DSHW-2022-021172

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By Division of Waste Management and Radiation Control at 2:46 pm, Jul 14, 2022

2702 South 1030 West, Suite 10, Salt Lake City, Utah 84119
Ph: 801.270.9400 Fax: 801.270.9401

TRANSMITTAL

TO: Doug Hansen Utah Division of Waste Management and Radiation Control 195 North 1950 West Salt Lake City, Utah 84116	DATE: 7/14/22 IGES JOB #: 00102-014 SENT VIA: Email

We are sending you the following:

Copies	Date	Description
1	7/14/22	2022 Trans Jordan Landfill Repermit Application

x	For approval		Approved as submitted		Resubmit		Copies for approval
	For your use		Approved as noted		Submit		Copies for distribution
	As requested		Returned for corrections		Return		Corrected prints
	For your review and comment		Other				

Remarks:
Attached is the 2022 Trans Jordan Landfill Repermit Application. Appendices will follow in other emails due to file size. As always, please contact me with any questions regarding this Class I Landfill repermit application.

SIGNED: Brett Mickelson

Trans-Jordan Landfill

2022 Permit Renewal

July 2022

Trans-Jordan Landfill

2022 Class I Landfill
Repermit Application

July 14, 2022

Part I & Checklist

Part I General Information APPLICANT: PLEASE COMPLETE ALL SECTIONS.

I. Landfill Type	☒ Class I ☐ Class V	**II. Application Type**	☐ New Application ☒ Renewal Application	☐ Facility Expansion ☐ Modification

For Renewal Applications, Facility Expansion Applications and Modifications Enter Current Permit Number 9421R3

III. Facility Name and Location

Name of Facility	Trans-Jordan Landfill				
Site Address (street or directions to site)	10473 South Bacchus Hwy			County	Salt Lake
City	South Jordan	Zip Code	84009	Telephone	(801) 569-8994
Township 3S	Range 2W	Section(s) 15	Quarter/Quarter Section	Quarter Section	
Main Gate Latitude	degrees 40 minutes 33 seconds 39	Longitude	degrees 112 minutes 03 seconds 44		

IV. Facility Owner(s) Information

Name of Facility Owner	Trans-Jordan Cities						
Address (mailing)	PO Box 95610						
City	South Jordan	State	UT	Zip Code	84009	Telephone	(801) 569-8994

V. Facility Operator(s) Information

Name of Facility Operator	Trans-Jordan Cities						
Address (mailing)	PO Box 95610						
City	South Jordan	State	UT	Zip Code	84009	Telephone	(801) 569-8994

VI. Property Owner(s) Information

Name of Property Owner	Trans-Jordan Cities						
Address (mailing)	PO Box 95610						
City	South Jordan	State	UT	Zip Code	84009	Telephone	(801) 569-8994

VII. Contact Information

Owner Contact Name	Jaren Scott	Title	Executive Director				
Address (mailing)	PO Box 95610						
City	South Jordan	State	UT	Zip Code	84009	Telephone	(801) 256-2812
Email Address	jarenscott@transjordan.org	Alternative Telephone (cell or other)					
Operator Contact Name	Jaren Scott	Title	Executive Director				
Address (mailing)	PO Box 95610						
City	South Jordan	State	UT	Zip Code	84009	Telephone	(801) 256-2812
Email Address	jarenscott@transjordan.org	Alternative Telephone (cell or other)					
Property Owner Contact Name	Jaren Scott	Title	Executive Director				
Address (mailing)	PO Box 95610						
City	South Jordan	State	UT	Zip Code	84009	Telephone	(801) 256-2812

Part I General Information (Continued)

VIII. Waste Types (check all that apply)

☒ All non-hazardous solid waste (see R315-315-7(3) for PCB special requirements) OR the following specific waste types:

Waste Type	Combined Disposal Unit	Monofill Unit
☐ Municipal Waste	☐	☐
☐ Construction & Demolition	☐	☐
☐ Industrial	☐	☐
☐ Incinerator Ash	☐	☐
☐ Animals	☐	☐
☐ Asbestos	☐	☐
☐ PCB's (R315-315-7(3) only)	☐	☐
☐ Other ______	☐	☐

IX. Facility Area

Facility Area........ 240 acres

Disposal Area........ 62 acres

Design Capacity

Years........ 10

Cubic Yards........ ____

Tons........ 4,800,000

X. Fee and Application Documents

Indicate Documents Attached To This Application

☐ Application Fee: Amount $

☒ Facility Map or Maps
☐ Ground Water Report
☒ Facility Legal Description
☒ Closure Design
☒ Plan of Operation
☒ Cost Estimates
☒ Waste Description
☒ Financial Assurance

Class V Special Requirements

☐ Documents required by UCA 19-6-108(9) and (10)

I HEREBY CERTIFY THAT THIS INFORMATION AND ALL ATTACHED PAGES ARE CORRECT AND COMPLETE.

Signature of Authorized Owner Representative: [signature]

Title: Executive Director

Date: 7/11/2022

Name typed or printed: Jaren C. Scott

Address: PO BOX 95610, South Jordan, UT, 95610

Email Address: jarenscott@transjordan.org

Alternative Telephone (cell or other): 435-531-6270

Signature of Authorized Land Owner Representative (if applicable)

Title

Date

Name typed or printed

Address

Email Address

Alternative Telephone (cell or other)

Signature of Authorized Operator Representative (if applicable)

Title

Date

Name typed or printed

Address

Email Address

Alternative Telephone (cell or other)

Application Checklist

I. **Facility General Information**	
Description of Item	Location In Document
Ia. Information Required for All Class I and V Landfills	
Completed Part I General information Form (See form above)	Part I
General description of the facility (R315-310-3(1)(b))	Section 1
Legal description of property (R315-310-3(1)(c))	Appendix B
Proof of ownership, lease agreement, or other mechanism (R315-310-3(1)(c))	Appendix B
Area served by the facility including population (R315-310-3(1)(d))	Section 1.1
If the permit application is for a class I landfill a demonstration that the landfill is not a commercial facility	Section 1
Waste type and anticipated daily volume (R315-310-3(1)(d))	Section 1.2 Section 7.2.1
Ib. Information Required for All New Or Laterally Expanding Class I and V Landfills	
Intended schedule of construction (R315-302-2(2)(a))	Not Applicable
Name and address of all property owners within 1000 feet of the facility boundary (R315-310-3(2)(a)(i))	Not Applicable
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))	Not Applicable
Name of the local government with jurisdiction over the facility site (R315-310-3(2)(iii))	Not Applicable
Ic. Location Standards for All New Or Laterally Expanding Class I and V Landfills (R315-302-1)	
Documentation that the facility has met the historical survey requirement of R315-302-1(2)(f)	Not Applicable
Land use compatibility (R315-302-1(2)(a))	Not Applicable
Maps showing the existing land use, topography, residences, parks, monuments, recreation areas or wilderness areas within 1000 feet of the site boundary	Not Applicable
Certifications that no ecologically or scientifically significant areas or endangered species are present in site area	Not Applicable
List of airports within five miles of facility and distance to each	Not Applicable
Geology (R315-302-1(2)(b))	Not Applicable
Geologic maps showing significant geologic features, faults, and unstable areas	Not Applicable
Maps showing site soils	Not Applicable
Surface water (R315-302-1(2)(c))	Not Applicable

I. **Facility General Information**	
Description of Item	Location In Document
Magnitude of 24 hour 25 year and 100 year storm events	Not Applicable
Average annual rainfall	Not Applicable
Maximum elevation of flood waters proximate to the facility	Not Applicable
Maximum elevation of flood water from 100 year flood for waters proximate to the facility	Not Applicable
Wetlands (R315-302-1(2)(d))	Not Applicable
Ground water (R315-302-1(2)(e))	Not Applicable
Id. Plan of Operations Requirements for All Class I And V Landfills (R315-310-3(1)(e) and R315-302-2(2))	
Forms and other information as required in R315-302-2(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))	Section 3 Appendix F
Schedule for conducting inspections and monitoring, and examples of the forms that will be used to record the results of the inspections and monitoring (R315-302-2(2)(c), R315-302-2(5)(a), and R315-310-3(1)(g))	Section 3.4 Appendix F
Contingency plans in the event of a fire or explosion (R315-302-2(2)(d))	Section 3.6
Corrective action programs to be initiated if ground water is contaminated (R315-302-2(2)(e))	Appendix C
Contingency plans for other releases, e.g. explosive gases or failure of run-off collection system (R315-302-2(2)(f))	Section 3.6
Plan to control fugitive dust generated from roads, construction, general operations, and covering the waste (R315-302-2(2)(g))	Section 3.9 Appendix G
Plan for litter control and collection (R315-302-2(2)(h))	Section 3.9
Description of maintenance of installed equipment (R315-302-2(2)(i))	Section 3.8
Procedures for excluding the receipt of prohibited hazardous or PCB containing wastes (R315-302-2(2)(j))	Section 3.10
Procedures for controlling disease vectors (R315-302-2(2)(k))	Section 3.9.3
A plan for alternative waste handling (R315-302-2(2)(l))	Section 3.7
A general training plan for site operations (R315-302-2(2)(o))	Section 3.12
Any recycling programs planned at the facility (R315-303-4(6))	Section 3.11
Closure and post-closure care Plan (R315-302-2(2)(m))	Section 4 Section 5
Procedures for the handling of special wastes (R315-315)	Section 3.2
Plans and operation procedures to minimize liquids (R315-303-3(1))	Section 3.3
Plans and procedures to address the requirements of R315-303-3(7)(c) through (i) and R315-303-4	Section 3

I. **Facility General Information**	
Description of Item	Location In Document
Approved traffic impact study from the agency with jurisdiction over the roads, including the safety, operation, and condition of roadways serving the proposed facility [Utah Solid and Hazardous Waste Act 19-6-108(9)(g)].	Not Applicable, not a new facility
For a facility owned or operated by a local government, disclosure of costs for establishing and operating the facility [Utah Solid and Hazardous Waste Act 19-6-108(9)(h)].	Not Applicable, not a new facility
Any other site-specific information pertaining to the plan of operation required by the Director (R315-302-2(2)(p))	Nothing specific required at this time
Ie. Special Requirements for New Or Laterally Expanding Class V Landfill (R315-310-3(3))	
Submit information required by the *Utah Solid and Hazardous Waste Act* Subsections 19-6-108(9) and 19-6-108(10) (R315-310-3(2)(a))	Not Applicable
Note the following information must be provided following issuance of the permit but prior to Director approval to take waste for a new Class V facility.	
Approval from the local government within which the solid waste facility sits	Not Applicable
Approval from the Legislature and the Governor	Not Applicable

II **Facility Technical Information**	
Description of Item	Location In Document
IIa. Maps for All Class I and V Landfills	
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))	Appendix A
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))	Appendix A
IIb. Geohydrological Assessment for All Class I and V Landfills (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))	Section 6
Evaluation of bedrock and soil types and properties including permeability rates (R315-310-4(2)(b)(ii))	Section 6
Depth to ground water (R315-310-4(2)(b)(iii))	Section 6
Direction and estimated flow rate of ground water (R315-310-4(2)(b)(iv))	Section 6
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))	Section 6.5 Appendix J
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))	Section 6.5 Appendix J
Identification and description of all surface waters on-site and within one mile of the facility boundary (R315-310-4(2)(b)(vii))	Section 6.6

***II* Facility Technical Information**	
Description of Item	Location In Document
Background ground water and surface water quality assessment and, for an existing facility, identification of impacts upon the ground water and surface water from leachate discharges (R315-310-4(2)(b)(viii))	Section 6 Appendix C
Ground Water Monitoring (R315-303-3(7)(b) and R315-308)	Appendix C
Statistical method to be used (R315-308-2(8))	Appendix C
Calculation of site water balance (R315-310-4(2)(b)(ix))	Section 6.8
IIc. Engineering Report - Plans, Specifications, And Calculations for All Class I and V Landfills	
Documentation that the facility will meet all of the performance standards of R315-303-2	Section 3 Section 4 Section 5
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))	TJL is not a new or laterally expanding facility
Anticipated facility life and the basis for calculating the facility's life (R315-310-4(2)(c)(ii))	Section 7.2.1 Appendix M
Cell design to include liner design, cover design, fill methods, elevation of final cover including plans and drawings signed and sealed by a professional engineer registered in the State of Utah (R315-303-3(3), R315-303-3(6) and (7)(a), R315-310-3(1)(b) and R315-310-4(2)(c)(iii))	Section 7.3
Leachate collection system design and calculations showing system meets the requirements of R315-303-3(2)	Section 3.4.5 Section 7.4.2
Equipment requirements and availability (R315-310-4(2)(c)(iii))	Section 1.4
Identification of borrow sources for daily and final cover and for soil liners (R315-310-4(2)(c)(iv))	Section 7.3.5
Run-On and run-off diversion designs (R315-303-3(1)(c), (d) and (e))	Section 7.5
Leachate collection, treatment, and disposal and documentation to show that any treatment system is being or has been reviewed by the Division of Water Quality (R315-310-4(2)(c)(v) and R315-310-3(1)(i))	Section 7.4.2
Ground water monitoring plan that meets the requirements of Rule R315-308 including well locations, design, and construction (R315-310-4(2)(b)(x) and R315-310-4(2)(c)(vi))	Section 3.4.1 Appendix C
Landfill gas monitoring and control plan that meets the requirements of Subsection R315-303-3(5) (R315-310-4(2)(c)(vii))	Section 3.4.4
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))	Section 7.1.2 Appendix I
Design and location of run-on and run-off control systems (R315-310-4(2)(c)(viii))	Section 7.5
IId. Closure Plan for All Class I and V Landfills (R315-310-3(1)(h))	
Closure Plan (R315-302-3(2) and (3))	Section 4

***II* Facility Technical Information**	
Description of Item	Location In Document
Closure schedule (R315-310-4(2)(d)(i))	Section 7.6
Design of final cover (R315-303-3(4) and R315-310-4(2)(c)(iii))	Section 7.3.5
Capacity of site in volume and tonnage (R315-310-4(2)(d)(ii))	Appendix M
Final inspection by regulatory agencies (R315-310-4(2)(d)(iii))	Section 4.4
IIe. Post-Closure Care Plan for All Class I and V Landfills (R315-310-3(1)(h))	
Post-Closure Plan (R315-302-3(5) and (6))	Section 5
Site monitoring of landfill gases, ground water, and surface water, if required (R315-310-4(2)(e)(i))	Section 3.4
Changes to record of title, land use, and zoning restrictions (R315-310-4(2)(e)(v))	Section 5.5
Maintenance activities to maintain cover and run-on/run-off control systems (R315-310-4(2)(e)(iii))	Section 5.2
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))	Section 5.6
IIf. Financial Assurance for All Class I and V Landfills (R315-310-3(1)(j))	
Identification of closure costs including cost calculations (R315-310-4(2)(d)(iv)) and (R315-302-2(2)(n))	Section 7.8 Appendix O
Identification of post-closure care costs including cost calculations (R315-310-4(2)(e)(iv))	Section 7.8 Appendix O
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))	Section 7.8 Appendix P

General & Technical Report

Contents

SECTION 1 - FACILITY DESCRIPTION

The Trans Jordan Cities Landfill (TJL) began operation in 1958 (as Tri-Cities Landfill) and is a cooperatively operated solid waste landfill operated by Trans-Jordan Cities (TJ). TJ was officially formed in 1986 to dispose of the solid wastes generated in the southern half of Salt Lake County. TJ is a political subdivision of the State of Utah and operates under an Inter-local Agreement between its member cities (the Cities of Draper, Midvale, Murray, Riverton, Sandy, South Jordan, and West Jordan) with a combined population of approximately 480,000. Operation of TJL is administered by a board with representatives from each member city. Management of the landfill is coordinated by Mr. Jaren Scott, Executive Director.

The TJL facilities are located on 240 acres owned by TJ at 10473 South Bacchus Hwy, in Section 15 of Township 3 South, Range 2 West. Drawing 1 – Title Sheet shows the location of TJL along with the surround topography. Appendix A – Drawings include all of the permit renewal drawings.

Access to TJL is provided from South Bacchus Highway (old State Route 111) with the facility entrance at the landfill's northwest corner. TJL is located within the city of South Jordan, with West Jordan city limits approximately 1 mile northeast of the facility, Herriman approximately 3 miles south-southeast and Copperton being approximately 1.5 miles to the west. The closest business to TJL is a wholesale plant nursery located across South Bacchus Highway from the landfill entrance. Additional businesses close to TJL are an E-Bay data center located approximately 1,500 feet northeast of the landfill and an Amazon Fulfillment Center 2,000 feet north of the landfill entrance.

In 2004, an agreement between TJ and Granger Electric of South Jordan LLC (GESJ) a subsidiary of Granger of Lansing, Michigan was finalized and a landfill gas to energy project began construction. The initial project, Phase A, consisted of 45 wells installed into the closed area of the unlined landfill. The wells are connected together with piping that transports the gas to a flare for proofing and destruction. Phase B consisting of 22 wells was completed in 2006.

During 2008, TJ leased land north of the operations and maintenance building to GESJ to build a landfill gas to energy plant and electrical power station to transform the landfill gas into electricity. In April of 2009, the GESJ plant went online; processing the landfill gas to fuel three Caterpillar 3520 engines. Each engine is capable of generating up to 1.6 megawatts of electricity (total of 4.8MW). GESJ and Murray City Power have an agreement where Murray City will purchase all power created at the South Jordan plant.

Additional closure phases have been constructed since the landfill gas to energy plant went online. Phase C consisted of 19 wells and was completed in 2009. Phase D consisted of 20 wells and was completed in 2013. Phase E landfill closure consisted of 19 wells and was completed in 2020.

Construction of a small outbuilding for use as an extension of the original scalehouse occurred in 2009. This building was constructed to achieve better customer service to residential customers during demanding summer weekends.

TJ has leased Verizon wireless property for the installation of a cell phone tower located south of the shop. TJ continues to provide a citizen drop-off facility Public Convenience Center (PCC), a household hazardous waste (HHW) disposal facility in partnership with Salt Lake County Health Department (SLCoHD), and screens incoming waste with an inline radiation detection system. TJL operates a full-service green waste processing facility for the management of various wood waste by products. The location of the previously described facilities are presented on Drawing 2 – General Arrangement, with the location of each of the closure phases are as shown on Drawing 3 – Final Cover (Appendix A).

The TJL has power lines located inside the north boundary of the landfill running across the north side slopes of the unlined landfill and a previously abandoned railroad right-of- way along the north and west sides of the property. All other areas of the landfill utilized for solid waste disposal are free of any utility right-of-way restrictions. Information pertaining to site access, operations, and facility contact information is presented on a sign at the entrance to the landfill.

1.1 AREA SERVED

In addition to waste from the member cities, waste from other municipalities and unincorporated areas of Salt Lake County are disposed of at TJL.

1.2 WASTE TYPES

The waste disposed of at the landfill is solid non-hazardous municipal solid waste (MSW), inert construction debris and landscaping debris with some solid demolition and non-hazardous operations waste from Kennecott Utah Copper (KUC) mining and milling operations. Non-acceptable materials include liquid wastes of any kind, burning materials, radioactive wastes, Polychlorinated Biphenyls (PCB) wastes and hazardous wastes of any kind. Any vehicle hauling non-acceptable wastes to TJL is refused entrance to the landfill and the appropriate State or County agency is then notified. PCBs are of particular concern and are specifically called out as not being allowed to enter the landfill; appropriate legal action can be initiated if attempts are made to dispose of these materials. Residential tires, batteries, oil, antifreeze, , solvents, and other household liquids are accepted at our HHW facility and disposed of or recycled offsite by SLCoHD. Commercial hazardous wastes are not accepted for disposal at TJL.

1.2.1 Unlined Landfill

The unlined landfill cell, as indicated on Drawing 2 – General Arrangement (Appendix A) has served parts of Salt Lake County since the mid 1950's. The exact date of first waste acceptance is not clear; data suggests that it is circa 1958. Based on an early topographic survey, the current topography of the site, and the volume of waste recorded since 1986, the estimated volume of waste disposed of in the unlined landfill cell is just over 7.5 million cubic yards.

No records exist that determine the nature and extent of the wastes accepted at the landfill prior to 1986. Therefore, the composition of the wastes disposed of in the unlined landfill is unknown, but it is assumed to consist of a combination of residential, agricultural, commercial, and industrial wastes.

Since TJ was formed, the landfill has accepted a variety of non-hazardous wastes from residential, commercial, and industrial sources located within the TJ service boundaries and from neighboring communities. There are no records that indicate TJL has ever knowingly accepted asbestos containing materials.

1.2.2 Lined Landfill Cell

The landfill currently accepts approximately 1,360 tons per day of municipal solid and C & D waste. This waste consists primarily of commercial front and side loaders and roll- off containers; and wastes that are self-hauled to the landfill by both private citizens and commercial entities. The quantities of solid wastes accepted at TJL vary seasonally.

1.3 HOURS OF SITE OPERATION

TJL is open to the general public and commercial haulers for solid waste disposal Monday through Saturday from 7:00 a.m. to 6:00 p.m., year-round, excluding four holidays (New Year's, July 4, Thanksgiving Day, and Christmas Day). TJL controls public access to the landfill to prevent illegal dumping of wastes, public exposure to hazards, scavenging, and unauthorized traffic. Access control is a key element in preventing unauthorized scavenging or potential injury. Fences, locked gates, video surveillance, and natural barriers provide the basis of the site's access control system. During operating hours, TJL personnel monitor and control all access to facilities with at least four (4) people on-site (Operation Supervisor, Equipment Operator, Scale House Operator, and Spotter), one of which is always in the scale house and one at the active face.

1.4 FACILITY EQUIPMENT

The following equipment is currently utilized at TJL:

1.4.1 Landfill and General Equipment

- Three (3) trash compactors.
- Three (3) bulldozers.
- One (1) scraper.
- One (1) grader.
- One (1) loader.
- One (1) smooth drum compactor.
- One (1) excavator.
- Three (3) articulated trucks.
- One (1) mini excavator.
- One (1) backhoe.
- One (1) water wagon.
- One (1) water truck.

The trash compactors are used to spread and compact solid waste disposed of at the landfill. The smooth drum compactor and grader are used for road and embankment construction and all other dirt work requiring grading and compaction. The bulldozers are used to provide backup waste placement and compaction duties, placement of daily cover soils, loading the scraper and for general site work. The excavator, haul trucks, and the scraper are used to excavate and haul daily and final cover materials as well as excavate material within proposed landfill expansion areas. The water trucks are used for dust control and recycle/disposal of leachate as required.

1.4.2 Greenwaste Equipment

- One (1) windrow turner.
- One (1) screener.
- Four (4) loaders.
- One (1) excavator.
- One (1) grinder.

The excavator, grinder and screener are used in greenwaste operations. The equipment on site is sufficient for current operations and may be changed at any time to meet changing requirements of the landfill.

1.5 PERSONNEL

The following persons are responsible for on-site landfill operations at TJ:

- Executive Director - The Executive Director is responsible for all landfill operations including planning, engineering, and site operations. He reports to the Board of TJ. He is supported by both an administrative assistant responsible for human resources, purchasing and general administrative duties and the following personnel:
- Human Resources – The Human Resources professionals are responsible for handling any people-related concerns and needs that arise within our organization. They manage recruiting, hiring, and firing, as well as onboarding new hires and managing the orientation process to get employees set up in their new roles. When problems arise between employees, human resources may become involved to assist in the resolution process. Human Resources reports to the Executive Director.
- Financial Analyst/Accountant – The Financial Analyst/Accountant constructs financial models to forecast business performance over the short-term and long-term future as well as handling the accounting practices for the landfill. The financial analyst/accountant reports to the Executive Director.
- Project Manager/Mechanic Supervisor–The Project Managers responsibilities include the coordination and completion of projects on time within budget and within scope. Oversees all aspects of projects, sets deadlines, assign responsibilities, and monitor/summarize progress of project. The Project Manager is also charged with calculating the density of the waste, the remaining space in the landfill and surveying of all landfill projects. The Project Manager also supervises the mechanics and reports to the Executive Director.

- Operation Supervisors – The Operation Supervisors are responsible for all site operations at the Landfill Facility. They are responsible for all operations relating to the surface operation of the landfill, Greenwaste operations and the general maintenance of the landfill and its buildings. The Equipment Operators and Spotters report to the Operation Supervisors. The Operation Supervisors report to the Executive Director.
- Scale House Supervisor – The Scale House Supervisor is responsible for the overall operations of the scale house and assists the Financial Analyst/Accountant in AP and other financial issues. The Scale House Supervisor reports to the Executive Director.
- Compliance Coordinator/HHW Supervisor – The Compliance Coordinator is responsible for ensuring that the landfill is in compliance with all rules and regulations regarding the safe operation of the landfill including permits, personnel training, safety, and OSHA requirements. HHW personnel report to the Compliance Coordinator. The Compliance Coordinator reports to the Executive Director.
- Equipment Operator(s) – The Equipment Operators are responsible for daily operations at the working face and excavation sites of the landfill. There are typically four (4) and no less than two (2) Equipment Operators on duty at the landfill at any given time. All Equipment Operators report to the Operation Supervisors.
- Truck Driver(s) – The Truck Drivers are responsible for daily movement of waste bins from the PCC to the working face of the landfill, water truck operations, and transporting of recyclables offsite. There are typically two (2) and no less than one (1) Truck Drivers on duty at the landfill at any given time. All Truck Drivers report to the Operation Supervisors.
- Mechanic(s) – The Mechanics are responsible for routine maintenance and repair of heavy equipment, landfill vehicles and auxiliary equipment located at the landfill. A Mechanic is on duty 8 hours per day Monday through Saturday. The Mechanics report to the Project Manager.
- Spotter(s) – The Spotters are responsible for inspecting incoming loads to prohibit hazardous and other unacceptable materials from being unloaded at TJL. Spotters are also responsible for directing traffic, ensuring public safety, and properly diverting recyclable materials to the proper location. The Spotters are trained in the identification of various solid wastes and report to the Operations Supervisors. There are typically four (4) Spotters on duty at any given time.

- HHW Technician/Spotter(s) – The HHW Technicians/Spotters are responsible for accepting and screening incoming HHW loads and bulking those materials. The HHW personnel are specially trained to handle HHW and report to the Compliance Coordinator/HHW Supervisor. The SLVHD oversees the operation of all HHW facilities in the County.
- Scale House Operator(s) – The Scale House Operators are responsible for screening incoming loads and collecting tipping fees at the scale house. The Scale House Operators report directly to the Scalehouse Supervisor.

Temporary employees or contractors will report directly to the Operations Supervisors , or their designee. These may include litter control, labor, operators, spotters, surveyors, and inspectors.

SECTION 2 - LEGAL DESCRIPTION & PROPERTY OWNERSHIP

TJ was formed in 1986 by interlocal agreement which designated TJ as responsible for managing the solid wastes generated by the member cities. The landfill originally consisted of approximately 4.95 acres of TJ owned land and approximately 90 acres of leased Kennecott Utah Copper (KUC) land. Additional land was purchased from KUC in 1993 and 1997. Two small property boundary realignments were done in 1999 between KUC and TJ properties to better define the actual landfill boundaries. TJ leased additional KUC property in 2001 as a buffer to the east and south of the landfill. The most recent land acquisition was 50 acres of land from Daybreak in 2019. A copy of the legal description and proof of ownership is included in Appendix B - Legal Description & Property Ownership.

SECTION 3 - OPERATION PLAN

On October 9, 1991, the U.S. Environmental Protection Agency (EPA) announced revisions to the Criteria for Classification of Solid Waste Disposal Facilities. These revisions were developed in response to Subtitle D of the 1984 Hazardous Waste Amendments to the Resource Conservation and Recovery Act (RCRA). The Subtitle D regulations set forth revised minimum federal criteria for municipal solid waste landfills (MSWLFs), including facility design and operating criteria. The Subtitle D regulations set forth differing requirements for existing and new units (e.g., existing units are not required to remove wastes in order to install liners).

Subtitle D established a framework for federal, state, and local government cooperation in controlling the management of non-hazardous solid waste. The federal role in this arrangement is to establish the regulatory direction by providing minimum nationwide standards for protection of human health and the environment and by providing technical assistance to States for planning and developing their own environmentally sound waste management practices. However, the actual planning, direct implementation, and enforcement of solid waste programs under Subtitle D remain largely a state and local function.

On November 5, 1995, the State of Utah Department of Environmental Quality (UDEQ) issued final Administrative Rules entitled Solid Waste Permitting and Management Rules (R315-301 through 320) implementing Subtitle D at the state level. UDEQ has received authorization from EPA to implement and enforce the solid waste program.

TJ has prepared this Operation Plan to guide the daily operations at TJL. This document provides substantial discussion of operations at the landfill based on the operating criteria outlined in 40 CFR 258, Subpart C, and State of Utah Administrative Rules R315-301 through 320.

Portions of this Operation Plan are subdivided into separate discussions of the unlined landfill and the lined landfill. Since the unlined landfill accepted waste after October 9, 1993, its closure and post-closure care must follow more stringent state and federal regulations than those facilities which were closed prior to October 9, 1993.

3.1 SCHEDULE OF CONSTRUCTION

Future construction of the last lined landfill cell will be made according to the methodology presented in the drawings contained in Appendix A - Drawings. These drawings show the conceptual configuration of the completed landfill and details for selected key elements of future landfill development. The proposed configuration was developed based on geologic/hydrogeologic conditions, geotechnical considerations, environmental assessment data, and operational considerations.

TJL has adopted the following definitions for clarification of the overall development cycle of the landfill:

- Cells – Cells represent the incremental excavation and associated liner construction at the base of the landfill. The lined landfill has been divided into nine (9) distinct Cells. The Cells are numbered 1, 2, 3, 4, 5 (Phase I), 5 (Phase II), 6A, 6B, and 6C and are oriented largely from west to east.
- Phases - Phases represent the incremental filling and associated final cover construction on the landfill. TJL has been divided into (8) distinct Phases. The Phases are lettered A through H and run west to east.

Drawings, specifications, and QA/QC Plans for Cells 1, 2, 3, 4, 5 (Phase I), Cell 5 (Phase II), 6A, and 6B have been previously submitted to Utah State DEQ Division of Waste Management and Radiation Control (DWMRC) for review and approval prior to construction. Cells 1, 2, 3, 4, 5 (Phase I), 5 (Phase II), 6A, and 6B have been constructed and have received waste. The last additional landfill Cell will be designed and constructed when the previous operational phase is nearing its intermediate capacity. Detailed drawings, specifications, and QA/QC plans will be developed for Cell 6C and each Phase of final cover construction and submitted to the DWMRC for review and approval prior to construction.

Drawing 2 – General Arrangement (Appendix A) shows the location of the remaining lined landfill cell, Cell 6C. Drawing 3 – Final Cover (Appendix A) shows the conceptual contour of the final cover and the relative locations of the closure Phases at TJL. Cell 6B is the cell currently being utilized for waste disposal at TJL. The construction of Cell 6C will be completed as required to meet the disposal needs of TJ and is anticipated to occur between 2024 and 2026.

The remaining capacity of Cell 6B plus the future Cell 6C have airspace for approximately 10 years of disposal, based on available fill volume, expected daily waste disposal rates, and an in-place density of 1,500 pounds per cubic yard (ppcy) of waste.

Surplus soil excavated from the development of Cell 6C will be used for daily, intermediate, and final cover or strategically stockpiled. At a minimum, enough soil will be stockpiled to construct the final cover for Phase G, Phase H, and final cover maintenance during the post closure care period.

3.2 DESCRIPTION OF HANDLING PROCEDURES

3.2.1 General

All waste entering the landfill is weighed and then monitored continually from the scale to the working face, PCC, HHW, or green waste facility by landfill personnel. Usually, two and sometimes three individuals will monitor the waste being off-loaded at the working face.

Section 3.10 discusses in detail the inspections of waste loads. Illicit material will be turned away and documented as such (to the SLCoHD). Waste delivered to the PCC is continually monitored by Spotters to exclude hazardous waste and to separate recyclable and HHW materials.

After a vehicle leaves the scale house, the vehicle will be routed to the appropriate discharge location. Loads will be regularly surveyed at the tipping area by Spotters. The waste materials will be placed and compacted in two-foot increments to provide the waste compaction necessary to meet the design landfill capacity. The materials will be placed at the toe of the operational face and spread up slope with a trash compactor to provide relatively uniform sloping (maximum 3H: 1V slopes) lifts.

The daily module will consist of a series of 2-foot increments placed to a height of approximately 8 to 10 feet (lift). At the maximum height of 10 feet of waste material, the daily lift will be covered with 6" of daily cover soil.

Waste delivered to the PCC is placed into roll-off containers by an Operator using a loader. Once the roll-off containers are full, a hook truck delivers the roll-off containers to the working face for disposal. Recyclables and green waste delivered to the PCC are placed into designated roll-off containers and routed to the appropriate facility. Greenwaste delivered to the Greenwaste area will be accepted by a Spotter who will ensure that the load consists of organic materials only.

3.2.2 Sequence of Development

The unlined landfill is historic in nature and was consequently constructed without a liner or leachate collection system. Waste has been added over the unlined landfill historical footprint to bring the elevation of the landfill to the final cover design topography. The final cover has been placed over a large portion of the unlined landfill cell. The final cover system details are presented on Drawing 5 – Details (Appendix A).

The following paragraphs describe the filling sequence for the remaining Phases of the TJL. This sequencing will result in the planned placement of wastes to maximize the stability of the fill at any time during operation of the landfill. The Operators will not deviate substantially from the sequencing plan without concurrence of the Project Manager.

The lined landfill has been designed to be constructed in nine (9) Cells. The constructed base of each lined landfill Cell is sloped toward the leachate collection/evaporation pond (LCEP). The LCEP system moves with the construction of each Cell of the lined landfill; always being located at the most down gradient point of the lined landfill. A leachate collection pipe (LCP) was installed in Cell 4 to assist with the transport of leachate to the active LCEP. Leachate is held in the LCEP until evaporated. In the event of a period of prolonged above normal precipitation; leachate will be pumped from the collection/evaporation pond and recirculated over the lined landfill to keep the head on the liner less than the required 12" and to maintain a 12" minimum freeboard in the LCEP. The LCEP is permanently marked to show the depth of leachate at any given time and to indicate remaining freeboard within the collection/evaporation pond.

3.2.2.1 Protective Soil Layer/Select Municipal Solid Waste Placement

After the completion of the liner system installation for each Cell; a one (1) foot thick layer of screened protective soil is placed over the liner components. The screened soil placement extends over the liner installed across the bottom of the Cell to help protect the liner from damage. A second two (2) foot layer of bank run material is then placed over the screened material to complete a three (3) foot protective layer in the base of the lined Cell. Drawing 5 - Details (Appendix A) illustrates the configuration of the bottom liner and the protective soils. The first MSW placed in a newly constructed Cell will be placed in a layer approximately 6 feet thick using only select MSW (side loader only). Objects capable of damaging the liner (i.e.: rebar, pipe, or other similar objects) are traditionally not in this waste and the solid waste will be compacted as a single lift, with no intermediate compaction to provide a six

(6) foot thick protective working surface over the protective soils.

Since the application of select waste over the one (1) foot thick layer of protective soil on the side slopes will take place incrementally as the level of MSW within the Cell raises, specific measures will need to be followed to minimize the potential of liner damage. The following procedure will be followed to ensure protection of the liner over the side slopes:

All Spotters and Operators involved with the placement of select MSW will have annual training delineating the screening and placement of the select MSW**.** The annual training documentation will identify the person receiving the training, date of training, and the name of the person providing the training. All training documents will be included in the operation record.

As the waste is placed, landfill equipment will spread the MSW in a layer approximately 1.5 - 2 feet thick. The Operator will perform the initial screening of the MSW as he/she spreads the MSW. A dedicated Spotter will perform the second screening of the MSW for objects capable of causing damage to the liner (i.e.: rebar, pipe, or other similar objects). All materials with the potential of damaging the liner through the one (1) foot thick soil layer will be removed from the MSW.

The Operations Supervisor will periodically observe the placement of the select MSW layer on the side slopes as a final screening of the select MSW. Drawing 5 – Details (Appendix A) illustrates the configuration of the Cell liner over the side slopes.

3.2.2.2 Development of Cells 1, 2, 3, 4, 5 (Phase I), 5 (Phase II), 6A and 6B

Construction

Cell 1 construction started the summer of 1997; stopped due to winter weather and was completed June of 1998. Excavation of Cells 2 and 3 was performed in conjunction with the placement of daily and intermediate cover in the unlined landfill and Cell 1. Additionally, various landscape and soil stockpile berms were constructed with soils from the Cell 2 and Cell 3 excavation. Liner construction of Cell 2 and Cell 3 was started prior to the complete filling of the Cell 1 area with Cell 2 construction being completed October of 2000 and Cell 3 being completed in the fall of 2002 respectfully. Cell 4 was constructed in the 2006 construction season. Cell 5 (Phase I) was constructed in the fall of 2011 with Cell 5 (Phase II) being constructed in June of 2012. Cell 6A was constructed in the fall of 2016 with the protective soil cover being place in February of 2017. Cell 6B was constructed during the 2020 construction season with final construction documentation completed in the fall of 2020.

Waste Placement

Cell 1 was filled beginning at the north and working towards the south where possible. Waste was placed in 8- to 10-foot-thick lifts depending upon the volume of waste being handled at the facility. Each lift was completed across the entire area of Cell 1 and terminated at the east edge slope for Cell 2.

Cell 2 waste placement began along the western side where Cell 2 adjoined Cell 1. The landfill operation proceeded in a general west to east fashion with each successive lift being tied into Cell 1. Subsequent landfill Cell operations proceeded in a similar fashion to Cell 2 with the MSW being tied into waste previously placed. At no time shall waste be placed within the landfill Cells at slopes exceeding 2.5H:1V As the operations within each Cell extend in elevation above the existing topography; each lift will extend toward the south slope, where they will coincide with the final cover elevations. Final cover slopes will not exceed 3H:1V as shown on Drawing 3 – Final Cover (Appendix A).

3.2.2.3 Development of Cell 6C

Construction

Excavation for daily, intermediate, and final cover is being conducted in the Cell 6C area. The construction of Cell 6C will be far enough in advance to ensure that it is fully operational prior to the filling of Cell 6B. Drawings 2 – General Arrangement (Appendix A) shows the geometry and location of Cell 6C. Soil generated from the excavation of Cell 6C will be used for daily and intermediate cover and stockpiled in a temporary soil stockpile located outside the perimeter of the main landfill. The stockpiled soil will be used for final cover. The construction of Cell 6C is anticipated for some time between 2024 and 2026 depending on final cell excavation.

Cell 6C will be constructed in accordance with detailed construction drawings, specifications, and QA/QC plan which will be developed and submitted to the DWMRC for review and approval before construction begins.

Waste Placement

Cell 6C will be filled in the same general manner as the previous landfill cells with incoming waste being tied into waste already placed. In general, each lift will be placed substantially across the bottom of the entire landfill cells before the next lift is started.

3.2.3 Infectious Wastes

TJL accepts some residential infectious waste because of accepting MSW. Residents with medical conditions occasionally dispose of infectious waste with their normal trash. TJL personnel are instructed to be aware of the possible presence of infectious wastes i.e., sharps and other items. As a general guideline Spotters are told to refrain from walking on non-compacted trash. Commercial infectious waste is not accepted at the TJL facility.

3.2.4 Special Wastes

3.2.4.1 Used Oil and Batteries

TJL is a "Used Oil Recycle Center". Waste oil is bulked and shipped to an oil reclamation facility. Automotive batteries are not accepted at the working face. TJL provides a pallet, within a plastic containment tub, in the PCC area where incoming batteries are stored until enough are generated to facilitate a pick up by a recycler.

3.2.4.2 Bulky Wastes

White goods are accepted at the landfill and are separated for recycling. All appliances containing refrigerants are segregated in a separate area. Refrigerant is removed per EPA guidelines and the appliances are loaded into the metal bin for recycling. TJL does not accept vehicles or vehicle parts. Persons seeking to dispose of used car bodies are encouraged to take the car directly to a metal recycler that is a certified dismantler.

3.2.4.3 Tires

TJL accepts small quantities of tires from the general public. Commercial haulers are prohibited from disposing of tires at TJL. Up to four passenger tires are accepted from the public with each load. A base fee is assessed for all passenger car tires TJL does not accept commercial tires with rims larger than 22”. When sufficient quantities of tires are collected, a tire recycler is called, and the tires are removed from the facility for recycling.

3.2.4.4 Dead Animals

Large dead animals are not accepted at the landfill. When small dead animals are found in the waste; they are incorporated into the bottom of the working face. The incorporation of the carcasses into the landfill is accomplished by pushing up the toe of the face and depositing the animal in the bottom of the toe; waste or a minimum of 12" of cover soil is then pushed over the top of the animal.

3.2.4.5 Asbestos Waste

Asbestos waste is not accepted at the TJL facility.

3.2.4.6 Grease Pit and Animal Waste By-Products

Grease pit and animal waste by-products are not accepted at the TJL facility.

3.3 LIQUIDS RESTRICTIONS

3.3.1 Bulk or Containerized Liquid Waste

Bulk or containerized liquid waste are not disposed of at TJL. Liquids restrictions are necessary because the disposal of liquids into landfills can be a significant source of leachate generation. By restricting the introduction of free liquids into the landfill, TJL personnel can minimize the leachate generation potential of the landfill. Reduction of free liquids should reduce the quantity of leachate to be managed in the landfill. The ban on containerized free liquids will also minimize the problem of subsidence and possible damage to the final cover upon deterioration of the waste containers. Leachate may be placed onto the lined landfill from the LCEP as a dust suppression technique or when the capacity of the LCEP is near the 12 inch of minimum freeboard level.

3.3.2 Liquid Household Waste

Restricting certain small volume liquids may be impractical and unnecessary to protect human health and the environment. For example, small amounts of liquid will be present in household wastes and may be difficult to effectively identify, separate, and restrict from disposal. The regulations allow disposal of products normally and reasonably associated with households or household activities that are in household containers (5 gallons or less). Spotters effectively remove all liquid HHW from loads delivered to the PCC.

3.3.3 Leachate and MSWLF Gas Condensate

Leachate and gas condensate collected as part of the gas recovery operations at TJL may be re-introduced into the lined landfill as a dust suppression technique or when the capacity of the LCEP nears the 12-inch freeboard levels. Operational experience of the leachate system over the past years indicates that the LCEP has more than adequate capacity to store leachate produced by the landfill during the winter months.

3.3.3.1 Leachate Handling Procedures

Leachate is to be removed as directed by the Project Manager. Because of the arid nature of the area, leachate removal has not been a practice. If TJL removes any leachate in the future, all Operators likely to be directly involved with the removal of leachate shall have initial and annual leachate handling training. The training documentation will identify the person receiving the training, date of training, and the name of the person providing the training. All training documents will be included in the operation record. Leachate shall be applied only to lined portions of the landfill only. Once leachate is loaded into the water truck, the entire load of leachate will be discharge onto the MSW located within the lined landfill or disposed of at a Publicly Owned Treatment Works (POTW). If the water truck is used for regular dust control in unlined areas, a full load of clean water will be placed on a lined cell area to clean the tank before the second clean load is used over unlined areas. The number of full loads of leachate either reintroduced into the landfill or taken to a POTW will be reported to a Compliance Coordinator for volume documentation.

3.3.4 Containers Holding Liquid Waste

Containers holding liquid waste will not be disposed of in the landfill unless the container is "household size (less than five (5) gallons).

3.4 MONITORING AND INSPECTION SCHEDULE

3.4.1 Groundwater

TJL has submitted a Modified Corrective Action Plan on December 19, 2003, which was approved by the Division of Solid and Hazardous Waste (now, the Division of Waste Management and Radiation Control) on January 23, 2004. That plan summarized historic ground water monitoring activities at the TJL and the reasons why ground water sampling is no longer being performed at the facility. TJL has complied fully with the Modified Corrective Action Plan with a copy of the approval and the plan included as Appendix C.

3.4.2 Surface Water

Drainage control problems can result in accelerated erosion of a particular area within the landfill. Differential settlement of drainage control structures can limit their usefulness and may result in a failure to properly direct storm water off-site. Drawing 2 – General Arrangement (Appendix A) illustrates the location of the surface water drainage ditches and storm water pond. TJL staff will inspect the drainage system monthly. Temporary repairs will be made to observed deficiencies until permanent repairs can be scheduled. TJL or a contractor will repair drainage facilities as required. The facility shall not cause a violation of any Utah Pollution Discharge Elimination System (UPDES) permit or standards from the discharges of surface water run-off, leachate or any liquid associated with the facility. The facility shall be in compliance with all provisions of the Clean Water Act. A copy of the current UPDES permit is included as Appendix D.

The Storm Water Pollution Prevention Plan details the inspection and operational requirements to follow at TJL to ensure that the facility is in compliance with the requirements of the UPDES permit. A copy of the Storm Water Pollution Prevention Plan is included as Appendix E .

3.4.3 Leachate Collection

The leachate collection system, installed in the lined landfill Cells consists of a layer of drain net (geosynthetic used for lateral flow of liquid) installed over the High Density Polyethylene (HDPE) and Geosynthetic Clay Liner (GCL) liners. The drain net is covered by protective soils and MSW. No maintenance or inspection of the drain net is required. The final leachate collection system components for Cell 6C will incorporate leachate collection pipes and the associated cleanouts. Once leachate collection pipes and cleanouts are installed, they will be inspected no less than quarterly by TJL staff for signs of deterioration. TJL or a contractor will make required repairs.

3.4.4 Landfill Gas Collection System

All landfill disposal operations produce some quantity of gas because of waste decomposition. However, it has also been shown that by reducing the available water coming in contact with the waste materials the quantity of gas generation is also reduced. For TJL, the semi-arid environment, depth to groundwater and the operational restrictions of no liquid waste disposal will serve to minimize the gas quantities generated. Any future landfill surface facilities will be constructed away from landfilling operations and existing structures have been equipped with methane monitoring equipment.

Gas control and monitoring requirements are detailed in Section 315-303-3. Explosive landfill gasses shall be monitored quarterly, and gas concentrations shall not exceed:

- 25% of the lower explosive limit for explosive gases in facility structures, excluding gas control or recovery system components.
- The lower explosive limit for explosive gases at the property boundary or beyond.

The landfill has thirteen gas monitoring wells; all thirteen of the wells presently show no measurable methane at ground level. Three of the wells, which are outside of the currently lined areas of the landfill, are showing methane within the boreholes. It is expected that these will fall below measurable levels as the final cover and Landfill Gas Collection Systems (LGCS) are installed in these areas. Landfill Gas inspection forms are included in Appendix F. The LGCS operation began construction in late 2004 with the construction of the Phase A cover. The LGCS included a flaring station that began operation in June 2005 with the landfill gas to energy plant being put online in April 2009. The LGCS system will be inspected quarterly according to those specifications and parameters listed in Utah Administrative Rules R315-303-2, Standards for Performance. The system will be repaired, and parts replaced as required to maintain system capabilities.

LGCS monitoring system will be followed throughout the post-closure maintenance period. Quarterly maintenance will include cutting weeds in a 2-foot radius around each monitoring location.

3.4.5 Landfill Leachate Collection/Evaporation Pond System

The Leachate Collection/Evaporation Pond (LCEP) system collects the leachate from all lined Cells and holds the leachate until evaporated. The pond has been constructed utilizing liner components identical to the lined landfill Cells with a secondary layer of GCL and 60 mil HDPE incorporated beneath the primary GCL layer. The uppermost (primary) liner consists of 60 mil HDPE membrane underlain by the GCL layers. Drawing 5 – Details (Appendix A) illustrates the materials utilized in the construction of the LCEP system.

The LCEP is located at the eastern edge (downgradient side) of the active landfill Cell. As new landfill Cells are constructed the location of the LCEP is moved accordingly. Drawing 2 – General Arrangement (Appendix A) show the location of the current LCEP. During the construction of Cell 4 a leachate pump was installed atop the HDPE plastic liner. The leachate pump is designed to keep leachate from collecting on top of the plastic liner by pumping accumulated leachate to the leachate pond.

