at the landfill can return to normal.

In the event of equipment breakdown that cannot be repaired in a reasonable time frame, equipment will be borrowed from contributing entities or leased from local distributors. It is the intent of owners and operators to have dedicated equipment at the landfill over a period of time and to acquire appropriate backup equipment.

TRAINING AND SAFETY PLAN

Currently two District employees involved with the Long Valley Sanitary Landfill have participated in the Manager of Landfill Operations Training Course and the Waste Screening Training Course provided by the Solid Waste Association of North America (SWANA). Limited training and educational experience exists for operators of small landfills, however, employees will be encouraged to attend appropriate seminars and training as time and budgets permit. All landfill employees have been provided with timely and sufficient training to operate the landfill within regulatory requirements. New landfill employees will also be provided with timely and sufficient training to operate the landfill within regulatory requirements. Training opportunities include access to SWANA training materials, on site training from certified managers, random training from landfill owners, and training from state regulatory staff during on site inspections.

Safety procedures will conform to OSHA guidelines, and personnel will be encouraged to participate in additional landfill management, waste screening, safety, and first aid workshops.

RECYCLING

No viable recycling markets currently exist for solid waste disposal at the Long Valley Sanitary Landfill. In an effort to promote recycling some compostable material may be diverted to areas designated for Class IV operation. However, no formal recycling program is anticipated for this facility.

ACCESS CONTROL & ONSITE PERSONNEL

Fencing has been placed on the main access road East of U S 89. The fence includes a lockable gate provided at the entrance to the unit. The absence of any roads and existing topography on the remaining sides of the landfill eliminate the possibility of unauthorized vehicular traffic.

Landfill personnel will be onsite during all hours the facility is open to the public. The proposed schedule for initial operation of the Long Valley Landfill is

Monday, Wednesday, Friday	4 pm to 7 pm
Saturday	1 pm to 5 pm

Collection vehicles may be entering the landfill when the facility is not open to the public. Waste will not be accepted from the public during these periods. The proposed schedule is currently in operation at the District's existing facility and is functioning adequately. The District intends to revise the scheduled operation of the landfill as the need arises and solid waste volumes dictate.

ADDITIONAL REQUIREMENTS

This subsection is provided to comply with requirements of R315-303-3(7). No scales currently exist at the landfill. Volumes of all incoming waste are estimated and recorded in the facility's operation record. A sign is erected at the facility entrance that identifies the name of the facility, the hours during which the facility is open for public use, unacceptable materials, and an emergency telephone number.

Fire protection is accomplished through arrangements made with local volunteer fire departments in Orderville and Glendale. Buildings and active areas are secured to prevent potential harborage of rat and other vectors, such as insects, birds, and burrowing animals,

The size of the unloading area and working face is minimized as much as possible, consistent with good traffic patterns and safe operation. All weather approach and exit roads have been constructed and provide traffic separation and traffic control on-site and at the site entrance. Communication service is provided by cellular telephone. On-site employees communicate verbally or with hand signals when required.

GEOHYDROLOGICAL ASSESSMENT

GEOLOGY

The Long Valley Landfill is situated in the high desert which makes up much of south central Utah. The area is characterized by rugged mountains and deep valleys. The landfill is located on the interface between the Glendale Bench and the East Fork of the Virgin River with the surface made up of flat to rolling slopes of alluvial deposits of variable thickness. The elevation of the landfill is approximately 5780 ft above sea level. West and downgradient of the landfill is Long Valley and the East Fork of the Virgin River. The valley floor is approximately 280 feet below the landfill's elevation.

Site specific geology of the proposed landfill indicates the area predominantly covered by interbedded alluvial material. The surface material, characterized by sands and gravels, extends approximately 16 ft in depth, and is slightly resistant to infiltration. The surface member is underlain by intermittent silts, and sands to a depth of 25 feet. This material overlays a 5 ft layer of conglomerate material of low permeability. The remaining material to a depth of 105 ft consists of soils of decreasing particle size and permeability.

There are no active faults, unstable slopes and subsidence areas within the boundaries of the landfill. The BLM has identified an ancient fault East of the landfill, but investigation indicates no movement within the last 10,000 years. It should be noted that significant portions of the proposed site are characterized by rolling slopes of alluvial material. On site investigations demonstrate natural material may stand at slopes steeper than 2:1.

HYDROLOGY

The climate in the area is mainly dry, semi-arid, continental. The seasons are well defined, and there is a fairly wide daily range in temperature. The average length of the frost free period is 134 days, and may vary considerably in any given year. Average annual precipitation at Orderville is less than 15.5 inches. The largest amount of precipitation occurs in the months of January and August and the least during April, May, and June. Potential evapotranspiration at the landfill exceeds precipitation by approximately 35 inches. Data kept by the weather bureau on the velocity of wind near the landfill are not available for the area. It would appear, however, that the windiest part of the year is in the spring and the early summer. The prevailing winds are usually dry and blow from the southwest.

ON SITE SOIL PROPERTIES

In order to determine onsite soil properties samples were obtained throughout the drilling depth of 105 ft for an exploratory drill hole located near the low gradient point of the existing active area

Data from the drill holes and topographic information indicate granular surface soils within the active area exist to a depth of at least 30 ft. All samples throughout the drilling depth were classified by the driller at the time of extraction. Results indicate surface material is comprised of sandy gravels to a depth of 25 feet. The surface material is underlain by a layer of conglomerate and finer grained soils eventually being dominated by clays and shales. Exhibit 6 provides additional data concerning onsite soils.

GROUNDWATER

No groundwater was encountered during the drilling operations. The drill hole was located just west of the active area and was extended to a depth of 105 ft. Information regarding depth to groundwater, aquifers, directional flow rate and water quality data is not available. No wells are located in close proximity to the landfill.

WELLS AND WATER RIGHTS

Contact was made with the State Engineer's office to determine quantity, location, and construction of any private and public wells within 2000 feet of the proposed site during the original permit process. No wells were identified within the surveyed area. An expanded search determined that no well or underground water right exists within one mile of the landfill. Considering 1) impermeability of onsite soils, 2) limited precipitation in the area, and 3) existing drainage patterns, the landfill is considered to be hydraulically isolated.

An examination of surface rights in the area was also conducted by the State Engineer's office as part of the original permitting process. Four surface rights were found within one mile of the landfill. Only two of the rights are located within 2000 ft of the facility. Each of the water rights is located in close proximity to the East Fork of the Virgin River and is on the opposite side of US 89. These surface rights are located approximately 1875 ft northeast and 1625 ft northwest for the landfill. Exhibit 7 is the documentation provided by the State Engineer. Information is not available regarding background and surface water quality assessments in the area.

SURFACE WATERS

No perennial streams, rivers, or permanent surface waters exist within close proximity of the proposed landfill. The closest perennial surface water is the East Fork of the Virgin River located approximately 1,000 ft north of the landfill and which has a flow line approximately 300 feet below the final elevation of waste. One unnamed intermittent wash parallels the eastern boundary and is located one eighth of a mile from the landfill. The drainage flows only during times of runoff or heavy precipitation. It should be noted that the wash is well beyond the landfill boundary and is for all purposes hydraulically isolated from the landfill. Other washes in the area are small, insignificant drainages that have formed in the native soil. All intermittent washes and surface waters will be prevented from impacting areas of the landfill which have received solid waste for events smaller than the 25-year storm period.

WATER BALANCE / MONITORING

Numerous water balance calculations have been performed for various landfills in the region and are on file with the Division of Solid and Hazardous Waste. Results at nearby landfills indicate no leachate was generated in the bottom 10 ft of waste during a 50 year evaluation period. Additional HELP Model simulations indicate leachate will not develop within 10 ft of the bottom of the waste during the life of the permit.

Groundwater monitoring has not been implemented at the Long Valley landfill and is not anticipated during the life of the permit. Existing depth to groundwater, limited precipitation and extensive evapotranspiration render groundwater monitoring impractical. In addition, on site groundwater monitoring wells could serve as a conduit for contamination.

IMPACTS TO WATER RESOURCES

As a small, arid facility the Long Valley Landfill is exempt from groundwater monitoring requirements. The landfill receives less than 20 tons of waste per day, receives less than 25 inches of precipitation per year and is located more than 100 ft above existing groundwater aquifers. Based on Utah State regulations, these characteristics indicate groundwater monitoring requirements are not necessary.

In addition, there is no potential for migration of hazardous constituents from the facility to the groundwater during the active life of the facility and during the post closure period. This conclusion is supported by three separate analyses: 1) onsite geologic and hydrologic conditions, 2) water balance and leachate production modeling, and 3) operational practices which minimize the amount of water that can come in contact with the waste. Each analysis makes its own strong argument for suspending groundwater monitoring requirements.

Onsite geologic and hydrologic conditions demonstrate a minimum potential for hazardous constituents reaching groundwater resources. Drilling operations indicate a complete absence of groundwater for a depth of 105 ft. Beginning at a depth of 25 ft, permeabilities significantly decrease along with particle size, eventually reaching a dense, impermeable clay/shale formation at a depth of 65 feet. The 35 feet thick impermeable layer will preclude the downward movement of any leachate and prevent potential contamination.

In addition to favorable soil conditions and depths to groundwater which minimize the potential for liquid migration, local climatic conditions prevent the production of significant amounts of leachate. Average annual precipitation is only 15.5 inches per year, and potential evapotranspiration exceeds precipitation by more than 300%. The lack of significant moisture passing beyond the vegetative zone is evidenced by the sparsely grown surface plants which are limited by minimum amounts of moisture.

Water balance and leachate production modeling also demonstrate a minimum potential for hazardous constituents reaching groundwater resources. Regional HELP model analysis described above indicates numerous worst case conditions would be required for leachate to be produced in sufficient quantities to result in the migration of any liquid to the groundwater. Worst case scenarios were used, so actual conditions should result in a greater level of confidence and a lower production of leachate than identified by the model.

Operational practices will also reduce the amount of water that could possibly come in contact with the waste. Surface waters will be diverted to protect landfill cells from runoff water for storms greater than the 25 year event. The size and progression of the units will result in cells being brought to final elevation and closed in the minimum amount of time possible, reducing the amount of water entering the waste. Contouring operations will reduce ponding and promote drainage away from active areas, use of alternate daily covers may prevent the infiltration of limited precipitation into the waste. The limited working face will require the removal of any snow from the active area, so incoming waste can be deposited. All of these measures result in the reduction of an extremely limited source of moisture.

Considering onsite geologic and hydrologic conditions, water balance and leachate production modeling, and operational practices which reduce the amount of water contacting the waste, groundwater monitoring and vadose zone monitoring are not justified. In fact installation of monitoring wells may provide a more viable conduit for groundwater contamination. The Executive Secretary is requested to exempt the Long Valley Sanitary Landfill from groundwater monitoring requirements in accordance with Subsection R315-303-3 (3)(e) of the Solid Waste Rules.

PRELIMINARY ENGINEERING REPORT

SITING CRITERIA

The proposed Long Valley Sanitary Landfill complies with siting criteria currently mandated by regulation and recognized by the State of Utah Solid and Hazardous Waste Committee. Specifically, no airport is located within 10,000 feet of the proposed landfill. The site is free from unstable areas and is not located within a 100-year floodplain or in any wetland. In addition to federal mandated criteria, the site is compatible with existing land uses for long term landfill operation and is in a remote area free from dwellings and other incompatible structures such as churches, schools, hospitals, etc. Cultural resources within the landfill will be mitigated in accordance with State Historic Preservation Officer requirements.

SOLID WASTE MANAGEMENT COMPLIANCE

The Kane County Solid Waste Management Plan required by Senate Bill 255 identifies the need for repermitting and or development of landfills capable of long term service in the planning area. The plan further supports continuation of the landfill. The Long Valley Sanitary Landfill is in complete compliance with the County's Solid Waste Management Plan.

FACILITY LIFE

The anticipated facility life for the Long Valley Landfill cannot be accurately defined. Based on the overall size of the property, relatively low waste volumes, and current efficiencies, facility life is estimated far in excess of the permit and is considered 20 years for this permit renewal process.

LINER DESIGN

Current volumes of solid waste disposed by generators serviced by the Long Valley Sanitary Landfill are well below 20 tons per day, and the facility is eligible for small landfill design exemptions. The Long Valley Sanitary Landfill is a natural attenuation Class II facility. No liner is required for the facility.

CELL DESIGN AND OPERATION

The Long Valley Sanitary Landfill is designed to minimize active areas and to reach final elevation as soon as practical in order to minimize infiltration and leachate generation. The cells are designed to accommodate from two to five years of waste and to expand in an orderly fashion from

west to east

Cells may be excavated as much as 30 feet deep and may extend approximately 50 feet in height. Bottom widths will range from 40 feet to 200 feet. Length and height of the cells will vary with volumes of waste, season of the year, and soil stockpile needs, but initial excavation will approximate 200 feet. Current proposals contemplate providing a minimum of 1 year excess excavated area for growth and unexpected problems. Excavated interior side slopes will originally be 4:1 and may be steepened to 2:1 immediately before receiving waste to expand capacity and augment covering operations.

Near the close of each working day waste will be spread, compacted, and covered with 6 inches of native soil or an alternate daily cover. When daily waste volumes are too small to permit efficient use of landfill space, solid waste will be stockpiled at the working face and covered with an alternate daily cover (a synthetic blanket designed to prevent infiltration).

The 50 foot cell height described earlier is a nominal dimension and does not consider final slopes to promote drainage or additional covering requirements. Cells are anticipated to follow existing contours and to consist of solid waste compacted in lifts ranging from 7 feet to 12 feet and covered with 6 inches to 12 inches of daily or intermediate cover material. Exhibit 8 is an illustration of the proposed cell progression. Exhibit 9 is a conceptual design of a typical cell.

EQUIPMENT AVAILABILITY

Minimum equipment requirements at the Long Valley Sanitary Landfill are limited to a track-type loader for daily operations and periodic use of additional equipment (dozer, scraper, grader, compactor, etc.) for specific covering, stockpiling, contouring and compacting operations. The facility will have equipment mobilized to the site as needed and will utilize other equipment from the District equipment pool as needed. Over time, adequate equipment will be acquired to guarantee the needs of the landfill will be met in a timely manner.

BORROW SOURCES

The Long Valley Sanitary Landfill will generally utilize onsite borrow materials for daily cover, final cover, and soil liners. Current estimates indicate adequate material is available within the landfill limits. Existing cell location utilizes excavated on-site material and provides for ongoing borrow operations. Onsite soils will be augmented with existing offsite borrow sources as needed. These borrow sources include local clays that have been used during the operation of the existing facility and will continue to be used to their greatest utility.

LEACHATE COLLECTION, TREATMENT AND DISPOSAL

The Long valley Sanitary Landfill is a natural attenuation facility located in an arid region with favorable soil conditions. No leachate collection and disposal will occur at the facility.

LANDFILL GAS CONTROL AND MONITORING

Due to the arid nature of the climate at the Long Valley Sanitary Landfill and the nature of the waste accepted at the facility, landfill gas concentrations are not anticipated to reach significant levels. The relatively open area of the proposed facility is designed to accommodate dissipation of any landfill gases prior to reaching the property boundary.

Monitoring for landfill gases will be conducted as part of the quarterly inspections performed by landfill managers. Concentration will be measured in any future structure. Results will be recorded on quarterly inspection forms.

Should unacceptable levels of landfill gases be detected, contingency plans described in other areas of this permit will be implemented. If gas levels exceed 25% of the lower explosive limit in structures or the 100% of the lower explosive limit at property boundaries, immediate action will be taken to protect human health, and the Executive Secretary will be contacted within 24 hours. Additional state regulations, including operating record notations within seven days and implementation of a remediation plan within sixty days, will be completed.

RUNON/RUNOFF CONTROL

The District will control the runoff resulting from storms smaller than the 25 year event from contacting solid waste and leaving the landfill. This will be accomplished through a series of best management practices. Any potential surface drainages will be diverted around cells. Daily, intermediate and final cover material will be excavated from the uphill side of active areas and will be accumulated at the interface between the natural ground and the waste cell, creating excavated areas and berms to prevent any surface waters from contacting the waste.

Run off will be controlled through ditches, berms, roads, ditches and other passive systems as needed. No formal runoff control systems are planned for the Long Valley Landfill.

CLOSURE / POST CLOSURE PLAN

CLOSURE/POST CLOSURE PLAN

Closure of active portions of the Long Valley Sanitary Landfill contemplates controlling, nummizing, and eliminating threats to human health and the environment from post closure escape of solid waste constituents, contaminated runoff, or waste composition products to the ground, groundwater, surface water, and the atmosphere. When an area of the landfill exceeding 10,000 square yards reaches final elevation it will be covered within 60 days with 12 inches of intermediate cover and graded to promote drainage. The surface shall be free from ponding and shall minimize infiltration. Not more than 6 months after completion of the intermediate cover, the area will be covered with a minimum of 18 inches of material having a hydraulic conductivity of less than 1×10^{-5} cm/sec or an alternate final cover approved by the Executive Secretary. The impermeable barrier will be covered with 6 inches of native soil or 6 inches of material capable of supporting vegetative growth.

Post closure care of inactive sections of the landfill will consist of maintaining the integrity of the final and vegetative covers. Any areas subject to erosion will also be corrected, and appropriate measures will be implemented to identify and eliminate the source. Groundwater monitoring, leachate collection, and gas collection are not proposed for the Long Valley Sanitary Landfill. Therefore, closure and post closure activities associated with these functions will not be performed.

CLOSURE SCHEDULE

Closure operations at the Long Valley Sanitary Landfill will be performed on an ongoing basis. Adequate capacity exists at the landfill to continue operation for many years. A final closing date cannot be determined at this time. Ongoing closure operations will generally be performed from May through October, the normal frost free construction period, or as weather permits. No area larger than 2 acres that has achieved final elevation will remain open longer than 6 months. Water balance calculations in the area indicate the lowest moisture content of the waste occurs during the late summer/early fall months.

FINAL COVER, SEEDING, CONTOURING

Closure operations will consist of leveling, contouring, placement of appropriate covers and seeding as necessary to reduce infiltration and preserve the integrity of the completed areas of the landfill. Areas of the landfill reaching final elevation will be closed within 6 months. Closure

operations will include leveling and contouring using intermediate cover to reduce infiltration and ponding. Excess material may be stripped and utilized in other operations or left in place. After grading operations promoting drainage are complete, a geosynthetic clay liner or 18 inches of material with a permeability of 1×10^{-5} cm/sec or less will be installed. Geosynthetic clay liners and other compatible covering systems may be used when permeability characteristics are equal to or better than earthen materials. Alternate designs meeting the performance standard of impermeable material may be used if approved by the Executive Secretary prior to placement. Upon completion of the impermeable cover, closed areas will be seeded. The seed mixture shall be developed after consultation with range specialists and verifying availability of local seed markets. Recently closed sections of the landfill will be evaluated as part of the quarterly inspection process during the first year and then placed on postclosure status.

SITE CAPACITY

Site capacity for the entire Long valley Sanitary Landfill cannot be accurately estimated. Assuming a 40 acre parcel, trench style operation (40 ft bottom width, 4:1 side slopes, 30 ft depth), three 8.5 foot lifts of waste with 1.5 foot intermediate cover, and an average density of 900 lbs per cubic yard, waste volumes can be estimated at 1,056,000 cubic yards or 475,200 tons.

CLOSURE TIMING AND NOTIFICATION

Closure activities at the Long valley Sanitary Landfill will be performed on an ongoing basis. The Executive Secretary will be notified of closure progress by reviewing quarterly and annual reports, and by contacting Division of Solid and Hazardous Waste inspectors who have visited the site. Considering the ongoing nature of closure operations and the justification for performing closure operations as a cell reaches final elevation, alternate notification procedures may not be feasible.

In addition to the ongoing notification indicated above, The Executive Secretary will be notified in writing prior to initiation of final cover operations, and the final cover design and the construction quality assurance/quality control (QA/QC) plan will be submitted to the Executive Secretary for review and approval. The QA/QC plan for closure will include tests for permeability and depth. Permeability tests, where required, will be performed at the rate of test per 3000 cubic yards of material and will randomly selected throughout the working area. Permeability tests may include in field or laboratory tests, nuclear density extrapolations, or other industry wide procedures and practices. Depth tests will utilize standard cross section survey methods and will be performed at a rate equal to or greater than tests performed for permeability. Closure as-builts and certification of closure according to the plan identified above will be signed by a registered professional engineer and forwarded to the Executive Secretary within 90 days of completion.

FINAL INSPECTION

The Long Valley Landfill is anticipated to operate well beyond the life of this permit. At least 60 days prior to any closure, the Division of Solid and Hazardous Waste will be contacted, and a final inspection will be scheduled. The Executive Secretary will be informed of incremental closure of individual cells through routine state inspections, annual reports, and renewal applications. In addition, a QA/QC plan will be submitted for approval prior to any closure operations. Within 90 days of unit and/or facility closure, as built plans signed by a professional engineer shall be forwarded to the Executive Secretary.

Landfill owners and operators shall allow the Executive Secretary of the Utah Solid and Hazardous Waste Control Board or an authorized representative, including representatives from the local District Health Department, upon representation of credentials, to enter during operating hours and/or inspect at reasonable times any facilities, equipment, practices, or operations regulated or required under this permit.

A record of the inspection may be made by photographic, videotape, electronic or other reasonable means, and a copy of any such record shall be provided to the owner and the operator within a reasonable time.

SITE MONITORING

No permanent monitoring devices are proposed for the Long Valley Sanitary Landfill. Landfill gas in closed sections will be monitored as described for active cells in the Preliminary Engineering Report section of this document.

No groundwater monitoring wells, lysimeters, vadose zone equipment or other monitors are planned for this facility. Surface waters in closed portions of the landfill will be evaluated as part of the annual inspection. Monitoring will be limited to identifying situations which promote infiltration.

LAND TRANSFERS AND USES

Plats and a statement of fact concerning the location of any disposal site shall be recorded as part of the record of title with the County Recorder not later than 60 days after certification of closure. Upon recording, proof of the record of filing will be submitted to the Executive Secretary.

POST CLOSURE MAINTENANCE

Post-closure care of inactive sections of the landfill will consist of maintaining the integrity of the final and vegetative covers. Any areas subject to erosion will be corrected, and appropriate measures

will be implemented to identify and eliminate the source. No active or technical devices are proposed for use at the Long Valley Sanitary Landfill. Best management practices will be implemented to minimize infiltration and assure the integrity of the run-on/run-off system. Evaluation of the system will be made during the quarterly inspections, and corrective measures, if any, will be implemented. Run-on and run-off from events smaller than the 25-year storm will be controlled.