3.4.6 Inspection Documentation

The results of all routine inspections of site facilities will be recorded on inspection forms. The inspection forms will be submitted to the Compliance Coordinator for inclusion in the landfill operating records as required in Section R315-302-2(5) of the Rules. Appendix F - Landfill Forms contains the forms utilized at TJL to document the landfill operations.

3.5 CORRECTIVE ACTION PLAN - GROUNDWATER

TJL entered into a Corrective Action Program as detailed in R315-308. A Modified Corrective Action Plan was submitted to DEQ and accepted on December 19, 2003, with approval being given by the Division of Waste Management and Radiation Control (formerly the Division of Solid and Hazardous Waste) on January 23, 2004. Appendix C contains the Division approval and the submitted Modified Corrective Action Plan for TJL.

3.6 CONTINGENCY PLANS

Contingency operations will be implemented should specific or unusual situations occur. The following subsections discuss such contingencies as fire, explosion, release of explosive gases, and failure of run-off containment. The Executive Director and Operation Supervisors have cellular phones and radios which will serve as the on-site mobile communications system for use in an emergency to communicate with the management offices and off-site personnel. The telephones located in the scale house and operations office which will serve as the back-up communication system.

3.6.1 Fire

3.6.1.1 Open Burning

Open burning of solid waste is prohibited except for the infrequent burning of limited items (e.g., agricultural wastes, land clearing debris, diseased trees, and debris from emergency cleanup operations). The open burning of these materials is not typically an ongoing practice and thus does not present a significant environmental risk.

EPA Subtitle D, Subpart C requires that TJL not violate applicable requirements of State Implementation Plans (SIPs) under Section 110 of the Clean Air Act (CAA). The CAA is the primary statutory authority for addressing air quality concerns. Section 111 of the CAA governs emissions from all MSWLF facilities. TJL understands that these infrequent acts of burning must be in compliance with applicable requirements under State of Utah SIPs and local open burning ordinances.

Open burning may be conducted in areas dedicated for that purpose at a distance from the active face of the landfill so as to preclude the accidental burning of other solid waste or damage to liner systems.

3.6.1.2 Vehicle Fires

In the event that a disposal vehicle carrying a burning or smoldering load of waste enters the landfill site, the following actions will be taken:

- The vehicle will be directed to a designated section of the landfill away from any exposed waste and allowed to deposit the material. The designated area will vary depending on operational areas in use. The area will be readily accessible and within 1 or 2 minutes of the tipping area. The designated area will be isolated from the existing tipping area and will either be an excavated area with no underlying fill or at a location with a minimum of 1-foot of soil cover over underlying fill. In no case will a load thought to be burning be allowed to be dumped when the fill over the liner system is less than 10 feet thick.
- Once burning waste is removed from the vehicle, the application of cover soil by landfill earth-moving equipment or the application of water by the on-site water truck to extinguish the fire can be carried out. Smothering the fire with soil is the preferred method.
- Precautions will be taken throughout the entire fire-fighting operation including using a hot spot observer.
- If, at any time, additional assistance is required, local fire-fighting units will be contacted.

3.6.1.3 Ground Fire/Below Cover Fire

In the event that waste placed on the ground or waste that was previously covered erupts into fire the following actions will be taken:

- The waste on fire will be isolated from previously deposited waste as much as possible. This may be done by either moving burning wastes to another area or by concentrating the burning wastes using the landfill earth-moving equipment.
- Once burning material is separated from other exposed waste, the application of cover soil by landfill earth-moving equipment or the application of water by the on-site water tank truck to extinguish the fire can be carried out.
- Any vehicles and any equipment in the "fire zone" will be sprayed with water while working to quell the fire.

- Precautions should be taken throughout the entire fire-fighting operation, including using a hot spot observer.
- If, at any time, additional assistance is required, local fire-fighting units will be contacted.

3.6.2 Explosion

The concentration and subsequent ignition of landfill gas is not expected to be a significant problem at the site. In the event at an explosion at the landfill or in any structure associated with the landfill site the following actions will be taken:

- The affected area will be immediately closed and evacuated. All site equipment will be moved away from the scene, if possible.
- Access to the explosion area will be restricted to all non-emergency persons until cleared for re-entry by local emergency personnel.
- All landfill personnel will be accounted for.
- Local emergency personnel (fire, police) will be contacted and informed of the situation.
- The TJL Executive Director will be informed about the situation.
- A determination of the origin of the explosion will be made it possible. If the source of the explosion can be determined, monitors will be set up to help detect the onset of future discharges.
- The TJL Executive Director or his designee will act as the Public Spokesman and will be the only employee authorized to make statements regarding the event.
- The TJL Executive Director will provide the necessary notices to the DWMRC Director.

3.6.3 Release of Explosive Gases

In the event that a release of explosive gases should occur at the landfill or in any structure associated with the landfill site the following actions will be taken:

- All personnel in the area, including those in surrounding buildings, will be evacuated immediately. In addition, site equipment will be moved away from the scene, if possible.
- All landfill personnel will be accounted for.
- Local emergency personnel (fire, police) will be contacted and informed of the situation.
- The TJL Executive Director will be informed of the situation.
- The release area and surrounding area will be monitored with a combustible gas

indicator (CGI) by landfill personnel and readings documented for placement into the operating record.
- The area of the release will be restricted to all non-emergency persons until cleared for re-entry by local emergency personnel.
- The TJL Executive Director or his designee will act as the Public Spokesman and will be the only employee authorized to make statements regarding the event.
- The TJL Executive Director will provide the necessary notices to the DWMRC Director.

3.6.4 Failure of Run-Off Containment

In the event of a failure of the run-off containment system that has been designed to minimize the potential for off-site release of surface water that contacts operational portions of the landfill the following actions will be taken:

- Landfill personnel will immediately suspend filling operations if containment failure is in an active fill area.
- Landfill personnel will use earth-moving equipment to construct temporary earthen berms in an effort to divert the flow of surface water away from the failure area and toward a holding area.
- The Project Manager will conduct damage assessment. A decision will be made as to whether the damage can be rectified by on-site personnel.
- If the damaged area cannot be reconstructed by on-site personnel, TJL will contact a contractor to initiate repairs to the existing system.
- The TJL Executive Director will provide the necessary notices to the DWMRC Director.

3.7 CONTINGENCY PLAN FOR ALTERNATIVE WASTE HANDLING

It is not anticipated that an alternative waste handling and disposal system will be necessary. Based on historical operations and a history of only closing down the site one time (a fire in the area), landfilling operations should not have to be suspended due to inclement weather conditions or interruption of service. The site soils, including those planned for daily cover, consist of silty to clayey gravel; these soils are easily placed over a wide range of moisture and weather conditions. Additionally, flooding of the disposal area or access road is unlikely as this design has been arranged to provide positive drainage away from the facility at all times. With the size of the landfill and the quantity of multi-use equipment available to the operators, equipment breakdown that would stop operations is unlikely. Alternate equipment could be hired on a temporary basis within 4 to 8 hours. TJL believes that their past operating experience and cautious operating procedures will negate the need for alternate waste handling plans.

In the event of a major unforeseen circumstance, a reciprocal agreement has been made with the Salt Lake Valley Solid Waste Management Facility to accept each other's waste in the unlikely event of a facility closure so waste could be diverted to their facility.

3.8 MAINTENANCE PLAN

The following subsections offer a description of the maintenance of installed equipment including groundwater monitoring systems and leachate and the landfill gas collection system.

3.8.1 Groundwater Monitoring System

The groundwater monitoring system that was monitored from 1994 until 2004 is no longer functional. All five (5) wells have become dry; Appendix C - Modified Corrective Action Plan, summarizes the changes in the groundwater monitoring program at TJL. All laws and regulations will be followed with regards to the abandonment of any wells. No maintenance of the groundwater wells is planned.

3.8.2 Leachate Collection/Evaporation Pond System

The Leachate Collection/Evaporation Pond (LCEP) system, installed as part of the lined landfill design, must be maintained so that it operates during the operational life and closure and post-closure periods. The system will be inspected no less than quarterly by TJL staff for signs of deterioration. TJL or a contractor will make required repairs. Future cleanouts can be used to internally inspect the main collection pipe when it is installed using in-line camera equipment. If necessary, these cleanouts can also be used to jet the pipe clean to re-establish flow. The drain net installed as part of the LCEP is not required to be inspected or maintained.

3.8.3 Landfill Gas Collection System (LGCS)

The LGCS will be inspected no less than quarterly. The gas collection system will be repaired, and parts replaced as required to maintain system operation. The program described below for inspecting and maintaining the LGCS will be followed during the post closure maintenance period.

Quarterly maintenance will include cutting weeds in a 2-foot radius around each well. Preventive maintenance will be performed on all mechanical equipment at manufacturer recommended intervals. These tasks include cleaning, lubrication, and replacement of worn parts.

3.8.4 Facilities

Signs, roads, fences, etc, will be inspected on a monthly basis and repairs made as necessary.

3.9 DUST, LITTER, DISEASE AND VECTOR CONTROL

3.9.1 Dust Control

Unsightliness, dust, and odor will be controlled by (1) timely placement of daily, intermediate, and final soil cover over the refuse fill; (2) proper maintenance of haul roads (grading and watering); (3) application of water spray or dust palliative on soil-covered work areas, soil excavation areas, and soil stockpile areas where conditions may result in fugitive dust; (4) application of water or planting of temporary vegetation on intermediate soil cover when conditions might create fugitive dust; (5) planting and maintenance of vegetated cover on completed fill slopes; and paving of access roads as appropriate. Appendix G – Fugitive Dust Plan contains information on the site-specific dust control measures.

While the landfill is in operation, placing daily and intermediate soil cover will control odors from the refuse. The installation of the low-permeability cap layer and the LGCS should effectively control odors.

3.9.2 Litter Control

The Executive Director will continue the ongoing litter collection program in order to minimize the impacts of litter on and surrounding the site. This program consists of various activities designed to reduce windblown litter, as well as other site features and operations that help to reduce windblown litter.

TJL has instituted the following activities specifically designed to reduce amounts of windblown litter:

- Enforcing the State law requiring all loads of waste delivered to the landfill be fully tarped. Waste loads delivered to the landfill that are not fully tarped are charged at double the standard tipping rate. This requirement to fully tarp and secure loads will minimize the potential for debris blowing out of vehicles.
- Minimizing the size of the active face reduces the area of wastes exposed to wind.
- Maintaining permanent perimeter fencing and maintaining temporary litter fences

downwind from the active face. The height and length of the temporary fences can be adjusted to maximize their effectiveness in trapping windblown litter.

- Timely application of daily and intermediate soil cover.
- Compaction of refuse layers at a maximum thickness of 2 feet to hold freshly deposited refuse to underlying landfill layers.

Site and surrounding area inspections will be conducted routinely, and any windblown litter will be collected. Debris will continue to be collected from the sides of the roads leading to the landfill. The landfill personnel will continually patrol the fence line both inside and outside to collect windblown debris.

3.9.3 Disease and Vector Control

TJL personnel will use appropriate technologies to prevent or control on-site populations of disease vectors (e.g., rodents, insects) in an effort to protect human health and the environment. TJL personnel will be responsible for maintaining control of vectors at the landfill through continued use of appropriate daily cover procedures. Professional extermination personnel and services may be used to control vectors if it is found that daily operation procedures are insufficient.

The primary method of vector control is to eliminate conditions favorable for the production of vectors through proper compaction and daily covering of waste. Should the landfill personnel notice the presence of vectors, cover material will be applied more frequently. Pesticides will only be used as necessary, and very sparingly.

As with vector control, the preliminary method of controlling birds is to eliminate conditions favorable to their existence. This can be accomplished by utilizing, but not limited to, one or more of the following methods:

- Minimizing the size of the active face; this is the most effective control method. This, along with more frequent and heavier compaction and frequent covering of the waste, will reduce the area available for the birds to feed.
- Avoiding the accumulation of water in depressions, ponds, or holding areas near the fill.
- Using noise-frightening or other techniques that provide a solution.

3.10 WASTE INSPECTION/EXCLUSIONS

A waste control program designed to detect and deter attempts to dispose of hazardous and other unacceptable wastes will continue to be implemented at TJL. The program is designed to protect the health and safety of employees, customers, and the general public, as well as to protect against contamination of the environment. The landfill is open for public and private disposal. Signs posted near the landfill entrance clearly indicate (1) the types of wastes that are accepted; (2) the types of wastes not accepted at the site; (3) hours of operation; and (4) the emergency phone numbers.

All vehicles delivering wastes to the site must stop at the scale house. Waste haulers are required to comply with the rules established by TJL and can lose the right to use the facilities if they violate these rules. Scalehouse personnel will inquire as to the contents of each incoming load to screen for unacceptable materials. Any vehicle suspected of carrying unacceptable materials (liquid waste, sludges, or hazardous waste) will be prevented from entering the disposal site unless the driver can provide evidence that the waste is acceptable for disposal at the site. TJL reserves the right to refuse service to any suspect load. Vehicles carrying unacceptable materials will be required to exit the site without unloading. If a load is suspected of containing unacceptable materials, the following information will be recorded (if possible): date, time, name of the hauler, driver, telephone number, license plate, and source of waste. The scale house personnel will then notify the Spotters by radio that a load is suspect, that load will be further inspected at the landfill tipping area before final disposal is allowed.

After a vehicle leaves the scale house, site personnel will route the vehicle to the appropriate discharge location. Loads will be regularly inspected at the tipping area. If a load contains inappropriate or unacceptable material, the driver will be required to reload the material and remove it from the landfill site. If the driver is not immediately identified, the area where the unacceptable material was discharged will be cordoned off. The unacceptable material will be moved to a designated area for identification and preparation for proper disposal. If landfill personnel discover regulated hazardous or PCB waste, TJL will ensure that the wastes are treated, stored, or disposed of in accordance with RCRA, and/or applicable State of Utah requirements.

TJL personnel will also conduct detailed inspections of loads delivered to the landfill. The detailed inspections will be conducted on a random basis designed to detect illegal or inadvertent disposal of unacceptable wastes. The working face Spotter will visually observe every load during tipping and a minimum of 1% of all loads entering the landfill will be screened in detail. The scale house software randomly (approximately every 25 loads) notifies the scale house attendant that an inspection is required. The scale house attendant notifies the Spotter who notifies the driver of the selected load that an inspection of the load is required. The Spotter will direct the driver to the proper location to discharge the load.

The selected load will be spread using the compactor or dozer to a maximum thickness of 1 foot. TJ personnel trained in waste screening will perform a detailed inspection of the load to determine if unacceptable materials are present in the waste.

If there is unacceptable waste in a load, the inspector will determine whether the driver should have been aware of the unacceptable wastes. If the driver could or should have recognized the unacceptable wastes, the inspector will issue a violation notice; if the unacceptable wastes are camouflaged, no violation notice will be prepared; however, the driver will be consulted and the route will be determined. For commercial haulers, the first violation for unacceptable wastes will result in a warning to the hauler; the second violation will result in suspension of landfill access. TJL personnel will issue a warning to the company on the suspension of any driver(s). In addition, TJL personnel will warn companies if repeated, apparently intentional violations are suspected; the warning will specify the violation under consideration, the action(s) required by the company, and the penalty(s) for additional violations. TJL may suspend all disposal privileges at TJL facilities of companies that repeatedly violate TJL rules. A suspended driver or company may not use the landfill during the period of the suspension.

The SLVHD and the TJL Executive Director will be notified if an unacceptable waste is discovered at the facility. The TJL Executive Director will be responsible for notifying the DWMRC Director and the transporter of the waste within 24 hours of discovery. This notification will include the date of discovery, type of unacceptable waste, approximate volume, and depth and location within the landfill. A copy of notification will be retained in the landfill operating record. If hazardous or PCB-containing waste is discovered, the Operations Supervisor will also restrict the inspection area from public access and from facility personnel, and will assure proper cleanup, transport, and disposal of the waste.

Following is a list of unacceptable wastes:

- Hazardous wastes (excepting those wastes that are normally and reasonably associated with households or household activity that are in household containers). Examples of hazardous wastes include:

1. Lead acid batteries (automotive, boat, RV).
2. Paint thinner, degreasing solvents, used oil or kerosene, or un-rinsed container thereof.
3. Pesticides, herbicides, or un-rinsed containers thereof.
4. Fluorescent light ballasts (PCB free labeled), electrical transformers, or fluids from these.
5. Commercial quantities of florescent and CFL tubes.

(These items listed to this point are directed to the HHW facility if they are of a *residential nature. All business hazardous waste generators are directed to the Salt Lake County HHW facility which is equipped to process small generator waste.)*

- Radioactive materials or materials contaminated by radioactive substances.
- Acutely hazardous waste, per 40 CFR 261.33.
- Wastes containing PCBs.
- Friable asbestos containing materials.

3.11 RECYCLING PROGRAM

TJL maintains bins and segregates recyclable materials at the PCC. TJL currently (based on market) maintains bins for segregation of greenwaste, steel, aluminum, tires, batteries, cardboard, plastic, paper, and electronics. When the bins are full, they are all hauled from the site for recycling.

A horizontal grinder is used at the greenwaste facility to grind clean material as a feed stock for the composting operation. TJL is actively encouraging all users of the landfill to take all clean green waste to the grinding facility. Incentive for waste diversion is achieved through a reduced tippage rate for the grinding site. The scale house personnel and site signage directs the appropriate vehicles to the greenwaste drop off area. This material is processed into wood chips and compost that may be purchased by the general public.

3.12 TRAINING PROGRAM

Personnel at the landfill are placed into broad classes based upon the work duties to be performed. In general, all landfill personnel will be required to complete a 40-hour HAZWOPPER equivalency training class and annually complete a landfill specific refresher. TJL personnel will keep First Aid/CPR training current. Operation Supervisors will maintain current SWANA-MOLO training. Operation Supervisors will also attend select classes on landfill monitoring, landfill safety, and general OSHA safety training. Formal job descriptions and work procedures are in place to guide each of the landfill personnel through a job orientation and evaluation process.

TJL personnel are trained on the identification of unacceptable wastes including liquid wastes, sludge, potential regulated hazardous waste, and PCB wastes. The training will emphasize methods of identifying containers and labels typical of hazardous and PCB waste. Training will also address the proper handling of unacceptable waste. All employees will receive on the job training in landfill operations and waste screening. This training will include operations and safety training. New employees will receive initial training before starting work and full HAZWOPPER equivalency training during their first twelve (12) months of employment.

3.13 RECORDKEEPING

TJL personnel will maintain an operating record (pursuant to the State of Utah Administrative Rule R315-302) which is available at the landfill office. The operating record will include at a minimum the following information:

- The weight or volumes of each vehicle, daily number of vehicles entering the landfill and if available, the types of wastes received.
- List of the deviations in operation from the approved Plan of Operation.
- Training and notification procedures.
- Ground water sampling and analysis results (when applicable).
- Gas monitoring results.
- Site inspection log.
- Other records as indicated in Section R315-302-2.

In addition to the Operating Record, the following data is maintained on site:

- Closure Plan.
- Post-Closure Plan.
- Cost estimates and Financial Assurance.

Records will be kept throughout the life of the facility, including the post-closure care period. Documents will be organized, legible, dated, and signed by the appropriate personnel. The information in the operating record will be available to citizens through the Utah Government

Records Access Management Act (GRAMA).

3.14 SUBMITTAL OF ANNUAL REPORT

TJL personnel will submit a copy of its annual report to the DWMRC Director by March 1 of each year for the most recent calendar year of facility operation. The annual report will include facility activities during the previous year and will include, at a minimum, the following information:

- Name and address of the facility.
- Calendar year covered by the report.
- Annual quantity, in tons, and estimated in-place density in pounds per cubic yard of solid waste handled for each type of treatment, storage, or disposal facility, including applicable recycling facilities.
- Update to the financial assurance mechanism.
- Ground water monitoring results (when applicable).
- Gas monitoring results.
- Results of leachate system monitoring and disposal.
- Training programs completed.
- Statement on changes or approved changes to the Modified Corrective Action Plan.

3.15 INSPECTIONS

The Compliance Coordinator, or his/her designee, will inspect the facility to prevent malfunctions and deterioration, operator errors, and discharges that may cause or lead to the release of wastes to the environment or to a threat to human health. These inspections will be conducted on a quarterly basis, at a minimum. An inspection log will be kept as part of the operating record. This log will include at least the date and time of inspection, the printed name and handwritten signature of the inspector, a notation of observations made, and the date and nature of any repairs or corrective actions. Inspection records will be available to the DWMRC Director or an authorized representative upon request.

3.16 RECORDING CLOSURE WITH COUNTY RECORDER AND THE STATE OF UTAH DIVISION OF WASTE MANAGEMENT AND RADIATION CONTROL

Plats and other data, as required by the County Recorder, will be recorded with the Salt Lake

County Recorder as part of the record of title no later than 60 days after certification of closure. Additionally, TJL personnel will submit proof of record of title filing to the DWMRC Director.

3.17 STATE AND LOCAL REQUIREMENTS

TJL personnel will maintain compliance with all applicable state and local requirements including zoning, fire protection, water pollution prevention, air pollution prevention, and nuisance control. The South Jordan Conditional Use, Zoning Map, and Future Land Use Plans are included in Appendix H - Local Land Use.

3.18 ASBESTOS CONTAINING MATERIALS

TJL does not knowingly accept waste materials containing friable asbestos.

SECTION 4 - CLOSURE PLAN

This section describes the final cover construction, site capacity, schedule of closure implementation, estimated costs for closure, and final inspection procedures for the final phases of the TJL.

4.1 CLOSURE STRATEGY

The majority of the north slope of the unlined landfill is closed and has been capped with a minimum 5-foot of final soil cover. The first closure of the landfill that utilized a composite system was the northwest areas of the unlined landfill (above the side slopes) that were capped during the 2004 Phase A closure. Phase B of the final cover was constructed in 2005, Phase C of the final cover was constructed in 2008, Phase D of the final cover was constructed in 2013 and Phase E of the final cover was constructed in 2020. Phase F of the final cover is scheduled to be completed in 2023. The location of each of the closure Phases can be found on Drawing 3 – Final Cover (Appendix A).

The last two final cover Phases will be Phase G and Phase H. The projected date of final closure of the entire landfill, based on current waste streams, is approximately 2033. TJL has approximately 4.8 million tons of disposal capacity remaining.

The Director will be notified in writing at least 60 days prior to the anticipated last receipt of waste in accordance with R315-302-3(4)(a). Implementation of the final closure Phase will begin within 30 days after last receipt of waste. Final closure of the entire landfill will be completed within 180 days of implementation of closure activities unless an extension has been granted by the DWMRC Director.

4.2 FINAL COVER DESIGN AND INSTALLATION

As previously mentioned, the construction of the remaining final cover at TJL will be completed within the next decade. Each of the final cover construction Phases will include a design package consisting of drawings, specifications, and QA/QC plan and be submitted to the DWMRC for review and approval prior to each cover placement event. A final closure certification package will be issued prior to final closure of the facility to ensure compliance with federal and state regulations effective at the time of closure.

The conceptual final cover design described herein is in accordance with current State of Utah regulations and RCRA Subtitle D criteria. The final cover system is designed to control the emission of landfill gas, promote the establishment of vegetative cover, minimize infiltration and percolation of water into the waste, and minimize the erosion of the final cover soils throughout the post-closure care period and beyond. Drawing 3 – Final Cover (Appendix A) shows the approximate final topography for the landfill. Drawing 4 – Elevation View and Drawing 5 – Details (Appendix A) present the final section views of the landfill and final cover details.

4.2.1 Unlined Landfill (North Slopes and Phase A)

The closure of the unlined landfill consisted of the closure of the side slopes (90% of them facing north) and the closure of the top area at the west of the historic landfill (Phase A). The unlined landfill currently extends to an approximate elevation of 5200 feet. The ultimate height of the landfill will be approximately 5230 feet. As stated previously, the north slopes (extreme north edge) of the unlined landfill has received final cover. The final cover for the north slopes of the unlined landfill consists of the following soil layers beginning from bottom to top:

- A minimum of 60 inches of native soil cover
- Additional 6-12-inch layer of soil cover consisting of native soils suitable for plant growth

The top areas (areas of the unlined landfill above the side slopes) of the unlined landfill has been closed in an incremental manner with the closing of Phases C through F). Phase A Closure provided final cover to the bulk of the unlined landfills western top area. The balance of the unlined landfill will be closed incrementally as Phase G and Phase H are completed.

4.2.2 Lined Landfill (Phase B through Phase F)

As mentioned above several closure phases have been complete over lined portions of the landfill. Phase B (2005), Phase C (2008), Phase D (2013), and Phase E (2020) have been completed and are located as shown on Drawing 3 – Final Cover (Appendix A). The final cover for the cover over lined portions of the landfill consists of the following layers beginning from bottom to top:

- A minimum of 12 inches of intermediate native soil cover.
- A reinforced GCL.

- A 60-mil textured HDPE membrane.
- A drain net (geonet sandwiched between two geotextile fabrics) drainage layer.
- A 36-inch protective soil layer, the upper of 6 inches of which will consist of compost enriched site soils suitable for plant growth.

4.2.3 Phases G and Phase H

The final cover for the remainder of the landfill, which consists of the south portion of the unlined landfill and the area over the lined cells 5 and 6, will be covered in two additional construction phases (Phase G and Phase H) over the remaining life of the landfill. The same final cover will be utilized for Phase G and Phase H as was utilized in previous phases over the lined landfill.

The protective soil layer will consist of native soil materials placed and track compacted to minimize maintenance efforts.

4.2.4 Seed and Mulch

The 6-inch vegetative layer of the final cover will be seeded with a mixture of grasses suitable for fast growth in the region. TJL will utilize the Kennecott seed mixture that has been used in the adjacent Kennecott land reclamation. The recommended seeding and mulching requirements are outlined below:

> The final cover area will be seeded using standard seeding techniques. The seed includes an equal mix of western wheatgrass, thickspike wheatgrass, slender wheatgrass, streambank wheatgrass and native wildflowers. This mix is consistent with vegetation currently surrounding the landfill.

Early establishment of vegetation on the landfill's final slope surface will impede soil erosion and promote evapotranspiration. TJL personnel will periodically evaluate vegetative growth, vigor, and color so that the integrity of the final cover system is maintained. If stress signs on vegetation caused by landfill gas and leachate seeps are noted, the problem will be corrected. Corrective procedures will be conducted based on current design recommendations and will be built consistent with construction specifications. TJL staff or a licensed landscape contractor will make repairs, as necessary.

4.2.5 Landscaping

The landfill facility, including all surrounding grounds, will be maintained in conjunction with any scheduled maintenance activities (i.e., road improvements, etc.). The landscape of the landfill will be designed to be both functional and aesthetically pleasing.

4.2.6 Contouring

The landfill's final grades will be inspected and maintained in order to ensure its integrity and conformity with the conceptual final cover plans that are included on Drawing 3 – Final Cover (Appendix A).

Any areas where water has collected (ponded) will be regraded. Erosion damage resulting from extremely heavy rainfall will be repaired. TJL staff will inspect the final grading no less than quarterly.

4.2.7 Quality Assurance/Quality Control (QA/QC) Procedures

For construction of the final landfill cover, drawings, specifications, and QA/QC procedures will be developed by a Utah licensed Professional Engineer and submitted to the DWMRC for review and approval prior to construction of each closure Phase.

4.3 CLOSURE COST ESTIMATES

The current cost estimates for the closure of the TJL operation is $1,919,290 as provided in the financial assurance portion of the 2021 annual report. Section 7.8 details the Financial Assurance considerations for the TJL facility.

4.4 CERTIFICATION OF CLOSURE AND RECORD KEEPING

A Utah licensed Professional Engineer will be retained to design the closure for each of the remaining closure Phases. The registered engineer will be employed by TJL or will be a TJL hired consultant and will certify the landfill was closed according to the closure plan. Any amendment or deviation to the closure plan will be approved by the DWMRC Director and any associated permit modifications will be made. Final closure work and documentation will be observed and reviewed by DWMRC personnel, as necessary.

As part of the certification process, the engineer shall also provide closure as-built drawings to the Director within 90 days following completion of closure activities.

Additionally, the final plats and the amount and location of waste will be recorded on the site title. The owner will file the notarized plat with the county recorder within 60 days following certification of closure.

SECTION 5 - POST-CLOSURE PLAN

Post closure activities will begin when closure is approved by the DWMRC Director. The following presents the post-closure plan for TJL.

5.1 MONITORING PROGRAM

The following subsections offer a description of the monitoring program, which includes groundwater monitoring, leachate, and gas collection systems.

5.1.1 Groundwater Unlined and Lined Landfill

TJ will continue a groundwater monitoring program as detailed in the Modified Corrective Action Plan (Appendix C).

5.1.2 Surface Water

Drainage control problems can result in accelerated erosion of a particular area within the landfill. Differential settlement of drainage control structures can limit their usefulness and may result in a failure to properly direct storm water off-site.

Implementation of a post-closure maintenance program will maintain the integrity of the final drainage system throughout the post-closure maintenance period. The final surface water drainage system will be evaluated and inspected, no less than quarterly, for ponded water and blockage of and damage to drainage structures and swales.

Where erosion problems are noted or drainage control structures need repair, proper maintenance procedures will be implemented as soon as site conditions permit so that further damage is prevented. Damaged drainage pipes and broken ditch linings will be removed and replaced.

Although no surface water sampling activities are scheduled for the landfill, TJL staff will inspect the drainage system no less than quarterly. Temporary repairs to any observed damage will be made until permanent repairs can be scheduled. TJL personnel or a licensed general contractor will replace drainage facilities, if necessary. Currently, a semi-annual statement is required to be sent to Utah Department of Water Quality for any discharges. Appendix E - Storm Water Pollution Prevention Plan specifies the storm water handling and documentation requirements.

5.1.3 Leachate Collection and Treatment

5.1.3.1 Unlined Landfill

A leachate collection system was neither required nor installed during utilization of the unlined landfill.

5.1.3.2 Lined Landfill

All leachate collection and treatment structures will be monitored no less than quarterly and will be conducted more often if the need arises.

5.1.4 Landfill Gas

Landfill gas monitoring wells have been installed around the north and west perimeter of the landfill site to monitor explosive landfill gas emissions from both the unlined and lined landfill cells. The gas monitoring wells, as well as all structures at the site, will be monitored quarterly to ensure compliance with State regulations regarding explosive landfill gas.

During post-closure; TJL personnel or a contracted company will be responsible for the inspection and sampling of all methane gas monitoring wells, facility structures, and gas collection system components. Monitoring will occur no less often than quarterly and will be conducted more often if the need arises. In the event that a sample exceeds the regulatory level, TJL personnel will notify the DWMRC immediately and undertake appropriate corrective actions.

As outlined in R315-303-3(5), TJL personnel will take all the necessary steps to protect human health and will immediately notify UDEQ of explosive gas levels detected above allowable levels and actions to be taken. Also, within 7 days of incident, TJL personnel will place in the operating record documentation of the explosive gas levels detected and a description of the interim steps taken to protect human health. Within 60 days of detection, TJL personnel will implement a remediation plan for the explosive gas releases, place a copy of the plan in the operating record, and notify DWMRC that the plan has been implemented. The remediation plan will describe the nature and extent of the problem and the proposed remedy.

5.2 MAINTENANCE PROGRAM

The following subsections offer a description of the maintenance of installed equipment, including groundwater monitoring systems and leachate and gas collection systems.

5.2.1 Monitoring Systems

5.2.1.1 Groundwater

All current and future groundwater monitoring wells will be inspected for signs of failure or deterioration during each sampling event (if applicable). If damage is discovered, the nature and extent of the problem will be recorded. A decision will be made to replace or repair the well. Possible repairs include redevelopment, chemical treatment, partial casing replacement or repair, sealing the annulus, or pumping and testing. If a well needs to be replaced, it will be properly abandoned. Damaged wells will be scheduled for repair or replacement.

5.2.1.2 Surface Water

Drainage control problems can result in accelerated erosion of a particular area within the landfill. Differential settlement of drainage control structures can limit their usefulness and may result in a failure to properly direct storm water off-site.

Implementation of a post-closure maintenance program will maintain the integrity of the final drainage system throughout the post-closure maintenance period. The final surface water drainage system will be evaluated and inspected, no less than quarterly, for ponded water and blockage of and damage to drainage structures and swales. Where erosion problems are noted or drainage control structures need repair, proper maintenance procedures will be implemented as soon as site conditions permit so that further damage is prevented. Damaged drainage pipes and broken ditch linings will be removed and replaced.

TJL staff will inspect the drainage system no less than quarterly. Temporary repairs will be made until permanent repairs can be scheduled. TJL staff or a licensed general contractor will replace drainage facilities.

5.2.1.3 Leachate Collection and Treatment

The leachate control and recovery system must be maintained so that it operates during the post-closure maintenance period. The system will be inspected no less than quarterly by TJL staff for signs of deterioration. TJL staff or a licensed contractor will make required repairs.

TJL will have the leachate control and recovery system reviewed by the Division of Water Quality prior to use in the post-closure maintenance period.

5.2.1.4 Landfill Gas

The LGCS will be regularly inspected in conjunction with the scheduled monitoring tasks. The system will be repaired, and parts replaced as required to maintain system capabilities.

The LGCS will be inspected quarterly throughout the post-closure period. Quarterly maintenance will include cutting weeds in a 2-foot radius around each monitoring location.

5.2.1.5 Final Grading

The landfill cover final grade will be inspected no less than quarterly and maintained in order to preserve its integrity. Evaluation and inspection of the cover final grades will include evaluations of vegetation and overall system performance. At the completion of closure activities, the surface of the cover will be surveyed to provide a reference point for monitoring settlement.

Areas where water has collected (ponded) will be regraded. Erosion damage resulting from extremely heavy rainfall will be repaired.

5.2.2 Facility and Facility Structures

Drawing 2 – General Arrangement (Appendix A) shows the locations of all current and proposed facility structures. All structures still in use during the post-closure period will be maintained to support the facility operations. All fences, roads, gates, and other structures will be maintained so as to be functional.

5.2.3 Cover and Run-On/Run-Off Systems

The final cover system will incorporate features to manage storm water, minimize erosion, and provide for efficient removal of storm water collected in the drainage layer. Drawing 2 – General Arrangement (Appendix A) shows the location of the storm water detention basin and associated ditch, while Drawing 3 – Final Cover (Appendix A) shows proposed final grades of the final cover.

The constructed cap will convey collected water via earthen dikes, piping, swales, and drainage channels to the detention basin.

Placement of all permanent drainage facilities will be completed during, or immediately following, installation of the final soil cover. Permanent drainage facilities will be designed to provide adequate drainage after settlement of the fill area(s). The detention basin will allow settlement of sediments contained in the storm water run-off.

5.3 SCHEDULE OF POST-CLOSURE ACTIVITIES

Post-closure activities, consisting of monitoring and maintaining the final cover and permanent drainage facilities, will be implemented as areas of the landfill are filled to final grade.

5.4 POST CLOSURE COST ESTIMATES

The most current cost estimates for Post Closure care for the TJL facility is $3,430,008 as provided in the financial assurance portion of the 2021 annual report. Section 7.8 details the Financial Assurance considerations for the TJL facility.

5.5 CHANGES TO RECORD OF TITLE, LAND USE, AND ZONING

TJL staff will notify the Salt Lake County Recorder's Office at any such time when there is a change to the Record of Title, land use plan, or zoning restrictions. In addition, TJL staff will notify the Recorder at that time when the post-closure care period has expired. TJL staff will send proof of this filing to the DWMRC Director in accordance with R315- 302-2(6)(b) of the Utah Administrative Code.

5.6 POST CLOSURE FACILITY CONTACTS

TJL will likely maintain a maintenance person responsible for the post-closure facility operations. However, if TJL does not have a dedicated contact person, the City Administrator of South Jordan will be the designated point of contact for the facility. The telephone number for the City Administrator is (801) 254-3742.

5.7 POST CLOSURE LAND USE

Appendix H – Local Land Use contains the current master plan for the lands surrounding the TJL facility. TJL staff will ensure that the TJL site meets the local land use at the time of closure and during the post-closure care period.

SECTION 6 - GEOHYDROLOGICAL ASSESSMENT

6.1 GEOLOGY AND HYDROLOGY

6.1.1 Regional Geology

Trans-Jordan Landfill (TJL) is located at an elevation of approximately 5,000 to 5,250 feet in the southwest portion of the Salt Lake Valley. This valley represents a deep, sediment-filled structural basin of Cenozoic age flanked by two uplifted blocks, the Wasatch Range on the east and the Oquirrh Mountains to the west (Hintze, 1980). The northern portion of the Salt Lake Valley extends beyond the northern limits of the Oquirrh Mountain range and is bordered on the west by the southeast shore of the Great Salt Lake. The Wasatch Range is the easternmost expression of pronounced Basin and Range extension in north-central Utah. Appendix I – Geologic Map / Geotechnical Information contains the current Geologic Map.

6.1.2 Local Geology

The near-surface geology of the Salt Lake Valley is dominated by sediments, which were deposited within the last 30,000 years by Lake Bonneville (Scott and others, 1983; Personius and Scott, 1992; Hintze, 1993). As the lake receded, streams began to incise large deltas formed at the mouths of major canyons along the Oquirrh and Wasatch ranges, and the eroded material was deposited in shallow lakes and marshes in the basin and in a series of recessional deltas and alluvial fans. Sediments toward the center of the valley are predominately deep-water deposits of clay, silt, and fine sand. However, these deep-water deposits are in places covered by a thin post-Bonneville alluvial cover. Surface sediments at the project site are mapped as Pleistocene lacustrine shore facies sand and gravel consisting of clast-supported pebble, cobble and rarely boulder gravel in a matrix of sand and pebbly sand (Davis, 1983; Personius and Scott, 1992). These sediments were deposited during the transgressive phase of the Lake Bonneville cycle approximately 30 to 14 ka (thousands of years ago).

6.1.3 Hydrology

TJL is in alluvial outwash material located two to three miles from the east slope of the Oquirrh Mountains near the mouth of Bingham Canyon. Bingham Creek runs out of Bingham Canyon and has incised into the alluvial outwash from the canyon. The creek runs along the north side of the landfill. The landfill terrain slopes northward toward the creek with an elevation drop of approximately 100 to 150 feet. Local runoff may travel over short distances but does not appear to transport flash flood waters/debris flow of significant volume over long distances. This is apparent due to the lack of erosion in the areas surrounding the site.

6.2 BEDROCK AND SOIL CHARACTERISTICS

6.2.1 Bedrock

West of the landfill area are the mining operations of the Bingham Canyon Mine owned by Kennecott Utah Copper (KUC) which is located at the confluence of Bingham Canyon and Carr Fork Canyon. The Bingham Mining District has been developed in intrusive and meta-sedimentary rocks. Copper, molybdenum, gold, and silver mineralization usually occur as replacement deposits in the meta-sedimentary and sedimentary rocks, particularly limestone, of the Pennsylvanian Bingham Mine Formation.

Major geologic units identified in the study area by Dames & Moore (May 1988) include the lower clays and mudstones, which underlie semi-consolidated sediments which in turn underlie upper unconsolidated sediments. The clays and mudstones underlie much of the site as do the semi-consolidated Tertiary deposits. The unconsolidated Quaternary deposits increase in thickness from the mountain front of the Oquirrh's toward the valley center. The clays and mudstones are typically massive thicknesses of moist clays with interbedded "hard" clayey gravels. Thicknesses of the consolidated clays may be as great as 2,000 feet. These sediments are not part of the principal aquifer which lies above this unit.

6.2.2 Soils

The semi-consolidated sediments are calcium carbonate-cemented sediments typically referred to by drillers as "hard or hardpan, cemented conglomerate or sandstone." Although not all these semi-consolidated sediments are strongly cemented, they are much more consolidated than the unconsolidated sediments found directly above them. The thickest accumulations of semi-consolidated sediments are present beneath Bingham Creek where thicknesses exceed 500 feet. The aquifer which underlies TJL is located primarily in this geologic unit. The unconsolidated sediments are the youngest sediments in the area and were deposited in alluvial, fluvial, and lacustrine environments.

Sediment from the mouth of Bingham Canyon has been deposited in a large alluvial fan out into the Jordan River Valley. Much of this alluvial fan formed during the time that Lake Bonneville filled much of the Jordan River Valley thus the unconsolidated sands and gravels from Bingham Canyon are interbedded with the sediments of ancient Lake Bonneville. The alluvium is usually poorly sorted sandy gravels roughly stratified with silt and clay layers. Volcanic ash deposits are interbedded with the gravels in numerous places.

The subsurface conditions encountered during the geotechnical investigation performed for the lined cells at TJL were characterized from the field exploration and the laboratory test programs. Soil conditions are predominantly silty-clayey gravels at and near the ground surface with both well graded and silty gravels under the silty-clayey gravels. Occasional lenses of silty clays were encountered but they do not extend continuously across the landfill area. Some sand deposits were also encountered but they are isolated in small, scattered areas. Excavations at the east end of the landfill area indicate primarily clayey gravels underlain by a deposit of silty clays/clayey silts. Site investigations were not able to document the extent of the silty clays/clayey silts.

Boreholes TJ-1 through TJ-6 were drilled along the south side of the old Bingham Creek outwash channel at the locations (and boring logs) shown on the location map in Appendix I – Geologic Map / Geotechnical Information. At the surface these soils are light brown sandy silty and clayey gravels, which are dense to very dense, with occasional zones of silty clay, clayey silt, and silty sand. These gravels appear to be part of the outwash deposits on the alluvial fan east of Bingham Canyon. Hollow-stem auger refusal occurred in very dense clayey or silty gravels with scattered cobbles and small boulders at depths ranging from 39.5 feet to 70 feet. No ground water was encountered in any of the boreholes. Natural moisture content of soil samples from depths of 10 to 20 feet ranged from 7.7 to 12.1 percent.

In the bottom of the old Bingham Creek outwash channel, at boreholes TJ-1 through TJ-6 there is a surface layer of clayey gravel with some thin lenses of silty gravel, silty clay, and silt ranging in depth from 9 to 37 feet. These gravels are dense to very dense with natural moisture content of between approximately 8.0 to 12.0 percent.

Below approximately 10.0 to 30.0 feet the soil materials were all dense to very dense clayey gravel to silty gravel with some poorly sorted gravel. No lenses of silt or clay were noted. Average natural moisture content was 6.9 percent.

On the higher ground south of the outwash channel there is approximately 30 feet of silty sands and gravels. Below 30 feet in depth are silty gravels to well sorted gravels. These materials are described on the log of borehole TJ-7. Down-slope, at the location of borehole TJ-8, the soil is primarily dense to very dense poorly graded silty and clayey gravel. At a depth of approximately 40 feet in borehole TJ-8 a 6-foot-thick lens of silt or low plasticity clay was encountered. Boring logs for the field exploration are presented in Appendix I – Geologic Map / Geotechnical Information.

6.3 HYDROGEOLOGY AND GROUNDWATER

6.3.1 Hydrogeology

Four studies conducted by the United States Geological Survey (USGS) since 1905 (Richardson, 1906; Taylor and Leggette, 1949; Hely and others, 1971; and Waddell and others, 1987) each described the hydrogeology of the Salt Lake and Jordan Valleys in terms of an unconfined deep aquifer near the mountain front, a confined aquifer below much of the valley floor and a shallow unconfined aquifer above the confined aquifer. While all these aquifers are hydrologically connected, the deep unconfined and confined aquifers are generally referred to as the "principal aquifer." Near the mountains the valley fill aquifer system is replaced by bedrock aquifers formed from the indurated bedrock units exposed in these areas.

As discussed in detail in Dames & Moore (May 1988), the principal aquifer underlying the landfill includes the semi-consolidated sediments (located immediately above the claystone and mudstone) as well as the upper Quaternary deposits of clay, silt, sand, and gravel. These two geologic units were included in the definition of the principal aquifer because they are permeable, interconnected and are a significant part of the flow system within the aquifer. The underlying Tertiary Age claystone and mudstone unit is, in contrast, considered to be relatively impermeable and the flow of ground water within or below this unit is not considered to be significant to flow occurring within the principal aquifer. The elevation of the top of the claystone unit is considered to be the elevation of the base of the principal aquifer.

Because there are no distinct impermeable beds confining the principal aquifer under TJL, the top of the aquifer is taken to be the water table. All monitor wells at the TJL are dry due to Kennecott Utah Corporation water reclamation projects.

Hydraulic properties such as transmissivity, permeability, and storage coefficients and or specific yield of the aquifers in the study area have been estimated from aquifer tests, specific capacity tests, results of previous modeling efforts and the physical characteristics of the hydrologic units comprising the aquifer.

Aquifer tests were conducted within 1,400 and 3,700 feet down gradient of TJL at wells K60 and K109, respectively (KUC's old production wells). These two wells are screened in the deep fanglomerate deposits (430 to 645 feet and 403 to 540 feet, respectively), that were reworked by Bingham Creek subsequent to their original deposition. The transmissivity of the aquifer at both of these wells is high; around 2.4 x 10^4 ft^2/day with horizontal and vertical hydraulic conductivities of about 2.0 ft/day and 0.2 ft/day, respectively.

Since observation wells were not available for most of the pump tests in this area, storage coefficients were computed based on barometric well efficiency. A storage coefficient and or specific yield representative of the Bingham Creek alluvium and underlying fanglomerate at the landfill site is about 0.15.

In summary, the hydraulic properties of the shallow saturated Bingham Creek alluvium include fairly high horizontal and vertical permeabilities of about 200 ft/day. For the deeper semi-consolidated deposits where the water table is encountered, the horizontal and vertical permeabilities are much lower, about 2 ft/day and 0.2 ft/day, respectively, due to silts and clays. Unsaturated hydraulic conductivities would be several orders of magnitude lower than these, (EPA, July 1986).

6.3.2 Depth to Groundwater

Ground water levels were obtained from measurements taken over time in the wells constructed to monitor groundwater at the site, measurements reported in USGS publications and water level measurements taken by Kennecott in groundwater monitoring wells near the landfill as part of their ground water monitoring program.

Historically, water levels were at relatively low levels in the mid to late 1930's and in the early to mid-1960's, and at relatively high levels in the 1950's and in the mid-1980's. Although few records are available, it appears that water levels were also at an apparent low around the turn of the century. Causes for these highs and lows in the water level appear to correspond generally to annual rates of precipitation.

The correlation of precipitation with water level changes is particularly apparent in water level data collected through the mid 1980's. The early 1980's data generally reflect a historic high in precipitation rates. Wells located away from major pumping centers showed significant rises in water levels in the mid 1980's, presumably as a result of increases in annual precipitation rates. Similarly, during periods of relatively low rates of precipitation such as during the mid-1930's and again in the early 1960's, water levels appeared at or near their lowest levels.

Ground water levels in Bingham Creek Drainage have been modified and impacted by construction and operation of the Bingham Canyon Reservoir and a KUC installed groundwater cut-off wall across this creek. Time graphs of water levels in the monitor wells (K100-K120, K84, K85, and K26) located below the Bingham Reservoir illustrate the rapid and pronounced effects of the operation of the reservoir on the water levels in these wells.

An upward vertical hydraulic gradient has been measured in four sets of nested monitor wells along Bingham Creek near the landfill. These include wells P190 A and B, P191 A and B, P213 B and C and P196 A and B in which the vertical water level elevation differences have measured about 3 feet, 1 foot, 29 feet and 100 feet, respectively. Wells which show such vertical gradients appear to reflect local inhomogeneities in the aquifer or a relatively close source of recharge. Most of the paired wells with one or more of the wells screened in the semi-consolidated or cemented deposits which form much of the deep unconfined areas of the principal aquifer do not show significant vertical gradients.

Wells P196 B and P213 C and well P208 B (KUC wells located in the near vicinity of Bingham Creek and the landfill), may be completed in a deep sediment-filled erosional channel. This channel is located above the claystone and mudstone unit which forms the base of the principal aquifer. The upward gradients observed in this area may be the result of the contrasting hydrologic properties of these channel materials coupled with high horizontal gradients and the upward discharge of ground water from the bedrock aquifers.

As mentioned, an east-west trending channel-like depression is present along Bingham Creek. It appears to have resulted from creek deposition of course-grained sediments and the winnowing out of fine-grained material from mudflow deposits by these creeks. This has resulted in increased permeability of sediments in these areas.

The most recent groundwater measurement data was taken from the wells on the landfill property in December of 2003. No groundwater elevations have been taken from the TJL wells due to all of them being dry. An up gradient groundwater cutoff wall completed by Kennecott Utah Corporation (KUC), an extensive KUC groundwater recovery/remediation program proximate to the landfill, and several years of below average precipitation all have contributed to the drop in water levels.

A summary KUC's ground water recovery efforts can be found in Appendix C – Modified Corrective Action Plan.

6.3.3 Groundwater Flow and Direction

Historically, the lateral (horizontal) hydraulic gradient across the landfill has been about 0.03 foot/foot. Immediately up gradient and to the west toward the Oquirrh's, the lateral hydraulic gradient increases to about 0.08 foot/foot and conversely immediately down gradient, it decreases to about 0.01 foot/foot. All these hydraulic gradients are relatively high in comparison to the lateral hydraulic gradients in other parts of the Salt Lake Valley. For example, the hydraulic gradient decreases to 0.004 foot/foot near the Jordan River about 7 miles directly east of the landfill.

The lower horizontal gradients east of the Oquirrh Mountains and east and down gradient from the landfill are believed to result from the transition from the lower permeability of the semi-consolidated fanglomerate deposits near the Oquirrh Mountains to the somewhat higher permeabilities of the unconsolidated deposits found further east.

The USGS (Hely and others, 1971) estimated a recharge rate to the ground water in the Jordan Valley of about 60,000 acre-feet/year or about 2.3 inches per year. The USGS, (1987) calculated the average rate of ground water movement in the area between wells K87 (located in the central part of the landfill) and well P197 A (down gradient and off-site from the landfill to the east-northeast about 3,600 feet from well K-87) to be about 260 to 920 feet per year, with travel times between 3.9 and 113.5 years.

Based on the groundwater elevations observed in the wells installed at the landfill and the KUC wells in the area around the landfill the general groundwater gradient has historically been predominantly eastward. However, as discussed previously, based on the elevations taken in the wells over the last few years, the direction of the groundwater flow has changed from generally east to generally south. It was also stated previously that KUC has been conducting an extensive groundwater recovery/remediation program immediately adjacent to the landfill.

6.4 ON-SITE WELLS (Historic)

TJL has historically had one up gradient and three down gradient monitoring wells on the property that have been utilized for groundwater monitoring and sampling. The up gradient well was identified as TJMW-2 while the down gradient wells are TJMW-3, TJMW-4, and TJMW-5. These sampling wells were originally positioned based on the predominant groundwater flow being west to east. TJMW-1 was originally installed in March of 1994 as an up gradient well but was not used for groundwater sampling due to the presence of perched water that was not representative of the low pH groundwater documented to be present near the site.

Monitoring Well TJMW-2 was completed to a depth of 455 feet below ground surface (Elevation 4814.16) and was drilled and completed in January 1995. The well served as the up gradient monitoring well. Monitoring well TJMW-3 was completed to a depth of 319 feet below ground surface (Elevation 4710.77) and was drilled and completed in December of 1995 as a down gradient well. Monitoring well TJMW-4 was completed to a depth of 365 feet below ground surface and was drilled and completed in November of 1997 as a down gradient well. Monitoring well TJMW-5 was completed to a depth of 365 feet below ground surface (Elevation 4705.9) and was drilled and completed in July of 1998 as a down gradient well.

None of the monitoring wells at the TJL have been monitored since they went dry in 2003.

6.5 WATER RIGHTS

A search of the Utah Division of Water Rights database indicates several (permitted wells) and two points of surface water diversion constituting a surface water right are within 2,000 feet of the facility boundary. The wells and surface water diversion are all associated with KUC. The water right output information is included in Appendix J – Water Rights.

6.6 SURFACE WATER

Bingham Creek is the only surface water that exists within one mile from the site perimeter. An historic drainage is indicated on the USGS Lark 7.5 minute quadrangle, 1952, photo-revised 1969, 1975, but that drainage has since been disrupted. Surface waters as defined by the United

States Army Corp of Engineers is any body of water shown in blue or as a solid blue or dashed blue line on USGS maps. Appendix A – Drawings include the latest USGS 7.5 minute quad map.

Bingham Creek channel parallels the north property boundary of TJL. Currently most of the historic surface water of the Bingham Creek drainage is intercepted by a KUC operated pond across the Bingham Creek channel. The impoundment is located approximately one mile upstream of the landfill and is operated by KUC. Presently, any surface water drainage to Bingham Creek in the vicinity of the landfill is minimal, due to the small drainage area, and is directed to a detention basin and is routed through the Progressive Plant property. All surface water drainages to the south of the landfill are cutoff by developments.

6.7 WATER QUALITY

6.7.1 Historic Ground Water Quality

Ground water quality within the study area ranges from drinking water quality in wells over one mile away to the north, northwest and north-northeast, to waters containing elevated TDS and low pH both upgradient and beneath the landfill. Previous work has delineated a 10,000 mg/l TDS contour line running beneath the landfill. The wide range in TDS concentrations in the study area reflects the impact of historic mining operations on the ground water. The ground waters at and surrounding the landfill are calcium chloride and calcium sulfate type ground waters.

Ground water quality in the area typically improves with depth since the sources of poor-quality recharge are man-induced and typically enter the aquifer from the top. Improvement with depth also indicates a lack of strong vertical mixing. The slight upward vertical hydraulic gradient (observed at a few wells) may also help to limit the downward movement of contaminants.

In 1972, chloride concentrations peaked in wells located both up and down gradient from the landfill. Specifically, the up gradient wells include K26, K87 and K100, and the down gradient wells include P190 B and K60. Most of these wells also showed significant increases in sulfate levels and copper levels, particularly in the wells located immediately down gradient from the reservoir. Slightly elevated chloride levels (elevated compared to historic levels) were again observed in 1979 in wells up gradient from the landfill (K118, K120, P213 B and C) but only in one well down gradient from the landfill (P190 A). This data indicate that the elevated chloride, sulfate, and copper levels were not due to landfilling activities at TJL. Low pH and high sulfate ground waters generally surround TJL. There currently are no exceptionally high levels of chloride detected in the ground waters down gradient from the landfill.

Seepage losses from historic operation of KUC's Bingham Canyon Reservoir up gradient from TJL (about 8,900 feet to the west) have been significant, estimated at about 1 to 7 million gallons per day since construction in 1965 (Dames & Moore, May 1988). The reservoir plume historically extended over 20,000 feet down gradient to the east, is about 10,000 feet wide, and encompasses the area under the landfill. The sulfate concentration in some of the monitor wells within the plume has historically exceeded 50,000 mg/l with pH values less than 3.0. Based on the monitoring well located on Site, which were installed from 1994 to 1998, the historic sulfate concentration in well TJMW-2 has been around 5,000 to 6,000 mg/l and the sulfate concentrations in the remaining wells (TJMW-3, TJMW-4, and TJMW-5) have been around 1,500 to 2,000 mg/l. The pH results in these wells indicate well TJMW-2 with a pH around 3.0 to 4.0 and wells TJMW-3, TJMW-4, and TJMW-5 all around 6.0 to 7.0.

The vertical extent of the sulfate plume immediately east and down gradient of the reservoir (wells K84, K100 and K120) extends several hundred feet down from the top of the water table (which is only about 40 feet below ground surface near the reservoir due to reservoir seepage). Low permeability fine-grained sediments may have blocked further downward movement in this area. At well P279, located about 3,000 feet southeast of the reservoir, the sulfate plume is encountered at a depth of about 300 feet below the water table. Immediately down gradient from the landfill at well P277, (which was drilled and sampled to 1,200 feet), the sulfate plume also did not extend beyond a depth of about 200 feet below the water table.

6.7.2 Current Ground Water Quality

All the monitor wells at TJL are dry and have not been sampled for years. KUC does conduct periodic sampling of wells in the area of TJL that TJL personnel has analyzed. May 2022 groundwater data from KUC wells sampled are included as Appendix K – Current Groundwater Data.

6.8 SITE WATER BALANCE

Among the possible problems created by waste storage in any landfill is the possible contamination of soil, surface water or groundwater by direct contact with the waste or by leached materials from water passing through the waste. Due to low precipitation and high evapotranspiration rates associated with the semi-arid climate in the Salt Lake Valley, the quantity of water infiltrating the landfill is predicted to be small and therefore the leachate generation low. The final landfill cover is designed to minimize infiltration and promote runoff. Furthermore, liquid waste is not allowed in the landfill. Estimates of leachate generation potential were also re-examined for the expanded landfill using the HELP (Hydrologic Evaluation of Landfill Performance) computer model. Two previous Dames & Moore studies have also examined ground water issues at the landfill.

The average annual precipitation for the TJL is approximately 15 inches. TJL maintains a weather station capable of measuring precipitation as well as temperature. The TJL weather station can be accessed via: https://mesowest.utah.edu/cgi-bin/droman/meso_base_dyn.cgi?stn=TRJO

6.8.1 Historic Water Balance Studies

In February 1989 Dames & Moore presented the results of preliminary hydrogeologic characterization at the landfill with recommendations for proposed leachate monitoring. In the spring of 1990 Dames & Moore implemented the leachate monitoring recommendations and conducted an investigation at TJL to assess the potential for landfill impacts on ground water quality. To determine quality and quantity of leachate generated, four boreholes were drilled and three suction lysimeters were installed in and immediately down gradient from the landfill. The lysimeters were sampled in the spring of 1990 following the seasonal period of maximum infiltration from winter snow melt and spring rains. Data on the subsurface water quality from lysimeters installed in October 1989 were presented in a Dames & Moore report in September 1990.

6.8.2 Storm Water Effects

Two storm water evaluations were performed to estimate the volumes of leachate produced from a 24-hour 25-year storm event (2.6 inches). Evaluations were performed on a typical landfill Cell to represent the conditions immediately following the construction of a new Cell (highest run-off potential) and the run-off conditions of a partially full Cell.

Run-off from the 24-hour 25-year storm event within a new cell would result from approximately 520,000 square feet of lined area and approximately 180,000 square feet of active landfill covered with daily/intermediate cover. This cover soil would provide some water storage capacity from available pore space and additionally the surface depressions created by landfill compactors. The depressions created by compacting the waste and cover soil creates small surface impoundments that will retain much of the potential run-off from the storm event.

In contrast virtually all the precipitation that falls on the lined portion of the cell would run-off and will need to be retained.

New Cell Run-Off Conditions

Based on this information, storm water runoff calculations for a 25-year 24-hour storm within a newly constructed Cell are as follows:

Lined Area:

Runoff volume: 2.6 inches of precipitation over 520,000 square feet
0.217 feet x 520,000 square feet = 112,840 cubic feet.

Active Landfill (soil with surface depressions):

Runoff volume: Using 2.6-inches of precipitation, a curve number of 65, type II rainfall and a time of concentration of 30 minutes with the TR55 computer software, runoff is estimated to be 0.34 inches. The curve number 65, type II was selected to represent the surface conditions of the active landfill soil cover with the surface depressions. The associated runoff volumes are:

0.34 inches over 180,000 square feet
0.028 x 180,000 square feet = 5,100 cubic feet.
TOTAL VOLUME = 117,940 Cubic Feet

Storage capacity: The current leachate collection/evaporation pond is approximately 700' long 100' wide and can retain approximately 254,421 cubic feet of liquid before migrating into the actual Cell footprint. The volume of the leachate collection/evaporation pond when the liquid is at the maximum pond level (12 inches of freeboard remaining on the eastern dike) is approximately 453,000 cubic feet.

Based on this analysis, the capacity of the storm water may temporarily rise onto the Cell bottom for a short duration if the 24-hour 25-year storm occurs immediately after the construction of a new Cell. However, all the storm water will be contained in the lined areas of the landfill and not in MSW.

Partially Full Cell Run-Off Conditions

A second scenario (partially full) has been evaluated to represents the most typical condition of the landfill operation. Run-off from the 24-hour 25-year storm event within a half full cell would result from approximately 140,000 square feet of lined area and approximately 500,000 square feet soil cover with surface depressions:

Lined Area:

Runoff volume:	2.6 inches of precipitation over 140,000 square feet 0.217 feet x 140,000 square feet = 30,380 cubic feet.

Active Face (dimpled soil cover area):

Runoff volume:	Using 2.6-inches of precipitation, a curve number of 65, type II rainfall and a time of concentration of 30 minutes with the TR55 computer software, runoff is estimated to be 0.34 inches. Therefore: 0.34 inches over 500,000 square feet 0.028 x 500,000 square feet = 14,000 cubic feet. TOTAL VOLUME = 44,380 Cubic Feet
Storage Volume:	Same as previous (approximately 254,421 cubic feet in the leachate/collection pond bottom and 453,000 cubic feet total with 12 inches of freeboard).

Based on this analysis, the capacity of the leachate collection/evaporation pond will be sufficient to store the anticipated runoff without contacting any in place MSW when the Cell is half full. Should there be precipitation events that exceed the 24-hour 25-year storm event; the leachate collection/evaporation ponds ultimate capacity (with a 12-inch freeboard) is approximately 453,000 cubic feet. The ultimate capacity is reached when the leachate backs up to MSW on the western side of the pond.

The level of leachate in the detention basin will be continually monitored. If the depth of leachate in the detention basin approaches the 12-inch maximum depth criteria or comes in contact with the MSW, the leachate will be removed from the leachate collection/evaporation pond and transported to either a Publicly Owned Treatment Works (POTW) or back onto the (Municipal Solid Waste) MSW in the lined cell. Storm water calculations are included in Appendix L – Storm Water Calculations.

6.8.3 Site Water Balance Conclusions

Based on the landfill design, the semi-arid climatic conditions (10 to 20 inches of rainfall per year), in-situ soil conditions, depth to ground water of over 300 feet, high pan evaporation rates and the operational constraint of no liquid waste disposal, significant leachate generation from the lined Cells of TJL and its impacts to underlying ground water is minimal. It should also be noted that the background quality of the groundwater in the unlined and lined landfill is poor, as previously discussed.

SECTION 7 - ENGINEERING REPORT

7.1 LOCATION STANDARDS - EXISTING AND SCHEDULED LANDFILL EXPANS1ON

The following sections present the Solid Waste Facility Locations Standards and discuss the status of TJL's compliance with those requirements although these requirements are for new or lateral expanding facilities. This permit renewal does not represent a lateral expansion. **The discussions of location standards are for informational purposes only.**

7.1.1 Land Use Compatibility

The UDEQ Division of Waste Management and Radiation Control Solid Waste Facility Location Standards Rules state that no new or laterally expanding Class I, Class II or Class V landfill will be located within:

- One thousand feet of a national, state or county park, monument, or recreation area; designated wilderness or wilderness study area; or wild and scenic river area.
- Ecologically and scientifically significant natural areas, including wildlife management areas and habitat for listed or proposed endangered species, as designated pursuant to the Endangered Species Act of 1982.
- One-quarter mile of existing permanent dwellings, residential areas, and other incompatible structures, such as, schools, churches, and historic structures or properties listed or eligible to be listed in the State or National Register of Historic Places.
- Proximity to an airport.
- Areas with respect to archeological sites.

7.1.1.1 Trans-Jordan Landfill Status

- The Trans-Jordan Landfill is not located within 1,000 feet of a national, state, or county park, monument, or recreation area; designated wilderness or wilderness study area; or wild and scenic river area.
- Ecologically or scientifically significant natural areas have not been observed within or adjacent to the current site. This site is an active landfill and has been used as such since the late 1950’s.
- There are no schools, churches, historic structures, or properties eligible to be listed in the State or National Register of Historic Places currently located within one-

quarter mile of the property line that encloses the area currently being operated as a landfill.

- ➢ The Landfill is not located within 10,000 feet of a public-use airport runway used by turbojet aircraft. Salt Lake Municipal Airport #2 is located approximately 5 miles northeast of the landfill.
- ➢ No archaeologically significant discoveries have been made at the site, nor are any known to exist.

7.1.2 Geologic Hazards and Geotechnical Engineering

The Utah State Regulations indicate "No new facility or lateral expansion of an existing facility shall be located in a subsidence area, a dam failure flood area, above an underground mine, above a salt dome, above a salt bed, or on or adjacent to geologic features which could compromise the structural integrity of the facility."

Neither the unlined landfill nor the lined landfill cells areas are in a subsidence area, a dam failure flood area, above an underground mine, above a salt dome, or above a salt bed as mentioned in the Utah State Regulations. However, the landfill area is located in the southwest portion of the Salt Lake Basin along the eastern side of the Oquirrh Mountains. Geologic hazards such as debris flows, alluvial fan flooding, liquefaction and faulting can be a potential concern in this area and were therefore assessed in the 2004 permit application. The following summarizes those assessments:

7.1.2.1 Debris Flows and Alluvial Fan Flooding

Based on the distance from the mountain front and the topography and elevations of the site, the hazard from debris flow and alluvial fan flooding is considered very low and should not be considered a concern.

7.1.2.2 Liquefaction

Certain areas within the Intermountain Region also possess a potential for liquefaction during seismic events. Liquefaction is a phenomenon whereby loose, saturated, granular soil deposits lose a significant portion of their shear strength due to excess pore water pressure buildup resulting from dynamic loading, such as that caused by an earthquake. Among other effects, liquefaction can result in densification of such deposits causing settlements of overlying layers after an earthquake as excess pore water pressures are dissipated. The primary factors affecting liquefaction potential of a soil deposit are: (1) level and duration of seismic ground motions; (2) soil type and consistency; and (3) depth to groundwater.

Referring to the "Surface Fault Rupture and Liquefaction Potential Special Study Areas" map dated March 31, 1989, and published by Salt Lake County Public Works - Planning Division, the subject site is located within an area designated as "very low" for liquefaction potential. Based on the field data, it is our opinion that the soil deposits at the site generally have a very low potential for liquefaction and should not be considered a concern for this site.

7.1.2.3 Seismicity and Faulting

Review of the "Surface Fault Rupture and Liquefaction Potential Special Study Areas" map dated March 31, 1989, and published by Salt Lake County Public Works - Planning Division, indicated there are no known active faults that pass under or immediately adjacent to the site. The site is located approximately 13 miles west of the Cottonwood section of the Salt Lake City segment of the Wasatch fault zone (Personius and Scott, 1992; Hecker, 1993). The Cottonwood section is one of three major splays of the Salt Lake City segment. The site is also located 12 miles northwest of the northern end of the Provo segment of the Wasatch fault. The Provo segment is 70 km long and is one of the longest segments of the Wasatch fault zone. The Traverse Mountains marks the northern extent of the Provo segment and form a structural boundary between the Salt Lake City and Provo segments of the Wasatch fault zone. The site is also located approximately 8.4 miles east of the Oquirrh fault zone. The Oquirrh fault zone, where it is exposed, consists of a single fault strand, which extends for 19 miles along the western side of the north Oquirrh Mountains (Lund, 1996). The site is also located approximately 8.5 miles southwest of the West Valley fault zone. The West Valley fault zone trends in a north - south orientation and is in the central portion of the Salt Lake valley (Keaton and Curry, 1993). While the West Valley fault zone is reported to be active and probably seismically independent of the Wasatch fault zone, sympathetic movement on the West Valley fault zone resulting from major earthquakes on the Wasatch fault zone is a possibility.

Analyses of ground shaking hazard along the Wasatch Front suggests that the Wasatch fault zone is the single greatest contributor to the seismic hazard in the Salt Lake City region. However, due to its close proximity to the site, the West Valley fault zone should be considered a large contributor to the seismic hazard at the site.

The expected maximum ground acceleration from a large earthquake at this site with a two (2) percent probability of exceedance in 50 years is 0.41g (United States Geologic Survey's (USGS) Earthquake Hazards Program - National Seismic Hazard Mapping Project). These values are estimated ground surface accelerations for a "firm rock" site, which is identified as having a shear-wave velocity of 760 m/sec in the top 30 meters. Sites with different soil types may experience amplification or de-amplification of these values. The site is situated within the International Building Code (IBC) Region 2.

Based on our field investigation, it is our opinion the soils at this site are representative of a "very dense soil" profile having an average shear wave velocity $1{,}200 \leq \bar{\upsilon}_S \leq 2{,}500$ (ft/sec) in the top 100 feet, best represented by IBC Site Class C having Site Coefficients of F_a= 1.0 and F_v=1.45. The following table reports the ground motion from the values obtained from the USGS website for the subject site.

LOCATION	40.5572º Latitude	-112.05º Longitude	
Distance to nearest grid point	6.36 kilometers		
Nearest grid point	40.6º Latitude	-112.1º Longitude	
Probabilistic ground motion values at the nearest grid point are:	**10% Probability of Exceedance in 50 Years (% gravity)**	**5% Probability of Exceedance in 50 Years (% gravity)**	**2% Probability of Exceedance in 50 Years (% gravity)**
PGA	20.64	28.62	41.27
0.2 sec SA	48.94	68.37	112.01
1.0 sec SA	15.69	23.68	35.63

7.1.2.4 Seismic Impact Zone

The EPA and the DWMRC define a seismic impact zone as any location with a 10% or greater probability that the maximum horizontal acceleration (MHA) in lithified earth material, expressed as a percentage of the earth's gravitational pull, will exceed 0.10g in 250 years. Dames & Moore, 1998 indicated there was a 10 percent chance in 250 years that the area could experience horizontal accelerations of 0.40g to 0.60g and used 0.50g in their analysis. As mentioned previously, updated mapping by USGS Earthquake Hazards Program – National Seismic Hazard Mapping Project indicates the predicted Maximum Horizontal Acceleration (MHA) at the site is 0.41g. Therefore, the site does lie within a Seismic Impact Zone.

The MHA in lithified earth material is defined in 40 CFR part 258.14 (EPA 1991) as the "maximum expected horizontal acceleration depicted on a seismic hazard map with a 90% or greater probability that the acceleration will not be exceeded in 250 years, or the maximum expected horizontal acceleration based on site specific seismic risk assessment." This definition was adopted in full by the UDEQ. The acceleration value of approximately 0.41g was obtained from the United States Geologic Survey's (USGS) Earthquake Hazards Program – National Seismic Hazard Mapping Project. The value is an estimated ground surface acceleration of a "firm rock" site, which is identified as having a shear-wave velocity of 760 m/sec in the top 30 meters; sites with different soil types may amplify or de-amplify this value.

7.1.2.5 Seismic Impact Zone Analysis

A seismic response analysis and a dynamic deformation analysis were performed by Dames & Moore, 1998. IGES performed a review of this seismic study and felt additional analysis should be performed based on the more recent and updated data available pertaining to the updated MHA information discussed previously and other updated information pertaining to the properties of the waste, soil and geosynthetic materials.

Cross-sections of the bottom excavation and final cover were generated and used in modeling static and seismic stability. The most critical sections of the bottom excavation and final cover were modeled. The excavation for Cell 5 had the deepest cut and the final cover slope in Phase H had the longest cover slope. Side-slope cuts of 3 horizontal to 1 vertical and final cover slopes of 4 horizontal to 1 vertical are planned.

Three material types were used for the stability analyses: foundation (in situ) soil, municipal solid waste (MSW), and cover interface (low strength zone in the cover). The following table presents the strength and unit weight parameters used for in the stability analyses:

Property	Native Soils	Cover Soils	MSW
Unit Weight (pcf)	125	130	63, 66, 70, 74, 80
Cohesion (psf)	0	100	0
Internal Friction Angle (deg.)	36	38	33

Foundation soil strength and unit weight parameters were assigned based upon field sampling and laboratory testing completed by Dames & Moore. An effective friction angle of 36 degrees, a cohesion of zero, and a total/saturated unit weight of 125 pounds per cubic foot were used for foundation soils in the analyses.

Municipal solid waste strength and unit weight parameters were estimated based upon historical data (Kavazanjian, et. al., 1995). Although strength parameters were assumed constant with depth, unit weight was assumed to increase with confining pressure (depth) as recommended by Kavazanjian et. al, 1995. The critical final cover cross section was separated into five MSW layers with total unit weights ranging from 63 to 80 pounds per cubic foot.

The internal friction angle of the reinforced GCL liner and the interface friction angle of the GCL to the textured HDPE liner were also analyzed. Test results pertaining to both of these parameters for the Bentomat ST product have been compiled. This information is summarized as follows:

Shear Strength Data of Bentomat ST as a Function of Overburden*

Overburden Stress (psf)	Internal Friction Angle (degrees)	Cohesion (psf)
<3000	34.9	280
>3000	24.5	450

* These values are an average of direct shear test data on hydrated bentonite.

Interface Shear Strength Data of Bentomat ST against a Textured Polyethylene Liner as a Function of Overburden*

Overburden Stress (psf)	Internal Friction Angle (degrees)	Cohesion (psf)
<1200	29.5	25
>1200	17.6	200

* These values are an average of direct shear test data on hydrated bentonite.

Static and pseudo-static analyses of the slope sections were performed using critical sections of the landfill geometry and the soil, geosynthetic, and waste parameters outlined previously. Static and pseudo-static slope stability analyses were completed using the computer program GSTABL7.

In order to estimate the potential amplification of the bedrock or “firm rock” acceleration of 0.41g as it travels up to the surface and then to the top of the landfill, the simplified approach developed by GeoSyntec (1994) was used. This method uses information from Sing and Sun (1995) and Kavazanjian and Matasovic (1995) in a three-step procedure to estimate the potential amplification. The three-step procedure is outlined as follows: 1) classify the soils in the top 100 feet; 2) estimate the free field peak ground surface acceleration; and 3) estimate the peak acceleration at the top of the landfill.

Based on the soil profile at TJL the upper 100 feet of material classifies as a medium stiff to stiff site (stiff to very dense soil according to IBC 2000). Therefore, the free field peak ground surface acceleration is assumed to be approximately equal to the peak bedrock acceleration and the maximum horizontal acceleration (MHA) at the ground surface is considered to be 0.41g using the analytical data from Kavazanjian and Matasovic (1994). Based on this information and an approximate fill height of 200 feet, the peak acceleration at the top of the Landfill was estimated to be 0.53g using the analytical data from and Singh and Sun (1995). Appropriately, an average acceleration of 0.47g was used in the stability and deformation analysis performed for the waste mass (Repetto et al., 1993).

Hynes and Franklin (1984) performed several Newmark seismic deformation analyses on embankments using 387 strong motion records and 6 artificial accelerograms. The analyses performed considered the yield accelerations (minimum acceleration to cause failure) of the slope sections evaluated by pseudo-static methods and compared them to the anticipated horizontal embankment accelerations. Based on these analyses performed by Hynes and Franklin, deformations are anticipated to be one foot or less if the yield acceleration is less than or equal to one-half the horizontal acceleration of the waste mass. Therefore, using a horizontal acceleration of 0.27g to obtain a pseudo-static factor of safety of 1.0 or greater indicates satisfactory performance of the waste mass under seismic conditions (deformation less than 1 foot).

7.1.2.6 Cell 6 Cut Slope Evaluation

IGES performed an updated evaluation of the proposed cut slopes at TJL associated with the development of Cell 6. The evaluation of the slope stability of excavated slopes was performed to increase the side slopes of the excavation from the permitted 3H:1V to a 2.5H: to 1V slopes. The analysis showed that the proposed excavation was stable. A copy of the Cell 6 Cut Slope Evaluation document is included in Appendix I – Geologic Map / Geotechnical Information.

7.1.2.7 Unstable Areas

An unstable area means “a location that is susceptible to natural or human induced events or forces capable of impairing the integrity of some or all of the landfill structural components responsible for preventing releases from a facility.” Unstable areas include poor foundation conditions or karst terrain resulting in excessive differential settlement, or areas susceptible to mass movement liquefaction.

The site is located on dense, alluvial deposits that are not susceptible to mass movement or liquefaction. Site borings indicate dense soils extend for sufficient depths such that excessive settlement of foundation soils will not occur. The Bingham Creek drainage is adjacent to the site; however, any surface water flows will not encounter planned excavations. The site is not located within a public watershed and no water retention facilities are located within a reasonable distance down gradient from the site.

7.1.3 Surface Water Requirements

UDEQ has adopted Subtitle D location restrictions for floodplains, and watersheds. The landfill site does not currently fall within a delineated 100-year flood zone. The scheduled cells are not located in a watershed for a public water system or a location that could cause contamination of a lake, reservoir, or pond.

7.1.3.1 Floodplain

The existing landfill is located adjacent to the 100-year floodplain of the Bingham Creek channel. The creek is dry year-round because of upstream watershed management performed by KUC. The facility, including all the future cell construction will not reduce or restrict the Bingham Creek drainage. The lined landfill area consists of the gently sloping (approximately 2%) eastward drainage plane located along the site's south boundary and bounded on the north by the unlined landfill.

Work related to contaminated soil removal in the Bingham Creek channel was completed by ARCO (west of the landfill) and KUC (north and east) in early 1996. As a result of the remediation work, the former channel was excavated and reconstructed using a uniform trapezoidal section. Flood routing analysis was performed for the reconstructed channel section and shows that for the 100-year, 24-hour flood, Bingham Creek flows would not inundate adjoining portions of either the unlined or lined landfill cells.

7.1.4 Wetlands

No new facility or lateral expansion of an existing facility shall be located in wetlands unless the owner or operator demonstrates to the Executive Secretary that:

- Where applicable under section 404 of the Clean Water Act or applicable state wetlands laws, the presumption that a practicable alternative to the proposed landfill is available which does not involve wetlands is clearly rebutted.
- The unit will not violate any applicable state water quality standard or Section 307 of the Clean Water Act.
- The unit will not jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of a critical habitat protected under the Endangered Species Act of 1973.
- The unit will not cause or contribute to significant degradation of wetlands. The owner or operator must demonstrate the integrity of the unit and its ability to protect ecological resources.

7.1.4.1 Trans-Jordan Landfill Status

There are no known or designated wetlands within the limits of the landfill boundary and this permit is does not include any expansion plans.

7.1.5 Groundwater Requirements

UDEQ location restrictions with respect to groundwater protection include the following:

- No new facility shall be located at a site where the bottom of the lowest liner is less than 5 feet above historical high level of groundwater in the uppermost aquifer.
- No new facility shall be located over a sole source aquifer as designated in 40 CFR 149.
- No new facility shall be located over groundwater classified as 1B under Section R317-6-3.3 (an irreplaceable aquifer).

- A new facility located above any aquifer containing groundwater which has total dissolved solids (TDSs) content below 1,000 milligrams per liter (mg/l) and does not exceed applicable groundwater quality standards for any contaminant is permitted only where the depth to groundwater is greater than 100 feet. For a TDS content between 1,000 and 3,000 mg/l, the separation must be 50 feet or greater. These separation distance requirements are waived if the landfill is constructed with a composite liner.
- No new facility shall be located in designated drinking water source protection areas or, if no such protection area is designated, within a distance to existing drinking water wells or springs for public water supplies of 250-day groundwater travel time.

7.1.5.1 Trans-Jordan Landfill Status

The lowest point of the bottom of the landfill cell is at least 250 feet above the highest observed groundwater elevation noted in the monitoring wells on and surrounding the site. The bottom liner will be the equivalent of a composite system, using a GCL overlain by a 60-mil HDPE membrane. Groundwater beneath the landfill area is not classified as a sole source or Class 1B (irreplaceable aquifer). A groundwater transport study was not conducted as part of this investigation. Based on this information the planned cell construction does meet the requirements of the groundwater protection location restrictions for new facilities and this permit does not include any expansion plans.

7.2 PHASED DESIGN - SCHEDULED LANDFILL DEVELOPEMENT

This permit application includes provisions for continuing the existing permitted operation on TJL owned land. The following sections discuss the development of the future Cell 6C and the incremental filling of the landfill Phase G and Phase H.

7.2.1 Estimated Life

The projected waste stream for TJL comes from the member cities, KUC, and the southern valley non-member municipalities. Only limited distinction is made in the records between residential and commercial waste disposal. A green waste bypass program coupled with recycling programs by the member cities will, to a limited extent, offset the population growth in the area. The anticipated future air space consumption has been evaluated based upon a 3% waste stream increase.

Volume calculations were based on the following assumptions. The quantity of municipal solid waste (MSW) weighed across the scale was approximately 420,000 tons in 2022, or approximately 1,360 tons per operational day. The life of the TJL facility; with the annual 3% increase in tonnage, is approximately 10 years. Appendix M – Landfill Life summarizes the remaining landfill life.

The landfill life projections are only estimates; the actual life of the landfill will depend on several variables including the actual rate of waste being delivered, densities, settlement, and the potential use of alternate daily cover material.

7.2.1.1 Phases A B, C, D, and E

TJL has brought Phases A, B, C, D, and E to completion and has installed final cover. These Phases have been capped with synthetic covers, landfill gas well systems installed, and final dirt work completed. Drawing 3 – Final Cover (Appendix A) indicate the location of the closed Phases.

7.2.1.2 Phase F

TJL has completed placing waste in the Phase F area and will install the final cover in 2023.

7.2.1.3 Phases G and H

Phase G and Phase H represent the final Phases for the TJL. The capacity of Phase G and Phase H is approximately 10 years or approximately 4.8 million tons of remaining MSW capacity.

7.3 CELL DESIGN

The design concept for the development of TJL includes one more cell (Cell 6C). The intent of the incremental development of the cells is to spread out the capital investments and minimize the area of the landfill that requires final cover.

The scheduled design allows for the development of future cell while providing soil for daily landfill operations and final cover construction. The approximate location of the remaining lined landfill cell (Cell 6C) is shown on Drawing 2 – General Arrangement (Appendix A).

A fundamental landfill design consideration is to minimize the conditions which are conducive to the generation of leachate. The composite liner system utilized at TJL helps to minimize the potential for leachate to migrate from the bottom of the landfill. The design concept provides for the free drainage of water away from the working face in every cell during each phase of construction and operation. A final, composite sloping soil cover system covering the completed cells will minimize long term rainfall infiltration. Long-term monitoring will be implemented to observe subsidence, and surface ponding and in-turn, reduce the potential for leachate development.

Secondary design considerations include balancing soil cut, fill, and stockpile requirements while maximizing the useable disposal space, current facility operational requirements, and long-term facility operational concerns. All soils generated from the on-site activities and all soils existing in stockpile locations are required to be used for the operations at TJL.

The final landfill cover will be seeded with drought resistant grasses and native vegetation as each of the cells are completed. The vegetative cover will minimize the water and wind erosion while visually allowing the landfill, once closed, to unobtrusively blend into the surrounding topography.

7.3.1 Phased Construction

Waste is placed in the current landfill closure Phase while cover soils are excavated from the ensuing Cell. Waste is currently being placed in Phase G with the daily and intermediate cover soils coming from the excavation of Cell 6C. Waste will continue to be placed in this manner from west to east. Sufficient soil will be stockpiled from the excavation of Cell 6C to provide adequate daily and intermediate cover. Soils for the final cover will come from previously stockpiled soils located to the south of landfill operations.

7.3.2 Arrangement

Several factors influenced the geometry of the lined landfill cells. The primary objective was to cost effectively maximize the volume of the landfill while minimizing visual and operational impacts. The height and footprint of the landfill are a result of a balance of these concerns. The depth of the landfill has been modified to accommodate leachate collection and to provide for the operational cover soils required. Expansion west is limited by the Utah Highway 111. Northward expansion is limited by the Bingham Creek Channel and property boundaries. Expansion to the east and south is also limited by property boundaries. Vertical expansion has been limited by visual impact considerations of raising the landfill too far above the surrounding terrain. No lateral expansion is planned for the TJL facility.

The crest of the landfill intentionally varies from a straight line, and the west to east slope of the crest varies, to lessen the "man-made" look. The cap will be constructed to maintain a minimum top slope of 3% for ease of construction but will have a greater maximum slope in most areas because the crest also slopes downward to the east. Around most of the landfill perimeter, a 4 horizontal to 1 vertical slope will extend downward from the final cap to the natural ground surface.

7.3.3 Liner

The landfill Cells are designed with environmental controls (both a composite liner and a leachate collection system) that are intended to protect surface water and groundwater from contamination. The previously approved composite liner system consists of (from the bottom up):

- Prepared subgrade foundation.
- A geosynthetic clay liner (GCL).
- A geomembrane liner (textured 60-mil HDPE).
- A geocomposite drainage layer (Drain-net).
- 12" screened soils.
- 24" general site soils.
- 6' select waste.

The select waste layer is specified to be placed directly over the 36" of protective soil as an additional protective measure for the liner components. The select waste is composed of sideloader waste (small residential waste) which by its nature is less likely to contain materials that could damage the liner.

This configuration was selected to provide a composite liner system that closely resembles the standard synthetic-over-clay composite liner system required by State of Utah Regulations (R315-303-4). This alternative liner system has been previously approved for use at TJL by the DWMRC.

The future landfill Cell 6C will be excavated to the contours indicated on the Drawing 2 – General Arrangement (Appendix A). Design drawings, specifications, and QA/QC packages will be submitted to DWMRC for review and approval prior to the construction of Cell 6C.

7.3.4 Fill Methods

TJL uses an area fill method. In the area fill method, an area is excavated and prepared as a lined landfill cell. During filling of each of the landfill phases, an adjacent area is excavated (for generation of cover soils) in preparation for the next lined cell such that the new cell is ready to receive waste as the previous phase nears capacity. The soils excavated during preparation of the new Cell are used as daily, intermediate, and final cover for the active landfill phase or placed in a soil stockpile for use in the future.

Once the liner system is installed, a 3-foot-thick layer of protective soil is placed over the drain net (upper layer of the liner system) to protect the entire liner system. The 1-foot-thick layer of soil will be placed on the side slopes incrementally as the waste depth increases. The first solid waste placed in a newly constructed landfill phase will be "select waste" placed in a layer approximately 6 feet thick. This material will also be placed as the first layer against the protective soil cover on the side slopes. Large objects will be removed from the deposited waste and the solid waste will be compacted as a single lift to provide an 8-foot-thick protective working surface over the liner and leachate collection systems. The Operation Plan (Section 3) details the criteria used and the select waste placement process in greater detail.

The filling of each of the lined cells will be accomplished in typically 250-foot wide, 17- foot deep and 8-foot-high daily modules. The sequence will generally proceed west to east and north to south within the cells. A 6-inch-thick soil layer (or approved alternate daily cover) will be placed over completed daily modules, isolating each day's waste placement within individual cells. The surface of the outside (eastern) face of the cell will be covered with a 12-inch-thick compacted intermediate soil cover sloped to drain storm water away from the landfill modules and to prevent the ponding of precipitation over in- place waste. The actual geometry (height, width, and length) of the daily operating modules will vary daily due to the total tonnage of waste handled, number of vehicles requiring site access, and weather conditions.

7.3.5 Daily, Intermediate, and Final Cover

7.3.5.1 Daily and Intermediate Soil Cover

Daily cover soils must meet the 6-inch State requirements for protection against odors, litter, and vectors. The daily 6-inch-thick cover will typically be obtained from the excavation of cells being developed for future disposal operations.

Intermediate cover soil requirements are governed by R315-303-4. The outside face of the daily modules and waste areas that are expected to remain inactive for more than 30 days will be protected with a 12-inch intermediate cover. The borrow area for intermediate cover soils is the same for daily cover soils. Based upon the nature of available soil at TJL crushing and screening of on-site soils is not required.

Before the start of waste placement each day, cover soils on top of the previous lift will be stripped back and stockpiled for reuse as soil cover at the end of the day or as needed. These recycled cover soils will be used first; the remainder of daily cover soils will be provided from cell excavation or stockpiled soils.

7.3.5.2 Alternate Daily Cover

TJL has not historically utilized alternate daily cover materials. Due to the nature of the landfilling operation; TJL proposes to utilize the following alternative daily cover materials as the need arises:

- Wood chips – The wood chips created from the grinding of green waste. As wood chips are produced from the grinding operations, some of the chips are utilized at the TJL facility for landscaping with the rest being sold to the public as part of the composting operation. Periodically, the timing of the compost process may result in the generation of excess wood chips. These wood chips may be utilized as an alternative daily cover to minimize the size of the wood chip stockpile.

7.3.5.3 Final Cover

TJL will initiate the placement of the final cover system within 180 days after the disposal ceases in each of the closure phases. Final cover construction will be completed within 180 days after initiation.

TJL is scheduled to construct the composite final cover over the remaining area of the landfill in a series of 3 closure phases; Drawings 3 – Final Cover (Appendix A) show the extent of each of the remaining closure phases.

The composite final cover system will consist of (from the bottom up):

- Minimum of 12-inches of intermediate cover soils.
- Geosynthetic Clay Liner (GCL).

- 60-mil High Density Polyethylene (HDPE) Liner.
- Geocomposite (drainage net sandwiched between unwoven geotextiles).
- A 36-inch protective soil layer, the upper of 6 inches of which will consist of compost enriched site soils suitable for plant growth.

The composite final cover system will minimize surface water infiltration (thereby minimizing leachate generation), gas migration, maintain slope stability, control surface water and erosion, and be capable of supporting vegetative cover. The vegetative cover has been selected with shallow root systems to prevent penetration into the drainage layer or geocomposite. The vegetative cover system is described in detail in Section 4.

The composite final cover design allows for natural water shedding during a normal rainfall or snowmelt with little infiltration into the drainage layer. However, in the case of a temporary low spot created by landfill settlement or during periods of unusually high precipitation, water may infiltrate to the horizontal drainage layer. The geonet geocomposite drainage layer will transport the infiltrated water to the perimeter drain at the edge of the landfill. The perimeter drain will be connected to the stormwater run-off system beyond the final cover perimeter. Surface water runoff will be systematically routed to drop structures for conveyance to the perimeter ditches located outside the final cover.

7.3.5.4 Elevations of Bottom Liner and Final Cover

As illustrated on the Drawings in Appendix A, the bottom liner has been designed to be installed at an approximate elevation of between 5,080 and 4,980 feet above mean sea level (msl). The bottom elevation of each cell varies (lower) by several feet proceeding east to accommodate leachate flow. The final cover elevations are also presented on the conceptual drawings and vary between 5,040 and 5,230 feet.

7.4 MONITORING SYSTEM - LINED AND UNLINED LANDFILL

7.4.1 Groundwater Monitoring System

The groundwater monitoring system that has been monitored since March of 1994 is no longer functional. All five (5) wells have become dry, the Modified Corrective Action Plan in Appendix C summarizes the changes in the groundwater monitoring at TJL.

7.4.2 Leachate Collection and Evaporation Pond

Among the possible problems created by waste storage in any landfill is the possible contamination of soil and surface or groundwater from water passing through the waste. Due to low precipitation and high evapotranspiration rates associated with the semi-arid climate in the Salt Lake Valley, the quantity of water infiltrating the landfill is predicted to be small and subsequent leachate generation low. The landfill cover is designed to minimize infiltration and promote runoff, and further, liquid waste is not allowed in the landfill. Leachate that is generated will be collected by the leachate collection and evaporation pond system (LCEP).

The LCEP system consists of a geocomposite drainage material to provide lateral drainage of leachate directly above the liner system. The geocomposite will be placed over the entire bottom of the lined landfill cell. The grades and materials of the LCEP will be designed to maintain functions during landfilling operations. The geocomposite is designed to limit leachate depths on the liner to less than one foot, even when clogged by sediments and biofouling that has been observed at other facilities.

The LCEP system, as designed, is in operation within all lined cells. The design appears to function as intended and no operational problems have been experienced with the design to date. Cell 4 construction at TJL incorporated a leachate collection pipe and pump system to enhance the removal of leachate from the liner. The liquid is pumped, within the lined area, of phase C. The leachate collection and header pipe are oversized to allow for periodic maintenance cleaning.

The bottom of the future lined cell will be graded to provide a minimum slope of 2% from the highest point of the graded bottom to the lowest point (west to east). A temporary leachate collection/evaporation pond is designed to be located at the east end of each of the lined landfill cells. As design capacity is reached in each cell, these temporary ponds are abandoned and become part of the next cell. A permanent sump will be established in the lowest lined area of the landfill with the leachate being pumped to a permanent evaporation pond located over the lined landfill area. Any leachate that is collected in the collection pond will be evaporated, circulated, or delivered to a POTW for proper handling.

7.4.3 Landfill Gas

The decomposition of solid waste produces methane, a potentially flammable gas. The accumulation of methane in site structures can result in fire and explosions that can injure employees and property, users of the landfill, and occupants of nearby structures. In accordance with Subtitle D and Utah rules, TJL conducts subsurface and facility structure gas monitoring at least quarterly for methane detection. The concentration of methane gas generated by the landfill must not exceed 25% of the lower explosive limit (LEL) in the facility structures (excluding gas control or recovery system components). The concentration of methane gas generated by the landfill must not exceed the LEL at the facility boundary. As outlined in EPA Subtitle D, Subpart C, and the State of Utah Regulations, TJL will take all necessary steps to protect human health and will immediately notify UDEQ of methane levels detected above required limits and actions taken, if any. Within 10 days of an incident, TJL will place documentation of the methane gas levels detected and a description of the interim steps taken to protect human health in the operating record. Within 60 days of detection, TJL personnel will implement a remediation plan for the methane gas releases, place a copy of the plan in the operating record, and notify UDEQ that the plan has been implemented. The remediation plan will describe the nature and extent of the problem and describe the proposed remedy.

The cover soils for the Trans Jordan Landfill site is predominantly silty to clayey gravels and sands of sufficient porosity such that the small amount of methane which may be produced would typically exit through a soil cover. The inclusion of a 60 mil HDPE membrane in the final cap will minimize the potential for landfill gas emissions. The final cover at the TJL has a gas collection system installed and operating in all closed Phases of the final cover. The landfill gas collection wells are interconnected, and all condensate is reinjected into the closed and active cells and the gas is transported a Gas to Energy Facility operated by EDL of South Jordan. Any non-utilized gas is sent to a methane flare located within TJL.

A copy of TJL's Title V Operating Permit is included as Appendix N - Title V Operating Permit.

7.5 DESIGN AND LOCATION OF RUN-ON/RUN-OFF CONTROL SYSTEMS

The main objectives of surface water management for the landfill is to provide landfill drainage and to prevent off site run-on, preventing unnecessary surface water infiltration and subsequent leachate production; to contain surface runoff from open areas on-site; and to prevent erosion. Federal regulations require: 1) A run-on control system to prevent flow onto the active portion of the landfill during the peak discharge from a 24-hour, 25-year storm; and 2) Run-off control system from the active portion of the landfill to collect and to control at least the water volume resulting from a 24-hour, 25-year storm.

7.5.1 Run-On from a 24-Hour, 25-Year Storm

Due to the location of the TJL facility; there is no potential for run-on. TJL is located higher than the topography to the north, south and east with U-111 providing a drainage break to the west. The only surface water that will require some management is the small volume of storm water run-on that is generated from the site landscape berms.

7.5.2 Run-Off from a 24-Hour, 25-Year Storm

The 25-year, 24-hour storm potential precipitation is 2.69 inches based on information from the Utah Climate Center. This precipitation level was used to size the perimeter channels and detention pond. Also, the final cover will consist of a geomembrane underlying a drain net that will capture any infiltration and direct it into the channels to be managed as run-off. This additional potential flow was considered into the design of the channels and detention areas by increasing run-off values. Realistically, run-off through the drain net will only occur if the storage capacities of the cover soils are exceeded, which would be rare for this type of climate.

Run-off from the final cover will be directed by ditches along the perimeters of the landfill site into a detention basin at the northeast corner of the landfill. The ditches will begin at the west end of the landfill with one ditch circling around the north end of the landfill and the other circling around the south. Using a curve number of 95, type II rainfall and a time of concentration of 42 minutes, with the TR55 computer software, peak flows were obtained for the perimeter drainage channels. A curve number of 95 was selected to represent a higher run-off and a more conservative design. Appendix L – Storm Water Calcs present the runoff calculations.