No leachate collection devices are proposed for the facility. Closed portions of the landfill will be inspected as part of the quarterly reviews performed by the landfill operator. Closed areas will also be inspected as part of the in-depth annual inspection. Any deficiencies will be repaired as soon as practical. For those failures which jeopardize the environmental integrity of the facility or permit the uncontrolled infiltration of significant amounts of moisture, corrective measures will be initiated immediately.

No alternate land use for closed sections has been developed to date. Closed cells will remain under the jurisdiction of the landfill manager. If alternate land use plans are developed they will be addressed during the permit renewal process, or a separate permit modification may be processed.

RESPONSIBLE PARTIES

The applicant, property owner, and responsible party for the post closure care period is

Western Kane County Special Service
District No. 1
28 North Main
Kanab, Utah 84741
Attn: Nyle Wilhs
Phone (801) 644-5089

It should be noted Western Kane County Special Service District County is continually upgrading solid waste management services. Future agreements, potential special service district creation, the extended life of the landfill, and alternate ownership/operation scenarios may require modification of this section of the permit. In addition, the District may contract site operations with private entities. The District will notify the Executive Secretary of any changes in responsible party status at least 30 days prior to their effective date. Other changes to the information listed above will be provided in annual reports and permit renewal documents.

FINANCIAL ASSURANCE PLAN

INTRODUCTION

This section of the permit describes compliance with Subsection R315-309, Financial Assurance of the Administrative Rules for Solid Waste Permitting and Management. Cost estimates consider the most expensive option during the period and are based on a third party performing closure and post closure care.

MECHANISMS

The Western Kane County Special Service District complies with financial assurance test requirements for local governments based on 1) acceptable bond ratings, 2) financial statements prepared in conformity with generally accepted accounting principles for governments audited by independent CPAs, 3) reference to closure and post closure costs in current and subsequent annual financial reports. To date, Western Kane County Special Service District has met financial assurance requirements by maintaining an existing, dedicated escrow account with the State Treasurer. In accordance with Executive Secretary approval, funds in excess of the estimate listed below may be used for capital improvements, to offset rate increases, operational expenses and other items deemed necessary by landfill managers. The Long Valley Sanitary Landfill is preparing documents to pass the local government test. If the District is unable to pass the financial test, it will continue its dedicated escrow account, or it may alter the mechanism to include the government test, insurance, surety bonds, trust funds, or other options as they become feasible.

SCHEDULE OF PAYMENTS

The Western Kane County Special Service District has made payments to a dedicated escrow account with the State Treasurer's office to insure the availability of sufficient funds for closure and post closure care. The fund currently has a balance of approximately \$20,225.00. If the District is unable to pass the local government financial test, the District will contribute minimum payments of \$20,000 per year until the fund balance reaches minimum requirements.

COST ESTIMATE

Closure and post-closure cost estimates were developed considering the largest area of the disposal facility requiring final cover during the operating period and using projections for a third party to perform the work. Estimates were developed using Utah State guidance, historical costs, project records and standardized rates for Kane County. A cost estimate summary identifying major closure and post-closure components is included below, and detailed information regarding closure

and post-closure costs is included under separate cover. Items that are identified in the mles but are not applicable to the Long Valley Landfill have not been listed.

Closure Costs

Survey / Site Evaluation	\$ 2,400 00
Project Management	8,900 00
Site Repair	1,000 00
Grading	1,800 00
Geosynthetic Cover	45,000 00
Soil Cover	15,000 00
Vegetation	1,200 00
Gas Collection	<u>700 00</u>
Subtotal	\$ 76,000 00
Contingency	<u>8,000 00</u>
TOTAL	\$ 84,000 00

Post-Closure Costs

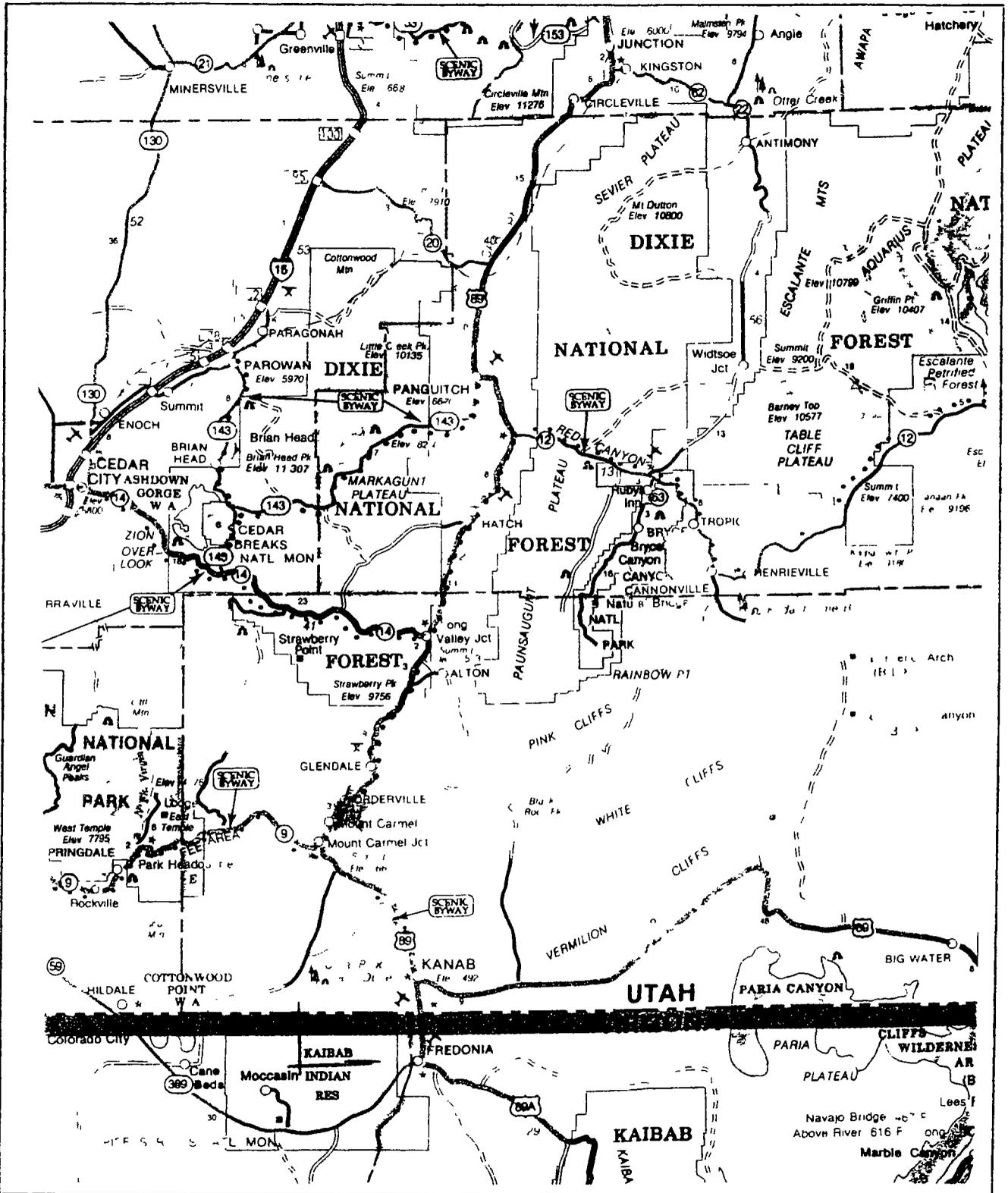
Engineering	\$ 21,000 00
Cover Maintenance	2,360 00
Leachate Collection System	0 00
General Maintenance	<u>1,300 00</u>
Subtotal	\$ 24,660 00
Contingency	<u>2,340 00</u>
TOTAL	\$ 27,000 00
TOTAL CLOSURE / POST CLOSURE COSTS	\$111,000 00

EXHIBITS

Exhibit #1	General Vicinity Map
Exhibit #2a	Project Location Map
Exhibit #2b	Property Deed
Exhibit #3	Service District Boundaries
Exhibit #4a-4b	Daily Record Form
Exhibit #5	Quarterly Inspection Log
Exhibit #6	Onsite Soil Data
Exhibit #7	Well and Water Right Documentation
Exhibit #8	Proposed Cell Progression
Exhibit #9	Conceptual Cell Design
Exhibit #10	Topographic Map
Exhibit #11	Financial Assurance Data

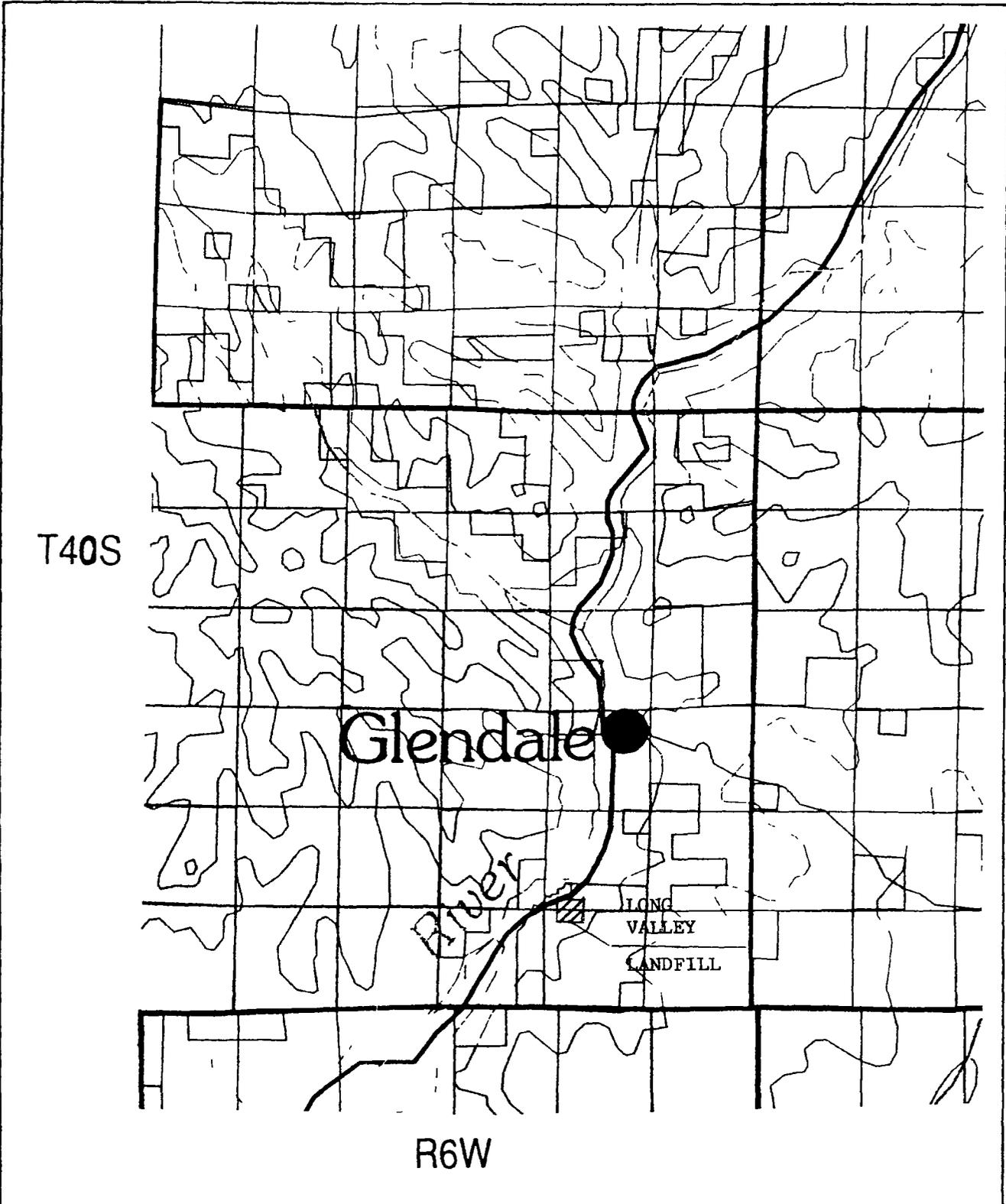
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LONG VALLEY SANITARY LANDFILL

Exhibit 1 General Vicinity Map



LONG VALLEY SANITARY LANDFILL

Exhibit 2a Project Location Map

The United States of America

To all to whom these presents shall come, Greeting:

Serial. Utah 60070

WHEREAS,

Western Kane County Special District No. 1

is entitled to a land patent pursuant to Section 203 of the Act of October 21, 1976, 90 Stat. 2750; 43 U S C 1713, for the following described land.