A value of 0.03 was used for Manning's coefficient of channel roughness, representative of a vegetated channel. The channels will collect the runoff from the side slopes, water transported through the drain net and run-off collected from the flatter sloped top. The top of the cover is variable sloped with an approximately 10 horizontal to 1 vertical (10:1) average. Surface runoff from this area will be diverted by a berm and collected at several locations and dropped into pipes that will carry the flows down the hill into the perimeter channels at the base of the landfill cover.

When the landfill nears closure, a final design of the channels, drop structures, detention basin and erosion protection will be performed. At this time the use of swales, wattles, erosion control mats and other detail items will be assessed and incorporated into the design. Soil loss potential, flow velocities and other design parameters will be used in this assessment.

A permanent stormwater pond will collect and store the storm waters (run-off) derived from direct precipitation on and around the landfill. These waters will be stored in the detention basin until evaporated. Drawing 2 (General arrangement) details the location of the permanent stormwater pond.

7.5.2.1 Run-off from Active Cells

Direct precipitation within the operating cells over the existing landfill will not be allowed to pond on or against any waste disposal areas. This will be accomplished by sloping the daily and intermediate soil covers away from the working face and toward the LCEP. Direct precipitation within the operating cells of the existing operations will be conducted away from the working disposal areas by using a combination of a 2% eastward sloping cell bottom, and daily and intermediate soil covers. Precipitation coming into direct contact with the open landfill face will be directed to the lined evaporation pond/detention basins at the east end of each cell. Each detention basin is designed to hold all the storm water runoff for the active waste disposal areas of the lined cells. The detention basins capacities are sized to manage the runoff from a 25-year, 24-hour storm event. Open faces during days of precipitation will be kept to an absolute minimum size.

7.6 CLOSURE SCHEDULE

Closure will occur incrementally. Each Landfill Phase will be closed once it has been filled to design capacity. The following table summarizes by landfill phases the remaining landfill capacity and projected dates of service starting from May 1 of 2004:

Landfill Phase	Remaining Volume (cubic yards)	Remaining Capacity (tons)	Date of Completion
Phase A	Complete	Complete	2004
Phase B	Complete	Complete	2005
Phase C	Completed	Completed	2008

Phase D	Completed	Completed	2013
Phase E	Completed	Completed	2020
Phase F	Completed	Completed	2022
Phase G and Phase H	8,600,000	4,800,000	2032

The remaining landfill life is presented in Appendix N – Landfill Life. When closure of Phase H is completed, TJL shall submit the following to the Executive Secretary:

- As-built unit closure plan sheet(s) signed by a professional engineer registered in the State of Utah.
- Certification by Trans-Jordan and a professional engineer registered in the State of Utah that the site has been closed in accordance with the approved closure plan.
- Closure plans and certification of closure will be submitted with the closure of each Landfill Phase.

7.7 POST - CLOSURE LAND USE - EXISTING AND SCHEDULED LANDFILL OPERATIONS

TJL staff or a TJL contractor will design a post-closure end use plan for the landfill at the time of final closure. TJL will select an end use that will be limited to those that do not threaten the integrity of the existing control systems. All closure activities will be designed to be consistent with surrounding land use. Typical end uses range from recycling operations (which complement existing operations) to recreational activities. Since the closure of the site is 10 years away, it is not currently possible to develop those land use plans to be consistent with surrounding land uses and the needs of the area that may be relevant at that future time. Appendix H - Future Land Use indicates the anticipated master plan for the land surrounding TJL.

7.8 FINANCIAL ASSURANCE

7.8.1 Closure Costs

Cost estimates have been developed for the closure Phases at TJL. Appendix O – Closure & Post Closure Costs contains the most recent Closure cost data for the TJL. Closure costs are updated each year and submitted with the Annual Report.

7.8.2 Post-Closure Care Costs

Cost estimates have been developed for the Post-Closure care period at TJL. Appendix O – Closure & Post Closure Costs contains the most recent Post-Closure cost data for the TJL. Post-Closure costs are updated each year and submitted with the Annual Report.

7.8.3 Financial Assurance Mechanism

TJL maintains a trust agreement with Zion's Bank to cover the financial assurance requirements of the TJL. Appendix P – Financial Assurance contains a copy the account statement for TJ.

SECTION 8 - REFERENCES

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1995.

APPENDICES

RECEIVED
By Division of Waste Management and Radiation Control at 2:57 pm, Jul 14, 2022

IGES
2702 South 1030 West, Suite 10, Salt Lake City, Utah 84119
Ph: 801.270.9400 Fax: 801.270.9401

TRANSMITTAL

TO: Doug Hansen Utah Division of Waste Management and Radiation Control 195 North 1950 West Salt Lake City, Utah 84116	DATE: 7/14/22 IGES JOB #: 00102-014 SENT VIA: Email

We are sending you the following:

Copies	Date	Description
1	7/14/22	2022 Trans Jordan Landfill Repermit Application (Appendix I)

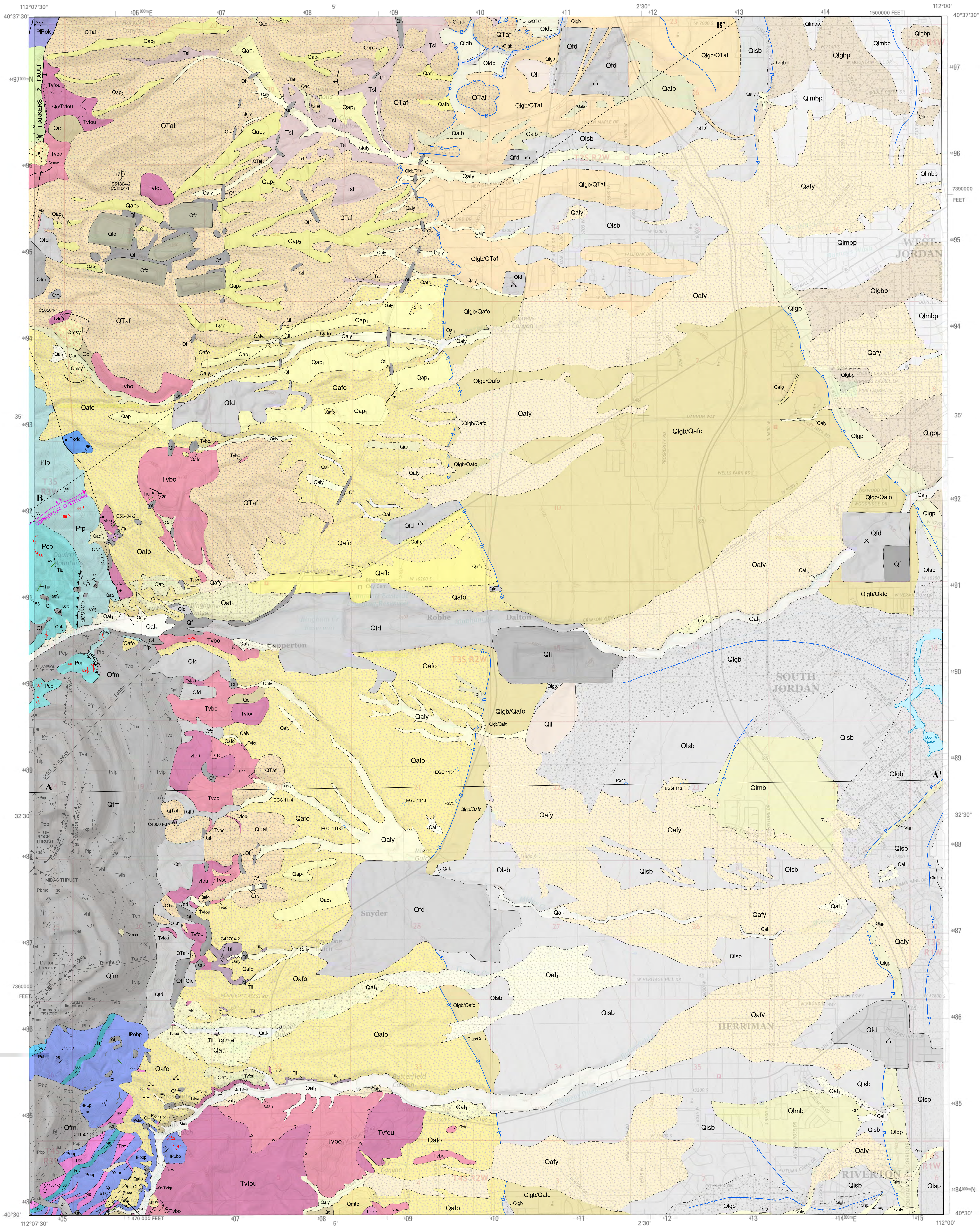
x	For approval		Approved as submitted		Resubmit		Copies for approval
	For your use		Approved as noted		Submit		Copies for distribution
	As requested		Returned for corrections		Return		Corrected prints
	For your review and comment		Other				

Remarks:
Attached is Appendix I of the 2022 Trans Jordan Landfill Repermit Application.

SIGNED: Brett Mickelson

APPENDIX I – Geologic Map / Geotechnical Information

UTAH GEOLOGICAL SURVEY
a division of
Utah Department of Natural Resources

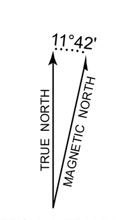


Although this product represents the work of professional scientists, the Utah Department of Natural Resources, Utah Geological Survey, makes no warranty, expressed or implied, regarding its suitability for a particular use, and does not guarantee accuracy or completeness of the data. The Utah Department of Natural Resources, Utah Geological Survey, shall not be liable under any circumstances for any direct, indirect, special, incidental, or consequential damages with respect to claims by users of this product. Geology intended for use at 1:24,000 scale.

This geologic map was funded by the Utah Geological Survey and the U.S. Geological Survey, National Cooperative Geologic Mapping Program through USGS STATEMAP award number 04HQAG0040. The views and conclusions contained in this document are those of the authors and should not be interpreted as necessarily representing the official policies, either expressed or implied, of the U.S. Government.

This map was created from geographic information system (GIS) files and meets formal Utah Geological Survey GIS and cartographic standards for publication.

Persons or agencies using these data specifically agree not to misrepresent the data, nor to imply that changes they made were approved by the Utah Geological Survey, and should indicate the data source and any modifications they make on plots, digital copies, derivative products, and in metadata.



APPROXIMATE MEAN DECLINATION, 2018

SCALE 1:24,000
1 0.5 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 0.5 0 1 KILOMETER
CONTOUR INTERVAL 20 FEET

GEOLOGIC MAP OF THE COPPERTON QUADRANGLE, SALT LAKE COUNTY, UTAH (GIS REPRODUCTION OF 2007 MAP)

by
Robert F. Biek[1], Barry J. Solomon[1], Tracy W. Smith[2], and Jeffrey D. Keith[3]
2018

[1]Utah Geological Survey, P.O. Box 146100, Salt Lake City, UT 84114-6100
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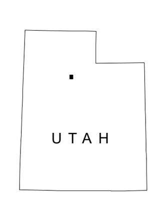

QUADRANGLE LOCATION

Base from USGS Copperton 7.5' Quadrangle (2017). Projection and datum for base map and GIS data are UTM NAD83. To conform to adjoining geologic maps, the geology is mapped to the 7.5' boundary of older UTM NAD 27 base maps; this explains the visible shift between geology and base map. The geology is accurately shown relative to cultural and topographic features on the US Topo base map.
Projection: UTM Zone 12
Datum: NAD 1983

Project Manager: Grant C. Willis
GIS and Cartography: Martha Jensen, Lori J. Steadman, and Kent D. Brown

Utah Geological Survey
1594 West North Temple, Suite 3110
Salt Lake City, UT 84116
(801) 537-3300
geology.utah.gov

1	2	3
4		5
6	7	8

1. Farnsworth Peak
2. Magna
3. Salt Lake City South
4. Bingham Canyon
5. Midvale
6. Lowe Peak
7. Tickville Spring
8. Jordan Narrows

ADJOINING 7.5' QUADRANGLE NAMES

ISBN 1-55791-738-8

UTAH GEOLOGICAL SURVEY
a division of
Utah Department of Natural Resources

MAP UNIT DESCRIPTIONS

QUATERNARY

Alluvial deposits

Qal1 **Modern stream deposits** (Holocene) – Moderately to well-sorted sand, silt, clay, and pebble to boulder gravel in active stream channels and flood plains; locally includes small alluvial-fan and colluvial deposits, and minor terraces up to 10 feet (3 m) above current base level; equivalent to the younger part of Qaly, but differentiated where deposits can be mapped separately; mapped principally along the larger streams, including Barneys, Bingham, Butterfield, and Midas Creeks, Copper Gulch, and Barneys Wash; generally 0 to 20 feet (0-6 m) thick.

Qat1, Qat2 **Stream-terrace deposits** (Holocene to middle Pleistocene) – Moderately to well-sorted sand, silt, clay, and pebble to boulder gravel that forms level to gently sloping terraces incised by modern streams; subscript denotes relative height above modern stream channels; level-1 deposits are 10 to 30 feet (3-10 m) above modern drainages and are found along Butterfield Creek, Copper Gulch, and Bingham Creek; level-2 deposits are greater than 30 feet (10 m) above modern drainages and are mapped at the mouths of Butterfield and Bingham Canyons; deposited in stream channels and flood plains; older terraces may include a loess veneer; generally 0 to 20 feet (0-6 m) thick.

Qaly **Young alluvial deposits** (Holocene to upper Pleistocene) – Moderately sorted sand, silt, clay, and pebble to boulder gravel deposited in stream channels and flood plains; includes abandoned alluvial flood plains that postdate the Bonneville shoreline of latest Pleistocene Lake Bonneville, which occupied the valley from about 32,500 to 11,600 calendar years B.P. (calendar-calibrated ages from D.R. Currey, University of Utah, written communication to Utah Geological Survey, 1996); the alluvial deposits are incised by active stream channels, and locally include small alluvial-fan and colluvial deposits; equivalent to modern stream deposits (Qal1) and older, post-Lake Bonneville stream deposits that are undifferentiated because units are complexly overlapping; mapped along streams draining the Oquirrh and Traverse Mountains; probably less than 20 feet (6 m) thick.

Qalb **Alluvial deposits related to the Bonneville (transgressive) phase of the Bonneville lake cycle** (upper Pleistocene) – Moderately sorted sand, silt, and pebble to boulder gravel deposited by streams graded to shorelines of the transgressive phase of Lake Bonneville; incised by active streams; mapped east of Clay Hollow and in small, unnamed drainages south of Bingham Creek; about 20 feet (6 m) thick.

Qaf1 **Modern alluvial-fan deposits** (Holocene) – Poorly to moderately sorted, weakly to non-stratified, clay- to boulder-size sediment deposited principally by debris flows at the mouths of small, active drainages; upper parts characterized by abundant boulders and debris-flow levies that radiate away from the fan apex; equivalent to the younger part of Qafy but differentiated where deposits can be mapped separately; generally less than 30 feet (9 m) thick.

Qafy **Younger alluvial-fan deposits** (Holocene to upper Pleistocene) – Poorly to moderately sorted, weakly to non-stratified, clay- to boulder-size sediment deposited principally by debris flows, debris floods, and streams; commonly obscures Lake Bonneville shorelines, and is equivalent to modern and level-2 alluvial-fan deposits (Qaf1 and Qaf2) that are undifferentiated because units are complexly overlapping or too small to show separately (level-2 alluvial-fan deposits are not recognized in the quadrangle, but are mapped in the adjacent Tickville Spring quadrangle [Biek and others, 2005]); upper parts of fans are locally deeply incised; mapped near the margins of the Oquirrh and Traverse Mountains, and extending as much as 3 miles (5 km) from the Oquirrh Mountains where major drainages incise Lake Bonneville deposits beyond the range front; probably less than 40 feet (12 m) thick.

Qafb **Alluvial-fan deposits related to the Bonneville (transgressive) phase of the Bonneville lake cycle** (upper Pleistocene) – Poorly to moderately sorted, clay- to cobble-size sediment deposited principally by debris flows on fan surfaces graded to the Bonneville shoreline; incised by active streams; mapped near Bingham Creek and Clay Hollow where the unit may locally include topset beds of deltaic deposits related to the transgressive phase of Lake Bonneville (Qldb); probably less than about 40 feet (12 m) thick.

Qafo **Older alluvial-fan deposits** (upper to middle Pleistocene) – Poorly to moderately sorted, weakly to non-stratified, clay- to boulder-size sediment deposited principally by debris flows; mapped as part of the Harkers fanglomerate by Slentz (1955); forms deeply dissected alluvial apron on piedmont slopes of the Oquirrh Mountains north of the Traverse Mountains; older alluvial-fan deposits are truncated by, and thus predate, the Bonneville shoreline; underlies piedmont slopes below the Bonneville shoreline beneath a thin veneer of lacustrine deposits; locally contains thin, white to light gray volcanic ash; may be undifferentiated from underlying Quaternary to Tertiary alluvial-fan deposits where mapped in deeply incised stream channels; late to middle Pleistocene age is suggested by development of stage II to III calcic paleosols on fan surfaces, characterized by calcium-carbonate coatings on clasts in a loose matrix with dispersed calcium carbonate; exposed thickness as much as 150 feet (45 m).

Qap1, Qap2 **Pediment-mantle alluvium** (upper to middle Pleistocene) – Poorly to moderately well-sorted sand, silt, clay, and pebble to boulder gravel that forms a thin veneer on gently sloping erosional surfaces; subscript denotes relative height above modern stream channels; level-1 deposits are less than 100 feet (30 m) above modern drainages and are mapped near Barneys Canyon, overlying Qafo, and near Clay Hollow in the northwest corner of the quadrangle, overlying the Tertiary Salt Lake Formation (Tsl) and QTaf; level-2 deposits are as much as 300 feet (90 m) above modern drainages and are mapped overlying QTaf at the foot of the Oquirrh Mountains from Barneys Canyon northward to Harkers Canyon in the adjacent Magna quadrangle (Solomon and others, in press); level-1 deposits are younger than level-2 deposits, grade to the Bonneville shoreline, and are equivalent to pediment number 3 of Slentz (1955); level-2 deposits are equivalent to both pediment numbers 1 and 2 of Slentz (1955), which are approximately the same age and are assigned to the same unit on our map; as much as about 15 feet (5 m) thick.

Artificial deposits

Qf **Artificial fill** (historical) – Engineered fill used in the construction of road and railroad embankments crossing drainages in the Oquirrh Mountains foothills, and for the Barneys Canyon heap-leach operation; a large area of fill is also mapped south of the Old Bingham Highway at the east edge of the quadrangle; unmapped fill may be present in any developed area; typically less than about 40 feet (12 m) thick.

Qfd **Disturbed land** (historical) – Land disturbed by sand, gravel, aggregate, and mining and mining reclamation operations; only the larger operations are mapped and their outlines are based on aerial photographs taken in July and October 1997; land within these areas contains a complex, rapidly changing mix of cuts and fills; most operations along the Oquirrh Mountains range front between Barneys and Harkers Canyon are extracting material from Quaternary and Tertiary alluvial-fan deposits (QTaf) beneath a thin cover of Lake Bonneville sediments and some contain excellent exposures of the underlying Jordan Narrows unit of the Tertiary Salt Lake Formation (Tsl); the operation northeast of Copperton near the New Bingham Highway (State Route 48) has exposed a thick sequence of topset and foreset beds related to the Bonneville (transgressive) phase of the Bonneville lake cycle; the large area in section 28, T. 3 S., R. 2 W., just east of the old Lark townsite, is an old mine tailings area.

Qfl **Landfill** (historical) – The Trans-Jordan Sanitary Landfill is an active disposal site for municipal waste and other debris, placed in an abandoned sand and gravel pit south of Bingham Creek near the center of the quadrangle; variable thickness up to several tens of feet.

Qfm **Mine Dumps** (historical) – Extensive deposits of waste rock from the Kennecott Copper mine are present along the Oquirrh Mountains front from Butterfield Canyon to Bingham Canyon; variable thickness up to several hundred feet (100+ m).

Qfo **Ore leach piles** (historical) – Ore from the Barneys Canyon and Melco mines that is part of a leach-pad operation at the mouth of Barneys Canyon; overlies engineered, lined pads; ore piles generally 100 to 150 feet (30-45 m) thick.

Colluvial deposits

Qc **Colluvial deposits** (Holocene to upper Pleistocene) – Poorly to moderately sorted, angular, clay- to boulder-size, locally derived sediment deposited by rock fall, slopewash, and soil creep on moderate slopes and in shallow depressions; most bedrock is covered by at least a thin veneer of colluvium, and only the larger, thicker deposits are mapped; maximum thickness about 20 feet (6 m).

Lacustrine deposits

Regressive-phase deposits of the Bonneville lake cycle.

Qlgp **Lacustrine gravel and sand related to the Provo (regressive) phase of the Bonneville lake cycle** (upper Pleistocene) – Moderately to well-sorted, moderately to well-rounded, clast-supported, pebble to cobble gravel and pebbly sand deposited at and below the Provo shoreline; thin to thick bedded; typically interbedded with, or laterally gradational to, lacustrine sand and silt; gastropods locally common in sandy lenses; locally partly cemented with calcium carbonate. Lake Bonneville occupied the Provo shoreline from about 16,800 to 13,500 calendar years B.P. (calendar-calibrated age for the start of the Provo shoreline from D.R. Currey, University of Utah, written communication to Utah Geological Survey [1996]; calendar-calibrated age for the end of the Provo shoreline obtained from data in Godsey and others [2005]) (table 1). The most extensive deposits form beaches along the Provo shoreline; forms cuspate barrier beach formed by converging currents of Lake Bonneville, called V-bars by Gilbert (1890), along the Provo shoreline; Eardley and others (1957) named the largest the "Evaporating Ponds spit" because it was once used by Kennecott Utah Copper as containment for an evaporating pond; this barrier beach lies mostly in the adjacent Midvale quadrangle (Davis, 2000), where Currey (1982) measured the altitude of the Provo shoreline at about 4813 feet (1467 m), but the gravelly northern limb extends into the eastern edge of the Copperton quadrangle in South Jordan; as much as 25 feet (8 m) thick.

Qlsp **Lacustrine sand and silt related to the Provo (regressive) phase of the Bonneville lake cycle** (upper Pleistocene) – Fine- to coarse-grained lacustrine sand and silt with minor gravel deposited at and below the Provo shoreline; grades downslope to finer grained Lake Bonneville deposits; typically thick bedded and well sorted; gastropods locally common; forms the south limb of the large cuspate barrier beach in South Jordan and additional deposits downslope; as much as 50 feet (15 m) thick.

Transgressive-phase deposits of the Bonneville lake cycle.

Qlgb **Lacustrine gravel and sand related to the Bonneville (transgressive) phase of the Bonneville lake cycle** (upper Pleistocene) – Moderately to well-sorted, moderately to well-rounded, clast-supported, pebble to cobble and rare boulder gravel and pebbly sand deposited between the Bonneville and Provo shorelines; thin to thick bedded; typically interbedded with, or laterally gradational to, lacustrine sand and silt; gastropods locally common in sandy lenses; locally partly cemented with calcium carbonate; forms a beach intermittently along the Bonneville shoreline at elevations between about 5175 to 5200 feet (1580-1585 m) near the base of the Oquirrh Mountains; also forms large spits south of Bingham Creek and north of Rose Creek, and small barrier beaches on deltaic deposits between Clay Hollow and Harkers Canyon. Lake Bonneville rose to its highest level, the Bonneville shoreline, about 18,000 calendar years B.P. (D.R. Currey, University of Utah, written communication to Utah Geological Survey, 1996), and overflowed its threshold intermittently until about 16,800 calendar years B.P. when the threshold failed and the lake fell to the Provo level (table 1). Thickness uncertain, but likely less than about 40 feet (12 m).

Qlsb **Lacustrine sand and silt related to the Bonneville (transgressive) phase of the Bonneville lake cycle** (upper Pleistocene) – Fine- to coarse-grained lacustrine sand and silt with minor gravel deposited between the Bonneville and Provo shorelines; grades downslope to finer grained Lake Bonneville deposits; typically thick bedded and well sorted; gastropods locally common; forms extensive deposits in the east part of the quadrangle; as much as 50 feet (15 m) thick where sand and silt fill paleotopographic lows east of Clay Hollow, but thinner elsewhere.

Qlmb **Lacustrine silt and clay related to the Bonneville (transgressive) phase of the Bonneville lake cycle** (upper Pleistocene) – Calcareous silt, clay, and minor fine-grained sand deposited between the Bonneville and Provo shorelines; typically laminated or thin bedded; grades upslope into lacustrine sand and silt; mapped between Bingham Creek and Riverton in the southeast part of the quadrangle; the thickness of this unit cannot be determined from map relationships, but the expected maximum thickness is about 50 feet (15 m).

Qldb **Deltaic deposits related to the Bonneville (transgressive) phase of the Bonneville lake cycle** (upper Pleistocene) – Moderately to well-sorted, moderately to well-rounded, clast-supported, pebble and cobble gravel in a sand matrix; thin to thick bedded; locally partly cemented with calcium carbonate; mapped at the mouths of some abandoned drainages between Clay Hollow and Harkers Canyon; commonly associated with small gravel barrier beaches (Qlgb) at and slightly below the Bonneville shoreline; may include topset alluvium undifferentiated at the map scale; maximum thickness about 40 feet (12 m).

Undivided deposits of the Bonneville lake cycle.

Qlgbp **Lacustrine gravel and sand of the Bonneville lake cycle, undivided** (upper Pleistocene) – Moderately to well-sorted, moderately to well-rounded, clast-supported, pebble to cobble gravel and pebbly sand; deposited at and below the Provo shoreline, where transgressive- and regressive-phase deposits cannot be differentiated and deposits cannot be directly correlated with regressive-phase shorelines; thin to thick bedded; typically interbedded with, or laterally gradational to, lacustrine sand and silt; locally partly cemented with calcium carbonate; mapped north of Bingham Creek in the northeast part of the quadrangle; may be as much as 75 feet (25 m) thick.

Qlmbp **Lacustrine silt and clay of the Bonneville lake cycle, undivided** (upper Pleistocene) – Calcareous silt, clay, and minor fine-grained sand deposited below the Provo shoreline; typically laminated or thin bedded; ostracodes locally common; grades upslope into lacustrine sand and silt; mapped in the east part of the quadrangle; may be as much as 75 feet (25 m) thick.

Qll **Lagoon-fill deposits** (upper Pleistocene) – Silt and clay, with minor fine-grained sand and pebbles; underlies level, grass-covered fields in closed depressions behind Lake Bonneville barrier beaches formed during the transgressive phase of Lake Bonneville; mapped south of Bingham Creek near the center of the quadrangle; maximum thickness about 20 feet (6 m).

Mass-movement deposits

Qmsh **Historical landslide deposits** (historical) – A small landslide in mine-dump deposits above Keystone Gulch; maximum thickness about 20 feet (6 m).

Qmsy **Younger landslide deposits** (historical to upper Pleistocene) – Very poorly sorted, clay- to boulder-size gravel in a matrix of silt, sand, clay, and pebbles; grain size and texture varies with the nature of the deposits in the source area; mapped in the Barneys Canyon area and in Butterfield Canyon; surfaces of rupture are in older block and ash flow tuff (Tvbo) and lava flows (Tvfou) and older alluvial-fan deposits (Qafo); younger landslide deposits are characterized by moderately subdued landslide features suggestive of Holocene or late Pleistocene age; older landslide deposits are not recognized in this quadrangle, but are mapped in the Traverse Mountains to the south (Biek and others, 2005; Biek, 2005a, 2005b); thicknesses of the deposits are highly variable.

Qmfh **Debris-flow deposit** (historical) – Very poorly sorted, subangular, cobble- to boulder-size gravel in a matrix of silt, sand, clay, and pebbles; derived from mine-dump deposits and mapped in the upper reaches of Castro Gulch; probably less than 10 feet (3 m) thick.

Mixed-environment deposits

Qac **Alluvial and colluvial deposits** (Holocene to upper Pleistocene) – Poorly to moderately sorted, generally poorly stratified, clay- to boulder-size, locally derived sediment deposited in swales, small drainages, and the upper reaches of larger ephemeral streams by fluvial, rock-fall, slopewash, and creep processes; mapped in a few drainages north of Bingham Canyon; generally less than 30 feet (9 m) thick.

Qaco **Older alluvial and colluvial deposits** (upper to middle Pleistocene) – Poorly to moderately sorted, generally poorly stratified, clay- to boulder-size, locally derived sediment deposited in swales, small drainages, and the upper reaches of larger ephemeral streams by fluvial, rock-fall, slopewash, and creep processes; forms isolated remnants deeply incised by adjacent streams in the southwest part of the quadrangle; generally less than 30 feet (9 m) thick.

Qmtc **Talus and colluvial deposits** (Holocene to middle Pleistocene) – Very poorly sorted, angular to subangular cobbles and boulders and finer grained interstitial sediment deposited principally by rock fall and slopewash on and at the base of steep slopes; typically grades downslope from talus to colluvial deposits; mapped on the north side of Shaggy Peak; generally less than 30 feet (9 m) thick.

Stacked-unit deposits

Qc/Tvfou **Colluvial deposits over older lava flows, undivided** (Holocene/late Eocene) – Mapped along Butterfield Creek where colluvium derived from level-2 terrace deposits (Qat2) conceals underlying older lava flows; colluvial cover typically less than about 15 feet (5 m) thick.

Qc/IPobp **Colluvial deposits over the Butterfield Peaks Formation** (Holocene/Middle Pennsylvanian) – Mapped along Butterfield Creek where colluvium derived from older alluvial-fan deposits (Qafo) conceals underlying quartzitic sandstone of the Butterfield Peaks Formation; colluvial cover typically less than about 15 feet (5 m) thick.

Qlgb/Qafo **Lacustrine gravel and sand related to the Bonneville (transgressive) phase of the Bonneville lake cycle over older alluvial-fan deposits** (upper Pleistocene) – Older alluvial-fan deposits partly concealed by a discontinuous veneer of sediment reworked by Lake Bonneville wave action; closely spaced, well-preserved shorelines are common on the steeper, upper parts of fans, but are less well developed lower on the fans where lacustrine deposits are finer grained and thicker; mapped on piedmont slopes between Rose Canyon and Barneys Creek; surficial deposits are generally less than 10 feet (3 m) thick.

Qlgb/QTaf **Lacustrine gravel and sand related to the Bonneville (transgressive) phase of the Bonneville lake cycle over oldest alluvial-fan deposits** (upper Pleistocene) – Oldest alluvial-fan deposits partly concealed by a discontinuous veneer of sediment reworked by Lake Bonneville wave action; closely spaced, well-preserved shorelines are common; mapped on piedmont slopes between drainages from Barneys and Harkers Canyons, where irregular landscape below the Bonneville shoreline reflects buried topography of fan deposits; surficial deposits are generally less than 10 feet (3 m) thick.

unconformity

QUATERNARY-TERTIARY

QTaf **Oldest alluvial-fan deposits** (middle Pleistocene to upper Miocene[?]) – Poorly to moderately well-sorted, weakly to non-stratified sand, silt, and pebble to boulder gravel deposited principally by debris flows; thin to thick beds of white to light gray tuff and tuffaceous sediments near the base of the unit indicate a gradational contact with the underlying Jordan Narrows unit of the Tertiary Salt Lake Formation (Tsl), which is consistently overlain by the oldest alluvial-fan deposits; mapped as part of the informally named Harkers fanglomerate by Slentz (1955); erosionally resistant fan remnants form steep, deeply dissected foothills in the Oquirrh Mountains north of Bingham Canyon; the unit is separated from the Lower Permian to Upper Pennsylvanian Kessler Canyon Formation (PIPok) by the Harkers fault, a range-front normal fault with at least several hundred feet of down-to-the-east movement of at least Miocene age and possibly as young as middle Pleistocene; may be undifferentiated from overlying alluvial-fan deposits where the latter are mapped in deeply incised stream channels downslope from outcrops of QTaf; glass-shard analyses of samples C51104-1 and C51804-2 suggest a chemical correlation to the 6.4 ± 0.1 Ma Walcott Tuff; a late to middle Pleistocene age for the youngest part of the unit is suggested by development of a stage IV calcic paleosol on fan surfaces, characterized by an indurated matrix cemented with laminated calcium carbonate; exposed thickness as much as 350 feet (100 m).

TERTIARY

Salt Lake Formation (Pliocene to Miocene)

Tsl **Jordan Narrows unit** – White to light-gray tuffaceous marlstone and micrite, lesser claystone, sandstone, and rhyolitic tuff, and minor limestone that is locally cherty or oolitic; part of the Jordan Narrows unit of Slentz (1955); poorly and incompletely exposed, but locally well exposed along road cuts and in sand and gravel pits; upper contact with Late Tertiary/Quaternary alluvial-fan deposits is gradational, and we have restricted Salt Lake strata to non-conglomeratic beds; probably deposited principally in a lacustrine environment (see, for example, Slentz, 1955); Bryant and others (1989) reported a fission-track age of 4.4 ± 1.0 Ma for a rhyolitic tuff in the reclaimed Pioneer pit in the SW1/4 section 11, T. 2 S., R. 2 W.; the total thickness is unknown along the west side of Salt Lake Valley; exposed thickness probably 300 to 500 feet (90-150 m).

unconformity

Volcanic and intrusive rocks of the Bingham district

Waite (1996) and Waite and others (1997) divided igneous rocks of the Bingham district into four informal yet distinct compositional suites: (1) younger volcanic suite, (2) older volcanic suite, (3) nepheline minette-shoshonite suite within the upper part of the older volcanic suite, and (4) Bingham intrusive suite. Parts of the older volcanic suite, Bingham intrusive suite, and younger volcanic suite are mapped in the Copperton quadrangle. Waite (1996), Pulsipher (2000), and Maughan (2001) described field and chemical characteristics of the older and younger volcanic suites based principally on observations in the Rose Canyon area in the adjacent Tickville Spring quadrangle. Moore (1973), Swensen (1975a), and Biek and others (2005) also provided descriptions of many of the units below. See Clark and Biek (2017) for major and trace element whole-rock analyses of samples collected during this project (available at the Utah Geological Survey Web site http:/ugspub.nr.utah.gov/publications/open_file_reports/ofr-665/ofr-665.pdf).

Younger volcanic suite

Volcanic and intrusive rocks of the west Traverse Mountains, generally south and east of Rose Canyon in the adjacent Tickville Spring quadrangle, are part of the younger volcanic suite of Waite (1996) and Waite and others (1997), which is mostly several million years younger than the Bingham intrusions and older volcanic suite.

Tisp **Rhyolite plug of Shaggy Peak** (upper Eocene) – Light- to medium-gray porphyritic rhyolite in two main phases (Swensen, 1975a): (1) a border phase with abundant 0.04- to 0.08-inch- (1-2 mm) size subhedral to euhedral plagioclase, smoky quartz, and biotite phenocrysts and with well-developed, locally chaotic, but typically near-vertical flow foliations, and (2) an interior phase with slightly larger phenocrysts and little or no evidence of flow foliation. Forms a volcanic neck or plug that intrudes volcanic block and ash flow tuffs and flows of the older volcanic suite; yielded two K-Ar ages on biotite of 32.0 ± 1.0 and 34.1 ± 0.9 Ma (Moore and others, 1968) and a new $^{40}Ar/^{39}Ar$ plateau age of 35.49 ± 0.13 Ma on sanidine (Biek and others, 2005).

Older volcanic suite

Petrographic, geochemical, and age data indicate that rocks of the older volcanic suite are largely comagmatic with the Bingham intrusive complex (Waite, 1996) and contain significantly higher chromium concentrations than the younger volcanic suite (Pulsipher, 2000).

Tvbo **Older block and ash flow tuff** (upper Eocene) – Gray to white, locally well bedded in medium to thick lenticular beds, but commonly massive, block and ash flow tuff; polylithic with subangular to subrounded pebbles to large boulders of mostly dacite, andesite, latite, and trachydacite composition in a matrix of lithic and crystal fragments; locally contains mostly mafic clasts; contains thin discontinuous lava flows of similar composition; typically forms poorly exposed slopes covered by lag of resistant volcanic clasts, but excellent exposures are present in the adjacent Tickville Spring quadrangle; erupted from the Bingham intrusive complex (Waite, 1996; Waite and others 1997); Deino and Keith (1997) reported an $^{40}Ar/^{39}Ar$ plateau age of 39.18 ± 0.11 Ma on biotite from a latite clast (their sample Tick-23) in a debris avalanche flow near the base of the unit; Maughan (2001) reported an $^{40}Ar/^{39}Ar$ plateau age of 38.68 ± 0.13 Ma on sanidine from a waterlain tuff (his sample Tick-113) near the top of the section at the head of Water Fork; thickness may exceed 4000 feet (1200 m) between Butterfield and Rose Canyons.

Tvfou **Older lava flows, undivided** (upper Eocene) – Dark-gray lava flows classified as borderline dacite, trachydacite, latite, and andesite on the TAS diagram of LeBas and others (1986); may locally include small areas of volcanic block and ash flow tuffs, especially between Butterfield and Dry Canyons where exposures and access are limited; derived from the Bingham intrusive complex; exposed thickness likely exceeds 1000 feet (300 m).

Bingham intrusive suite

Tiu **Older intrusive rocks, undivided** (upper Eocene) – Denotes two distinct rock types in exposures northwest of Copperton: (1) partly altered, medium-gray to greenish-gray, fine-grained trachydacite exposed in northeast-trending dikes, and (2) a deeply weathered, light-gray, plug-like mass of probable dacitic composition, with common phenocrysts of bronze-colored biotite and hornblende altered to chlorite in a fine-grained, chalky weathering matrix.

Til **Dacite plug of Lark** (upper Eocene) – Light- to medium-gray dacite porphyry with abundant plagioclase and euhedral biotite phencrysts and fewer smaller hornblende phenocrysts in a fine-grained groundmass; typically weathers to grussy soils; Midas Gulch exposure is highly altered and weathers to greenish-gray clayey soils; exposed at the former Lark townsite, and in isolated exposures north in Midas Gulch and south to Butterfield Canyon; a sample from the Bingham tunnel portal yielded K-Ar ages of 36.9 ± 1.0 Ma on biotite and 36.9 ± 0.9 Ma on hornblende (Moore and others, 1968).

Tibc **Sills of Butterfield Canyon** (upper Eocene) – Greenish-gray to dark-gray dacite to latite porphyry with abundant plagioclase and hornblende phenocrysts and fewer, smaller biotite phenocrysts; locally deeply weathered and yellowish brown; two samples collected for this study are dacite on the TAS diagram of LeBas and others (1986), but plot near the common intersection of the andesite, dacite, trachydacite, and latite fields; Deino and Keith (1997) and Pulsipher (2000) called them latite porphyry dikes, but in the Copperton and Tickville Spring quadrangles, most appear to be subparallel to bedding in the Butterfield Peaks Formation and therefore most are properly termed sills (see also Moore, 1973); Pulsipher (2000) reported rare, microscopic sapphire crystals from these rocks; Stavast (2002) reported on magmatic sulfides preserved in the quenched margins of the sills and dikes, and reasoned that they were emplaced at relatively shallow depth, probably less than 1000 feet (300 m); typically best exposed near ridge crests and commonly partly covered by colluvium on adjacent slopes; sills vary from 0 to about 400 feet (0-120 m) thick; yielded $^{40}Ar/^{39}Ar$ plateau age of 38.84 ± 0.19 Ma on plagioclase (Deino and Keith, 1997, sample Bing-6).

Tv **Volcanic rocks of the Bingham district and west Traverse Mountains, undivided** (Oligocene and Eocene) – Used on cross section only. May include Paleogene basin-fill deposits.

unconformity

TERTIARY and CRETACEOUS, undivided

TKc **Conglomerate** (Paleocene to Upper Cretaceous) – Silica-cemented, ledge-forming, pebble to small boulder conglomerate; clasts are subangular to subrounded quartzitic sandstone and calcareous sandstone; lacks volcanic clasts (and is locally overlain by Eocene volcanics in the adjacent Tickville Spring and Magna quadrangles) and so predates Eocene-Oligocene volcanism; mapped in the lower reaches of Castro Gulch where it is about 50 feet (15 m) thick; age uncertain, but likely Late Cretaceous to early Tertiary.

unconformity

PERMIAN and PENNSYLVANIAN

Rogers Canyon Sequence

Defined by Tooker and Roberts (1970) to include folded, upper-plate strata of the North Oquirrh thrust.

Oquirrh Group

PIPok **Kessler Canyon Formation** (Lower Permian to Upper Pennsylvanian) – Thin- to medium-bedded, yellowish-brown quartzitic sandstone and calcareous and dolomitic sandstone, and minor light-gray dolomitic limestone sedimentary breccia and yellowish-brown sandy limestone; incompletely exposed in the extreme northwest corner of the quadrangle; poorly constrained age from Gordon and Duncan (1970); upper and lower contacts not exposed in this quadrangle, but Tooker and Roberts (1970) reported that the total thickness of the formation is probably in excess of 4300 feet (1300 m) in the adjacent Farnsworth Peak (formerly Garfield) quadrangle.

Bingham Sequence

Originally defined by Tooker and Roberts (1970) to include only folded upper-plate strata of the Midas thrust; redefined by Swensen (1975a) to include upper- and lower-plate rocks of the Midas thrust and lower-plate rocks of the North Oquirrh thrust.

PERMIAN

Pkdc **Kirkman Limestone and Diamond Creek Sandstone, undivided** (Lower Permian) – Small exposure mapped near the head of Barneys Wash in the Copperton quadrangle consists of highly altered fine-grained sandstone of yellowish-brown, reddish-brown, and white hues that probably belongs to the Diamond Creek Sandstone and sedimentary limestone breccia that may represent poorly developed Kirkman Limestone; Swensen (1975a) reported that the complexity of discontinuous beds and intraformational breccia precludes separation and accurate thickness measurements of the two formations in the Bingham district, but collectively they are about 2000 feet (600 m) thick in the north Oquirrh Mountains.

Pfp **Freeman Peak Formation** (Lower Permian [Wolfcampanian]) – Yellowish-brown to grayish-brown, very fine to fine-grained quartzitic sandstone, calcareous sandstone, and minor siltstone; typically medium to thick bedded in laterally continuous, planar beds with faint, planar laminae and low-angle ripple cross stratification; typically forms poor, colluvium-covered slopes west of Copperton on the northeast-plunging nose of the "Copperton overturn" (overturned anticline), but excellent exposures are present along new pipeline west of Copperton in the SW1/4SW1/4 section 7 and NW1/4NW1/4 section 18, T. 3 S., R. 2 W.; upper contact not exposed in the Copperton quadrangle; age from Welsh and James (1961); Swensen (1975a) reported the formation is 2400 feet (730 m) thick at Freeman Peak in the Bingham Canyon quadrangle.

Pcp **Curry Peak Formation** (Lower Permian [Wolfcampanian]) – Similar to the Freeman Peak Formation, but Swensen (1975a) reported that it is typically thinner bedded, has abundant worm tracks on bedding surfaces, and contains three silty limestone and calcareous sandstone marker beds; upper contact placed at the base of a thin, yellowish-brown, chert-pebble conglomerate as much as a few feet thick; age from Welsh and James (1961); lower part not exposed in the Copperton quadrangle, but Swensen (1975a) reported the formation is 2450 feet (750 m) thick at Curry Peak in the Bingham Canyon quadrangle.

PENNSYLVANIAN

Oquirrh Group (Upper Pennsylvanian) – Divided into, in ascending order, the West Canyon Limestone, Butterfield Peaks Formation, and Bingham Mine Formation, which are part of the Bingham sequence of Tooker and Roberts (1970); only parts of the Butterfield Peaks and Bingham Mine Formations are exposed in this quadrangle; best exposed along or just below ridge crests, but elsewhere, slopes are commonly covered by a veneer of colluvium and talus not practical to map at a scale of 1:24,000; ages from Gordon and Duncan (1970), Douglas and others (1974), and Davis and others (1994); the group is in excess of 17,800 feet (5400 m) thick in the Oquirrh Mountains (Tooker and Roberts, 1970) and about 25,000 feet (7600 m) thick near Mt. Timpanogos (Baker, 1964).

Bingham Mine Formation (Upper Pennsylvanian [Missourian and Virgilian]) – Concealed by mine dumps except for part of the Jordan limestone, which marks the base of the formation; upper contact is exposed west of the mapped area where it corresponds to the base of a thin, discontinuous, chert-pebble conglomerate bed that marks the base of the Curry Peak Formation (Swenson, 1975a); the formation is about 7300 feet (2200 m) thick in the Oquirrh Mountains (Tooker and Roberts, 1970).

IPobmj **Jordan Limestone** – Thin- to medium-bedded, medium- to dark-gray, sandy, silty, and argillaceous limestone with irregular black chert nodules; typically thin to medium bedded and locally fossiliferous with bryozoans, brachiopods, and corals; mapped at the head of Yosemite Gulch, in the southwest corner of the quadrangle; upper part is not exposed; Tooker and Roberts (1970) reported the unit is 361 feet (110 m) thick in the Bingham Canyon quadrangle to the west.

IPobp **Butterfield Peaks Formation** (Middle Pennsylvanian [Desmoinesian – Atokan]) – Interbedded, brown-weathering, fine-grained quartzitic sandstone and calcareous sandstone, medium-gray, fine-grained sandy limestone, and several limestone intervals; typically cyclically interbedded with several tens of feet of calcareous sandstone capped by gray limestone several feet thick; contains minor siltstone and mudstone interbeds that are very poorly exposed; forms ledgy to cliffy slopes. Calcareous sandstone is typically medium to thick and planar bedded, light brownish gray to medium gray but grayish orange to brown weathering, very fine to fine grained, locally with low-angle and ripple cross-stratification and bioturbation; commonly non-calcareous on weathered surfaces and so appears similar to quartzitic sandstone, but fresh surfaces are invariably calcareous. Quartzitic sandstone is grayish orange pink to light brown, very thick bedded, very fine to fine grained, with faint low-angle cross-stratification and a prominent conchoidal fracture. Limestone intervals, some mapped separately as 'ls' marker beds, are typically medium gray, medium to thick bedded, and commonly sandy with very fine to fine-grained sand; fossils include syringoporid and rugose corals, bryozoans, brachiopods, and fossil hash; locally contain irregularly shaped black chert nodules and ribbon chert; commonly grade upward to finer grained, platy weathering limestone and argillaceous limestone. Upper, conformable contact exposed above Yosemite Gulch in the southwest part of the quadrangle where it corresponds to the base of the Jordan Limestone; Tooker and Roberts (1970) reported the formation is about 9000 feet (2750 m) thick in the Oquirrh Mountains.

ls

Geology under the Bingham mine dumps

Geology under the Bingham mine dumps was taken from the Geologic Map of the Bingham District and conforms to pre-mine dump topography (Swensen, 1975b). Paleozoic strata belong to the Bingham Sequence (see descriptions above). Volcanic and intrusive rocks belong to the older volcanic suite and include both lava flows and block and ash flow tuff as described above. The Champion thrust is shown under the dumps, but not on the north side of Bingham Canyon where we could not verify its existence. The sequence of volcanic and intrusive rocks listed below is uncertain.