Salt Lake Meridian, Utah

T. 40 S., R. 7 W.,
Sec. 26, SE $\frac{1}{4}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$.

Containing 10.00 acres

NOW KNOW YE, that there is, therefore, granted by the UNITED STATES, unto the above named claimant the land above described TO HAVE AND TO HOLD the said land with all rights, privileges, immunities, and appurtenances, of whatsoever nature, thereunto belonging, unto the said claimant, its successors and assigns, forever,

EXCEPTING AND RESERVING TO THE UNITED STATES

- 1 A right-of-way thereon for ditches and canals constructed by the authority of the United States. Act of August 30, 1890, (26 Stat. 391, 43 U.S.C. 945 (1970).
- 2 All minerals in the land described above, with the right to prospect for, mine, and remove the same under applicable law and such regulations as the Secretary may prescribe

SUBJECT TO

- 1 A right-of-way, Serial No. U-0794570, for a highway granted under the Act of August 27, 1958 (43 U.S C. 317).
2. A right-of-way, Serial No. U-019787, for a telephone and telegraph line granted under the Act of February 15, 1901 (43 U.S.C. 959).



IN TESTIMONY WHEREOF the undersigned authorized officer of the Bureau of Land Management, in accordance with the provisions of the Act of June 17, 1948 (62 Stat 476), has, in the name of the United States, caused these letters to be made Patent, and the Seal of the Bureau to be hereunto affixed

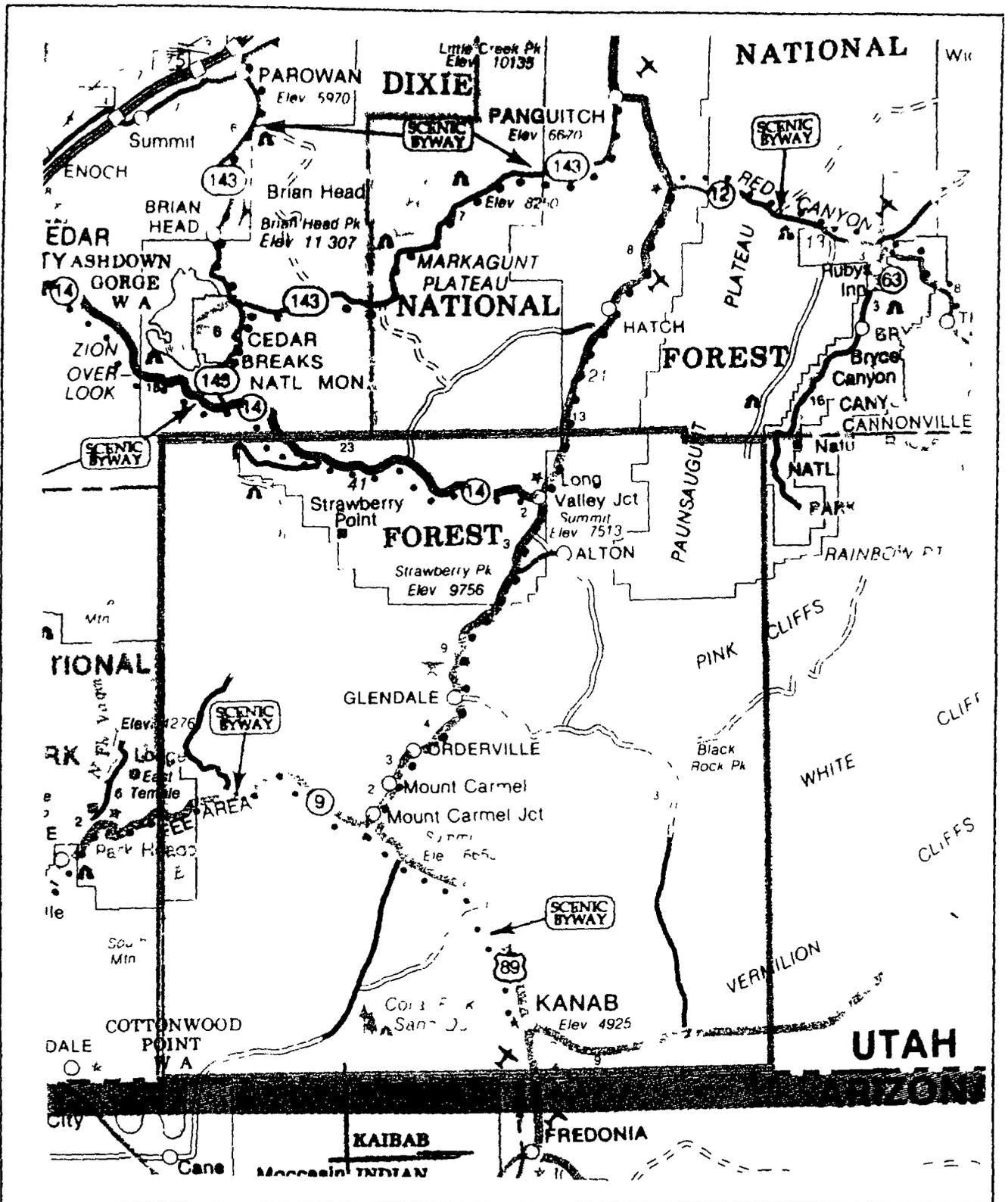
GIVEN under my hand in Salt Lake City, Utah
the Sixteenth day of June
in the year of our Lord one thousand nine hundred and
Eighty-Nine and of the Independence of the
United States the two hundred and Thirteenth

By J. Darwin Swell
Chief, Branch of Lands and Minerals, Operations

Patent Number 43-89-0036

ENTRY NO. 665672
 DATE AUG 14 1989 AT 7 30 AM
 BY REC'D AT REQUEST OF WLC S.S.D.

418



LONG VALLEY SANITARY LANDFILL

Exhibit 3 Service District Boundaries

Hazardous/PCB Record Form

Date _____ Time _____ Vehicle No _____

Random Selection Yes___/No___ Suspicious Load Yes___/No___ Other _____

Vehicle Owner _____
Name Address

City State Phone

Waste Origin _____

Waste Types _____

Describe any hazardous or PCB wastes encountered _____

Action Taken _____

Comments _____

If hazardous waste or PCB waste is encountered, contact the Division of Solid and Hazardous Waste at (801) 538-6170

Signature _____ Date _____

Long Valley Sanitary Landfill Quarterly Inspection Log

This document is the official form required for compliance with R315-301-7(5)(a) for the Long Valley Sanitary Landfill

Date _____ Time _____ Weather _____

Inspection Team _____

Litter Control _____

Observations _____

Date and Nature of Repairs/Corrective Action _____

Other _____

Explosive Gas Monitoring _____ Structures _____ Property Boundary _____

Training Procedures Completed _____

Major Deviations from Plan of Operation _____

Name of Inspector

Signature

This form shall be kept on site or at another convenient location if no permanent office facilities for a minimum of 3 years



UNIZICKER & WELLS DRILLING

WELL DATA FORM

OWNER NAME Orderville Land Fill

Hole # 1 DF1

Page of

Well Log		W A I E R	P E R M E A B I L I T Y	UNCONSOLIDATED					CONSOLIDATED		ROCK TYPE	COLOR	DESCRIPTIONS AND REMARKS (include comments on water quality if known)
DEPTH (feet) FROM	TO			C L A Y	S I L T	S A N D	G R A V E L	C O B B L E S	B O U L D E R	O T H E R			
0	16	X			XX								
16	25	X			XX								
25	30		X							Conglomerate			
30	55		X		XX								
55	65		X		XX								
65	100		XX							Shale grey			
100	105		X							shale Black			
												Total Depth 105'	
												Test hole diameter .5"	
												Permeability test taken from	
												0-25 6 bpm Total 6gpa	
												25-50 1 bpm Total 6gpa	
												Each section held level with water for 10 min. Lost water replaced every min	
												No water encountered	

LONG VALLEY SANITARY LANDFILL

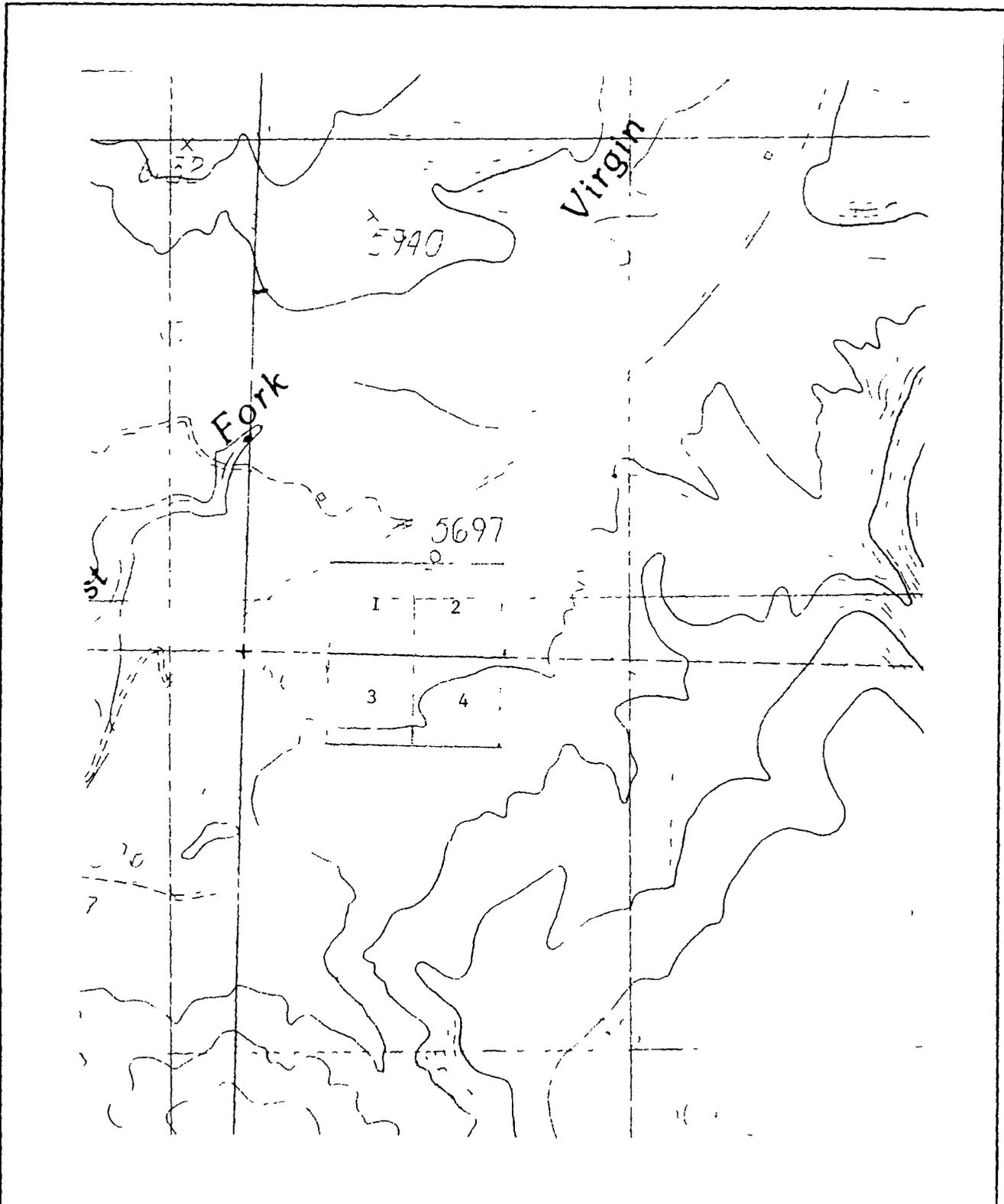
Exhibit 6 Onsite Soil Data

UTAH DIVISION OF WATER RIGHTS
 NUPLAT POINT OF DIVERSION LOCATION PROGRAM

MAP CHAR	WATER RIGHT	QUANTITY		SOURCE DESCRIPTION or WELL INFO			POINT OF DIVERSION DESCRIPTION				W A P T S U P R			
		CFS	ANO/OR	AC FT	DIAMETER	DEPTH	YEAR LOG	NORTH	EAST	CNR SEC	TWN	RNG B&M	N P R R R	U G T E
0	81 2628	5	7900											
		WATER USE(S) POWER		00 East Fork of Virgin River									X	X
		Glendale Irrigation Company		P O. Box 175									UT 84729	
		PRIORITY DATE												
		08/15/1984												
		Glendale												
0	a17549	5	7900											
		WATER USE(S) POWER		00 East Fork Virgin River									X	X
		Glendale Irrigation Company		P O Box 175									UT 84729	
		PRIORITY DATE												
		08/23/1993												
		Glendale												
1	81 2959	2200												
		WATER USE(S) IRRIGATION		00 Pond Canyon Spring Stream			S	150	W	890	E4 27 40S	7W SL	X	X
		Anderson, L Dean		P O Box 175									UT 84729	
		PRIORITY DATE												
		00/00/1900												
		Glendale												
2	81 1713		0850 OR											
		WATER USE(S) DOMESTIC STOCKWATERINC		1 85 Spring Hollow Spring			N	2390	U	53	S4 26 40S	7W SL	X	X
		Sorenson, Dallas H and Colleen T		P O Box 85									UT 84729	
		PRIORITY DATE												
		00/00/1890												
		Glendale												
3	a20172	4	6850											
		WATER USE(S) IRRIGATION		00 East Fork of Virgin River			N	1600	E	100	SW 26 40S	7W SL	X	X
		Orderville Irrigation Company		P O Box 48									UT 84758	
		PRIORITY DATE												
		06/24/1996												
		Orderville												
4	81 2958	0900												
		WATER USE(S) MUNICIPAL		00 J S Carpenter Springs			N	55	W	55	S4 27 40S	7W SL	X	X
		Orderville Town Corporation											UT 84758	
		PRIORITY DATE												
		00/00/1871												
		Orderville												

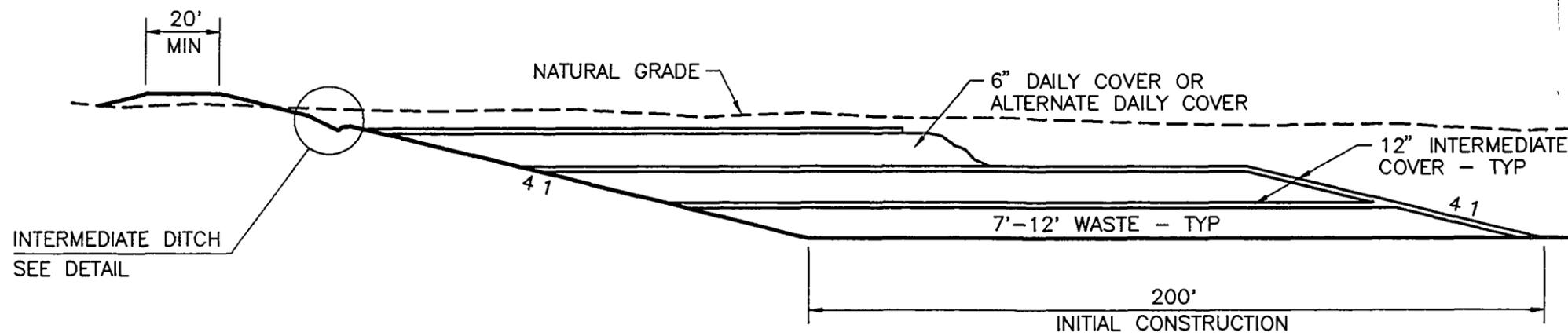
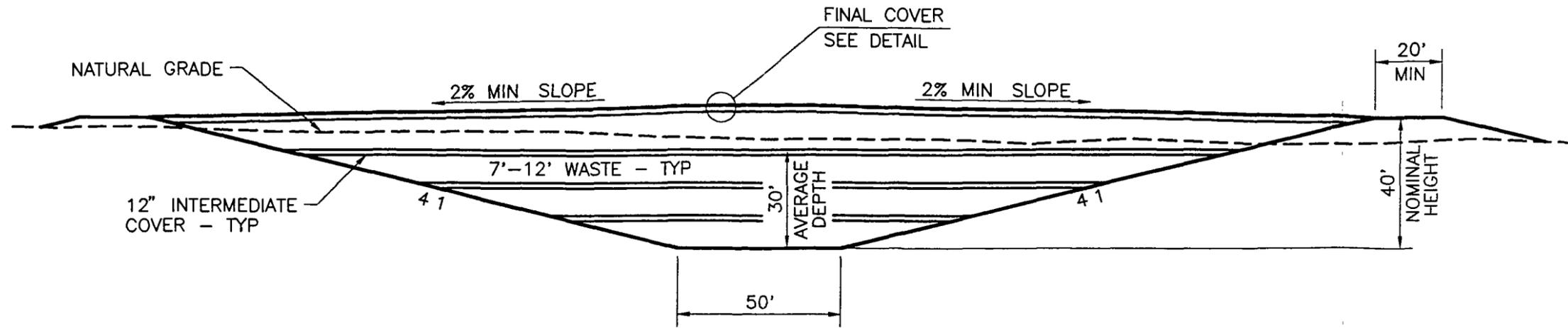
LONG VALLEY SANITARY LANDFILL

Exhibit 7 Well and Water Right Documentation

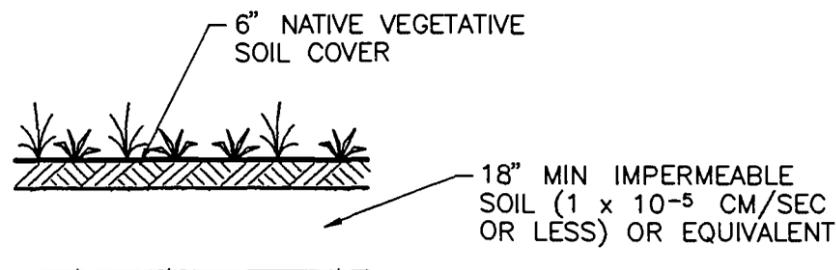


LONG VALLEY SANITARY LANDFILL

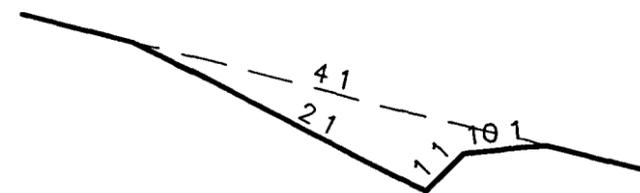
Exhibit 8 Proposed Cell Progression



Brian B. Bremner



FINAL COVER DETAIL



INTERMEDIATE DITCH DETAIL

NOTES

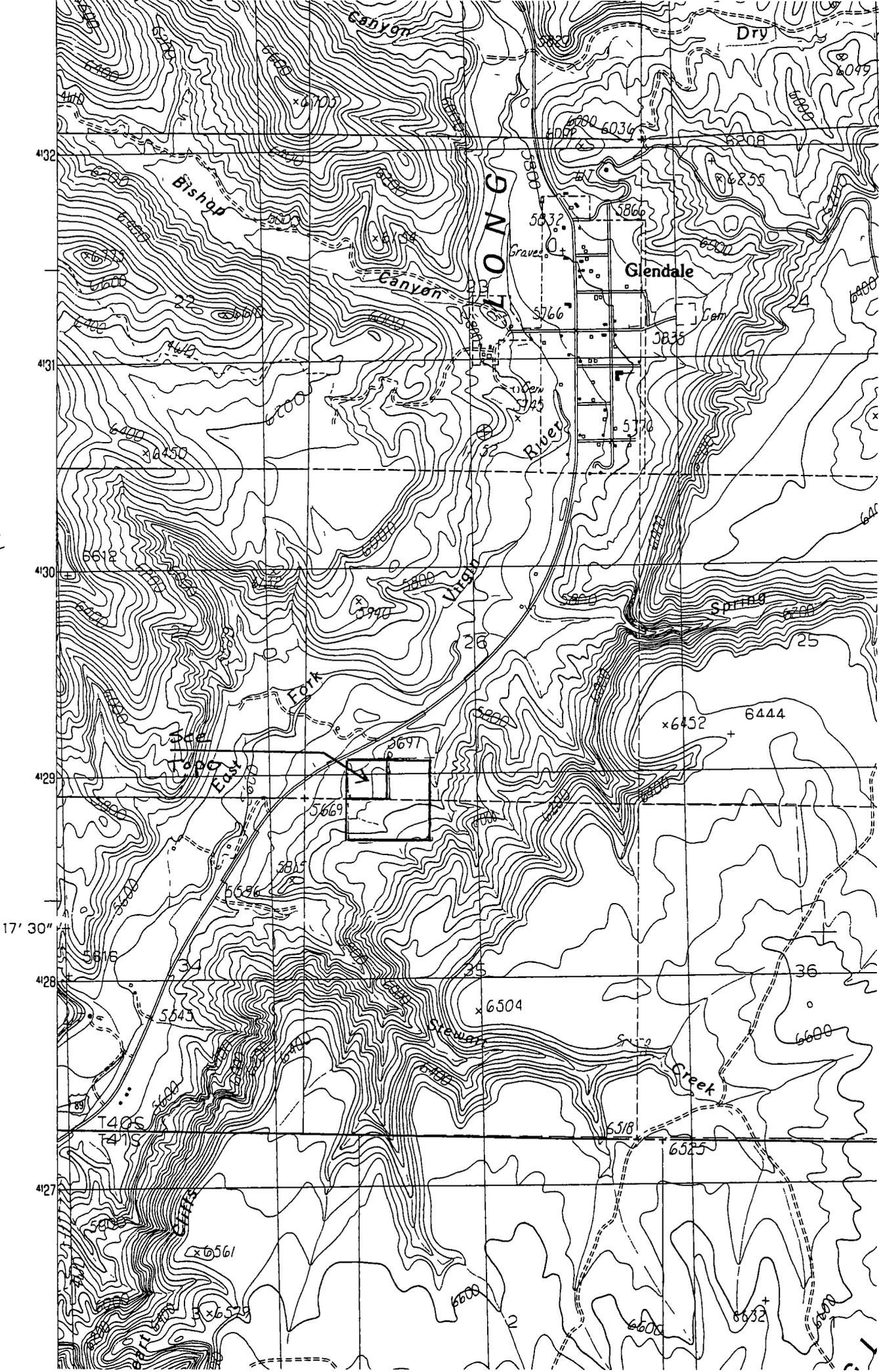
- 1 ALL SIDE SLOPES 4 1 OR PLATTER
- 2 INITIAL CELL BOTTOM DIMENSIONS 50' x 200'
- 3 STOCKPILE SUITABLE MATERIAL FOR FINAL COVER DURING EXCAVATION
- 4 STOCKPILE TOP 6" OF NATIVE MATERIAL FOR LATER TOPSOIL USE