Qal	Undifferentiated alluvial deposits
Tiu	Undifferentiated sills and dikes
Tvb	Latite breccia with interbedded tuff, sand, and gravel
Tvlb	Latite breccia
Tvlp	Latite
Tvhl	Hornblende latite porphyry
Tilp	Latite porphyry (sill or dike)
Tva	Andesite
Tc	Conglomerate
Pfp	Freeman Peak Formation
Pcp	Curry Peak Formation
IPbmc	Bingham Mine Formation, Clipper member
	Commercial limestone
	Jordan limestone
IPbp	Butterfield Peaks Formation
	lst – limestone marker bed

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13. Tooker, E.W., 1987, Preliminary geologic maps, cross sections, and explanation pamphlet for the Ophir and Mercur quadrangles, Salt Lake and Tooele Counties, Utah: U.S. Geological Survey Open-File Report 87-152, 18 p., 3 plates, scale 1:24,000.
14. —1992, Preliminary geologic map of the Lowe Peak 7 ½ minute quadrangle, Tooele, Utah, and Salt Lake Counties, Utah: U.S. Geological Survey Open-File Report 92-404, 13 p., 1 plate, scale 1:24,000.
15. Tooker, E.W., and Roberts, R.J., 1971a, Geologic map of the Magna quadrangle, Salt Lake County, Utah: U.S. Geological Survey Geologic Quadrangle Map GQ-923, 1 plate, scale 1:24,000.
16. —1971b, Geologic map of the Garfield [Farnsworth Peak] quadrangle, Salt Lake and Tooele Counties, Utah: U.S. Geological Survey Geologic Quadrangle Map GQ-992, 1 plate, scale 1:24,000.
17. —1988, Preliminary geologic map, cross-sections, and explanation pamphlet for the Bingham Canyon 7 ½ minute quadrangle, Salt Lake and Tooele Counties, Utah: U.S. Geological Survey Open-File Report 88-699, 33 p., 2 plates, scale 1:24,000.
18. Welsh, J.E., 1965, Bedrock geologic map of the Traverse Mountains, Tickville Spring, Jordan Narrows, and Lehi quadrangles, Utah: Unpublished map, 1 plate, scale 1:24,000.

ACKNOWLEDGMENTS

We thank Larry Barnhart, Kennecott Utah Copper (KUC), for kindly answering daily calls to inform him where we would be working. Gerry Austin (KUC) shared his considerable knowledge of the geology of the Barneys Canyon area, and his colleague Brian Vinton did the same for the subsurface geology of the southwest Salt Lake Valley. Geology underneath the large mine dumps is taken from Swensen (1975b). Jaren Swensen, retired Kennecott geologist, recounted his knowledge of the structure and Paleozoic stratigraphy of the Traverse and Oquirrh Mountains. Thanks, also, to the late John Welsh for making available his unpublished mapping of the Oquirrh and Traverse Mountains. Bill McIntosh and Lisa Peters at the New Mexico Geochronology Research Laboratory provided new $^{40}Ar/^{39}Ar$ ages of volcanic rocks of the west Traverse Mountains. Mike Perkins (University of Utah) provided glass-shard analyses of tuffaceous old alluvial-fan deposits. Kent Brown, Utah Geological Survey (UGS), set up photogrammetry for this project, and Darryl Greer (UGS) assisted with portraying geology under the Bingham mine dumps. We thank Don Clark, Grant Willis, and Mike Hylland, each with the UGS, for careful reviews of this map. Gary Christenson and Ken Krahulec (UGS) also lent their expertise in surficial geology and the Bingham mining district, respectively, in their reviews of the map.

MAP SYMBOLS

Contact, dashed where approximately located, dotted where concealed

Normal fault, dashed where approximately located, dotted where concealed and approximately located; query indicates uncertain presence; bar and ball on down-dropped side

Thrust fault, dashed where approximately located, dotted where concealed and approximately located; teeth on upper plate

Axial trace of overturned anticline, dashed where approximately located; arrow indicates direction of plunge

Major shorelines of the Bonneville lake cycle. Mapped at the top of the wave-cut platform, dashed where approximately located; may coincide with geologic contacts

B — Highest shoreline of the Bonneville (transgressive) phase

b — Other shorelines of the Bonneville phase – mostly transgressive

P — Highest shoreline of the Provo (regressive) phase

p — Other shorelines of the Provo phase – mostly regressive shorelines of the Provo phase, but may include some shorelines of the Bonneville (transgressive) phase

Crest of Lake Bonneville barrier beach or spit

Landslide scarp, hachures on down-dropped side

38 Strike and dip of inclined bedding

70 Strike and dip of overturned bedding; red symbols are from Swensen (1975b)

20 Approximate strike and dip of inclined bedding

60 Strike and dip of flow foliation in igneous rocks

Strike of vertical flow foliation in igneous rocks

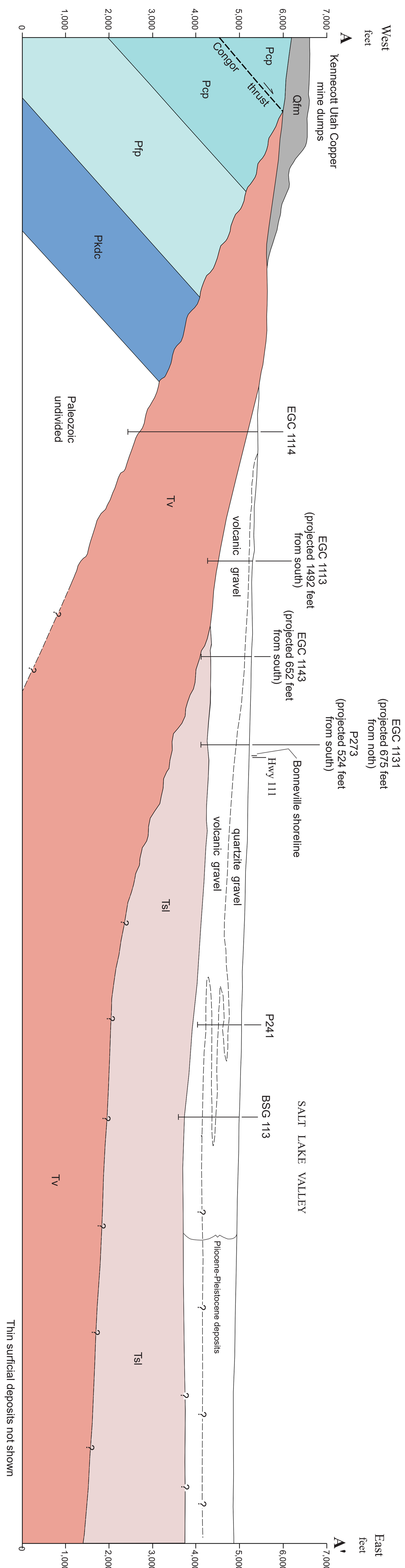
Sand and gravel pit

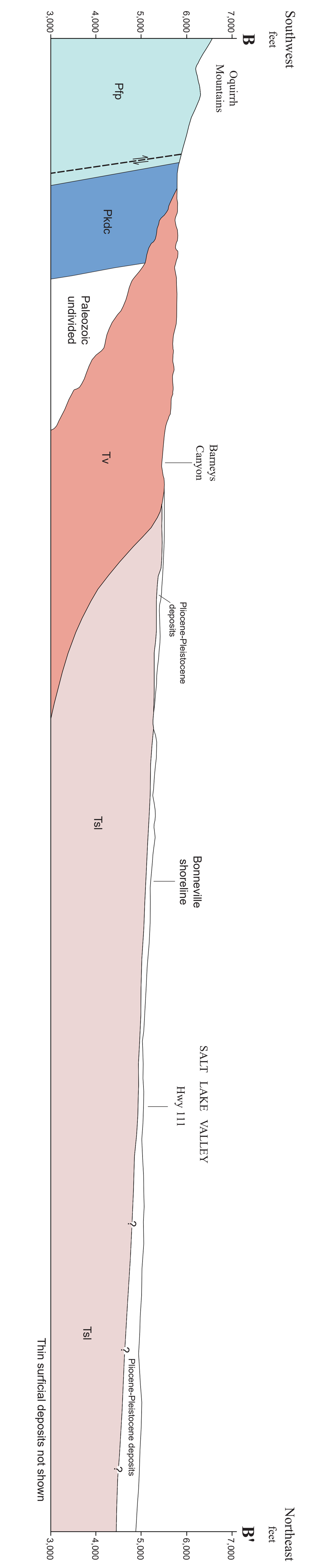
Adit

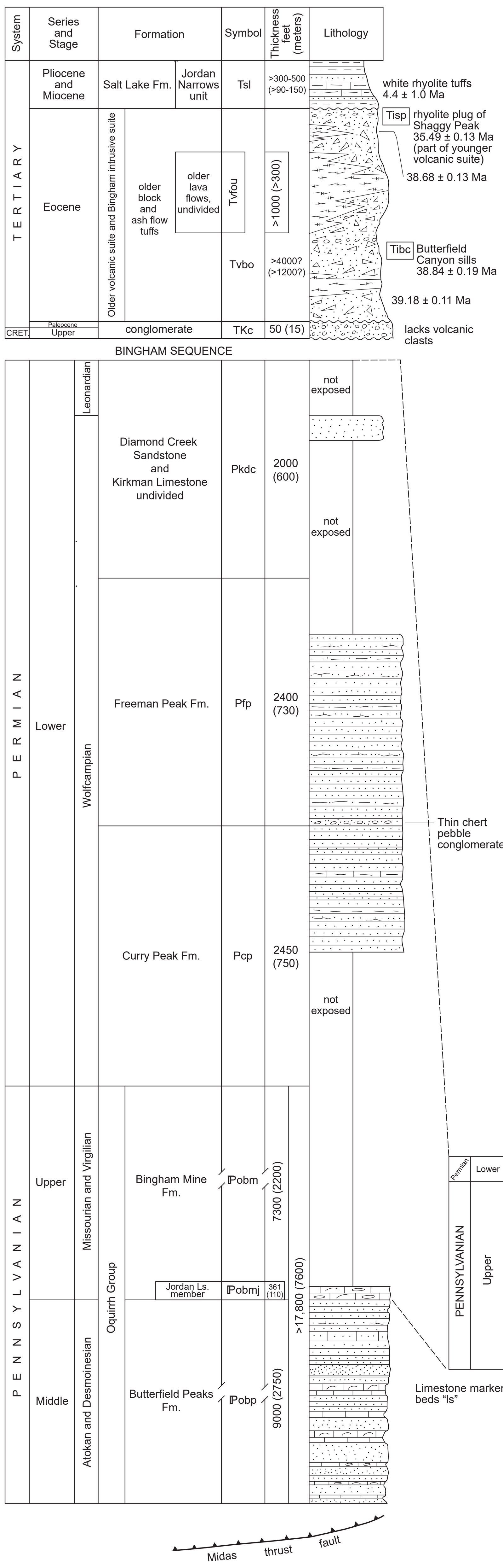
C51804-2 Sample location and number

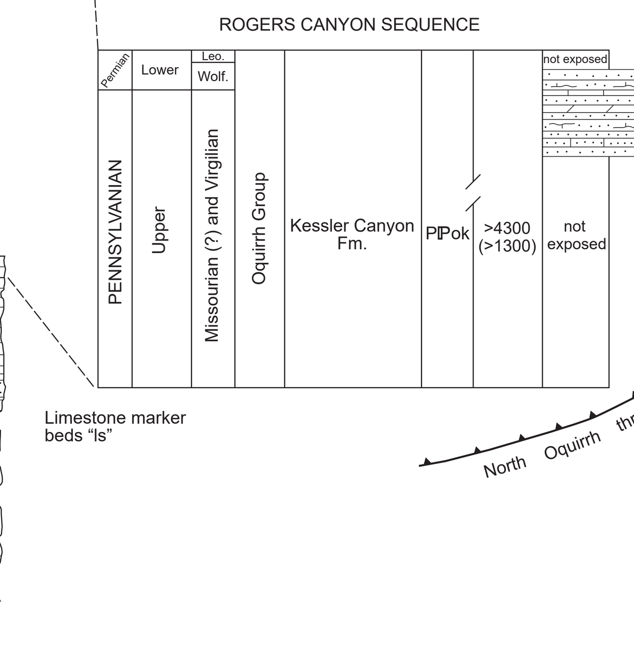
ECG 1114 Ground water monitoring well

LITHOLOGIC COLUMN









CORRELATION OF MAP UNITS

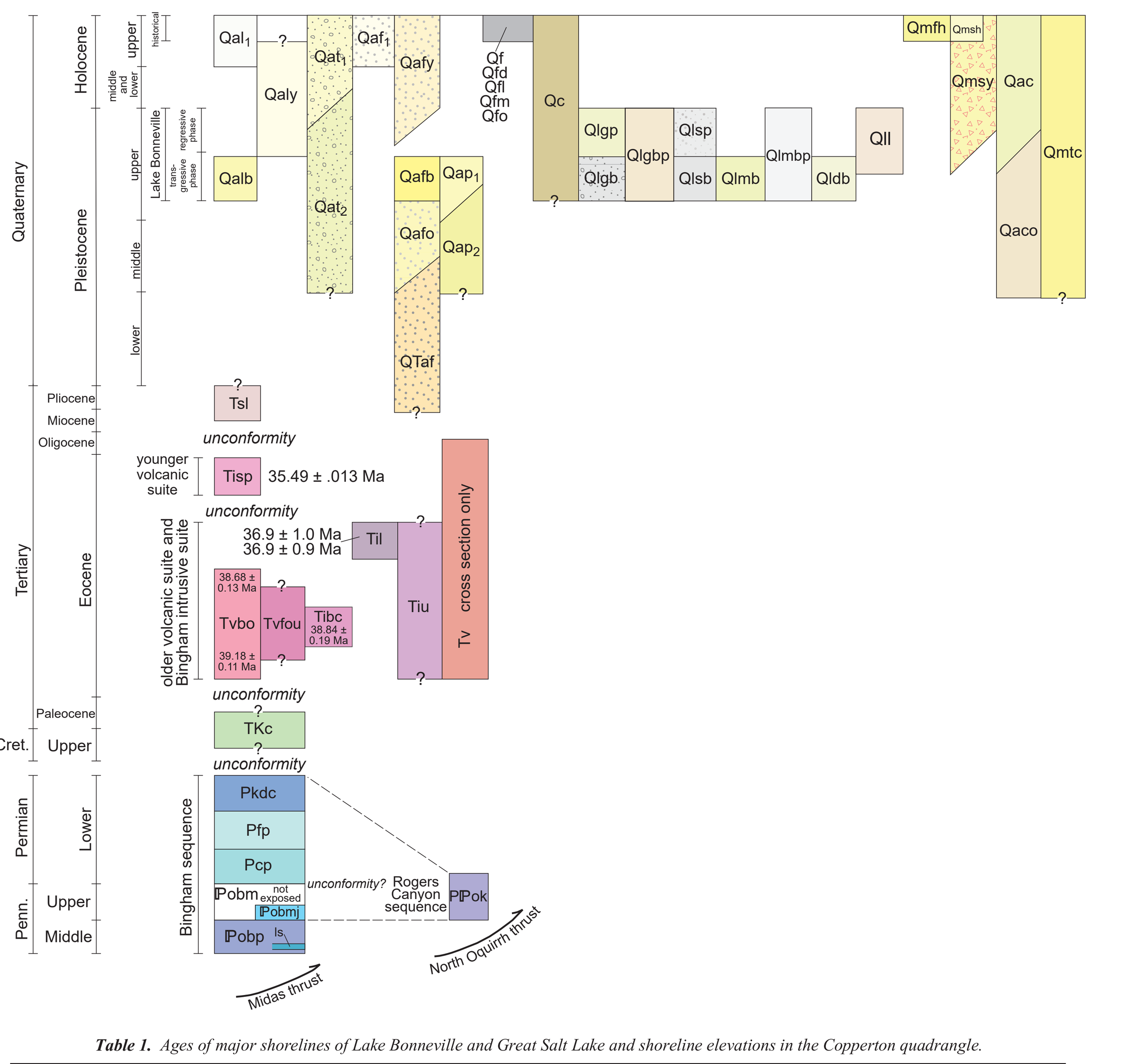
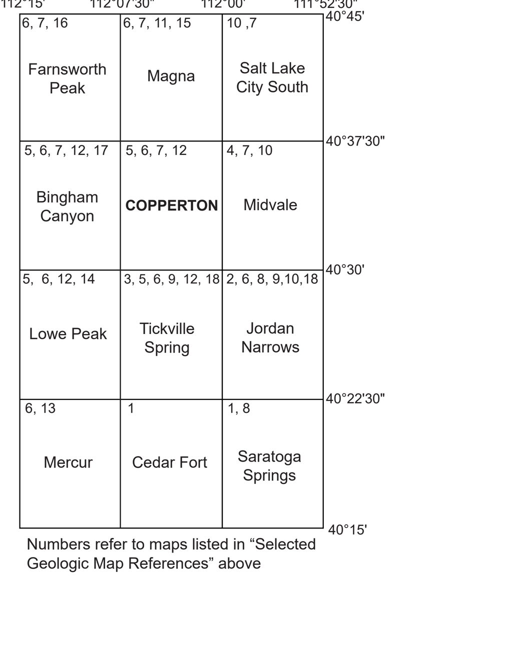


Table 1. Ages of major shorelines of Lake Bonneville and Great Salt Lake and shoreline elevations in the Copperton quadrangle.

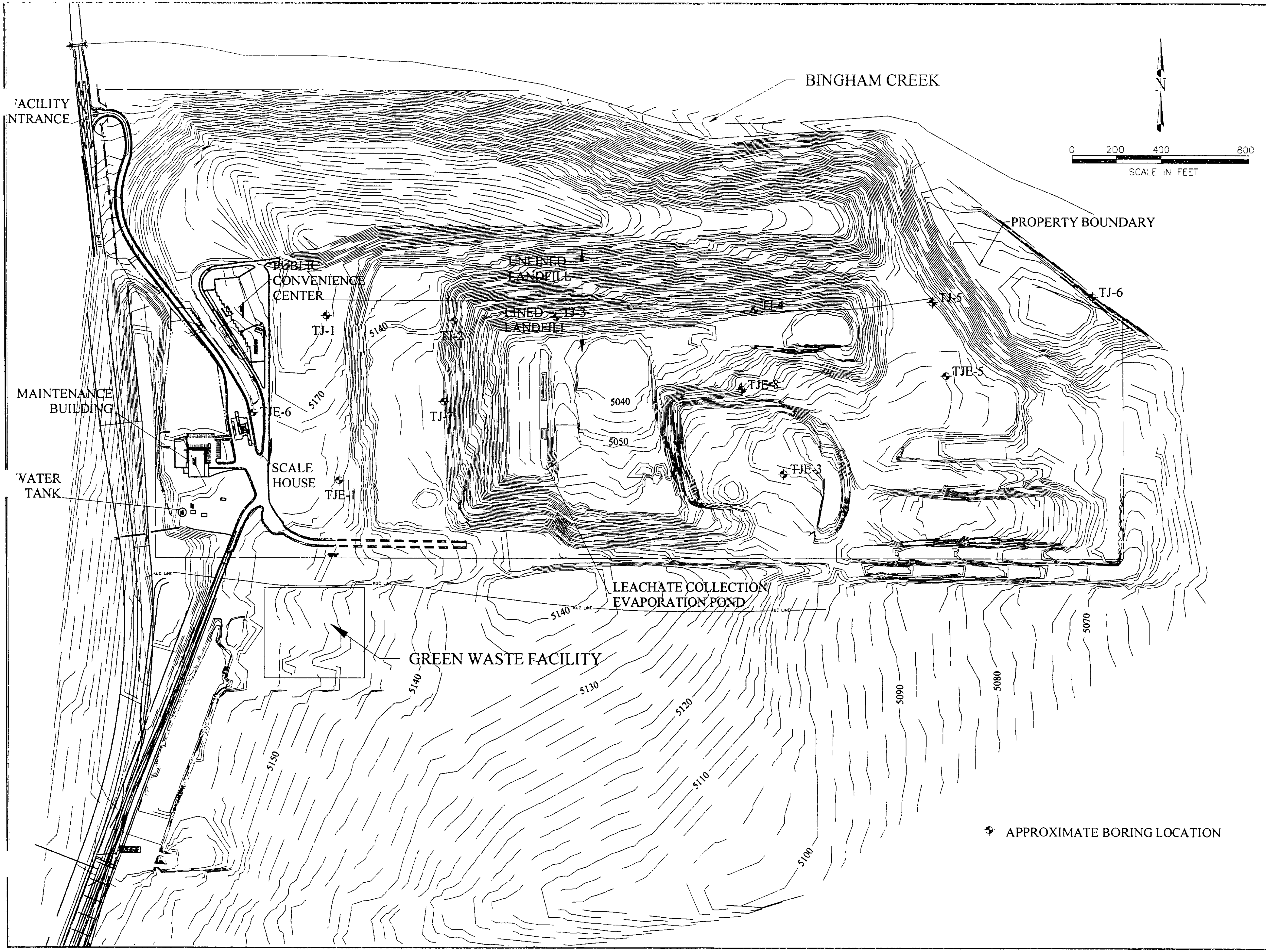
Lake Cycle and Phase	Shoreline (map symbol)	Age: radiocarbon years B.P.	Age: calendar years B.P.[1]	Elevation feet (meters)
Lake Bonneville				
Transgressive Phase	Stansbury	22,000-20,000[2]	24,400-23,200	Not exposed
	Bonneville (B) — flood	15,500-14,500[3]	18,000-16,800	5,175-5,200 (1,575-1,585)
Regressive Phase	Provo (P)	14,500-12,000[4]	16,800-13,500[5]	4,790-4,820 (1,460-1,470)
	Gilbert	11,000-10,000[6]	12,800-11,600	Not exposed
Great Salt Lake				
	Holocene highstand	3000-2000[7]	-----	Not exposed

[1]Calendar-calibrated ages of most shorelines have not been published. Calendar-calibrated ages shown here, except for the age of the end of the Provo shoreline, are from D.R. Currey, University of Utah (written communication to Utah Geological Survey, 1996; cal yr B.P. = 1.16 ^{14}C yr B.P.).
[2]Oviatt and others (1990); Currey (written communication to Utah Geological Survey, 1996, assumed a maximum age for the Stansbury shoreline of 21,000 ^{14}C yr B.P., which is used in the conversion to calendar years).
[3]Oviatt and others (1992), Oviatt (1997).
[4]Godsey and others (2005) revised the timing of the occupation of the Provo shoreline and subsequent regression; Oviatt and others (1992) and Oviatt (1997) proposed a range from 14,500 to 14,000 ^{14}C yr B.P. Oviatt and Thompson (2002) summarized many recent changes in the interpretation of the Lake Bonneville radiocarbon chronology.
[5]Calendar-calibrated age of the end of the Provo shoreline estimated by interpolation from data in Godsey and others (2005), table 1, who used Stuiver and Reimer (1993) for calibration.
[6]Murchison (1989), figure 20.
[7]Currey (1990).

INDEX MAP



Numbers refer to maps listed in "Selected Geologic Map References" above



TRANS JORDAN

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MARK	DATE	DESCRIPTION

ISSUE.
PROJECT NO: 00102
CAD DWG FILE:
DRAWN BY. JIO
CHECKED BY: DJW
APPROVED BY BDM

SHEET TITLE

TRANS JORDAN LANDFILL

BORING LOCATIONS

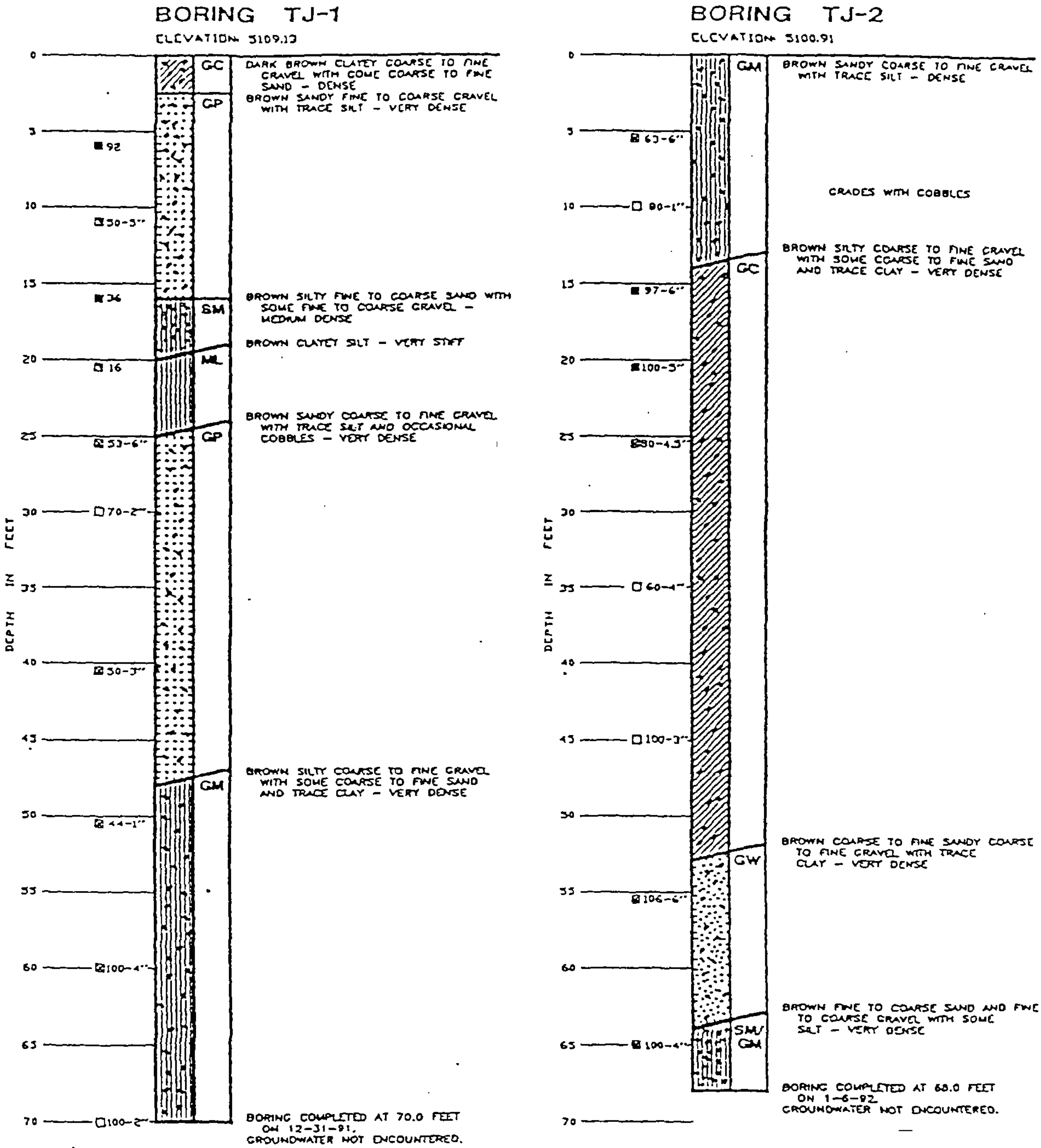
MAJOR DIVISIONS			GRAPH SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN No. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON No. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING No. 4 SIEVE	CLEAN SAND (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN No. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SAND, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS.

UNIFIED SOIL CLASSIFICATION SYSTEM

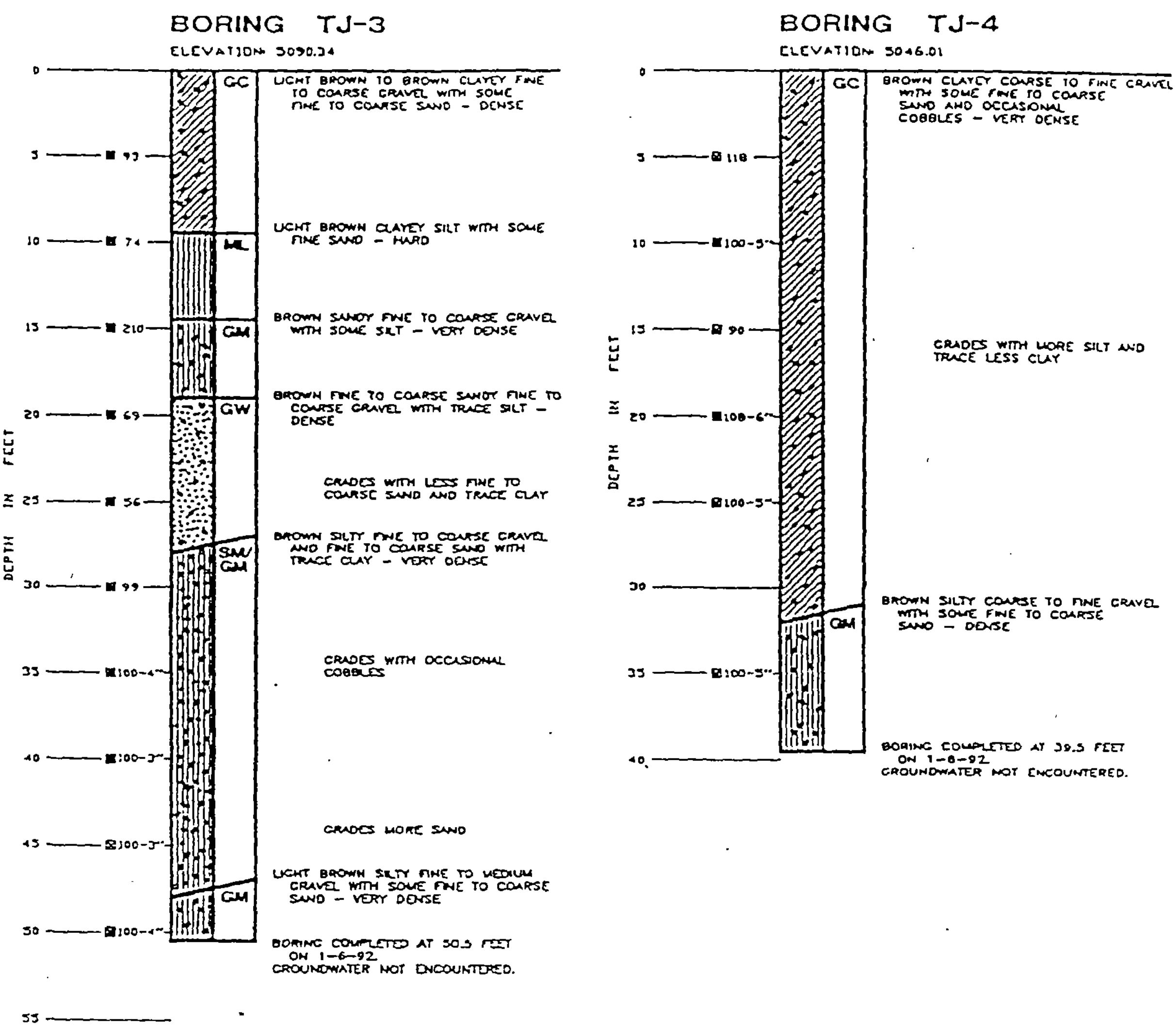
Dames & Moore

FILE 9816-007-162 (TJBOR1) BY DATE CHECKED BY DATE



LOG OF BORINGS

Dames & Moore



KEY

A ~ B ■ C

A FIELD MOISTURE EXPRESSED AS A PERCENTAGE OF THE DRY WEIGHT OF SOIL
B DRY DENSITY EXPRESSED IN LBS. PER CUBIC FOOT
C BLOWS REQUIRED TO DRIVE A D&M TYPE U SAMPLER ONE FOOT WITH A 140 LB. HAMMER DROPPING 30 INCHES
■ DEPTH AT WHICH UNDISTURBED SAMPLE WAS EXTRACTED
⊠ DEPTH AT WHICH DISTURBED SAMPLE WAS EXTRACTED
□ SAMPLING ATTEMPT WITH NO RECOVERY

LOG OF BORINGS

Dames & Moore

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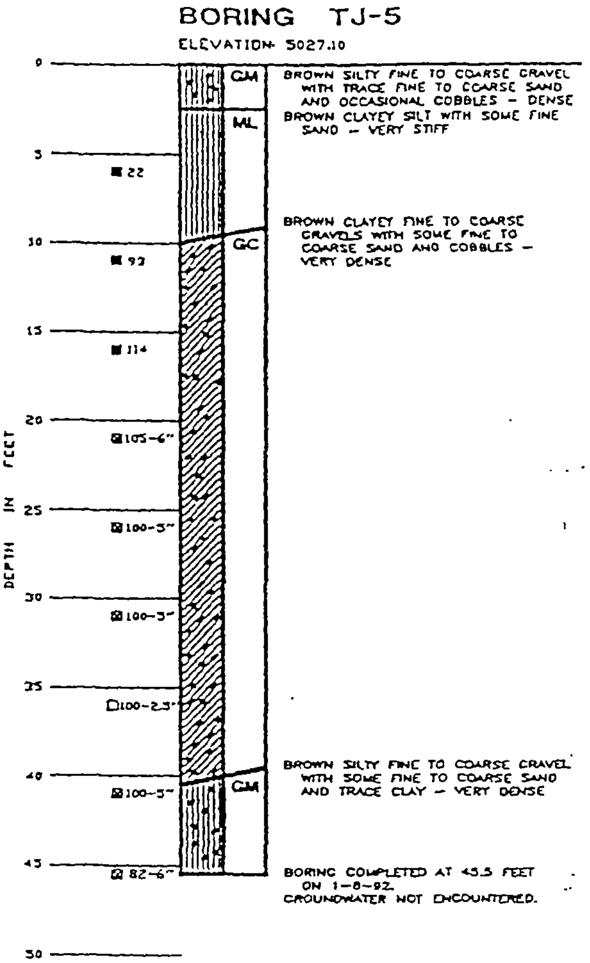

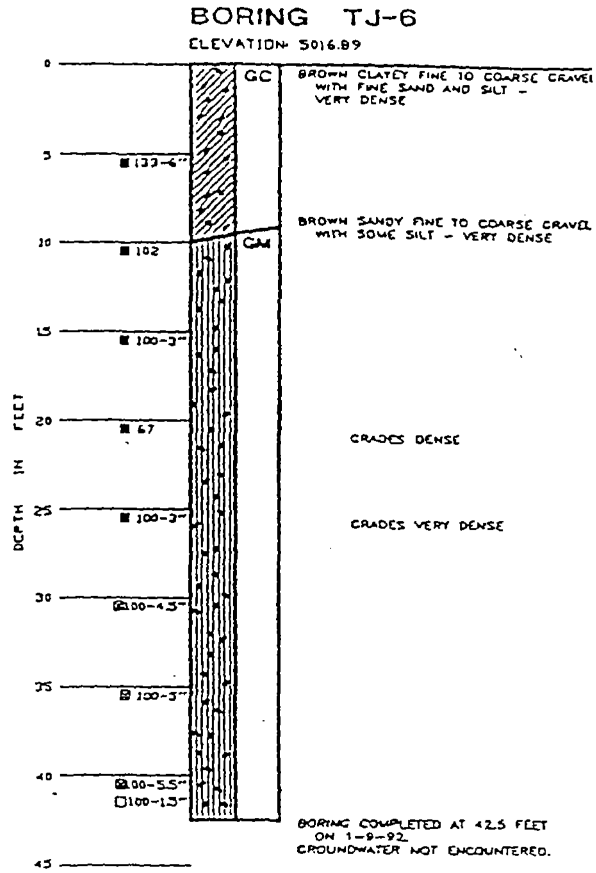

KEY

A – B ■ C

- A FIELD MOISTURE EXPRESSED AS A PERCENTAGE OF THE DRY WEIGHT OF SOIL
- B DRY DENSITY EXPRESSED IN LBS. PER CUBIC FOOT
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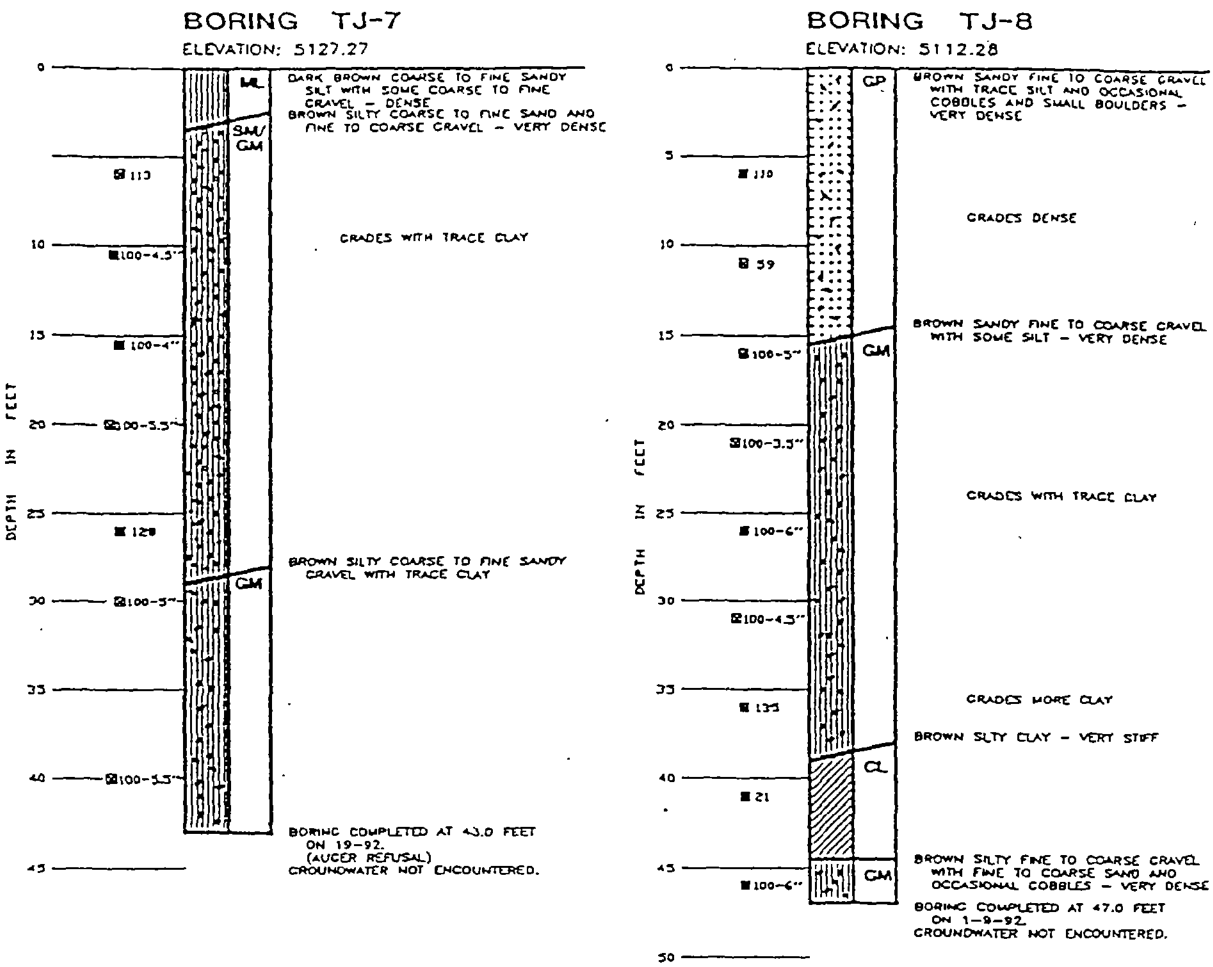
LOG OF BORINGS

Dames & Moore



KEY

A - B ■ C

- A FIELD MOISTURE EXPRESSED AS A PERCENTAGE OF THE DRY WEIGHT OF SOIL
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- □ SAMPLING ATTEMPT WITH NO RECOVERY

LOG OF BORINGS

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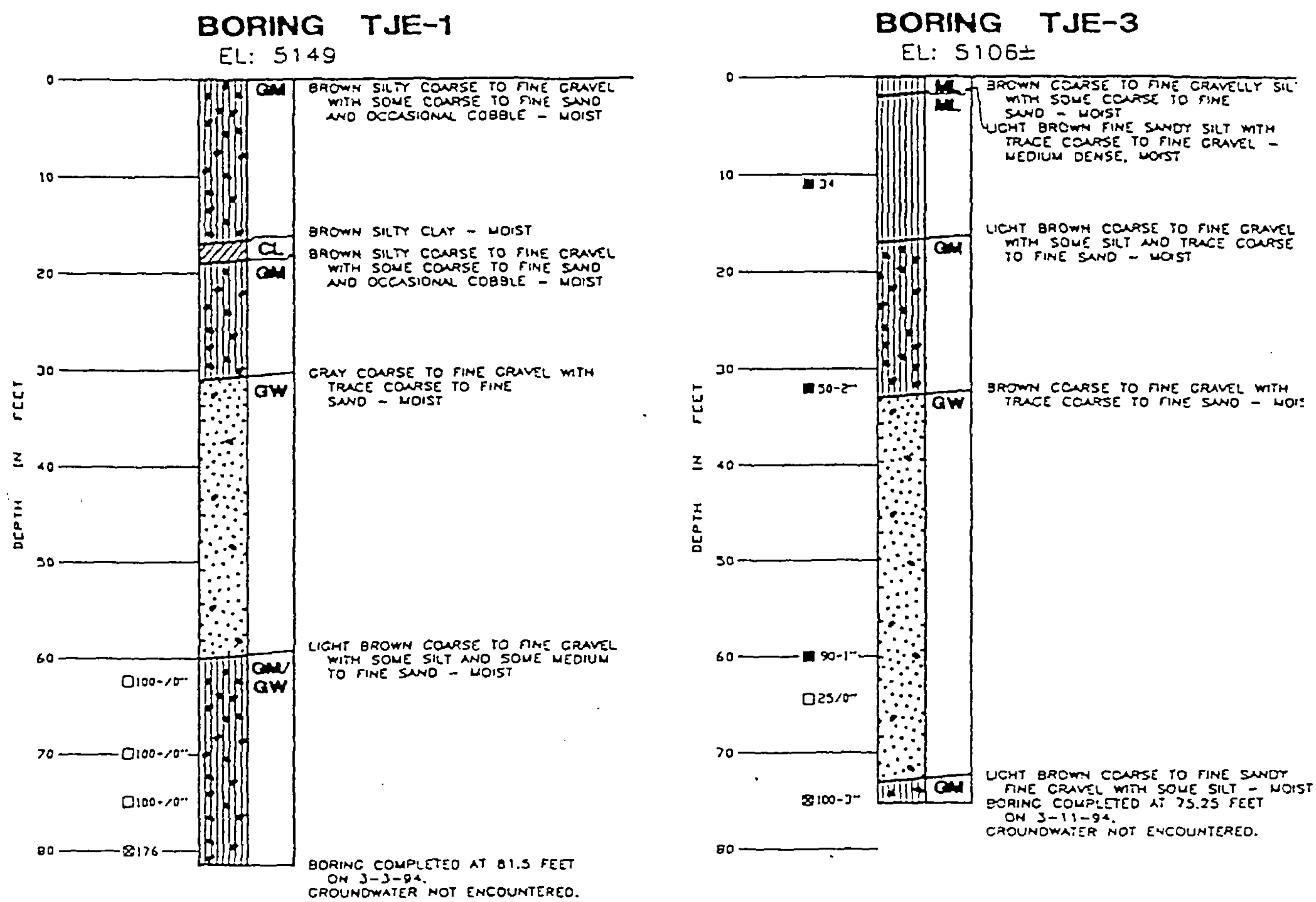

KEY

A - B ■ C

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- B DRY DENSITY EXPRESSED IN LBS. PER CUBIC FOOT
- C BLOWS REQUIRED TO DRIVE A D&M TYPE U SAMPLER ONE FOOT WITH A 140 LB. HAMMER DROPPING 30 INCHES
- ■ DEPTH AT WHICH UNDISTURBED SAMPLE WAS EXTRACTED
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- □ SAMPLING ATTEMPT WITH NO RECOVERY

LOG OF BORINGS

Dames & Moore

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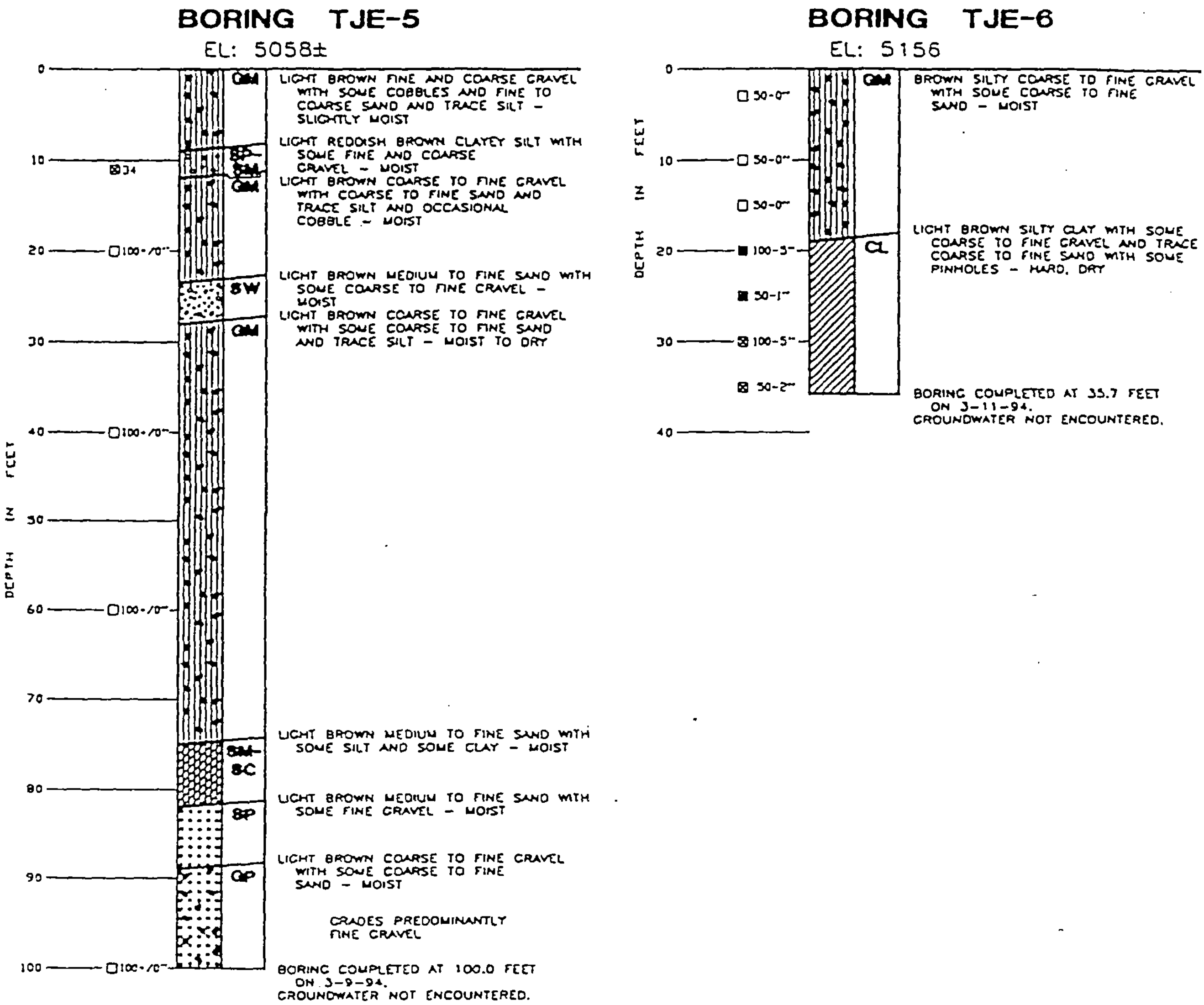

KEY

A - B ■ C

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- □ SAMPLING ATTEMPT WITH NO RECOVERY

LOG OF BORINGS

Dames & Moore

FILE 9816-009-162 (\DWG\TRANSJO\BORING_2.DWG) BY ____ DATE ____ CHECKED BY ____ DATE ____

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ideas for a changing world
Intermountain GeoEnvironmental Services, Inc.
4153 S. Commerce Drive, Salt Lake City, Utah (801) 270-9400 T (801) 270-9401 F

May 9, 2011

Mr. Dwayne Woolley
Trans Jordan Landfill
10873 South 7200 West
P.O. Box 95610
South Jordan, Utah 84095-0610

RE: Cell 6 Cut Slope Evaluation

Mr. Woolley:

This report presents the results of our geotechnical analysis of three different slope configurations proposed for use in excavation of Cell 6 at your facility. To this point, all cells have been constructed with 3H: 1V side (cut) slopes. It is our understanding that Trans-Jordan wishes to explore the feasibility of maximizing their available airspace by excavating all or part of Cell 6 using steeper side slopes (2.5H: 1V or 2H: 1V).