**LONG VALLEY SANITARY LANDFILL
CONCEPTUAL DESIGN**

EXHIBIT 9

DESIGNED: BB	CHECKED:	DRAWN: CJC
DATE		DRAWING NO
SCALE: NONE		SHEET NO 1 OF 1

North
Wind
10°



APPENDIX 1

Preparation of Closure / Post Closure Cost Estimates for Long Valley Class II Landfill

Preparation of Closure and Post-Closure Cost Estimates for Long Valley Class II Landfill

Introduction

This document was prepared in accordance with guidelines developed by the Utah Division of Solid and Hazardous Waste to comply with financial assurance rules associated with landfill closure and post closure cost estimates. The cost estimates contained herein comply with Utah Administrative Code (UAC) R315-302-3. Where questions arose regarding the estimates, the text of the rule governed.

Owners or operators of the Long Valley Class II Landfill are required to provide cost estimates, in current dollars, for a third party to conduct and complete closure activities (i.e., hiring qualified contractors to perform closure activities). Estimates equal the maximum closure and post closure costs at any time during the life of the facility or cell, or the permit life, whichever is shorter. Estimates are included for each closure activity. If closure will be conducted in phases, cost estimates for completing each phase are provided. A worksheet for estimating costs is contained herein.

The costs shown were developed after examining local construction costs, UDOT's annual summary of construction costs, and the Oklahoma Department of Environmental Quality data and adjusting prices to reflect cost differences between Kane County, Utah and Oklahoma.

Closure

Basic closure cost items include

- Cost to provide construction details for the closure
- Gas control system installation
- Costs for any additional equipment
- Final cover installation and material cost including
 - a Material acquisition, placement, and compaction
 - b Vegetative layer material acquisition, placement and grading or placement of any other approved layer to protect the compacted soil layer
 - c Geomembranes, drainage layers or other cover layers as required by the permit and closure plan
 - d Seeding, fertilization, soil amendments and mulch
- Installation of any additional control or monitoring features as necessary

Post-Closure

The basic post-closure cost items include

- Final cover maintenance and repair. The following were used for estimating the amount of work to be done each year
 - a Erosion repair, use one half foot of cover over 3% of the landfill area per

year for the first five years

b Vegetation repair, use 5% of the landfill area per year for two years

- Gas monitoring including costs for
 - a Sampling
 - b Analyses (if necessary)
 - c Maintenance and repair
- Passive Gas control systems do not require any expenditures
- Other monitoring or sampling required by other environmental programs
- Record keeping and reporting is required by UAC R315-302-2
- Site inspections to oversee repairs and post-closure care
- Costs associated with demonstrating that the site is stable and that the post-closure care period can be terminated

Adjustments

Landfill owners or operators will annually adjust their final closure and post-closure costs for inflation or facility modifications that would affect closure or post-closure care costs (R315-309-2(2)) The first annual adjustment will occur the first year after the permit is approved by the Executive Secretary and each following year unless the actual closure costs are recalculated The first adjustment will be made by multiplying the closure and post-closure care costs given in the permit application by the U S Department of Commerce inflation factor corrected for Kane County pricing Subsequent adjustments will be made annually on the same basis This process of adjustment will be utilized until the actual closure and post-closure care costs are recalculated At the time of permit renewal and at the ten-year anniversary of the permit issuance, the closure and post-closure care costs will be recalculated using the current approved design and current construction costs

Additional Information

The initial closure and post-closure plans are submitted as part of a permit application and become part of the approved permit Subsequent changes due to permit modifications, regulatory changes, operational changes, or unforeseen circumstances (e g , increase / decrease in fill rate or premature closure with less than the total acreage utilized) which substantially affect the time schedule or costs of closure and post-closure will necessitate closure and post-closure plan and cost estimate modifications These modifications will be submitted to the Executive Secretary for approval In addition, adjustments to the cost estimates will be submitted with the annual report to be approved by the Executive Secretary Any change in the financial assurance mechanism will be submitted to, and receive Executive Secretary approval

DESCRIPTION OF LINE ITEMS

Closure Costs

Closure costs are those expenses necessary to physically close the landfill and prepare it for the post-closure period The costs for closure operations are divided into engineering costs,

construction costs, and landfill gas collection system costs

1.0 Engineering

1.1 Topographic Survey

A topographic survey will generally be required to ascertain the existing height and top slope of the landfill so that permit compliance can be evaluated and the final closure system, drainage system and final grading can be engineered. Costs were developed by phone quote with a local licensed surveyor.

1.2 Boundary Survey

A Boundary survey is a metes and bounds description that is required for filing the closure notice and making the required changes on the record of title or deed. The boundary survey was completed when the Western Kane County Special Service District acquired the property from the BLM.

1.3 Site Evaluation

The site evaluation includes a site inspection to identify waste disposal areas, analyze drainage and erosion protection needs, and to determine other site operational features that may not be in compliance with the permit. Landfill gas analysis, operation records, etc. should also be included. Costs were developed by utilizing data from the *Solid Waste Financial Assurance Program Report*.

1.4 Development of Plans

The final closure plan includes the final cover system design and specifications, grading and drainage plans, specifications for revegetation, design of any other site improvements required, and preparation of a closure schedule. This item also includes the coordination of the closure plan with the Utah Division of Solid and Hazardous Waste, including the required notifications and reporting. Included in Item 1.7.

1.5 Contract Administration

Included in Item 1.7.

1.6 Administrative Costs

Included in Item 1.7.

1.7 Project Management, Observation and Testing

Project Management, Observation and testing costs include the cost of a Professional Engineer to observe the closure construction, perform appropriate cover thickness and permeability verifications, and prepare an evaluation report upon completion of the closure. Costs were developed by utilizing data from the *Solid Waste Financial Assurance Program Report* and using a 12.5% multiplier.

1.8 Ground Water Monitor Well Consultant Costs

Not Applicable.

1.9 NPDES Construction Storm Water Permit Package

The consultant is to prepare all necessary plans, specifications, and other documents necessary for compliance with all applicable federal and state laws and requirements necessary for the closure of the site. One of these required steps is compliance with the Federal Clean Water Act. Included in Item 1.7.

1.10 Disposal of Final Wastes

Any onsite waste that is not in the disposal cell must be placed in the cell or disposed of at a permitted facility if the waste can not be placed in the current open cell. Costs were developed by utilizing data from the *Solid Waste Financial Assurance Program Report*.

1.11 Remove Temporary Buildings

Onsite buildings that are not being used for post-closure care operations at the site must be removed and disposed of. Not Applicable.

1.12 Remove Equipment

Onsite equipment that is not being used for post-closure care operations at the site must be removed and disposed of Not Applicable

1.13 Repair/Replace Perimeter Fencing

Costs were developed by utilizing data from the *Solid Waste Financial Assurance Program Report*. Natural topography and vegetation prevents access to the landfill except by the entrance gate.

Closure costs for this item are considered minimal.

1.14 Clean Leachate Lines

Not Applicable

2.0 Construction Costs

Closure construction costs include those for construction of the final cover system, site grading, and drainage improvements. Other construction costs may be necessary to correct on-site problems.

2.1 Final Cover System

The standard final cover system at Class I, Class II, and some Class V Landfills is an infiltration layer that is a minimum of 18 inches of earthen material that has a permeability less than or equal to the permeability of any bottom liner system, or if there is no liner in the landfill unit, no greater than the permeability of the natural soils, or a permeability of no greater than 1×10^{-5} cm/sec, whichever is less, and an erosion layer of a minimum of 6 inches of earthen material that is capable of sustaining plant growth. Western Kane County Special Service District currently intends to use a Geosynthetic clay cover that develops a permeability less than 1×10^{-5} cm/sec when covered with a minimum of 12 inches of earthen material. The earthen material will also serve as the drainage / holding layer for any precipitation not removed through evapotranspiration. Also, a 6 inch vegetative layer is included to protect the entire final cover system along with vegetation of all disturbed areas. If earthen material or alternate cover systems are more economical, Western Kane County Special Service District County may choose to incorporate them into the design.

2.1.1 Completion of the Sidewall Liner

Not Applicable

2.1.2 Drainage Layer on Sidewall (if required)

Not Applicable

2.2 Completion of the Top Cover

2.2.1 Infiltration Layer (Compacted Clay)

The infiltration layer of the final cover system consists of an 18-inch thick layer of compacted soil or other earthen materials with a permeability matching that of the bottom liner or native soils, but not greater than 1×10^{-5} cm/sec. Not Applicable

2.2.2 Geosynthetic Clay Layer

A compacted clay liner may be used at certain landfill sites to meet the permeability requirements of the rules. Costs were developed by utilizing data from the *Solid Waste Financial Assurance Program Report* and after discussions with in-state suppliers/installers.

2.2.3 Flexible Membrane Cover

A flexible membrane cover will be necessary at certain landfill sites where the required permeability cannot be attained in the infiltration layer by earthen materials alone. Similar material is used for the FMC as is used for the FML, but typically requires more flexibility and less chemical resistance.

Not Applicable

2.2.4 Drainage Layer

A drainage layer is commonly used between the erosion layer and the infiltration layer. Geosynthetic clay cover manufacturers require a 12 inch layer of 1" minus material to develop permeability rates. The material is located on site, is free draining and will serve as the drainage

layer and the protective cover. In addition, the material will allow capillary forces to hold water in the vegetative layer for plant uptake and will serve as the erosion layer. Costs were developed by utilizing data from the *Solid Waste Financial Assurance Program Report* after analysis of local pncmg and are included in item 2.2.4c.

2.3 Erosion Layer Placement

The erosion layer must be a minimum of 6 inches of earthen material capable of sustaining plant growth. The existing site topsoil use for the drainage layer is generally acceptable for this application, and additional material is available on County owned property. Costs were developed by utilizing data for on site soils from the *Solid Waste Financial Assurance Program Report* after analysis of local pncmg and are included in item 2.2.4c.