Airspace and Revenue

Under the current excavation plan the Cell 6 excavation would remove approximately 2.08 Mcyd of soil. The first step in our evaluation was to determine how much additional volume and revenue would be available in Cell 6 by excavating the side slopes at a steeper angle. Initially IGES looked at the volume increase if only the north side of Cell 6 was steepened, leaving the east and south sides excavated with the "standard" 3H: 1V side slope. The following table shows the projected volume and revenue increase associated with steeper excavation on the north slope only of Cell 6:

Cell 6 North Slope Only	Approx. Quantity				Increase from Base		
	Total Ex. (yd^3)	Old Waste (yd^3)	Soil/Additional Airspace (yd^3)	New Waste (ton)	(yd^3)	(ton)	Revenue
3.0:1	3,340,550	1,257,600	2,082,950	1,458,065	-	-	$0
2.5:1	3,408,580	1,257,600	2,150,980	1,505,686	68,030	47,621	$1,142,904
2.0:1	3,492,840	1,257,600	2,235,240	1,564,668	152,290	106,603	$2,558,472

The potential increase in revenue show is based on an assumed average density of 0.7 ton/cyd and tipping fees of $24/ton.

The next table shows the volume/revenue increase if the entire Cell 6 Excavation is performed with steeper side slopes. The same assumptions regarding waste density and tipping fees were applied in this assessment.

Cell 6 Entire Excavation	Approx. Quantity				Increase from Base		
	Total Ex. (yd^3)	Old Waste (yd^3)	Soil/Additional Airspace (yd^3)	(ton)	(yd^3)	(ton)	Revenue
3.0:1	3,340,550	1,257,600	2,082,950	1,458,065	0	0	$0
2.5:1	3,585,000	1,257,600	2,327,400	1,629,180	244,450	171,115	$4,106,760
2.0:1	3,882,200	1,257,600	2,624,600	1,837,220	541,650	379,155	$9,099,720

As shown in the table a portion of the Cell 6 excavation will encounter some old waste that will need to be relocated within other lined cells of the landfill. We do not anticipate that this waste volume will vary with steeper slope excavation, but in any case it will not produce revenue for the landfill. The exact volume is not known, but it has been estimated to be ~1.26 Mcyd for all slope angles.

StabilityAnalysis

The excavation of Cell 6 will result in a maximum cut height of approximately 105 feet on both the north and south sides of the cell. Slopes of 3H:1V, 2.5H:1V, and 2H:1V were analyzed for static stability.

Because of the nature of site soils, meaningful sampling and laboratory testing are not feasible. Test pit excavations in the area reveal that site soils are granular and composed mainly of sandy subrounded gravel and cobbles. Deposits were also observed to be cemented. The observed characteristics are similar to soils that have been encountered in previous cell excavations at the site. Based on visual material classification and empirical correlations these soils are anticipated to have a friction angle of approximately 38 degrees. The following photographs show the conditions encountered in some of the test pit excavations.

Stability analysis was performed at each of the proposed slope angles using the expected friction angle, ϕ=38°. Sensitivity analysis was also performed to determine what friction angle would result in a safety factor equal to 1.5 for each slope angle. Embankment stability was analyzed using the global stability program Slide 6.0 developed by Rocscience. Results of the analysis are presented as attachments to this document. The following table summarizes the results of stability modeling and sensitivity analysis.

Slope	ϕ=38° Factor of Safety	Factor of Safety=1.5 ϕ
3.0:1	2.37	26.3
2.5:1	1.98	30.6
2.0:1	1.65	35.4

While a safety factor greater than 1.0 indicates a stable slope, this assumes that the model created provides a fairly accurate representation of material when evaluating slope stability. In most cases a safety factor of 1.5 or greater is sought under static conditions to account for some unknowns in stratigraphy and soil strength. Seismic loading was not considered in our stability analyses since the excavation is considered temporary and impacts of failure would be limited. For all three slope angles an acceptable static factor of safety against failure was shown using the assumed ϕ=38°.

As previously mentioned, prior cell excavation at the site and test pit exploration performed for this stability assessment showed that site soils are typically cemented together. Given the nature of the material the strength of this cementation/cohesion could not be readily quantified via laboratory testing. Rather than assuming a value for use in our analysis, cohesion was conservatively omitted from all analyses. Affects from groundwater are not anticipated and have not been accounted for in the model. It is possible that the soils encountered will have ϕ< 38°; however based on our observations, previous experience at the site and the conservative assumptions used in stability modeling we believe that the Cell 6 excavation will be stable at cut slopes as steep as 2.0H: 1V.

Composite Liner Stability

The stability of the slope liner was analyzed assuming a 2.5H: 1V slope. As per Trans-Jordan Landfill details liner construction will consist of a lower layer of compacted screened soil (6-inches thick to protect liner from native cobbles/boulders), a Geosynthetic Clay Liner (GCL), and a HDPE liner covered by another layer of loosely compacted screened soil (6-inches thick to protect liner from waste). The screened soil is expected to be a Poorly Graded SAND with silt (SP-SM) generated through processing of site soils to remove oversized materials. A friction angle of 33° was assumed for these screened soils. For the purpose of stability analysis the sand below the GCL is expected to be compacted resulting in an unit weight of approximately 120 pcf. Above the HPDE liner the soil is expected to be loosely compacted, yielding an expected unit weight of approximately 110 pcf.

Factors of safety for the layers of soil in the liner construction are above 1.5. After construction of the liner, the failure planes with the minimum factor of safety passed through the screened soil. The factor of safety in the compacted screened soil below the GCL is expected to be 1.665. The factor of safety of the layer of soil placed on the HDPE liner is expected to be 1.641. The models indicate the liner and surrounding protective soils will be stable at a slope of 2.5H: 1V.

Limitations

The recommendations contained in this report are based on limited field exploration, empirical correlations and understanding of the proposed construction. The subsurface data used in the preparation of this report were obtained from the explorations made for this investigation. It is possible that variations in the soil and groundwater conditions could exist between and beyond the points explored. The nature and extent of variations may not be evident until construction occurs. If any conditions are encountered at this site that are different from those described in this report, we should be immediately notified so that we may make any necessary revisions to recommendations contained in this report. In addition, if the scope of the proposed construction changes from that described in this report, we should be notified.

This report was prepared in accordance with the generally accepted standard of practice at the time the report was written. No warranty, expressed or implied, is made.

We appreciate the opportunity to provide you with our services. If you have any questions, please contact us at your convenience.

Respectfully submitted,
IGES, Inc.

LICENSED PROFESSIONAL ENGINEER
No. 374860
JARED A. HAWES
5/9/11
STATE OF UTAH

Joan Brown, P.E.I.
Staff Engineer

Jared Hawes, P.E.
Project Engineer

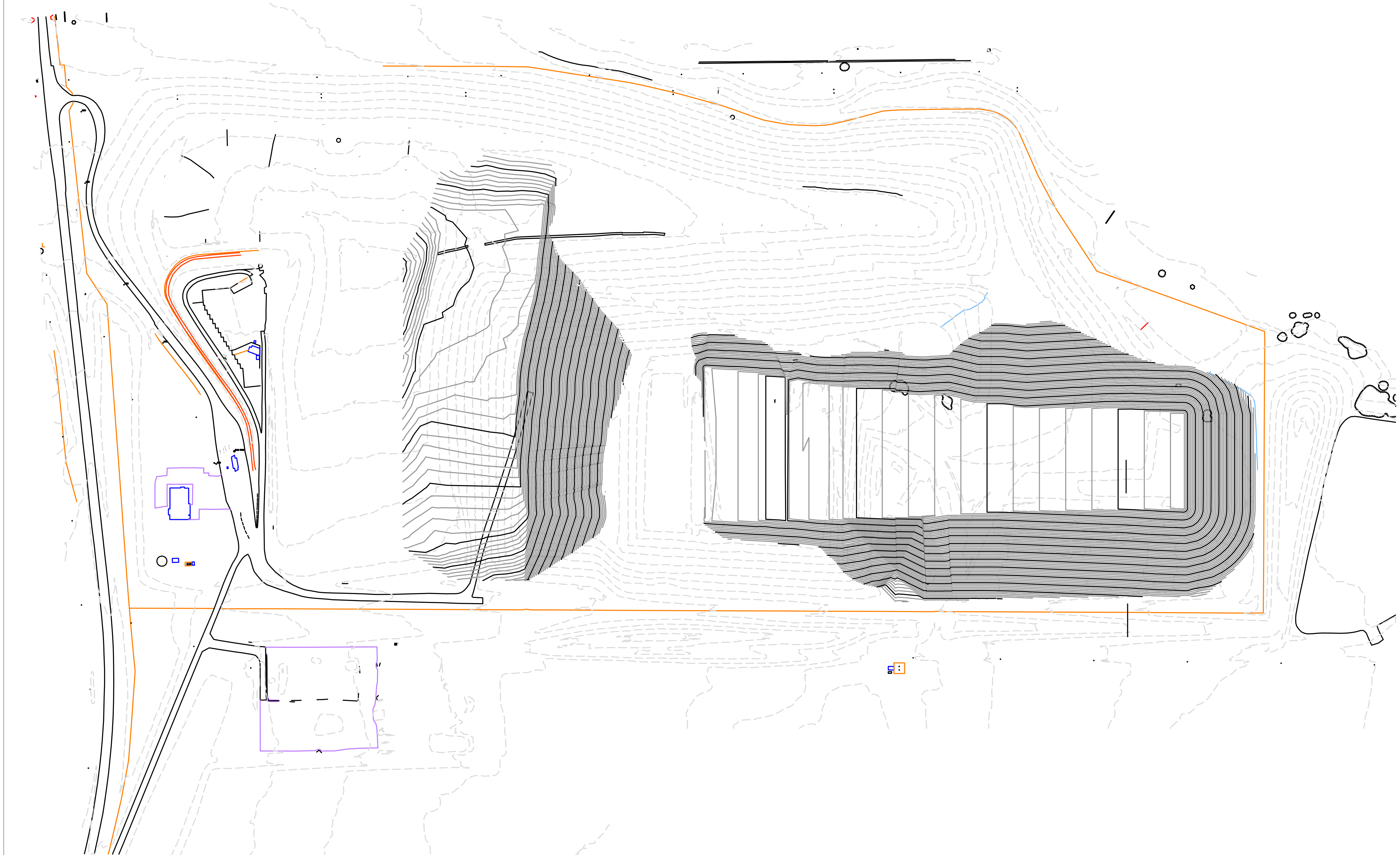
Attachments:

Appendix A

1 Cell 6 Excavation Plan (3.0: 1 Cut)
2a Cell 6 Excavation Plan (2.5: 1 Cut-North)
2b Cell 6 Excavation Plan (2.0: 1 Cut-North)
3a Cell 6 Excavation Plan (2.5: 1 Cut)
3b Cell 6 Excavation Plan (2.0: 1 Cut)

Appendix B
Stability Analysis

APPENDIX A



REFERENCE:
BASE TOPOGRAPHY PROVIDED BY CLIENT
AERIAL SURVEY BY OLYMPUS AERIAL SURVEYS MAY 21, 2005
SURVEY UPDATE OF WASTE IN PLACE BY CLIENT: MAY 2, 2008

TRANS-JORDAN

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Salt Lake City, Utah
(801) 270-9400

NOTES:

1. *CELL 6 EXCAVATION WITH 3.0:1 SLOPE*

TOTAL: 3,340,550 CYD
SOIL: 2,082,950 CYD
OLD WASTE: 1,257,600 CYD

MARK	DATE	DESCRIPTION

ISSUE:

SHEET TITLE

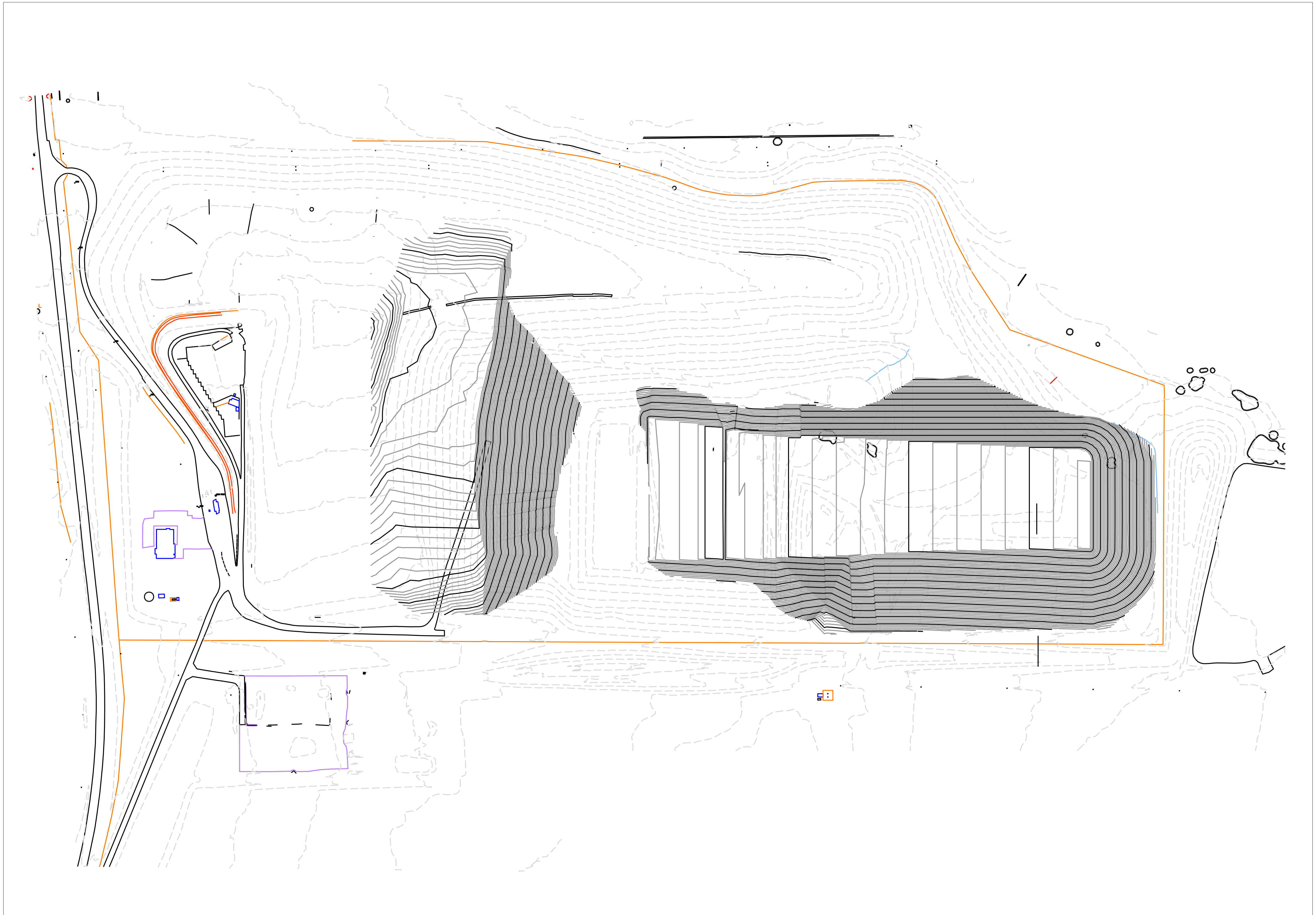
TRANS-JORDAN CITIES LANDFILL

Cell 6 Excavation Plan

(3.0: 1 CUT)

1

X:\PROJECTS\00102\2010 Slope Stability\Volume Comparison\Base map.dwg



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BASE TOPOGRAPHY PROVIDED BY CLIENT
AERIAL SURVEY BY OLYMPUS AERIAL SURVEYS MAY 21, 2005
SURVEY UPDATE OF WASTE IN PLACE BY CLIENT: MAY 2, 2008

TRANS-JORDAN
10873 South 7200 West
South Jordan, Utah
(801) 569-8994

CONSULTANTS
IGES
ideas for a changing world
4153 South Commerce Drive
Salt Lake City, Utah
(801) 270-9400

NOTES:

1. CELL 6 EXCAVATION: 2,150,975 CYD WITH 2.5:1 SLOPE ON NORTH

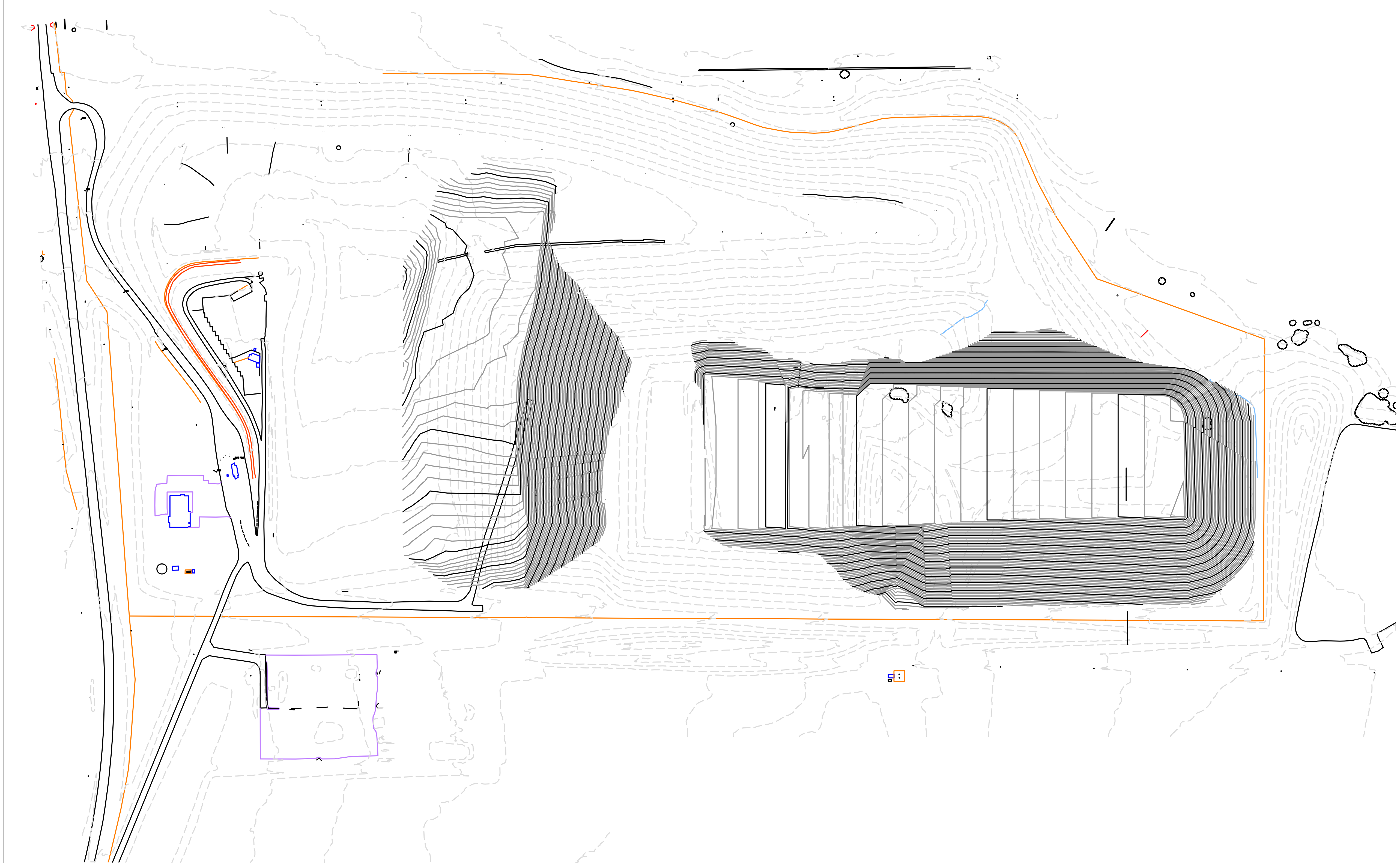
MARK	DATE	DESCRIPTION

ISSUE:

SHEET TITLE
TRANS-JORDAN CITIES LANDFILL
Cell 6 Excavation Plan
(2.5: 1 CUT - NORTH)

2a

X:\PROJECTS\00102\005-2008 VOLUME\Base map.dwg



TRANS-JORDAN
10873 South 7200 West
South Jordan, Utah
(801) 569-8994

CONSULTANTS
IGES
ideas for a changing world
4153 South Commerce Drive
Salt Lake City, Utah
(801) 270-9400

NOTES:

1. CELL 6 EXCAVATION: 2,235,240 CYD WITH 2.0:1 SLOPE ON NORTH

MARK	DATE	DESCRIPTION

ISSUE:

SHEET TITLE

TRANS-JORDAN CITIES LANDFILL

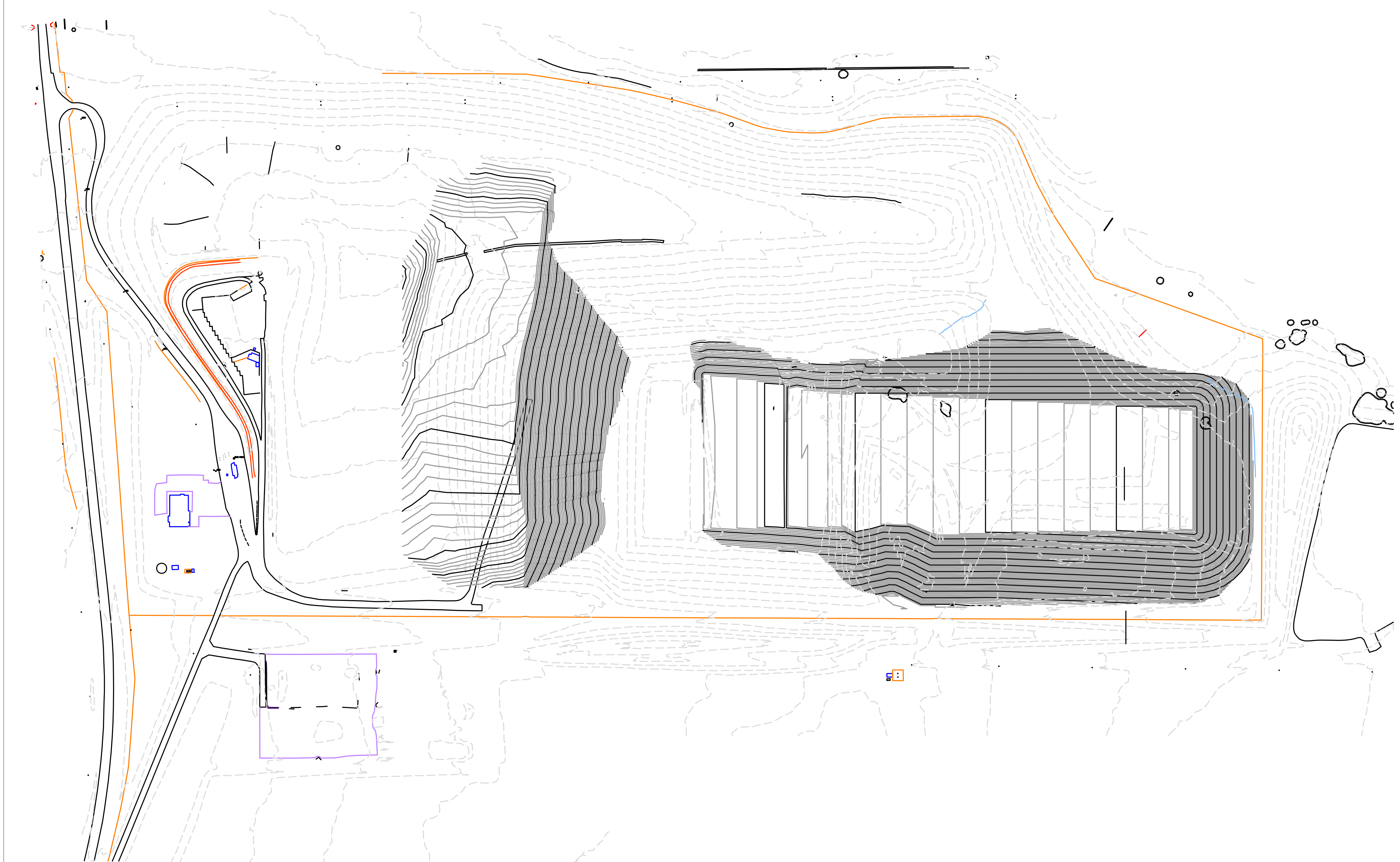
Cell 6 Excavation Plan

(2.0: 1 CUT NORTH)

2b

REFERENCE:
BASE TOPOGRAPHY PROVIDED BY CLIENT
AERIAL SURVEY BY OLYMPUS AERIAL SURVEYS MAY 21, 2005
SURVEY UPDATE OF WASTE IN PLACE BY CLIENT: MAY 2, 2008

X:\PROJECTS\00102\005-2008 VOLUME\Base map.dwg



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AERIAL SURVEY BY OLYMPUS AERIAL SURVEYS MAY 21, 2005
SURVEY UPDATE OF WASTE IN PLACE BY CLIENT: MAY 2, 2008

X:\PROJECTS\00102\2010 Slope Stability\Volume Comparison\Base map.dwg

TRANS-JORDAN
10873 South 7200 West (U-111)
P.O. Box 95610
South Jordan, Utah 84095-0610
(801) 569-8994

CONSULTANTS
IGES
ideas for a changing world
4153 South Commerce Drive
Salt Lake City, Utah
(801) 270-9400

NOTES:

1. CELL 6 EXCAVATION WITH 2.5:1 SLOPE
NORTH SLOPE ONLY

TOTAL: 3,408,580 CYD
SOIL: 2,150,980 CYD
OLD WASTE: 1,257,600 CYD

2. CELL 6 EXCAVATION WITH 2.5:1 SLOPE
ENTIRE EXCAVATION

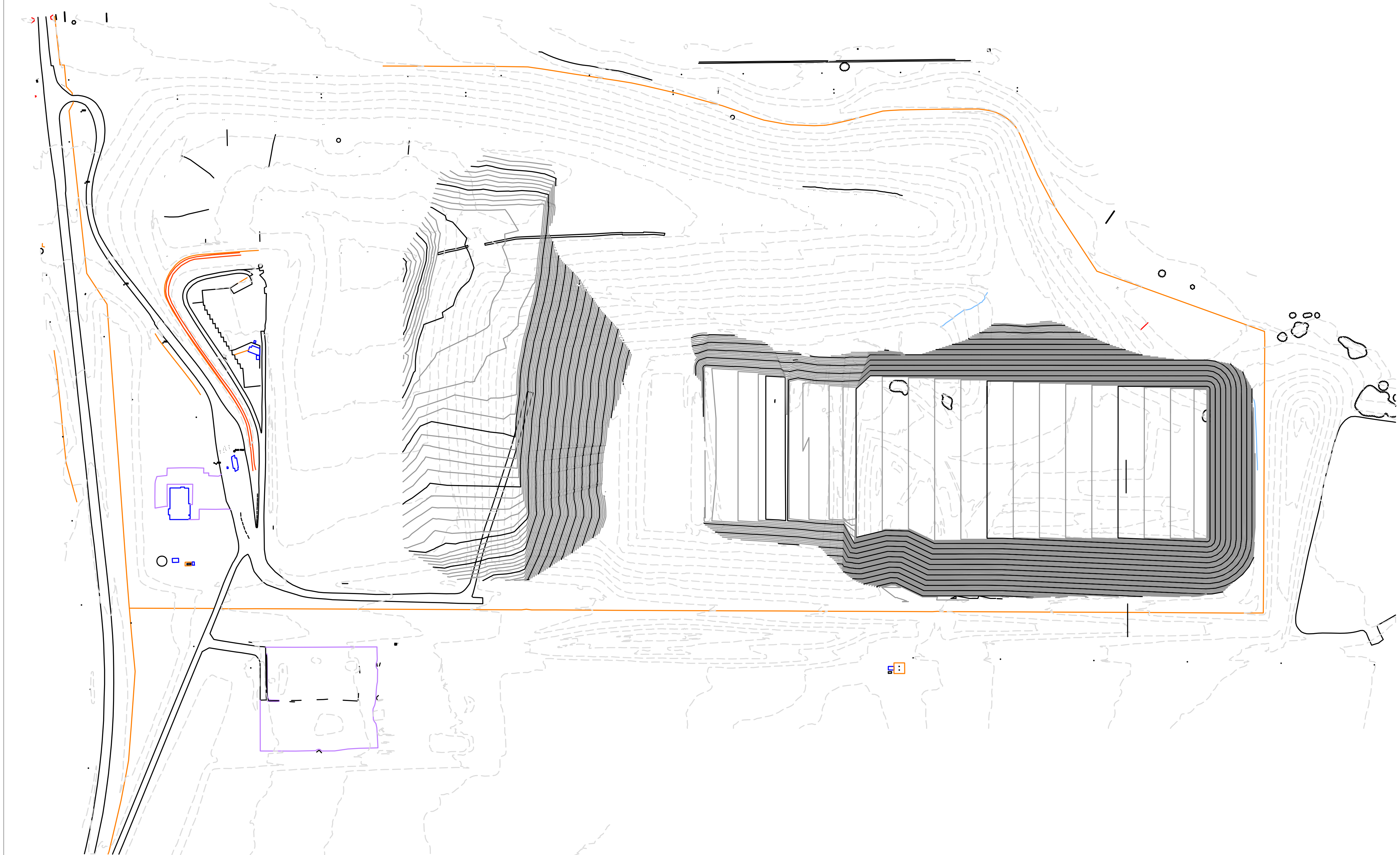
TOTAL: 3,585,000 CYD
SOIL: 2,327,400CYD
OLD WASTE: 1,257,600 CYD

MARK	DATE	DESCRIPTION

ISSUE:

SHEET TITLE
TRANS-JORDAN CITIES LANDFILL
Cell 6 Excavation Plan
(2.5: 1 CUT)

3a



REFERENCE:
BASE TOPOGRAPHY PROVIDED BY CLIENT
AERIAL SURVEY BY OLYMPUS AERIAL SURVEYS MAY 21, 2005
SURVEY UPDATE OF WASTE IN PLACE BY CLIENT: MAY 2, 2008

TRANS-JORDAN

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South Jordan, Utah 84095-0610
(801) 569-8994

CONSULTANTS

IGES

ideas for a changing world

4153 South Commerce Drive
Salt Lake City, Utah
(801) 270-9400

NOTES:

1. CELL 6 EXCAVATION WITH 2.0:1 SLOPE
NORTH SLOPE ONLY

TOTAL: 3,492,840 CYD
SOIL: 2,235,240 CYD
OLD WASTE: 1,257,600 CYD

2. CELL 6 EXCAVATION WITH 2.0:1 SLOPE
ENTIRE EXCAVATION

TOTAL: 3,882,200 CYD
SOIL: 2,624,600 CYD
OLD WASTE: 1,257,600 CYD

MARK	DATE	DESCRIPTION

ISSUE:

SHEET TITLE

TRANS-JORDAN CITIES LANDFILL

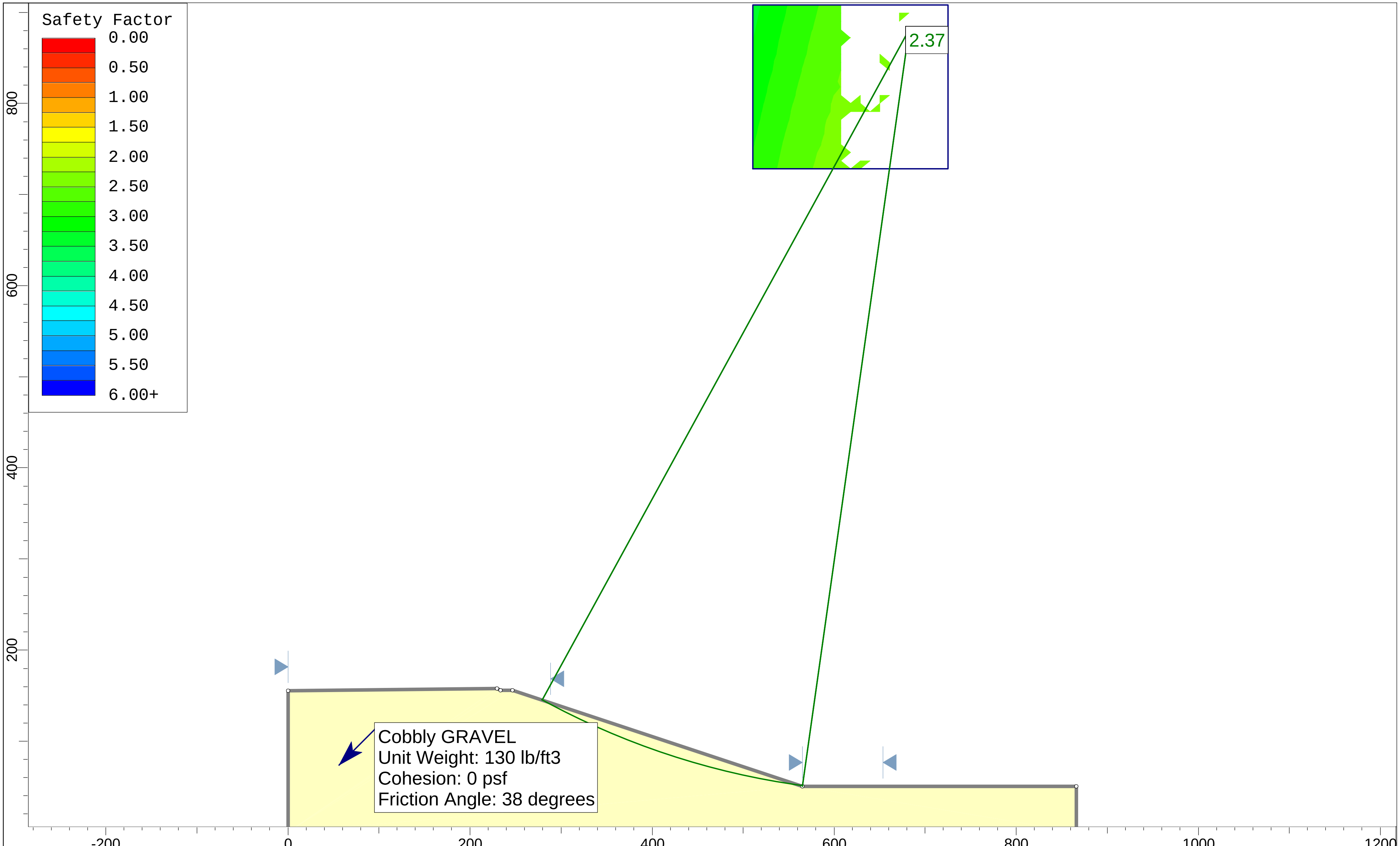
Cell 6 Excavation Plan

(2.0: 1 CUT)

3b

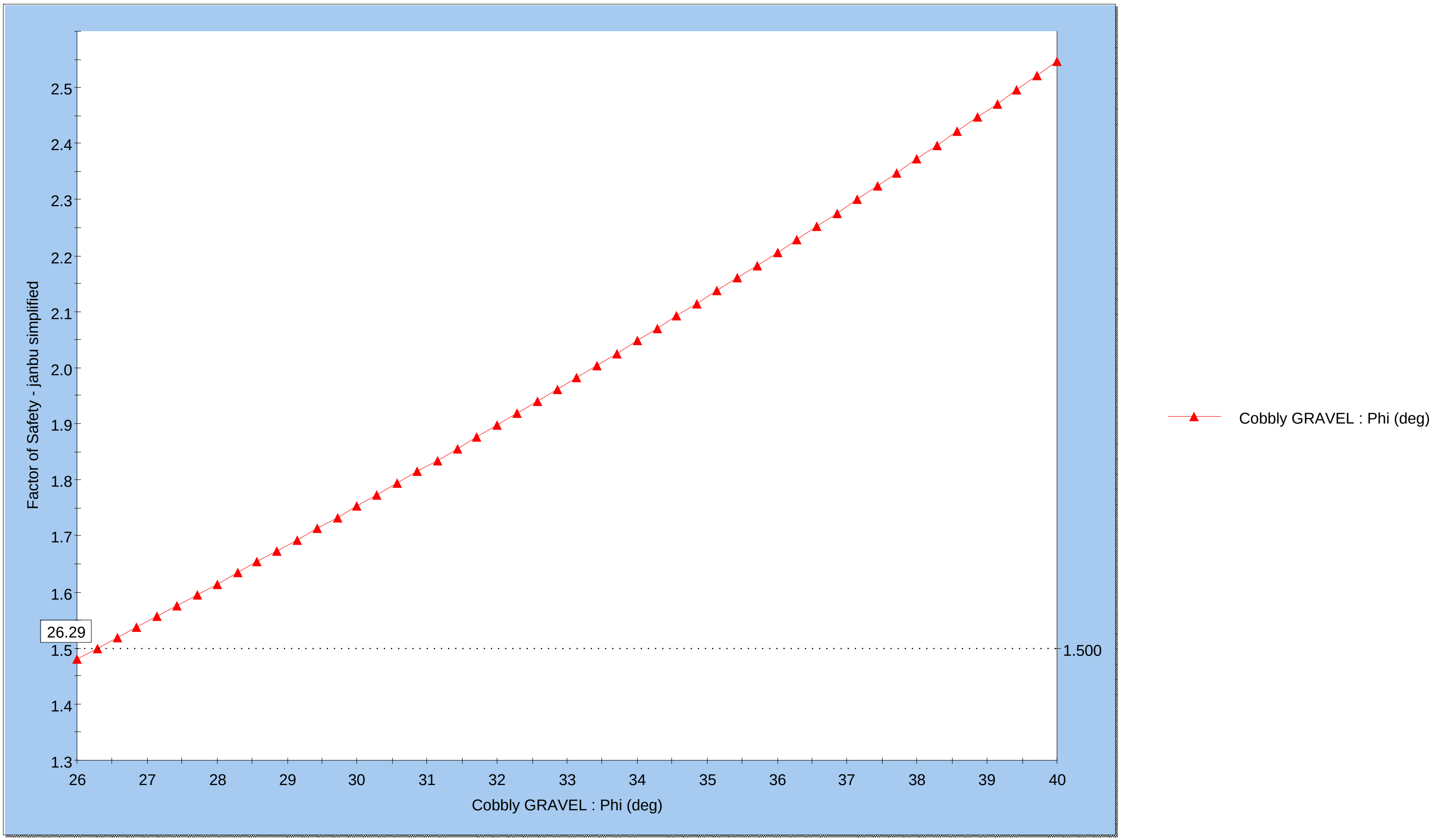
X:\PROJECTS\00102\2010 Slope Stability\Volume Comparison\Base map.dwg

APPENDIX B

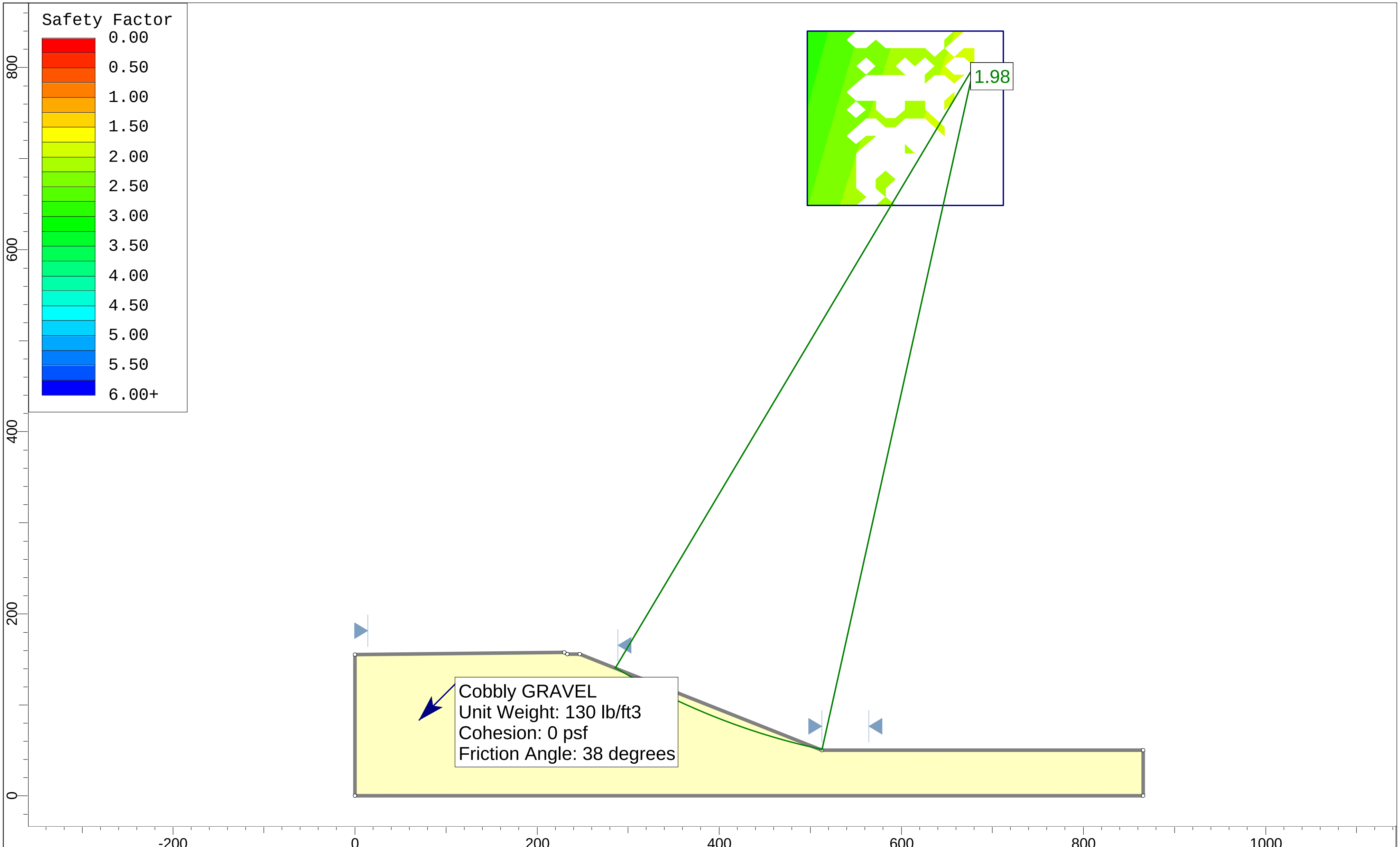


Project	Landfill 3H to 1V slope stability		
Analysis Description	Janbu - no cohesion		
Drawn By	JB	Scale	1:1750
Company	IGES, Inc		
Date	2/11/11	File Name	landfill_3_to_1sensitivity.sli

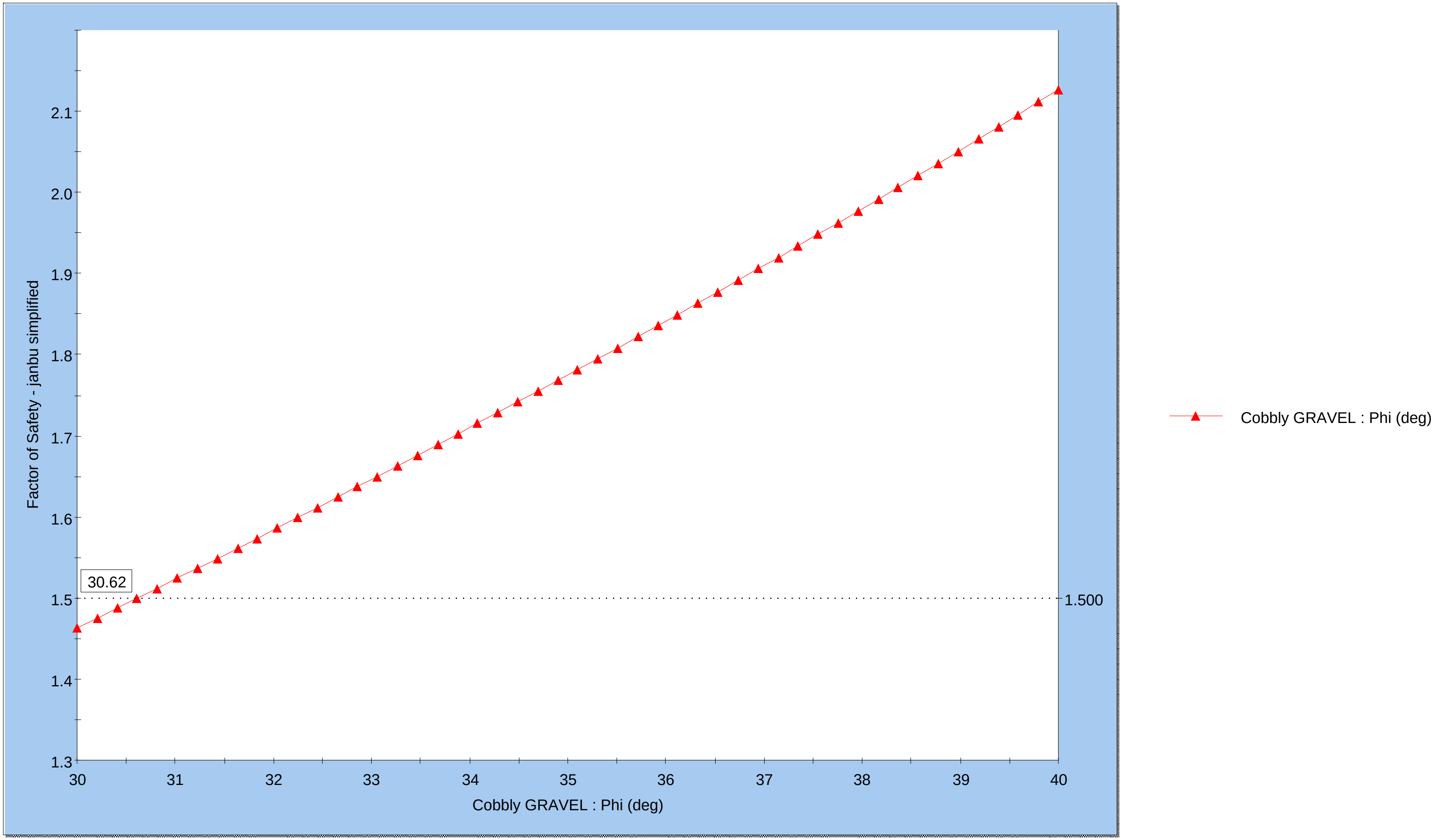
SLIDEINTERPRET 6.008



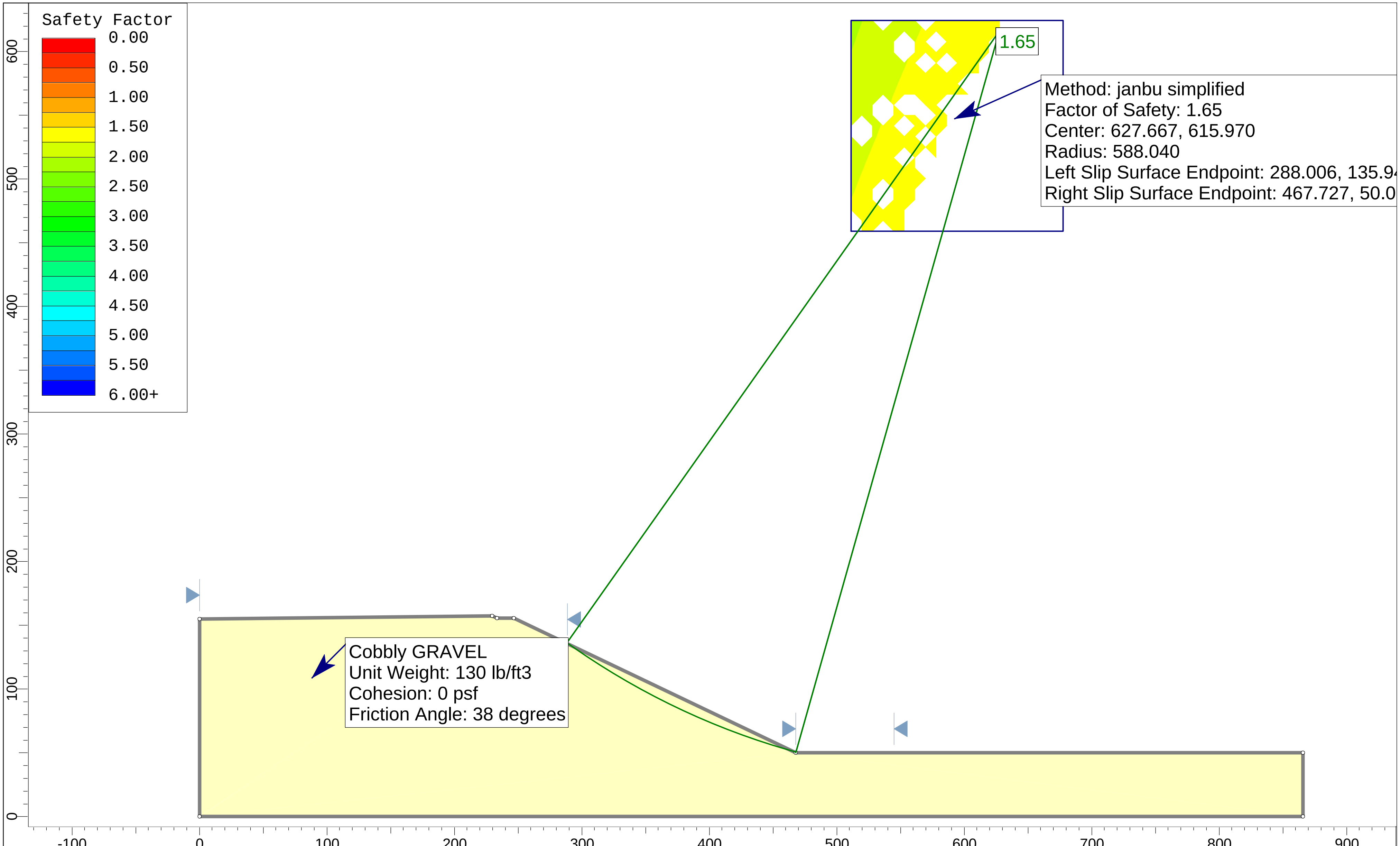
IGES®	*Project* Landfill 3H to 1V slope stability			
	Analysis Description Janbu - no cohesion			
	Drawn By JB	*Scale*	*Company* IGES, Inc	
SLIDEINTERPRET 6.008	*Date* 2/11/11		*File Name* landfill_3_to_1sensitivity.sli	



IGES®	Project: Landfill 2.5H to 1V slope stability		
	Analysis Description: Janbu - no cohesion		
	Drawn By: JB	Scale: 1:1750	Company: IGES, Inc
SLIDEINTERPRET 6.008	Date: 2/11/11		File Name: landfill_2.5_to_1sensitivity.sli

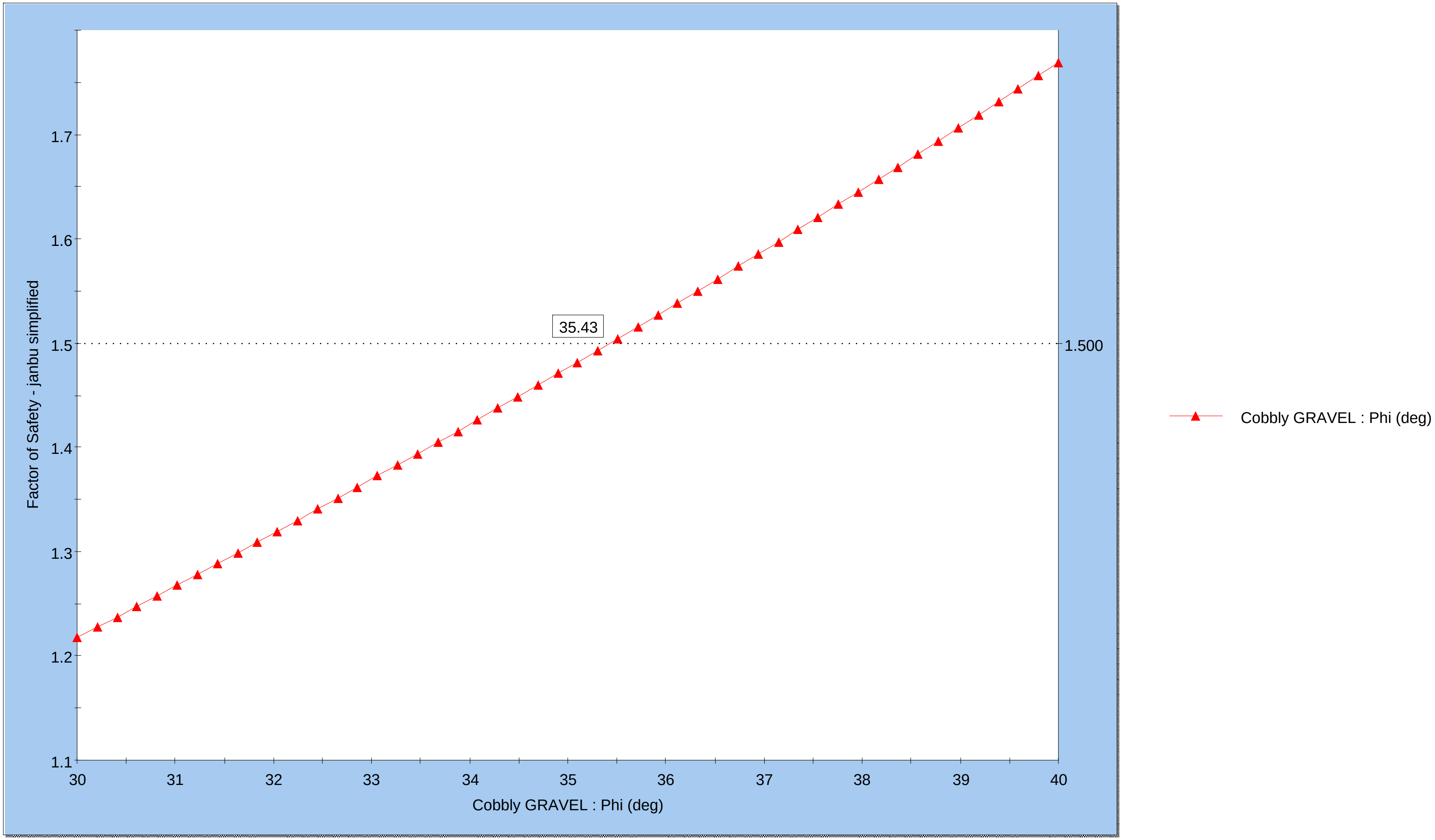


IGES®	*Project* Landfill 2.5H to 1V slope stability		
	Analysis Description Janbu - no cohesion		
	Drawn By JB	*Scale*	*Company* IGES, Inc
SLIDEINTERPRET 6.008	*Date* 2/11/11		*File Name* landfill_2.5_to_1sensitivity.sli

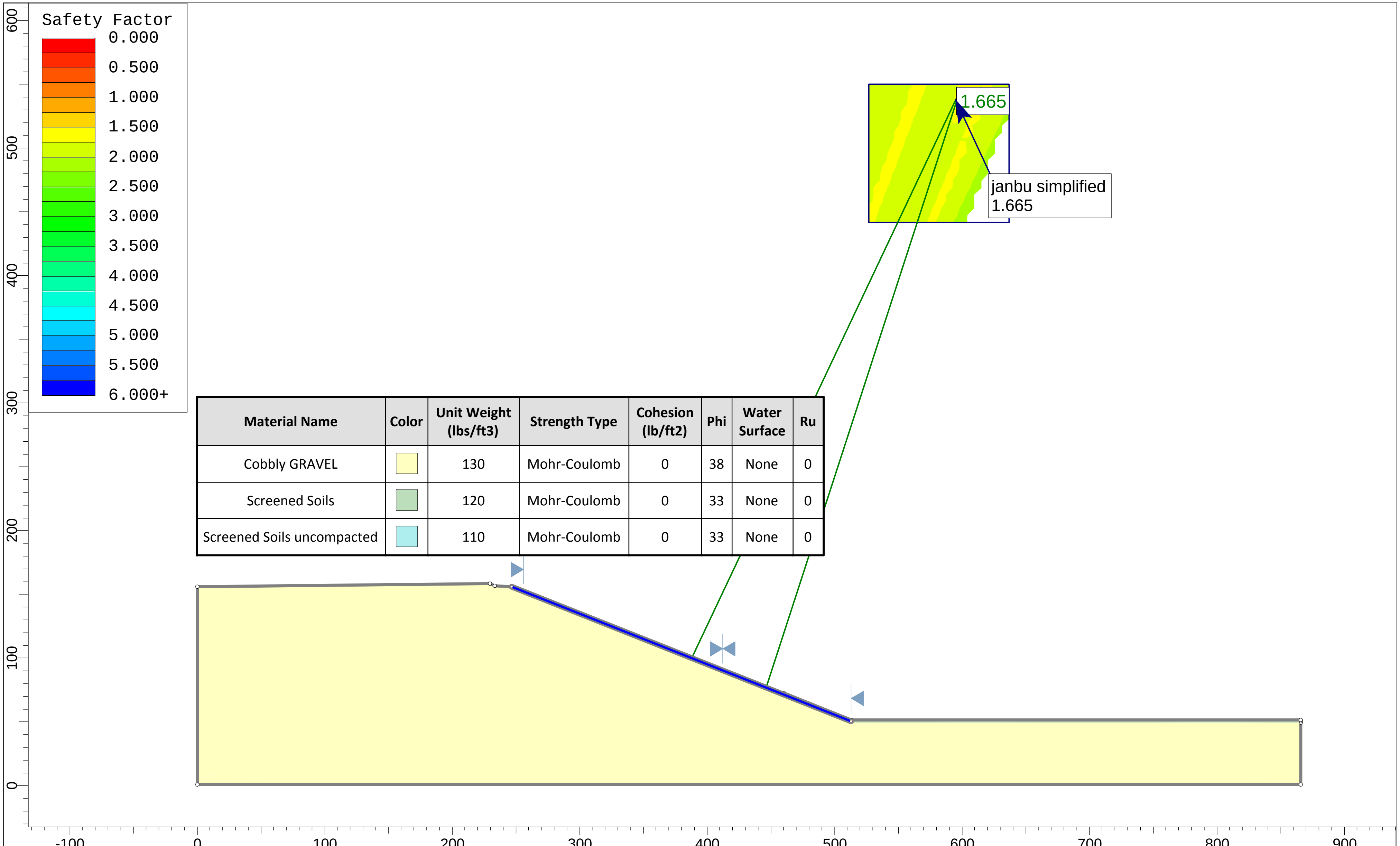


Project	Landfill 2H to 1V slope stability		
Analysis Description	Janbu - no cohesion		
Drawn By JB	*Scale* 1:1250	*Company*	IGES, Inc
Date	2/11/11	*File Name*	landfill_2_to_1sensitivity.sli

SLIDEINTERPRET 6.008



IGES®	*Project* Landfill 2H to 1V slope stability		
	Analysis Description Janbu - no cohesion		
	Drawn By JB	*Scale*	*Company* IGES, Inc
SLIDEINTERPRET 6.008	*Date* 2/11/11		*File Name* landfill_2_to_1sensitivity.sli

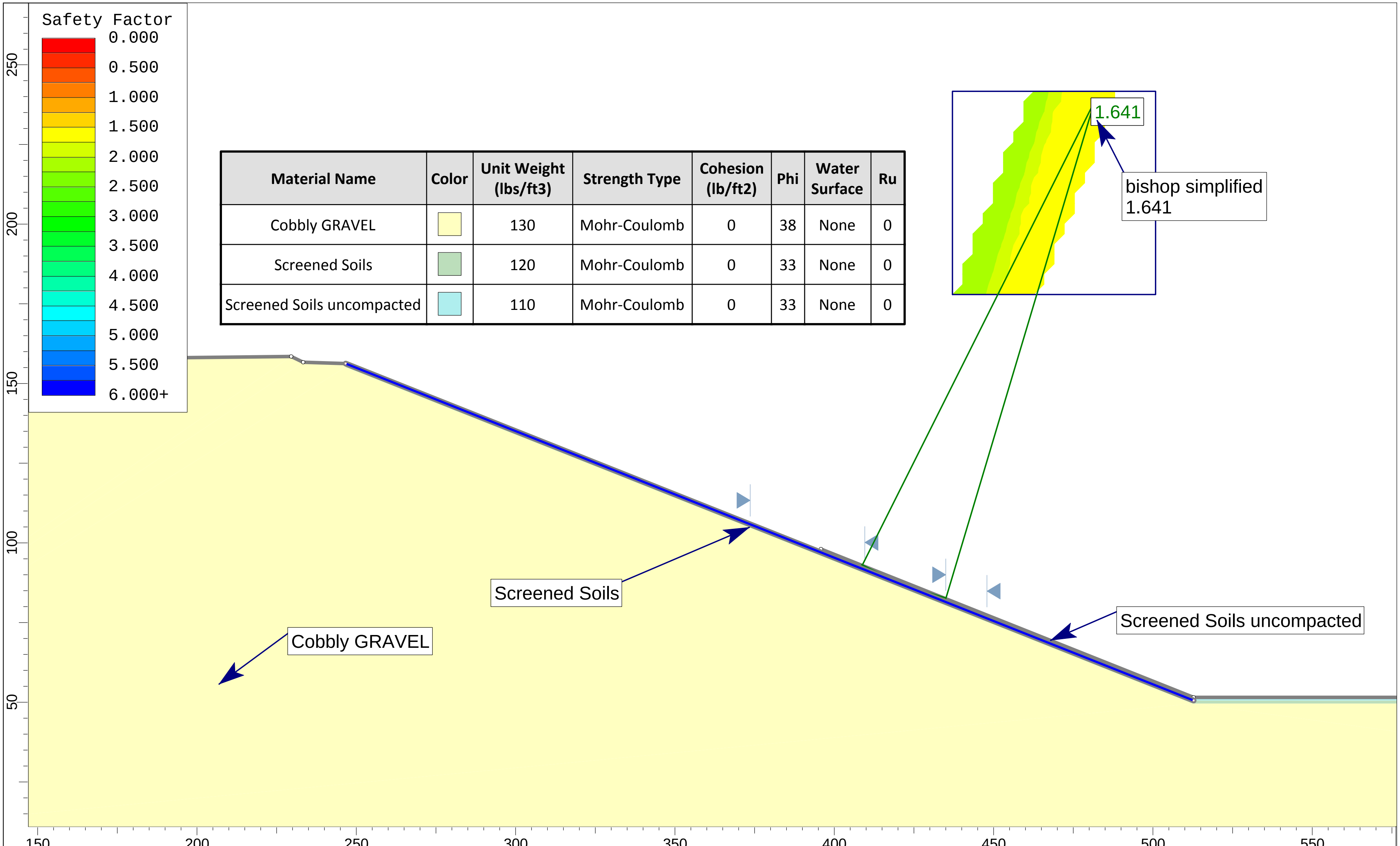


Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (lb/ft2)	Phi	Water Surface	Ru
Cobbly GRAVEL		130	Mohr-Coulomb	0	38	None	0
Screened Soils		120	Mohr-Coulomb	0	33	None	0
Screened Soils uncompacted		110	Mohr-Coulomb	0	33	None	0

IGES®

SLIDEINTERPRET 6.010

Project	Landfill 2.5H to 1V slope stability - Veneer stability
Analysis Description	Failure through sand layer and GCL
Drawn By	JB
Scale	1:1250
Company	IGES, Inc
Date	5/2/11
File Name	landfill_2.5_to_1 with sand_textile.sli



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (lb/ft2)	Phi	Water Surface	Ru
Cobbly GRAVEL		130	Mohr-Coulomb	0	38	None	0
Screened Soils		120	Mohr-Coulomb	0	33	None	0
Screened Soils uncompacted		110	Mohr-Coulomb	0	33	None	0

IGES®

SLIDEINTERPRET 6.010

Project	Landfill 2.5H to 1V slope stability - Veneer stability		
Analysis Description	Failure through sand veneer on HDPE		
Drawn By JB	*Scale* 1:500	*Company*	IGES, Inc
Date	5/2/11	*File Name*	landfill_2.5_to_1 with sand_textile_sand.sli

2702 South 1030 West, Suite 10, Salt Lake City, Utah 84119
Ph: 801.270.9400 Fax: 801.270.9401

RECEIVED
By Division of Waste Management and Radiation Control at 2:55 pm, Jul 14, 2022

TRANSMITTAL

TO: Doug Hansen Utah Division of Waste Management and Radiation Control 195 North 1950 West Salt Lake City, Utah 84116	DATE: 7/14/22 IGES JOB #: 00102-014 SENT VIA: Email

We are sending you the following:

Copies	Date	Description
1	7/14/22	2022 Trans Jordan Landfill Repermit Application (Appendices A – E)

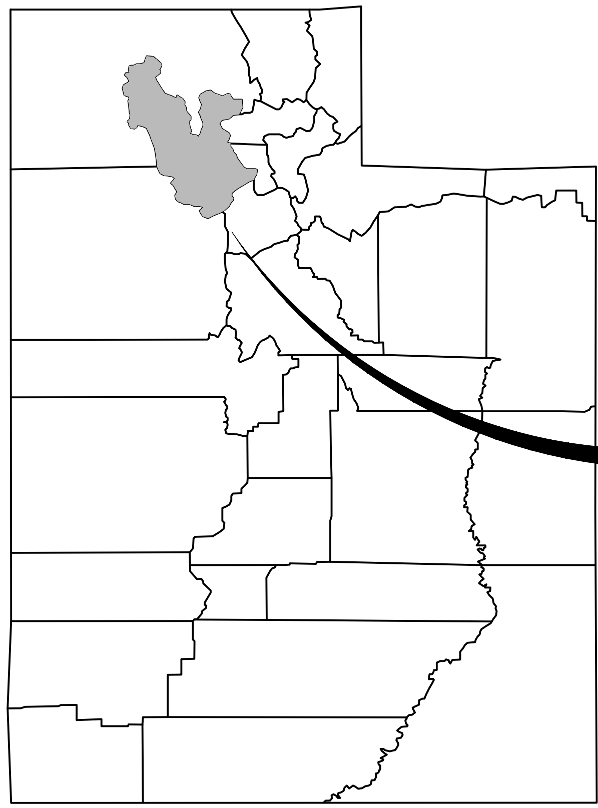
x	For approval		Approved as submitted		Resubmit		Copies for approval
	For your use		Approved as noted		Submit		Copies for distribution
	As requested		Returned for corrections		Return		Corrected prints
	For your review and comment		Other				

Remarks:
Attached are Appendices A through E of the 2022 Trans Jordan Landfill Repermit Application.

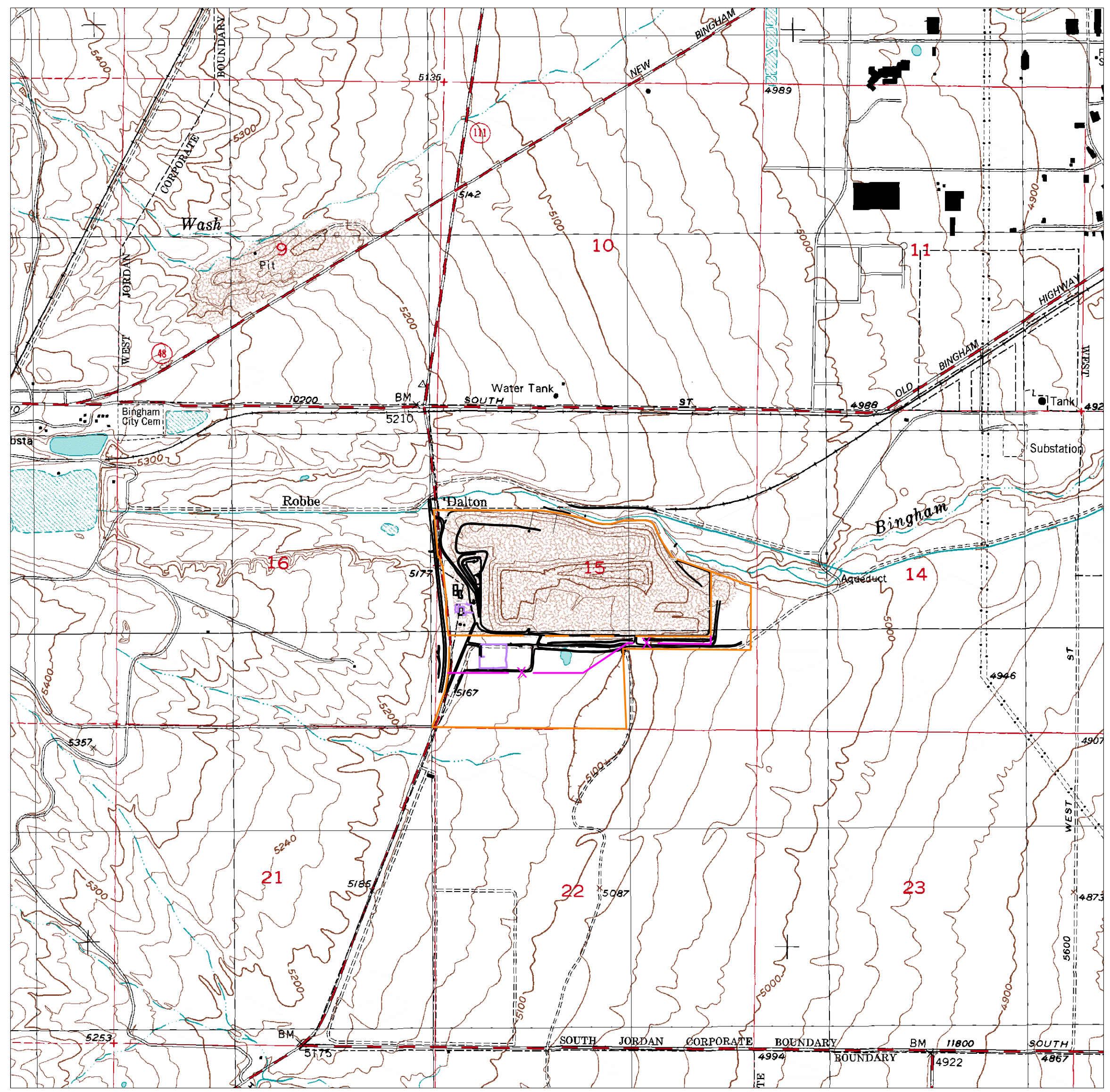
SIGNED: Brett Mickelson

APPENDIX A – Drawings

TRANS-JORDAN LANDFILL
2023 PERMIT RENEWAL



SITE LOCATION MAP
(NOT TO SCALE)



SITE VICINITY MAP
(1" = 3000')

DRAWING INDEX

1 TITLE SHEET
2 GENERAL ARRANGEMENT
3 FINAL COVER
4 ELEVATION VIEW
5 DETAILS

TRANS-JORDAN

10473 South Bacchus Hwy (U-111)
P.O. Box 95610
South Jordan, Utah 84095-0610
(801) 569-8994

CONSULTANTS

IGES

2702 South 1030 West, Suite 10
Salt Lake City, Utah 84119
(801)270-9400 Fax: (801)270-9401

MARK	DATE	DESCRIPTION
-	7/13/22	PERMIT
-	6/6/22	DRAFT

ISSUE:

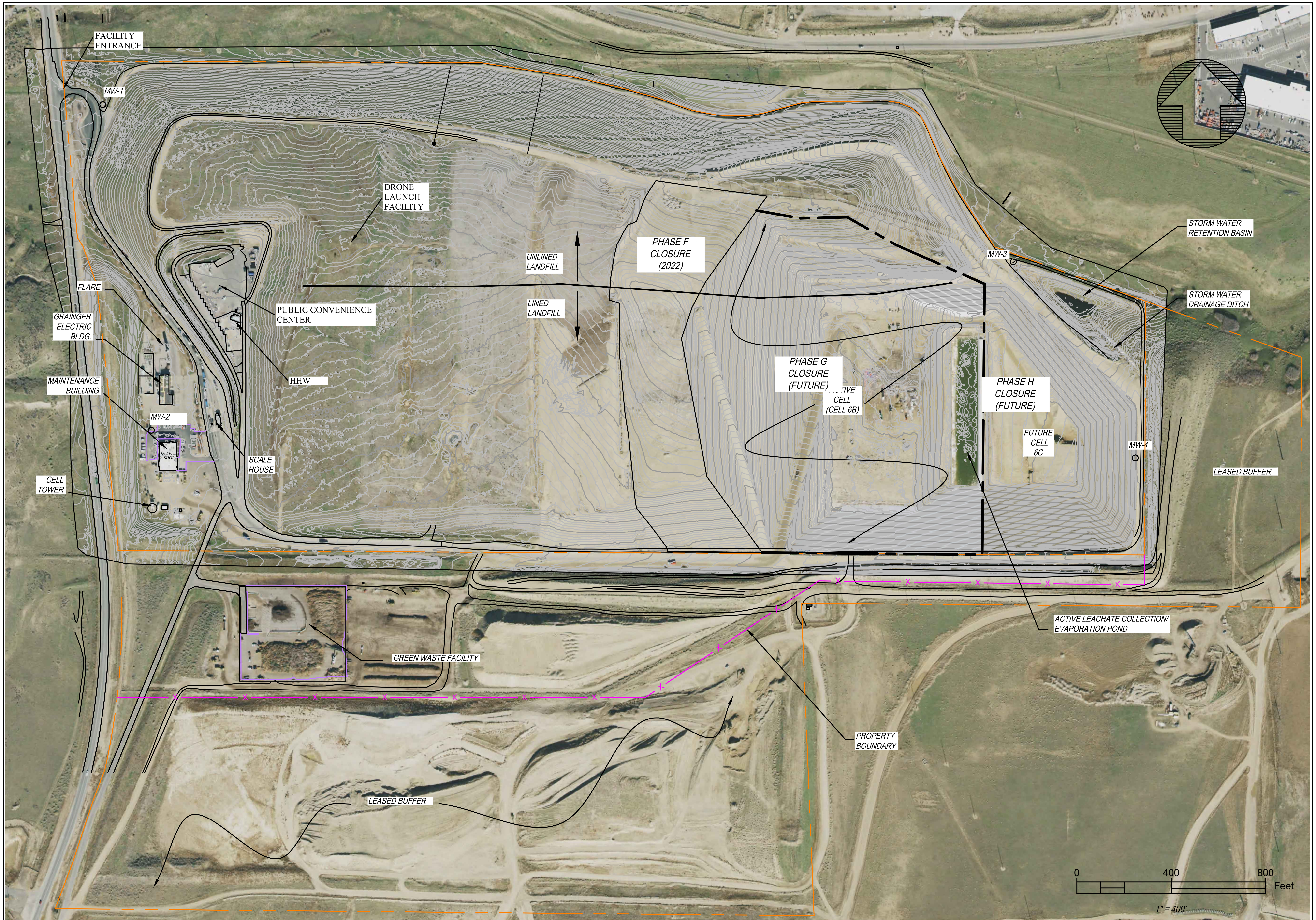
PROJECT NO.:	00102-014
CAD DWG FILE:	TJL 2023 Permit Renewal
DRAWN BY:	JAH
DESIGNED BY:	BDM
CHECKED BY:	TR
COPYRIGHT:	IGES 2022

SHEET TITLE

TRANS-JORDAN LANDFILL
TITLE
SHEET

1

REFERENCE:



REFERENCE:
TOPOGRAPHY FROM CLIENT SURVEY (May 5, 2022)
BACKGROUND AERIAL IMAGERY, NAIP 2021 (Utah Geographic Reference Center)

TRANS-JORDAN

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P.O. Box 95610
South Jordan, Utah 84095-0610
(801) 569-8994

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IGES

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Salt Lake City, Utah 84119
(801)270-9400 Fax: (801)270-9401

PROPERTY BOUNDARY

MARK	DATE	DESCRIPTION
-	7/13/22	PERMIT
-	6/6/22	DRAFT

ISSUE:

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DRAWN BY:	JAH
DESIGNED BY:	BDM
CHECKED BY:	TR
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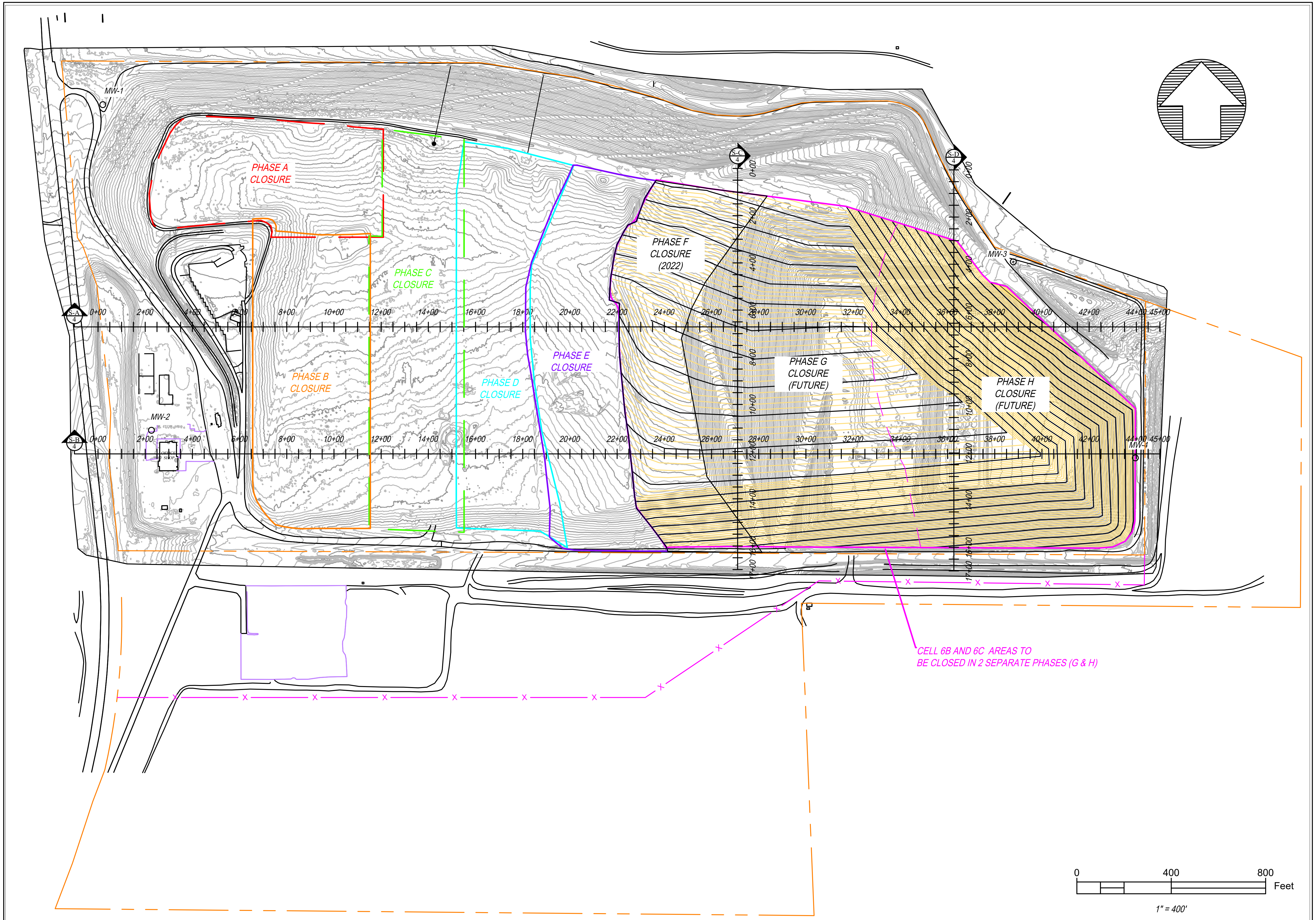
SHEET TITLE

TRANS-JORDAN LANDFILL

GENERAL ARRANGEMENT

2



REFERENCE:
TOPOGRAPHY FROM CLIENT SURVEY (May 5, 2022)
BACKGROUND AERIAL IMAGERY, NAIP 2021 (Utah Geographic Reference Center)

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PROPERTY BOUNDARY

MARK	DATE	DESCRIPTION
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-	6/6/22	DRAFT

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DRAWN BY:	JAH
DESIGNED BY:	BDM
CHECKED BY:	TR
COPYRIGHT:	IGES 2022

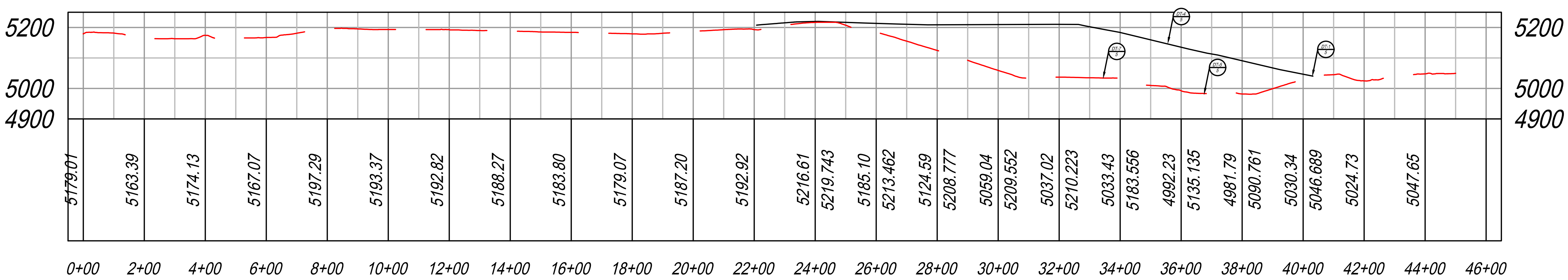
SHEET TITLE

TRANS-JORDAN LANDFILL

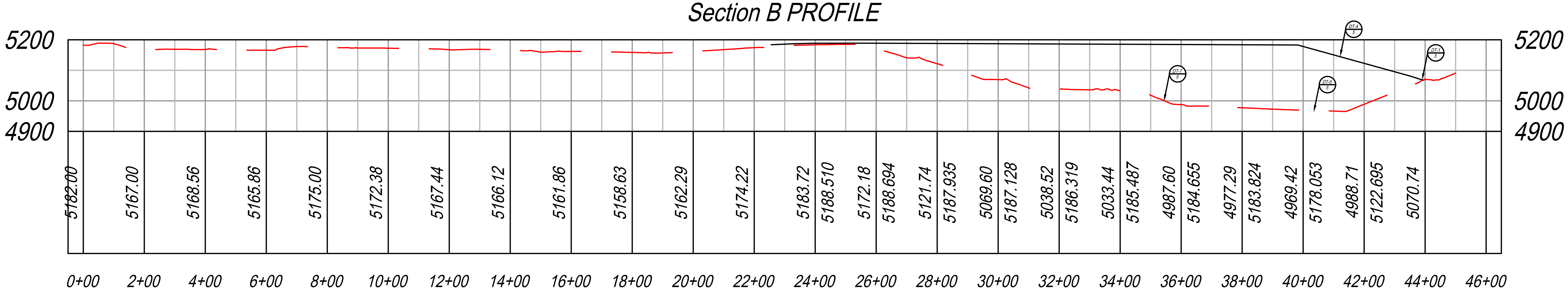
FINAL COVER

3

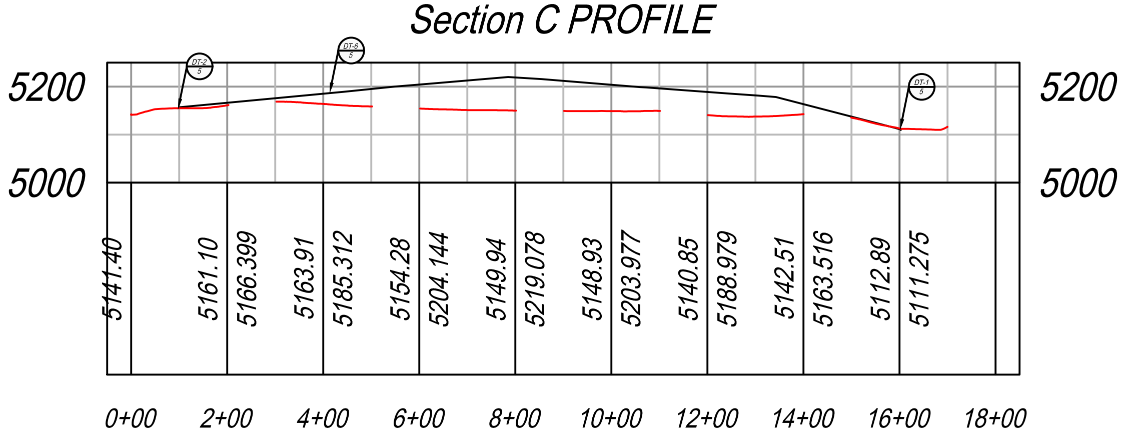
Section A PROFILE



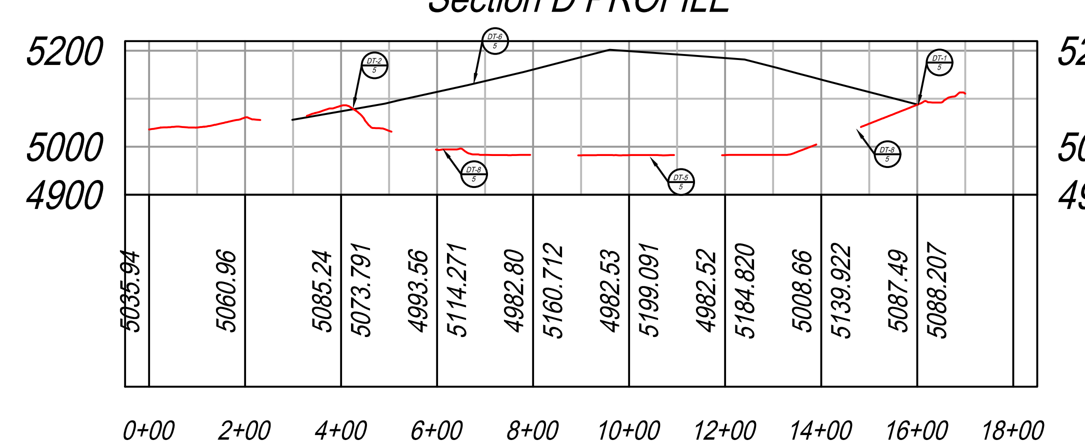
Section B PROFILE



Section C PROFILE



Section D PROFILE



0 400 800 Feet

1" = 400'

REFERENCE:
TOPOGRAPHY FROM CLIENT SURVEY (May 5, 2022)
BACKGROUND AERIAL IMAGERY, NAIP 2021 (Utah Geographic Reference Center)

TRANS-JORDAN

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CONSULTANTS

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Salt Lake City, Utah 84119
(801)270-9400 Fax: (801)270-9401

MARK	DATE	DESCRIPTION
-	7/13/22	PERMIT
-	6/6/22	DRAFT

ISSUE:

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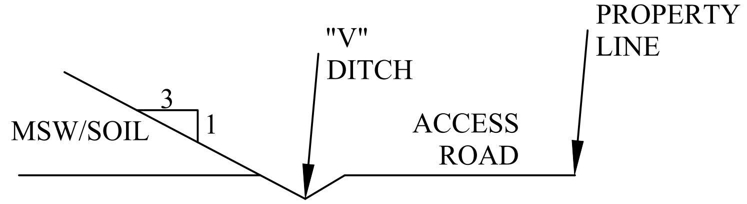
DRAWN BY:	JAH
DESIGNED BY:	BDM
CHECKED BY:	TR
COPYRIGHT:	IGES 2022

SHEET TITLE

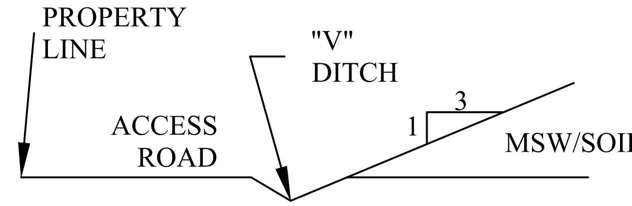
TRANS-JORDAN LANDFILL

ELEVATION VIEW

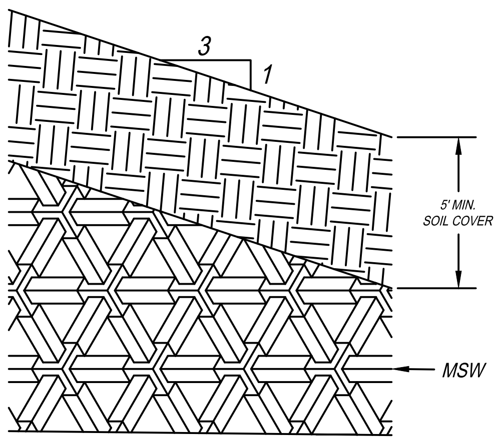
4



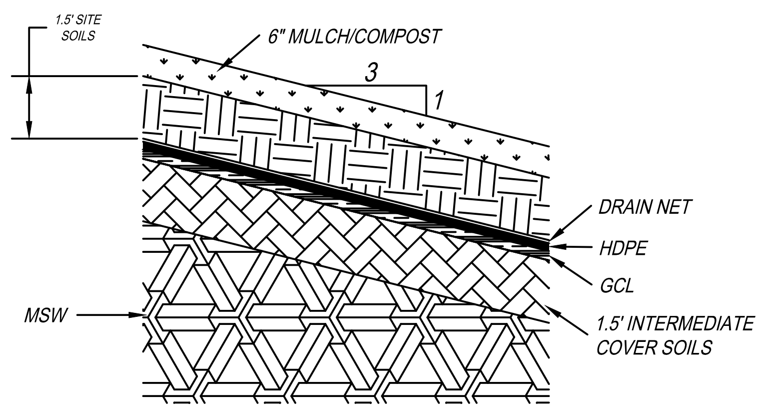
DT-1
4
PERIMETER DRAINAGE DITCH
NTS



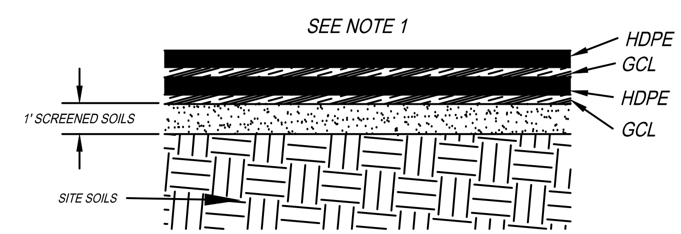
DT-2
5
PERIMETER DRAINAGE DITCH
NTS



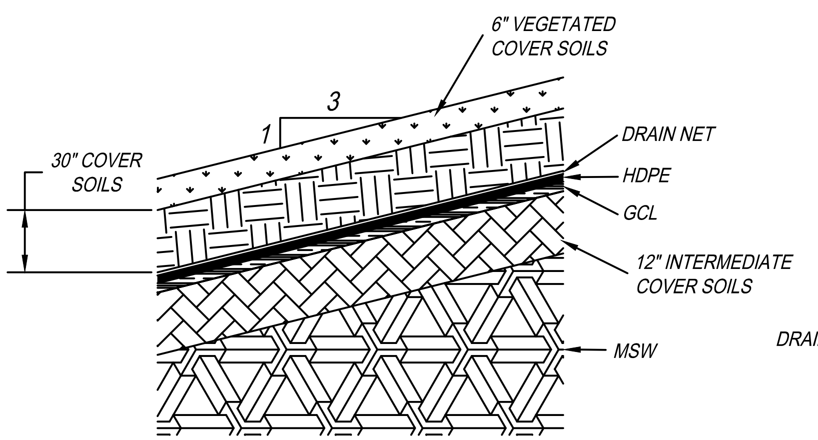
DT-3
4
NORTH SLOPE PROTECTIVE COVER
NTS



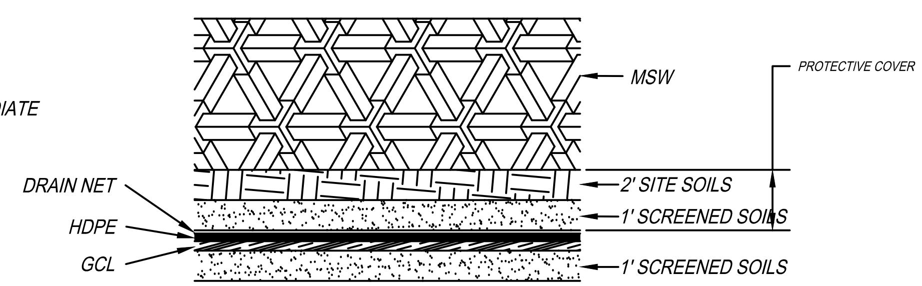
DT-4
4
UNLINED LANDFILL COVER
NTS



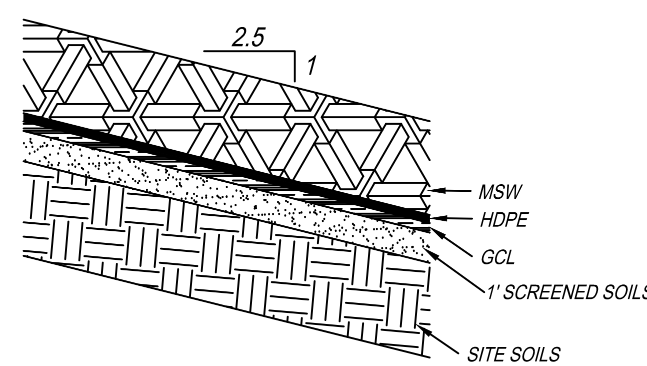
DT-5
4
LEACHATE COLLECTION/
EVAPORATION POND LINER
NTS



DT-6
4
LINED LANDFILL COVER
NTS



DT-7
4
LANDFILL CELL BASE LINER
NTS



DT-8
4
LANDFILL SLOPE LINER
NTS

REFERENCE:

TRANS-JORDAN

10473 South Bacchus Hwy (U-111)
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DRAWN BY:	JAH
DESIGNED BY:	BDM
CHECKED BY:	TR
COPYRIGHT:	IGES 2022

SHEET TITLE

TRANS-JORDAN LANDFILL

DETAILS

5

APPENDIX B – Legal Description & Property Ownership

Trans-Jordan Landfill Property Description
A parcel of land in Section 15, Township 3 South, Range 2 West, Salt Lake Base and Meridian, Salt Lake County, Utah, containing 190.0468 acres and being more particularly described as follows.

Beginning at a point S89□41'17"E 183.50 feet from a rock monument at the West quarter corner of said Section 15, said rock monument bears N0□04'19"E 2643.87 feet (basis of bearing) from a brass cap monument at the Southwest corner of said Section 15, said point also being on the Easterly line of Salt Lake County Road 111 (formerly U-111); thence N19□44'29"W 213.44 and N6□11'36"W 753.84 feet along said Easterly line of County Road 111; thence S89□45'42"E 1783.29 feet; thence S81□14'37"E 402.07 feet; thence S77□13'31"E 165.34 feet; thence S74□37'58"E 201.08 feet; thence S70□00'29"E 148.20 feet; thence S79□19'04"E 107.15 feet; thence S87□07'45"E 89.27 feet; thence N86□30'28"E 63.83 feet; thence N79□00'30"E 49.95 feet; thence 74□47'30"E 162.12 feet; thence N85□06'53"E 59.90 feet; thence N89□26'10"E 304.89 feet; thence S81□15'35"E 50.02 feet; thence S68□45'39"E 49.96 feet; thence S51□41'10"E 49.91 feet; thence S32□01'58"E 50.11 feet; thence S23□33'11"E 169.05 feet; thence S28□07'40"E 138.34 feet; S33□25'02"E 290.94 feet; thence S70□13'26"E 679.75 feet; thence S0□14'18"W 1075.58 feet; thence N89□45'42"W 4348.02 feet to a point on said Easterly line of County Road 111; thence along said Easterly line of County Road 111 the following four courses, (1) Northwesterly 33.15 feet along the arc of a 2934.90 foot radius curve to the left through a central angle of 0□38'50" (chord bears N5□52'10"W 33.15 feet). (2) N6□11'36"W 353.2 feet. (3) N2□20'14"E 202.24 feet. (4) N6□11'36"W 542.50 feet to the point of beginning.