2.4 Revegetation

Revegetation includes the activities necessary to provide vegetative erosion protection over the surface of the completed final cover. Limited moisture for germination and growth exists at the landfill. Costs are based on local vegetation practices and seeding with grasses or other shallow rooted plants that are native to the area. Success rates will be dependant on available moisture. Costs were developed by utilizing data from the *Solid Waste Financial Assurance Program Report* after analysis of local pncmg and are included in item 2.4.1.

2.5 Site Grading and Drainage

Site grading and drainage include the final grading of the site, drainage improvements and sedimentation controls for proper closure of the site. This activity will not be anticipated to be applicable to the Long Valley Landfill. Normal costs were developed by utilizing data from the *Solid Waste Financial Assurance Program Report* after analysis of local pncmg and are included in item 2.5.

2.6 Site Fencing and Security

Site fencing and security are to be added to secure any area of the landfill which has received waste and is undergoing closure but may not have been fenced. Existing security meets the standard. This item is not applicable to the Long Valley Landfill.

2.7 Leachate Collection System Completion

No leachate collection system exists at the landfill. Not Applicable.

3.0 Gas Collection System

Some landfill closures may require the installation of a gas collection system. The system for this landfill consists of passive vents to dispose of landfill gas before it can build up pressures that may damage the cover. Costs were developed by utilizing data from the *Solid Waste Financial Assurance Program Report* and are described below.

3.1 System Design

The system uses a passive design comprised of perforated PVC piping and vents when a geosynthetic clay cover is used. A gas collection system is not required when earth fill cover methods are used. The design includes placement of vents at 200 ft intervals along the peak. No additional design is required.

3.2 Completion of Gas Collection System

In the event of forced closure, there may be circumstances where the gas monitoring system, if required, has not been installed completely in association with the unit to be closed. The gas monitoring system will include the installation of passive vents where necessary to conduct the required monitoring.

3.3 Equipment and Installation

These costs include placing passive vents in the crest of the landfill cells. Intermediate cover is

granular and conducive to landfill gas transmission. Costs for the vents were estimated using known pricing for materials and adding conservative figures for installation.

4.0 Monitor Well Installation

Not Applicable

4.1 Ground Water Monitor Well Installation, Reworking, or Replacement

Not Applicable

4.2 Install, rework, or Replace Methane Probe/s or Wells

Not Applicable

4.3 Monitor Well or Methane Probe/Well Plugging

Not Applicable

Contingency Costs and Legal Fees

An estimated 10 percent contingency cost for all closure activities has been included. In addition, a bond cost reflective of qualified contractors has been added to account for a performance bond at the time of construction. Inasmuch as the State of Utah regulates the permitting, operation and closure of the Long Valley Landfill, no legal costs are anticipated to be applicable.

Post-Closure Care

The post-closure care period is established to be 30 years or as long as the Executive Secretary determines is required for the facility or unit to become stabilized and to protect human health and the environment. During this period, maintenance must be ongoing to assure the integrity and effectiveness of the final cover and other required systems. The costs for post-closure care are divided into engineering costs and construction costs.

1.0 Engineering Costs

Engineering costs include the amendment of a post-closure plan, site inspections, site monitoring, preparation of a post-closure permit, and preparation of correctional plans if required.

1.1 Post-Closure Plan

The post-closure plan provides a schedule for routine maintenance of the final cover system, the landfill security system, and the gas monitoring system. When properly closed, the Long Valley Landfill will need a minimum of routine maintenance. A majority of the final cover system will be in place for more than five years and is assumed to have stabilized. The stabilized nature of the facility is reflected in the post-closure costs. The permit and any Executive Secretary approved modifications provide sufficient detail to be considered the initial post-closure plan. Costs for any additional planning are included in Items 1.2 and 1.3.

1.2 Site Inspections

Site inspections should be performed at least quarterly. Inspections will include identification of areas experiencing settlement or subsidence, identification of erosion or other drainage-related problems, inspection of the fencing, and inspection of the leachate collection system and monitoring systems. Considering the long term nature of the facility prior to post-closure activities, it is not anticipated that significant corrective measures will be necessary. Costs for this item were derived from the *Solid Waste Financial Assurance Program Report* and adjusted for site complexity.

1.3 Correctional Plans and Specifications

Correctional plans and specifications include the costs for an engineering consultant to prepare plans and specifications to correct problems identified during the site inspections. This cost is dependent upon the quality of care taken during the closure of the site and ongoing maintenance during previous post-closure care years. Higher costs typical of early post-closure years will occur.

while the landfill is still operational. This item is assumed to have tapered down to zero prior to the beginning of the official post-closure care period. However, in an effort to provide a factor of safety, it is assumed that a minimal corrective plan will be required during 10% of the closure period.

1.4 Site Monitoring

Site monitoring is the cost to perform sampling and analysis of groundwater and gas monitoring systems. Gas monitoring is performed on a quarterly basis during the post-closure care period and is included in Item 1.2. Considering the data that will be available prior to the post-closure period, it is anticipated that limited value will be achieved through the monitoring process and that Executive Secretary approved modifications may be implemented. Costs reflect simplified nature of the monitoring systems at the Long Valley Landfill and are included in Item 1.2.

2.0 Maintenance Costs

Post-closure maintenance costs include the costs to correct any problems determined by the site inspections and as specified by the engineer's correctional plans and specifications. These costs will also include any ongoing site maintenance that is needed throughout the post-closure care period. Maintenance costs are dependent upon the quality of care taken during the closure of the site and ongoing maintenance during previous post-closure care years. It is assumed that proper closure and post-closure care have been conducted and that maintenance costs are minimal.

2.1 Cover Maintenance Costs

Subsidence and erosion of the cover may occur. These areas must be repaired and the vegetation reestablished. Also any damage to the protective soil layer or the cover must be repaired. Most of the landfill will have been closed for a considerable period of time prior to post-closure activities, and higher costs associated with early maintenance will not occur. Cover maintenance is assumed to consist of minimal soil replacement and seeding in 10% of the post-closure years.

2.2 Equipment Maintenance

No equipment is anticipated at the Long Valley Landfill. All systems are passive in nature. Maintenance costs associated with monitoring systems are not applicable.

3.0 Final Plugging of Monitoring Wells

Not Applicable

4.0 Leachate Disposal

Not Applicable

5.0 Site Maintenance

General maintenance of the site will continue throughout the post-closure period. Maintenance for fences and gates or other access controls, buildings and access roads is assumed to be minimal. Minimal costs for these items has been included.

6.0 Demonstration of Stability

Although the post-closure care period is not automatically ended at the end of 30 years, it is anticipated that the landfill will be shown to be stable and not present a threat to health or the environment. It is assumed the demonstration be supported by analysis of data collected during the active life and post-closure period. Costs for this item has been included.

Landfill Closure Cost Estimate Worksheet

Cost estimate worksheets for the Long Valley Landfill have been included below for documentation purposes

Landfill Closure Cost Estimate Worksheet

A brief description of each line item, as numbered in the tables, is given immediately following this series of tables.

Item	Unit Measure	Cost/Unit	No. Units	Total Cost	Source	Note
1.0 Engineering and Preliminary Site Work						
1.1 Topographic Survey	Hour	\$150.00	8	\$ 1,200	Phone Quote	
1.2 Boundary Survey for Closure	Not Applicable					
1.3 Site Evaluation	Lump	\$ 1,200	1	\$ 1,200		
1.4 Development of Plans	See 1.7					
1.5 Contract Administration Bidding and Award	See 1.7					
1.6 Administrative Costs for the Certification of Final Cover and Closure Notice	See 1.7					
1.7 Project Management; Construction Observation and Testing	Lump	12.5%	1	\$ 8,900	Standardized Rate	
1.8 Monitor Well Consultant Cost				Not Applicable		
1.9 Other Environmental Permit Costs				Not Required		
1.10 Disposal of Final Wastes						
1.10.1 Disposal Cost	Not Required					
1.11 Remove Temporary Buildings	Not Applicable					
1.12 Remove Equipment	Not Applicable					
1.13 Site Repair/Replace Perimeter Fencing	Lump	\$ 1,000	1	\$ 1,000		
1.14 Clean Leachate Lines	Not Applicable					
Subtotal				\$12,300		

10 % Contingency				\$ 1,300		
Engineering Total				\$13,600		

Item	Unit Measure	Cost/Unit	No. Units	Total Cost	Source	Note
2.0 Construction						
2.1 Final Cover System						
2.1.1 Completion of Sidewall Liner	Not Applicable					
2.1.1a Soil Placement	See 2.5					
2.1.1b Soil Processing	See 2.5					
2.1.1c Soil Amendment	See 2.5					
2.1.1d Soil Purchase	Not Applicable					
2.1.1e Soil Transportation	Not Applicable					
2.1.2 Drainage Layer on Sidewall	Not Applicable					
2.1.2a Geotextile Filter Fabric	Not Applicable					
2.1.2b Geonet/Geotextile Composite	Not Applicable					
2.1.2c Geomembrane Sidewall Liner	Not Applicable					
2.2 Completion of Top Cover						
2.2.1 Infiltration Layer (Compacted Clay)						
2.2.1a Soil Placement (Compacted)	See 2.2.2a & 2.2.4c					
2.2.1b Soil Processing	See 2.2.2a & 2.2.4c					
2.2.1c Soil Amendment	See 2.2.2a & 2.2.4c					
2.2.1d Soil Purchase	See 2.2.2a & 2.2.4c					
2.2.1e Transportation	See 2.2.2a & 2.2.4c					
2.2.2 Geosynthetic Clay Layer						
2.2.2a Geosynthetic Clay Installation	Sq. Ft.	\$0.50	90,000	\$45,000	Recent Bid	

Item	Unit Measure	Cost/Unit	No. Units	Total Cost	Source	Note
2.2.3	Flexible Membrane Cover					
2.2.3a	Flexible Membrane Installation	Not Applicable				
2.2.4	Drainage Layer					
2.2.4a	Geonet/Geotextile	Not Applicable				
2.2.4b	Sand Layer	Not Applicable				
2.2.4c	Soil Cover	Cu. Yds.	\$3.00	5,000	\$15,000	
2.2.4d	Geonet/Geotextile Composite	Not Applicable				
2.3	Erosion Layer Placement					
2.3.1	Soil Purchase	Not Required				
2.3.2	Soil Transportation	Not Required				
2.3.3	Soil Processing	Not Required				
2.3.4	Soil Amendment	Not Required				
2.3.5	Soil Placement	See 2.2.2a ,2.2.4c & 2.5				
2.4	Revegetation					
2.4.1	Seeding	Acre	\$600	2	\$ 1,200	
2.4.2	Fertilize	See 2.4.1				
2.4.3	Mulch	See 2.4.1				
2.5	Site Grading and Drainage	Hour	\$120	15	\$ 1,800	Standardized Rates
2.6	Site Fencing and Security	Not Required				
2.7	Leachate Collection System	Not Applicable				
Completion						
	Subtotal				\$63,000	
	10% Contingency				\$ 6,300	
	Construction Total				\$69,300	

Item	Unit Measure	Cost/Unit	No. Units	Total Cost	Source	Note
3.0 Gas Collection System						
3.1 System Design	Not Applicable					
3.2 Completion of Gas Collection System	See 3.3.3					
3.3 Equipment and Installation						
3.3.1 Place Sand	Not Applicable					
3.3.2 Install Geonet and Geotextile	Not Applicable					
3.3.3 Install Passive Vents	Lump	\$ 700	1	\$ 700		
3.3.4 Install, Rework or Replace Gas Control Equipment	Not Applicable					
Subtotal				\$ 700		
10% Contingency				\$ 400		
Gas Collection Total				\$ 1,100		

Item	Unit Measure	Cost/Unit	No. Units	Total Cost	Source	Note
4.0 Monitor Well Installation Cost						
4.1 Ground Water Monitoring Well Installation, Reworking, or Replacement	Not Applicable					
4.2 Install, Rework, or Replace Methane Probe/s	Not Applicable					
4.3 Monitor Well, or Methane Probe Plugging	Not Applicable					
Subtotal						
10% Contingency						
Monitor Well Installation Total				\$ 0		

Calculation of Total Closure Costs

Engineering Total \$ 13,600

Construction Total \$ 69,300

Gas Collection Total \$ 1,100

Ground Water Total \$ 0

0 % Contract
Performance Bond Included in unit costs

SUBTOTAL \$ 84,000

Legal Fees
(0 % Of Subtotal) \$ 0

TOTAL CLOSURE COSTS \$ 84,000

Landfill Post-Closure Care Cost Estimate Worksheet

Item	Unit Measure	Cost/Unit	No. Units	Total Cost	Source	Note
1.0 Engineering Costs						
1.1 Post-Closure Plan and Post-Closure permits	See 1.2 & 1.3					
1.2 Site Inspection and Record keeping (annual)	Lump	\$ 18,000	1	\$ 18,000		
1.3 Correctional Plans and Specifications (annual)	Lump	\$ 3,000	1	\$ 3,000		
1.4 Site Monitoring						
1.4.1 Ground Water Monitoring						
1.4.1a Ground Water Sample Collection	Not Applicable					
1.4.1b Ground Water Sample Analysis	Not Applicable					
1.4.1c Ground Water Sample Analysis Review and Reporting	Not Applicable					
1.4.2 Landfill Gas Monitoring						
1.4.2a Gas Monitoring Data Collection	See 1.2					
1.4.2b Gas Monitoring Data Review and Reporting	See 1.2					
2.0 Maintenance Costs						
2.1 Cover Maintenance Costs						
2.1.1 Soil Replacement	Cu. Yd	\$ 4.00	500	\$ 2,000		
2.1.2 Vegetation Reseeding	Acre	\$600	0.6	\$ 360		
2.2 Equipment Maintenance						
2.2.1 Ground Water well Maintenance and Replacement	Not Applicable					
2.2.2 Methane Probe Maintenance and Replacement	Not Applicable					
2.2.3 Gas Collection System Operation	Not Required					
2.2.4 Gas Collection System Maintenance and Repair	Not Applicable					

Item	Unit Measure	Cost/Unit	No. Units	Total Cost	Source	Note
2.2.5 Leachate Collection System						
2.2.5a Leachate Collection System Repair and Maintenance	Not Applicable					
2.2.5b Clean Leachate Lines	Not Applicable					
3.0 Final Plugging of Monitoring Wells						
3.1 Final Plugging of Methane Probes	Not Applicable.					
3.2 Final Plugging of Ground Water Monitoring Wells	Not Applicable					
3.3 Gas Control Equipment Removal	Not Applicable					
4.0 Leachate Disposal	Not Applicable					
5.0 Site Maintenance						
5.1 Repair of Surface Water Diversion Structures	Not Applicable					
5.2 Repair of Fences and Gates	Each	\$100	3	\$ 300		
5.3 General Maintenance						
5.0 Demonstration of stability	Lump	\$1,000	1	\$ 1,000		
Subtotal				\$ 24,660		
10% Contingency				\$ 2,340		
Post-Closure Care Total				\$ 27,000		

Total Closure and Post-Closure Costs

Total Closure Costs: \$ 84,000 _____

Total Post-Closure Care Costs: \$ 27,000 _____

Total Cost: \$ 111,000 _____

The following are reference costs developed by the Oklahoma Department of Environmental Quality and can be used if no other costs are available (2008 update)

2008 Worksheet for Calculating Closure and Post-closure Cost Estimates

All site data necessary to calculate estimates of closure and post-closure costs were gathered by completing table H 1. Data from Table H 1 was inserted into Tables H 2 and 1 1, as applicable to complete calculations.

Table H 1 Site Data

Facility Name Long Valley Landfill

Permit Number 92-03

Description	Quantity	Units
Total Permitted Area	40	acres
Active Portion		
Composite Lined	0	acres
Soil Lined	2	acres
Area of Largest Cell/Phase Requiring Final Cap		
Composite Lined	0	acres
Soil Lined	2	acres
Perimeter Fencing	1,000	linear feet
Groundwater Monitoring Wells	0	VLF
Methane Gas Probes	0	VLF
Terraces	0	linear feet
Letdown channels	0	linear feet
Perimeter drainage ditches	0	linear feet
Average Daily Flow	0	tons/day
Landfill Disposal Cost	0	\$/ton

VLF = Vertical linear feet. The sum of the depths of all monitoring wells.

Table H 2 Closure Cost Estimate

Facility Name

Permit Number

	Task/Service	Quantity	Units	Multiplier ^a	Unit Cost ^b	Subtotal
1	Preliminary Site Work					
	a Conduct Site Evaluation	1	Lump sum	1	\$3,120.30	\$3,120.30
	b Dispose Final Wastes	0				
	Average Daily Flow	0	tons/day		\$10.00	
	Disposal Cost	0	tons/day	5		
	c Remove Temporary Building(s)	0	lump sum	0	\$2,861.37	
	d Remove Equipment	0	lump sum	0	\$2,335.72	
	e Repair/Replace Perimeter Fencing	1,000	linear feet	0.25	\$3.06	\$ 765.00
	f Clean Leachate Line(s)	0	lump sum	1	\$1,413.31	
2	Monitoring Equipment					
	a Rework/Replace Monitoring Well(s)	0	VLF	0.25	\$65.62	
	b Plug Abandoned Monitoring Well(s)	0	VLF	0.25	\$26.26	
	c Rework/Replace Methane Probe(s)	0	VLF	0.25	\$56.66	
	d Plug Abandoned Methane	0	VLF	0.25	\$20.71	

	Probe(s)					
	e Rework/Replace Remediation and/or Gas Control Equipment	0	lump sum	0 05	\$0 00	
3	Construction					
	a Complete Site Grading to include on- and off-site borrow areas	2	acres	1	\$1,237 14	\$2,474 28
	b Construct Fmal Cap					
	Compacted On-site Clay Cap or	0	cubic yards	1	\$4 46	
	Compacted Off-site Clay Cap or	0	cubic yards	1	\$7 21	
	Install Geosynthetic Clay Lmer Cap	87,120	square feet	1	\$0 45	\$39,204 00
	c Construct Landfill Gas Venting Layer					
	Place Sand or	0	acres	1	\$33,079 81	
	Install Net and Geotextile	0	square feet	1	\$0 32	
	d Install Passive Landfill Gas Vents	2	acres	1	\$792 46	\$1,584 92
	e Install Flexible Membrane Lmer	0	square feet	1	\$0 35	
	f Drainage Layer					
	Place Sand or	0	acres	1	\$33,079 81	
	Install Net and Geonet	0	square feet	1	\$0 32	
	g Place On-site Topsoil	3227	cubic yards	1	\$1 91	\$6,163 57
	Place Off-site Topsoil	0	cubic yards	1	\$15 27	
	h Establish vegetative cover, including on- and off-site borrow areas	2	acres	1	\$469 49	\$938 98
4	Drainage/erosion control					
	a Construct Terraces	0	linear feet	1	\$7 99	
	b Construct Letdown Channels	0	linear feet	1	\$7 52	
	c Clean Perimeter Drainage Ditches	0	linear feet	0 50	\$6 10	
5	Tasks Not Identified					
6	Subtotal					\$54,251 05
7	Administrative Services	1	lump sum	0 10		\$5,425 11
8	Technical and Professional Services	1	lump sum	0 12		\$6,510 13
9	Closure Contingency	1	lump sum	0 10		\$5,425 11
10	Total Fmal Closure					\$71,611 40

Table 1 1 Post-closure Cost Estimate

Facility Name

Permit Number

	Task/Service	Quantity	Units	Multiplier ^a	Unit Cost ^b	Subtotal
1	Site maintenance					
	a Site Inspections	4	per year	8	\$567 63	\$18,164 16
	b General Maintenance	1	per year	8	\$1,701 77	\$13,614 16
	c Remediation and/or Gas Control Eqmpnt	1	lump sum	0 3 ^c	^d	
2	Monitoring equipment					

a	Rework/Replace Momtormg Well(s)	0	VLF	0 25	\$66 04	
b	Plug Abandoned Momtormg Well(s)	0	VLF	0 25	\$26 26	
c	Final Pluggmg of Momtormg Wells	0	VLF	1	\$26 26	
d	Rework/Replace Methane Probe(s)	0	VLF	0 25	\$56 66	
e	Plug Abandoned Methane Probe(s)	0	VLF	0 25	\$20 71	
f	Final Pluggmg of Methane Probes	0	VLF	1	\$20 71	
g	Final Pluggmg of Piezometer(s)	0	VLF	1	\$20 71	
3	Samphng and analysis				151 07	
a	Groundwater Momtormg Wells	0	wells	60		
b	Methane Gas Probes	0	probes	60	\$39 72	
c	Surface Water Momtormg Pomts	0	pomts	60	\$73 77	
d	Leachate	0	sample	60	\$118 86	
4	Final cover maintenance					
a	Mow and Fertilize Vegetative Cover	n/a	acres	30 8	\$187 79	
b	Repair Erosion, Settlement, and Subsidence for On-site Soils	2	acres	30	\$2 72	\$163 20
	Repair Erosion, Settlement, and Subsidence for Off-site Soils	0	acres	30 8	\$16 27	
c	Reseed Vegetative Cover	2	acres	0 20	\$469 48	\$187 79
5	Leachate management					
a	Clean Leachate Lme(s)	0	per year	30 (30 yrs)	\$1,455 54	
b	Maintain Leachate Collection System and Equipment	0	per year	30 (30 yrs)	\$2,261 24	
c	Collect, Treat, Transport, and Dispose of Leachate	0	gal/yr	30	\$0 29	
6	Tasks not identified					
7	Subtotal					\$32,129 31
7	Administrative Services	1	lump sum	0 06	\$32,129 31	\$1,927 76
8	Technical and Professional Services	1	lump sum	0 07	\$32,129 31	\$2,249 05
9	Post-closure Contingency	1	lump sum	0 10	\$32,129 31	\$3,212 93
10	Total Post-closure					\$39,519 05

a Multipliers are determined from the *Solid Waste Financial Assurance Program Report*, December 22, 2000

b Unit costs include a 2.66% inflationary adjustment for 2008

c 5% of equipment capital cost, maintenance performed once per 5 yrs for 30 years

d Input capital cost for gas control/remediation equipment, if installed at the site

e If the approved groundwater monitoring plan requires monitoring for alternative constituents, unit costs shall be calculated in accordance with OAC 252.515-27-52(b) or (c)

f Input subtotal from line 7

g Add lines 7 through 10

Total Closure and Post-Closure Costs

Total Closure Costs	<u>\$ 71,611 40</u>
Total Post-Closure Care Costs	<u>\$ 39,519 05</u>
Total Cost	<u>\$ 111,130 45</u>

Closure costs are estimated to approximate \$111,000 regardless of the estimating method used. The Western Kane County Special Service District has established a base value of \$111,000 for the Long Valley Landfill 2008 Closure – Post Closure Cost.