0720492

Recorded at the Request of ____________________
at ____________ __. M. Fee Paid $____________.
Mail tax notice to: Trans-Jordan Cities
Address: 10873 South 7200 West, P. O. Box 95610, South Jordan, Utah 84095-0610

QUIT-CLAIM DEED

TRANS-JORDAN CITIES, a political subdivision of the State of Utah, hereby QUIT-CLAIMS to GRANTEE, TRANS-JORDAN CITIES, a political subdivision of the State of Utah, for the sum of TEN DOLLARS, ($10.00), and other good and valuable consideration, the following tract of land located in Salt Lake County, State of Utah for the purpose of consolidating three separate parcels of property into a single parcel of land described as follows:

A parcel of land located in Section 15, Township 3 South, Range 2 West, Salt Lake Base and Meridian, Salt Lake County, Utah, containing 190.0470 acres and being more particularly described as follows.

Beginning at a point on the east line of Highway 111, said point being N0°02'33"E 949.46 feet along the section line and S89°45'42"E 29.37 from a stone monument at the West quarter corner of said Section 15, said stone monument bears S0°02'33"W 2644.02 feet (basis of bearing) from a stone monument at the northwest corner of said section 15;

thence S89°45'42"E 1783.29 feet;
thence S77°13'31"E 165.34 feet;
thence S70°00'29"E 148.20 feet;
thence S87°07'45"E 89.27 feet;
thence N79°00'30"E 49.95 feet;
thence N85°06'53"E 59.90 feet;
thence S81°15'35"E 50.02 feet;
thence S51°41'10"E 49.10 feet;
thence S23°33'11"E 169.05 feet;
thence S33°25'02"E 290.94 feet;
thence S81°14'37"E 402.07 feet;
thence S74°37'58"E 201.08 feet,
thence S79°19'04"E 107.15 feet;
thence N86°30'28"E 63.83 feet;
thence N74°47'30"E 162.12 feet;
thence N89°26'10"E 304.89 feet:
thence S68°45'39"E 49.96 feet;
thence S32°01'58"E 50.11 feet;
thence S28°07'40"E 138.34 feet;
thence S70°13'26"E 679.73 feet;
thence S0°14'17"W 1075.58 feet;
thence N89°45'42"W 4348.03 feet to the east line of said Highway 111;
thence continuing along said east line of Highway 111 the following six courses;

1. Northwesterly 33.14 feet along the arc of a 2934.90 foot radius curve to the left through a central angle of 0°38'49" (chord bears N5°52'31"W 33.14 feet);
2. N6°11'33"W 353.20 feet.
3. N2°20'17"E 202.24 feet.
4. N6°11'35"W 542.50 feet.
5. N19°44'29"W 213.44 feet.
6. N6°11'36"W 753.84 feet to the point of beginning.

Containing Parcel Nos.:

26-15-300004	4.51 ac
26-15-300013	184.19 ac
26-15-300011	.96 ac
	190.05 ac

8726492
07/10/2003 01:53 PM NO FEE
Book - 8838 Pg - 3270-3271
GARY W. OTT
RECORDER, SALT LAKE COUNTY, UTAH
TRANS JORDAN CITIES
10873 S 7200 W
PO BOX 95610
SOUTH JORDAN UT 84095-0610
BY: SBM, DEPUTY - WI 2 P.

quickclaimdeed
894006/HCH/msp

Witness the hand of said Grantor, this 30 day of June, 2003.

TRANS-JORDAN CITIES

By: Tom DeSpain
Tom DeSpain
Its Chairman

STATE OF UTAH)
: SS.
COUNTY OF SALT LAKE)

On the 30th day of June, 2003, personally appeared before me, Tom DeSpain, signer of the foregoing instrument, who duly acknowledged to me that he executed the same.

Kaye M Astill
NOTARY PUBLIC

[SEAL]

KAYE M. ASTILL
NOTARY PUBLIC • STATE OF UTAH
4646 SOUTH 500 WEST
MURRAY, UT. 84123
COMM. EXP. 08-07-2006

```
NAME    TRANS-JORDAN CITIES                    NEW/UPDT N      TAX DIST  OK 38
CONT                                           ASR DATE 03/16/2004
C/O,AT                                                          ACREAGE   190.05
STREET                          EDIT
CITY
LO    E                         EDIT   CERTIFY     ASSR BATCH NO  268 SEQ 504
UNKNOWN                                                  EDIT N  PLAT
PROPERTY DESCRIPTION
DESC    1 BEG N 0¬02'33" E 949.46 FT & S 89¬45'42" E 29.37 FT FR W 1/4 WORK CRD
DESC    2 COR OF SEC 15, T 3S, R 2W, SLM; S 89¬45'42" E 1783.29 FT; S  PRINTED
DESC    3 81¬14'37" E 402.07 FT; S 77¬13'31" E 165.34 FT; S 74¬37'58"
DESC    4 E 201.08 FT; S 70¬00'29" E 148.20 FT; S 79¬19'04" E 107.15
DESC    5 FT; S 87¬07'45" E 89.27 FT; N 86¬30'28" E 63.83 FT; N
DESC    6 79¬00'30" E 49.95 FT; N 74¬47'30" E 162.12 FT; N 85¬06'53" E
DESC    7 59.90 FT; N 89¬26'10" E 304.89 FT; S 81¬15'35" E 50.02 FT; S  15 DESC
DESC    8 68¬45'39" E 49.96 FT; S 51¬41'10" E 49.10 FT; S 32¬01'58" E     LINES
DESC    9 50.11 FT; S 23¬33'11" E 169.05 FT; S 28¬07'40" E 138.34 FT;
DESC   10 S 33¬25'02" E 290.94 FT; S 70¬13'26" E 679.73 FT; S 0¬14'17"   MORE
OLD PARCEL NUMBERS
26-15-300-004-0000  26-15-300-013-0000  26-15-300-011-0000

                                                         MORE     TOTAL   3
```

```
NAME    TRANS-JORDAN CITIES                        NEW/UPDT N       TAX DIST  OK 38
CONT                                               ASR DATE 03/16/2004
C/O,AT                                                              ACREAGE   190.05
STREET                            EDIT
CITY
LC    E                           EDIT   CERTIFY      ASSR BATCH NO  268 SEQ 504
UN  .WN                                                     EDIT N  PLAT
PROPERTY DESCRIPTION
DESC  11 W 1075.58 FT; N 89¬45'42" W 4348.03 FT TO EAST LINE OF       WORK CRD
DESC  12 HIGHWAY 111; NW'LY ALG A 2934.90 FT RADIUS CURVE TO L 33.14  PRINTED
DESC  13 FT (CHORD N 5¬52'31" W 33.14 FT); N 6¬11'33" W 353.20 FT; N
DESC  14 2¬20'17" E 202.24 FT; N 6¬11'35" W 542.50 FT; N 19¬44'29" W
DESC  15 213.44 FT; N 6¬11'36" W 753.84 FT TO BEG. 190.05 AC.

                                                                       15 DESC
                                                                         LINES

                                                                        MORE
OLD PARCEL NUMBERS
26-15-300-004-0000  26-15-300-013-0000  26-15-300-011-0000

                                                            MORE     TOTAL    3
```

13161372
1/2/2020 9:03:00 AM $40.00
Book - 10880 Pg - 5643-5645
RASHELLE HOBBS
Recorder, Salt Lake County, UT
OLD REPUBLIC TITLE DRAPER/OREM
BY: eCASH, DEPUTY - EF 3 P.

WHEN RECORDED, RETURN TO:

Bennett Tueller Johnson & Deere
3165 Millrock Drive
Salt Lake City, Utah 84121
Attn: Craig Hall

Tax ID: 26-15-300-012

SPECIAL WARRANTY DEED

VP DAYBREAK INVESTCO 7 LLC, a Delaware limited liability company, with its principal office at 11248 Kestrel Rise Road, Suite 201, South Jordan, Utah 84009, County of Salt Lake, State of Utah (collectively, "**Grantor**"), for and in consideration of the sum of Ten and No/100 Dollars ($10.00) paid to Grantor and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, does hereby **CONVEY** and **WARRANT** against the acts of Grantor only to Trans-Jordan Cities, an interlocal agency and political subdivision of the State of Utah ("**Grantee**"), certain land being more particularly described in Exhibit A attached hereto and incorporated herein by reference (the "**Land**"), together with (i) all improvements, if any, located thereon, and (ii) all right, title and interest of Grantor (if any) in, to and under adjoining streets, rights of way and easements, **SUBJECT TO** all reservations contained in this Deed and all encumbrances of record, all building codes and other applicable laws, ordinances and governmental regulations affecting the Land and all other matters reasonably identifiable from an inspection or survey of the Land.

Grantor hereby retains and reserves (i) all oil, gas and minerals under or appurtenant to the Land, together with all rights to use or extract the same, except that Grantor shall not have the right to enter upon or disturb the surface of the Land or the first 500 feet below the surface of the Land to use or extract the same, and (ii) all water flowing or located under, within, or over, and all water rights or water shares in any way connected or associated with or appurtenant to, the Land. Grantor and Grantee agree that the provisions of Paragraph 10 of Exhibit B to that certain Deed dated October 16, 2002 from Kennecott Utah Copper Corporation, as grantor, to OM Enterprises Company, as grantee, recorded in the Official Records of Salt Lake County as Instrument No. 8442505, including, without limitation, the "Well Prohibition Covenant" and the "Subsequent Transfer Covenant" (as such terms are defined in such Paragraph 10), are hereby incorporated into this Deed and shall be binding on Grantee, its successors and assigns.

[SIGNATURE PAGE FOLLOWS]

THIS DOCUMENT HAS BEEN RECORDED ELECTRONICALLY
ENTRY # 13116972 DATE 1.7.2020

WHEN RECORDED, RETURN TO:

Bennett Tueller Johnson & Deere
3165 Millrock Drive
Salt Lake City, Utah 84121
Attn: Craig Hall

Tax ID: 26-15-300-012

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[SIGNATURE PAGE FOLLOWS]

IN WITNESS WHEREOF, Grantor has caused its duly authorized representative to execute this instrument as of the date hereinafter written.

DATED: ~~January 2~~ December 4, ~~2020~~ 2019 (BB)

GRANTOR:

VP DAYBREAK INVESTCO 7 LLC,
a Delaware limited liability company

By: Brendan Bosman
Name: Brendan Bosman
Its: Authorized Signatory

STATE OF MINNESOTA)
) ss:
COUNTY OF HENNEPIN)

The foregoing instrument was acknowledged before me this 4th day of December 2019, by Brendan Bosman, the ~~President~~ Authorized Signatory of VP Daybreak Investco 7 LLC.

Dana Marti
Notary Public

My Commission Expires: 1/31/2021

Residing at: 8151 33rd Ave S, E606, Bloomington, MN 55425

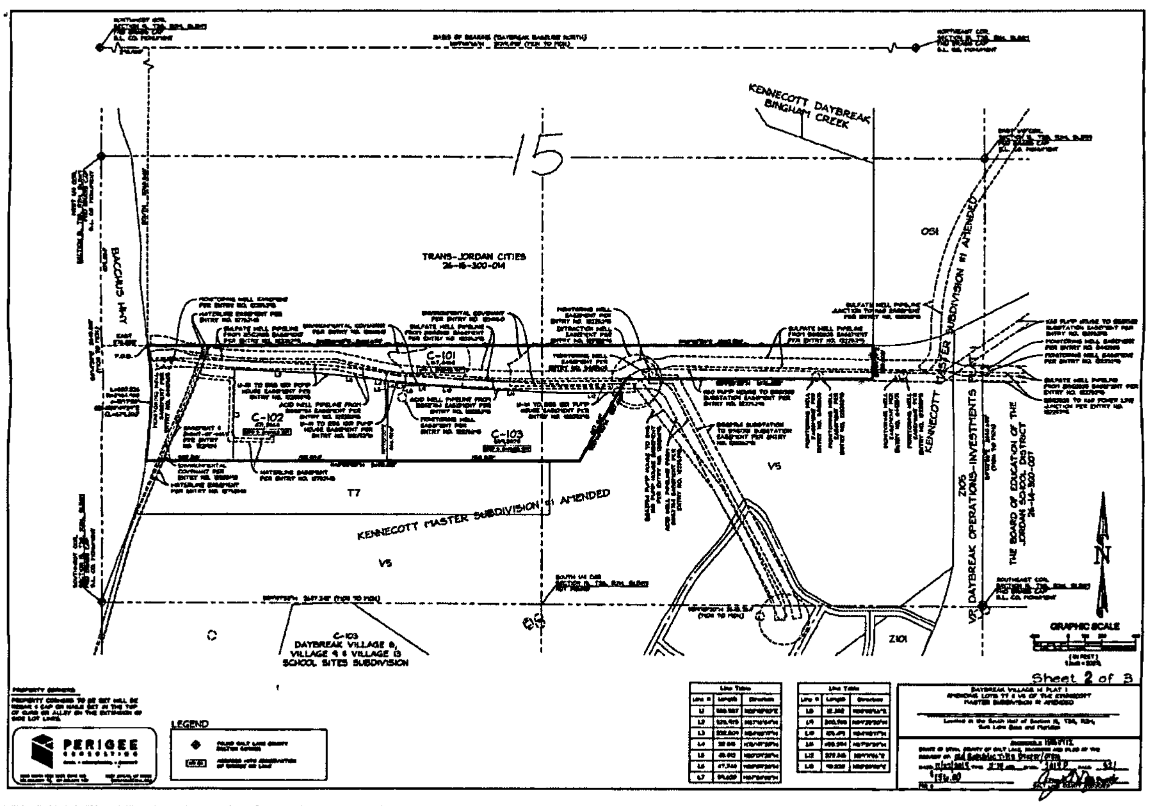
DANA A. MARTI
Notary Public-Minnesota
My Commission Expires Jan 31, 2021

<u>EXHIBIT A</u>
<u>to Deed</u>

<u>Legal Description</u>

Parcel ID: 26-15-300-012

Legal Description: Lots C-101, C-102, and C-103 of DAYBREAK VILLAGE 14 PLAT 1 Amending Lots T7 & V5 of The Kennecott Master Subdivision #1 Subdivision, recorded November 22, 2019 as Entry No. 13130712 in Book 2019P of Plats at Page 321, on file in the office of the Salt Lake County Recorder, State of Utah.



APPENDIX C – Modified Corrective Action Plan

State of Utah

Department of Environmental Quality

Dianne R. Nielson, Ph.D.
Executive Director

DIVISION OF SOLID & HAZARDOUS WASTE
Dennis R. Downs
Director

OLENE S. WALKER
Governor

GAYLE F. McKEACHNIE
Lieutenant Governor

RECEIVED

January 23, 2004

Dwayne J. Woolley, General Manager
Trans Jordan Landfill
10873 South 7200 West
South Jordan, Utah 84095-5610

RE: Modified Corrective Action Plan Approval

Dear Mr. Woolley:

We have reviewed the Modified Corrective Action Plan submitted January 9, 2004 by Trans-Jordan Cities (TJC). The plan is approved, with the stipulation that an update on the implementation and status of the plan be included in TJC's Solid Waste Facility Annual Report and whenever changes to or deviations from the plan are made. We appreciate your efforts in addressing this issue.

If you have any questions please call Ralph Bohn or Phil Burns at 801-538-6170.

Sincerely,

Dennis R. Downs, Executive Secretary
Utah Solid and Hazardous Waste Control Board

DRD/PEB/kk

c: Patti Pavey, M.S., Executive Director, Salt Lake Valley Health Department

TN200400066
Salt Lake County/Trans Jordan LF

MODIFIED CORRECTIVE ACTION PLAN

Trans-Jordan Cities

FOR

TRANS-JORDAN LANDFILL

TRANS JORDAN

December 19, 2003

GENERAL MANAGER: DWAYNE J. WOOLLEY

ENGINEER: IGES, BRETT MICKELSON, P.E.

TABLE OF CONTENTS

EXECUTIVE SUMMARY

General

Pursuant to Regulation R315-308-3 (1) V of the Solid Waste Permitting and Management Rules, Trans-Jordan Cities (TJC) solicited input from affected and /or interested parties with regard to potential Ground Water impacts from Trans-Jordan Landfill (TJL).

Public Comment

The public comment meeting was conducted as part of a larger public comment period where TJC solicited input from interested or affected parties. The public comment period ran from September 29, 2003 to October 29, 2003 as stated in the attached advertisement published in the local newspapers. The only comments received by TJC during the course of the public comment period were from Mr. Jonathan Cherry of Kennecott Utah Copper (KUC).

Response to Public Comment

On December 9, 2003, TJC issued a written response to the State of Utah DSHW, regarding all questions and comments received during the Public Comment Period. A copy of this letter and KUC comments are included as Attachment 1.

Changes to Plan

Based on comments received, review of recent and existing data, TJC sees no compelling reason to significantly modify the previously submitted plan. Comments from Attachment 1 are referenced where appropriate. Minor editorial changes have also been made to the original submitted Corrective Action Plan. These are updates that do not change the intent of the original plan.

TRANS-JORDAN LANDFILL GROUND WATER REVIEW

General

The TJL began operation in 1958 and is a cooperatively operated solid waste landfill operated by TJC. TJC was officially formed as a political subdivision of the State of Utah in 1986 to dispose of solid wastes generated in the southern half of Salt Lake County. TJC operates under an Interlocal Agreement between its' member cities (the Cities of Draper, Midvale, Murray, Riverton, Sandy, South Jordan, and West Jordan) with a combined population of 307,000 (2000 census). The TJL is overseen by a Board of Directors with each member city having one board position. Daily operations and management of the Landfill is coordinated by Mr. Dwayne J. Woolley, General Manager.

TJL in conjunction with South Valley Water Reclamation Facility (SVWRF) cooperatively fund the operation and maintenance of a wood products and green waste grinding facility established in 1996. SVWRF is the operator of this facility located immediately south and adjacent to the landfill.

During 1999, TJL constructed and placed on-line, a citizen drop-off facility at the landfill. The citizen drop-off facility is comprised of two areas, one area provides a safe area for citizen unloading of residential wastes, and a second area is used to separate Household Hazardous Waste (HHW) and recyclables from the waste stream. The HHW program is a joint operation with Salt Lake Valley Health Department (SLVHD).

The existing landfill facility is located on TJC owned land in Section 15 of Township 3 South, Range 2 West. The street address for the landfill is 10873 South 7200 West, South Jordan Utah.

Landfill access is provided from U-111 (old State Route 111) at the landfill site's northwest corner. TJL is located within the city of South Jordan and West Jordan city limits are approximately 1/2 mile northeast. The community of Herriman lies approximately 3 miles south-southeast and Copperton is 1.5 miles to the west. Drawing 1 (Attachment 2) shows the general arrangement of the TJL site.

Ground Water Monitoring Requirements

The State of Utah Department of Environmental Quality Division of Solid and Hazardous Waste (DSHW) in conjunction with (SLVHD) regulate the design, construction and operation of municipal solid waste (MSW) landfills in Salt Lake County. Section R315-308 of the State regulations and Health Regulation #1 of Salt Lake County stipulate requirements required for ground water monitoring at MSW facilities.

Detection Monitoring:

Each facility must have at least one upgradient well and two downgradient wells. During the first year of facility operation after the wells are installed, a minimum of eight independent samples from the upgradient and four independent samples from each downgradient well are analyzed for the constituents in Section R315-308-4 to establish background water quality. The detection monitoring program requires the owner or operator of the facility to semiannually determine ground water quality at each monitoring well during the operation, closure and post-closure care period of the facility.

If, during the performance of the detection monitoring, a constituent is detected in the downgradient wells that has a statistically significant increase over the upgradient (background) water quality, the facility owner or operator must:

- Enter the information in the operating record of the facility.
- Notify the Executive Secretary (DSHW) and Director (SLVHD) of the findings.
- Immediately resample all wells to further evaluate the water quality.

If there is a statistically significant increase over background of any constituent, the owner or operator of the facility has 90 days to demonstrate that the source of the contamination is not associated with the facility. If the facility does not establish that the contamination is not associated with the facility, the ground water monitoring program moves into assessment monitoring.

Assessment Monitoring:

Assessment monitoring starts with sampling all downgradient wells and analyzing the water for all constituents listed in Appendix II of 40 CFR Part 258. For any constituent detected in the Appendix II list, a minimum of four independent samples must be collected, analyzed, and statistically analyzed to establish background concentrations. The owner or operator of the facility shall sample quarterly and compare the concentrations to ground water protection standards.

If after two consecutive sampling events, the concentrations of all constituents being analyzed are shown to be at or below established background values, the owner or operator must notify the Executive Secretary and upon approval return to detection monitoring.

If concentrations of any of the constituents are statistically measured at concentrations exceeding the protection standards, the owner or operator must notify the Executive Secretary, local health officials, and adjacent landowners, then characterize the nature and extent of the release. If the owner or operator cannot demonstrate that the source of the contamination is other than the landfill, then the facility enters into a corrective action phase.

Corrective Action:

As a facility enters into corrective action, the owner or operator of the facility takes any interim measures to protect human health and the environment and assesses possible corrective actions. Based upon the corrective action assessment and public comment, the owner or operator must select a remedy, which shall be submitted to the Executive Secretary.

Upon approval of the selected corrective action, the Executive Secretary will notify the owner or operator of such approval and will require that the corrective action plan proceed according to the approved schedule.

TJL Ground Water Monitoring Program

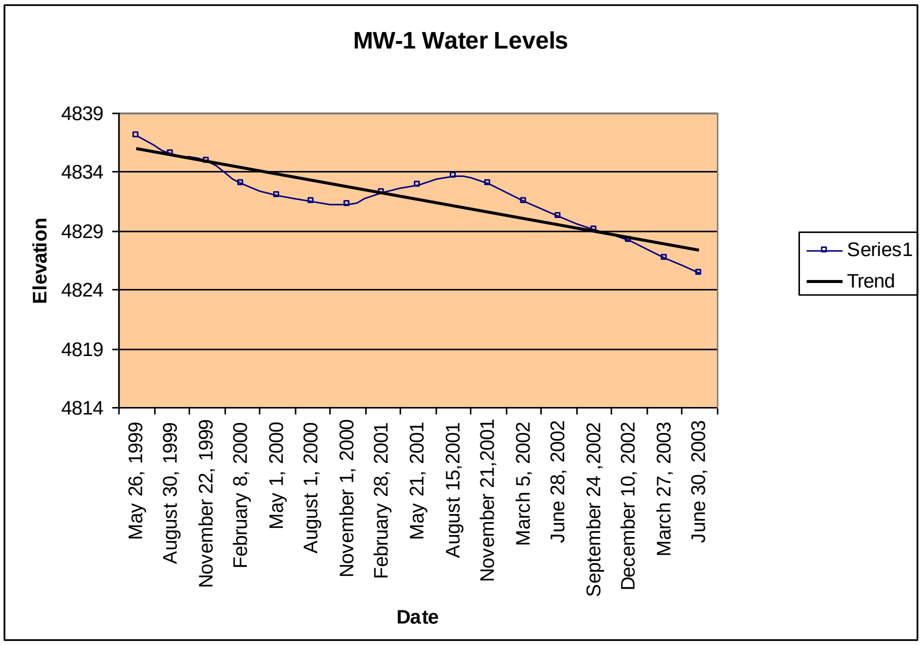
A ground water monitoring program was initiated in March of 1994 with the installation of monitor well one (MW-1). Water from MW-1 was compared with water well data in the vicinity of the landfill and it was determined that MW-1 was completed in a perched water system not representative of the documented low pH water known to be found in surrounding Kennecott Utah Copper (KUC) wells. As a result MW-1 has not been used as an upgradient well. Installation of monitor well two (MW-2) was performed in January of 1995 to serve as the upgradient monitor well for water quality evaluations. Monitor well three (MW-3) was installed in December of 1995 and served as the initial downgradient well for water quality evaluations.

Monitor well four (MW-4) was installed in November of 1997 to function as the second downgradient well. Monitor well five (MW-5) was installed in August of 1998 to monitor ground water closer to the active cell.

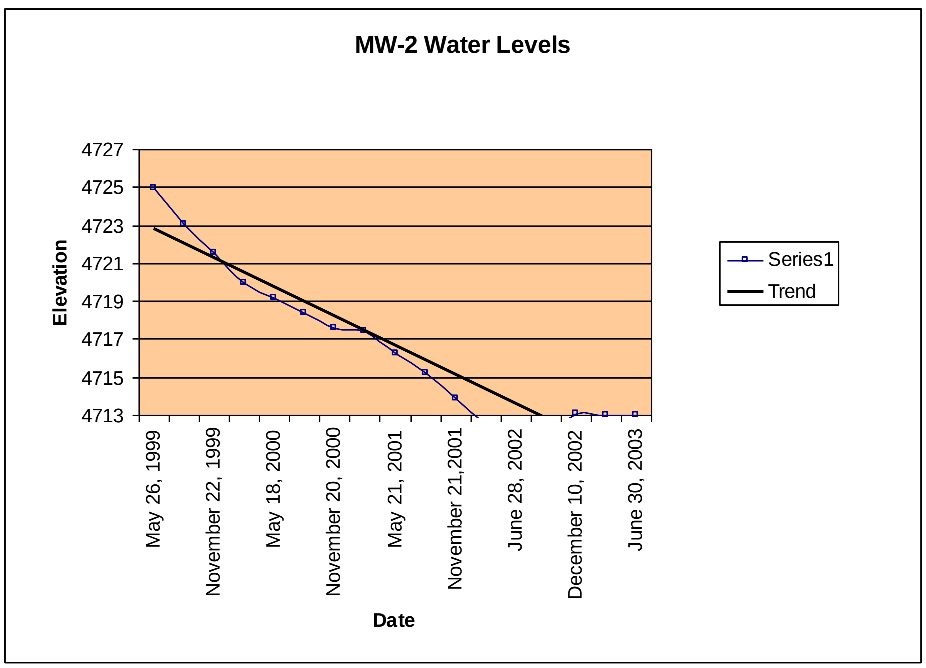
These sampling wells were originally located based on the predominant groundwater flow being west to east. However, down gradient pumping and the recent construction of a surface and alluvial cutoff system by KUC and other activities related to the Copper Mine located up gradient from the site, have each altered the groundwater conditions at the landfill. Drawing 2 (Attachment 2) shows the location of the five TJL monitoring wells.

Ground Water Elevations

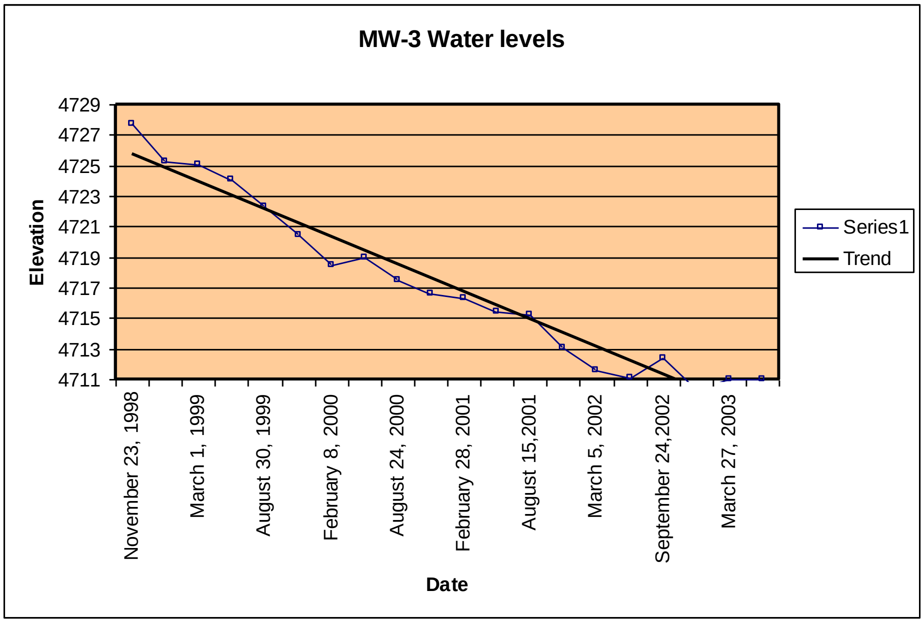
Modifications to the ground water recharge regime (by KUC), several years of below average precipitation and increased demand on downgradient wells have all contributed to the drop in ground water elevations, drying up 2 of TJL monitor wells. The groundwater elevations in the two remaining downgradient monitoring wells (MW-4 and MW-5) have dropped by over 1 foot in the last 3 months. The following graphs illustrate the decreasing water levels for the last 4 years for each of the monitoring wells. The bottom of each of the graphs corresponds to the bottom elevation of each well:



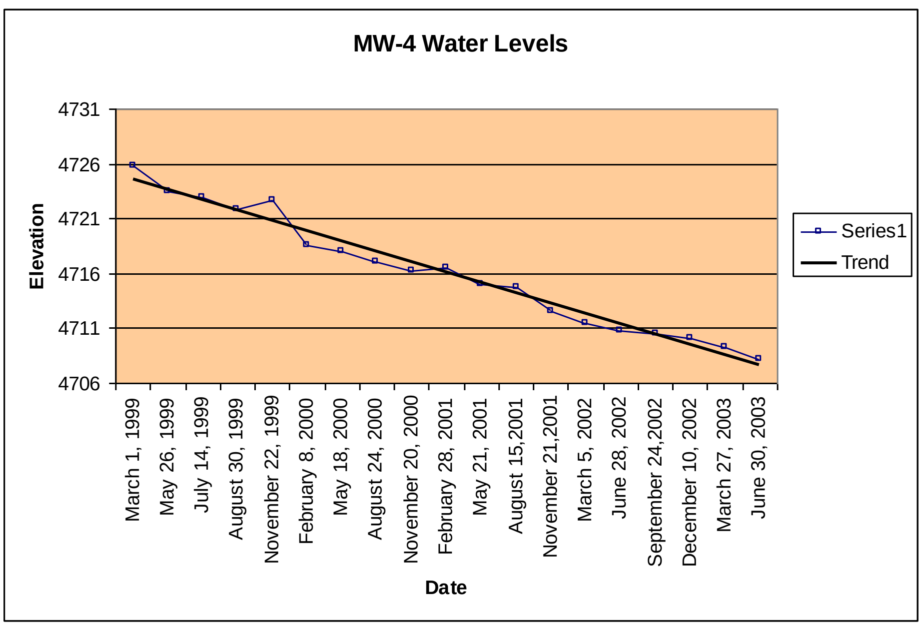
Well #1 Data:	Well Depth = 365’
	Bottom Elev. = 4814’
	Initial Water Column = 39’
	Water Column Remaining = 11’
Well #1 Status:	Not currently utilized for groundwater analysis.



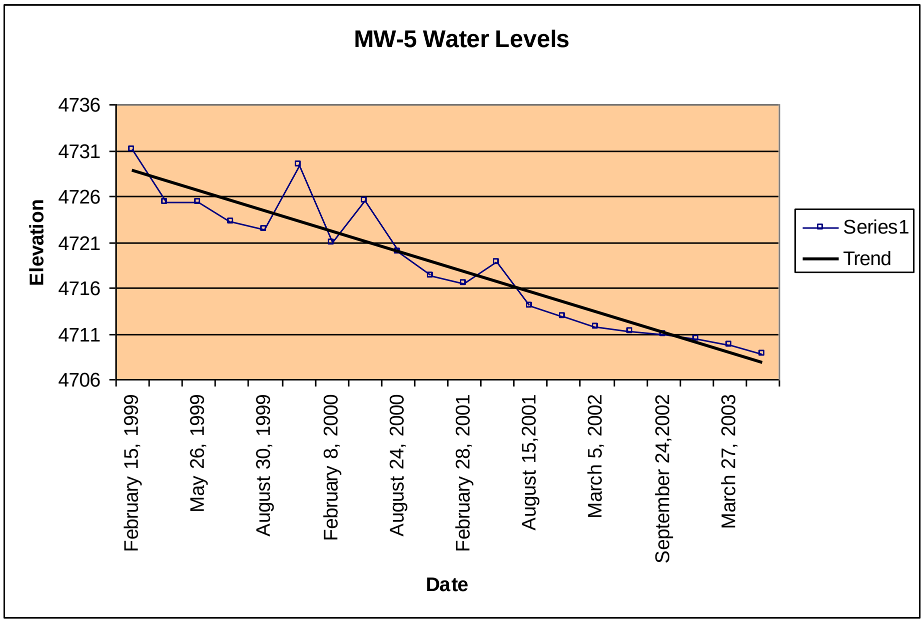
Well #2 Data:	Total Depth = 455’
	Bottom Elev. = 4713’
	Initial Water Column = 34.5’
	Water Column Remaining = 0
Well #2 Status:	No viable sample since June 2002



Well #3 Data: Total Depth = 319'
Bottom Elev. = 4711'
Initial Water Column = 30.5'
Water Column Remaining = 0
Well #3 Status: No viable sample since June of 2002



Well #4 Data: Total Depth = 365',
Bottom Elev. = 4706'
Initial Water Column = 22'
Water Column Remaining = 2'
Well #4 Status: Operational (Projected date being dry: 1st quarter 2004)



Well #5 Data: Total Depth = 365',
Bottom Elev. = 4706'
Initial Water Column = 21'
Water Column Remaining = 3'

Well #5 Status: Operational (Projected date being dry: 1st quarter 2004)

Ground Water Quality

The most recent summary of the ground water quality at the TJL is presented in the 2002 Ground Water Monitoring Report, which was part of the annual landfill report submitted to DSHW in February of 2002. This Ground Water Monitoring Report presents the results of recent ground water analysis, including ground water chemistry, depth to water and the interpreted direction of ground water flow under the TJL. The "*Trans-Jordan Landfill 2002 Ground Water Monitoring Report*" is included as Attachment 3.

Potential Constituents of Concern

The 2002 Ground Water Monitoring Report details the procedures for analyzing the concentration of constituents in ground water. The ground water at TJL is analyzed for ground water constituents as prescribed by the DSHW regulations. Most of the chemicals analyzed for are either non-detect or are present at low enough concentrations to not exceed ground water standards. Statistical analysis is performed on all measurable constituents to determine if ground water is potentially being impacted from landfilling operations.

Potential Constituents of Concern for TJL are the following organic compounds:

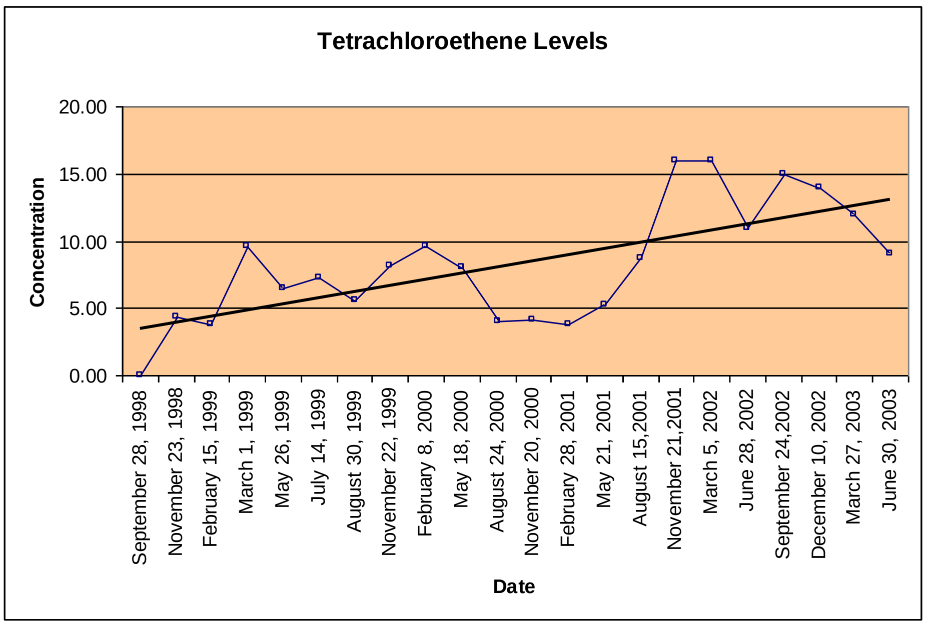
- 1,1 Dichloroethene

- Tetrachloroethene
- 1,1,1 Trichloroethane
- Trichloroflouromethane
- Dichlorodiflouromethane

Of the five potential constituents of concern listed above, four (1,1 Dichloroethene, 1,1,1 Trichloroethane, Trichloroflouromethane, and Dichlorodiflouromethane) have been measured in the ground water at TJL at concentrations lower than the ground water protection standards.

Only Tetrachloroethene in TJMW-5 was identified as a constituent of concern, which is identified as having concentrations higher than the groundwater protection standards and having higher concentrations downgradient than upgradient.

The following chart shows the concentration of Tetrachloroethene over time in well #5:



Confidence Interval analysis for Tetrachloroethene utilizing the data through March 2003 showed that Tetrachloroethene has exceeded the ground water protection standard of 5 parts per billion with all data subsets.

CORRECTIVE ACTION #1 – ACCELERATED CLOSURE OF UNLINED LANDFILL

General

Tetrachloroethene (PCE) is a dense non-aqueous phase liquid (DNAPL). One problem with the chlorinated solvents is that they are heavier than water and can result in deep contamination. PCE can migrate under the influence of gravity as a liquid, or can volatize and migrate in a vapor phase. Due to the nature of PCE, depth to ground water, and the inherent challenges in investigating the source and mechanism of the PCE transport, TJC proposes to mitigate both of the primary mechanisms for transport.

The first of the corrective actions summarized in this plan will be to minimize the potential for liquid based solute transport by constructing a landfill cover system that will reduce the infiltration of liquid into the landfill. TJC has modified the landfilling operations to accelerate the closure of the unlined landfill. The active landfill face has been moved from the lined cells and located over the unlined landfill to bring the unlined area to a final grade sooner. Bringing the unlined landfill to grade sooner will allow for the installation of a synthetic cover over the top of the unlined area in the most time efficient manner and minimize the potential infiltration of water into the MSW. TJC has elected to incorporate synthetic materials for cover construction rather than a monolithic soil cover to improve methane collection, storm water management and infiltration reduction efforts. Reducing the infiltration of water in the landfill will minimize the generation of leachate which will reduce the potential for additional PCE transport in a liquid medium.

To accomplish the accelerated closure of the unlined landfill, while maintaining a manageable landfill operation, TJC has developed a phased closure plan for the entire landfill operation. The following presents the scheduled closure phases at the Landfill:

Side Slopes Closure

Drawing 3 (Attachment 2) indicates the areas of the landfill to be covered with a minimum of 5 feet of acceptable soil cover. Drawing 3 also shows the locations that test pits have been excavated to document soil depth and the locations of future test pits. Once final cover soils have been placed on the remaining side slopes, test pits will be excavated to document the remaining side slopes soil thickness. All side slopes will have received final cover by late fall of 2003. The side slopes indicated on the drawing are slopes that in general bound the unlined areas of the landfill.

TJL has accelerated the side slope closure, as previously discussed with DSHW personnel, to aid in the implementation of the first corrective action. All side slopes will receive a minimum of 5 feet of site soils. All test pits excavated to date showed the minimum 5-foot cover thickness. Once test pits are excavated in the remaining areas to document cover thickness, topsoil and/or compost will be placed on all side slopes and the areas revegetated.

All areas of the landfill will be closed in accordance with applicable final cover requirements in the regulations.

Closure Phases A through H

Phases A through H as indicated on Drawings 4, 5, 6, and 7 (Attachment 2) represent the future closure phases of the landfill. The cover system utilized in Phases A through H will incorporate synthetic materials designed to the lower liner permeability criteria of the lined cells. The utilization of synthetic materials in the cover design will aid in the design and operation of a future landfill gas recovery system.

The approximate closure schedule and associated area for each Phase is as follows:

Phase	Cover Area	Date of Closure
North side slopes	26 acres	Summer 2003
Phase A	11 acres	Summer 2004
Phase B	7 acres	Summer 2005
Phase C	10 acres	Summer 2007
Phase D	15 acres	Summer 2011
Phase E	17.5 acres	Summer 2016
Phase F	18.5 acres	Summer 2021
Phase H	30.5 acres	Summer 2030

Duration of Corrective Action #1

All landfill covers will be maintained from initial installations through the closure, and through the post-closure care periods.

CORRECTIVE ACTION #2 – INSTALLATION OF A GAS COLLECTION SYSTEM

General

The second of the corrective actions summarized in this plan will be to install a landfill gas collection system that will depressurize the landfill while recovering methane, thus minimizing the potential for a vapor phase transport of the PCE.

The installation of a gas recovery system is part of a comprehensive waste management plan that is being implemented at the landfill. Installation of the system allows for the safe, long-term methane management that will help to minimize the potential for further environmental impacts to the ground water.

Existing Gas Recovery Design

As part of the New Source Review program of the State of Utah Division of Air Quality, TJC had a methane collection system designed. The design of the methane collection system met the requirements of the Air Quality Regulations and, at the time of the design, represented the anticipated closure sequence of the landfill.

The existing gas collection system design was prepared by HDR Engineering, Inc. in 1999 and had provisions for some 45 vertical wells uniformly distributed across the landfill. The design package included all requisite engineering details and specifications to support a bid package.

Gas to Energy Project

TJC is negotiating a final contract to partner with a developer in support of a Landfill Gas-to-Energy Project (LGEP). The LGEP is a proactive partnership in the beneficial use of landfill gas.

The contract is a culmination of a RFP process where TJC received 6 competitive proposals in April of 2003. Trans-Jordan personnel reviewed and ranked all 6 proposals based upon landfill gas-to-energy experience, project approach, schedule and proposed fee. Out of the 6 proposals, 3 were selected to prepare presentations to Trans-Jordan's personnel. The 3 remaining bidders were given additional information reflecting the change in closure sequence and additional site-specific data. Final presentations to TJC were conducted the 21^{st} of August 2003. As this contract is finalized, TJC will proceed with the LGEP early next year.

TJL will install a gas collection system as part of its methane management plan, but with the price of natural gas steadily increasing, the prospects of a viable gas-to-energy project increase substantially.

System Construction

The construction of any gas collection system or gas-to-energy system will be of a phased nature. The system will be installed concurrent with or just subsequent to the closure of each of the Phases outlined previously.

Duration of Corrective Action #2

Landfill gas will be continually collected from the initial system installation through closure and post-closure care periods or until landfill gas is measured below 25% of the LEL for Methane in the system.

CORRECTIVE ACTION #3 – KUC GROUND WATER RECOVERY SYSTEM

General

The third and final portion of the proposed corrective actions summarized in this plan is a ground water recovery system being implemented by KUC. Though KUC is responsible for the aspects of their ground water recovery program, TJC appears to be an indirect beneficiary of KUC's actions. KUC actions, independent of the Corrective Actions #2 and #3 may mitigate TJL impact to the ground water.

Geologic Background

The TJL is located in the southwestern portion of the Jordan River Valley, usually called the Salt Lake Valley, east of the northern Oquirrh Range and the mouth of Bingham Canyon. Bingham Creek flows from the Oquirrh Range eastward down Bingham Creek (immediately north of the landfill) and out into the Salt Lake Valley to the Jordan River. West of the landfill area are the mining operations of the Bingham Canyon Mine that is located at the confluence of Bingham and Carr Fork Canyons. The Bingham Mining District has been developed in intrusive and meta-sedimentary rocks.

KUC Ground Water Impacts

Kennecott Utah Copper has been conducting mining operations west of the landfill location for decades. As part of the mining operations, a reservoir (Bingham Canyon Reservoir) has been operated in the Bingham Creek drainage to serve as storage for process waters. The reservoir is located hydraulically upgradient from the TJL, approximately 8,900 feet to the west. Seepage losses from the historic operation of the Bingham Creek Reservoir have been estimated at over 1,000,000 gallons per day since construction in 1965. The Bingham Creek Reservoir (unlined) has since been decommissioned and replaced with a lined reservoir, but the residual downgradient acid and sulfate waters still remain. Additionally, KUC has installed several groundwater cutoff walls.

The affected ground waters have been estimated to extend over 20,000 feet downgradient to the east and about 10,000 feet wide, fully encompassing the landfill. The sulfate concentration in some of the monitor wells within the plume has historically exceeded 50,000 mg/l with some pH values less than 3.0.

Previous hydrogeologic work has delineated a 10,000 mg/l TDS contour line running beneath the landfill. The wide range in TDS concentrations in the study area reflects the impact of historic mining operations on the groundwater.

KUC Ground Water Treatment

KUC has been working with the State of Utah Division of Water Quality for several years to implement a groundwater recovery and treatment plan. KUC's recovery effort involves pumping impacted groundwater from a network of wells designed and installed to recover both the low pH water and the high TDS waters. "The Southwest Jordan Valley Ground Water Cleanup Project" is currently undergoing a public comment period while preliminary work has already been started. A new acid recovery well has been installed within 200 feet of the TJL boundary. The volume of water pumped from this well and others located near the landfill will drastically alter the groundwater elevations under the landfill. KUC has shared information on two of the possible pumping scenarios.

Scenario #1 pumping rates:	Scenario #2 pumping rates:
Zone A: Acid Well 1146 (950 gpm) New Acid Well (750gpm) Jordan Wells (2600 acre feet/yr) Lark Well (200 gpm) Sulfate Well (1000 gpm) Sulfate Well B2G1193 (1100gpm) Sulfate Well B2G1200 (1100gpm) Riverton Wells (4308 acre feet/yr)	Zone A: Acid Well 1146 (950 gpm) New Acid Well (750gpm) W. Jordan Wells (2600 acre feet/yr) Lark Well (200 gpm) Sulfate Well (1000 gpm) Sulfate Well B2G1193 (1700gpm) Sulfate Well B2G1200 (1700gpm) Riverton Wells (4308 acre feet/yr)
Zone B: Wells 1-6 (235gpm each) Well 7 (1200 gpm)	Zone B: Wells 1-6 (235gpm each) Well 7 (1200 gpm)

10, 20, and 40 Year Drawdowns

KUC's drawdown data for each of the above scenarios is presented on Drawings 8, 9, 10, 11, 12 and 13 (Attachment 2). Drawings 8, 9, and 10 represent the predicted groundwater drawdown for scenario #1 at 10, 20, and 40 years. Drawings 11, 12, and 13 represent the predicted groundwater drawdown for scenario #2 for the same 10, 20, and 40 year periods.

The predicted 10-year groundwater drawdown for the groundwater in the vicinity of the landfill ranges from 30 to 60 feet. The predicted 20 and 40-year groundwater drawdowns for the landfill areas are from 50 to 80 feet and 70 to 90 feet respectively.

KUC Water Destinations

Water from the acid wells will be directed to the KUC tailings ponds north of Magna and water recovered from wells B2G1193 and BFG1200 will be sent to a reverse osmosis plant for treatment to drinking water standards for public use.

Duration of Corrective Action #3

The duration of the KUC recovery actions is scheduled for the next 40 years. When the groundwater under TJL has reached equilibrium, groundwater will be sampled and analyzed to document that the Corrective Action was successful.

FUTURE GROUND WATER MONITORING

Impacts to Trans-Jordan Landfill's Ground Water Monitoring

As previously detailed, the groundwater under the landfill is dropping. Two of the five monitoring wells are now dry and the two remaining downgradient wells are anticipated to become dry within 9 months. The predicted drop of ground water and subsequent drying out of MW-4 and MW-5 does not include an increase in the rate of ground water drop due to the upcoming pumping plan. If water recovery efforts start soon, the entire groundwater monitoring system at the landfill may be rendered useless.

New Well Installation

These two pumping scenarios may not be the only variations in a KUC plan, but are only the scenarios shared with TJC. The impacts to the groundwater elevations under and surrounding the landfill might be enormous. Based upon the magnitude of the groundwater elevation change, the level of accuracy of the modeling, and the numerous scenarios being considered, the true impact to the groundwater elevations are still unknown.

The anticipated drawdown of the ground water surface may result in the change of direction of flow of the groundwater under the landfill. The effects of the change in direction of flow are also an unknown.

The magnitude of these unknowns (final depth to groundwater and final direction of flow) are such that the location selection for and the installation of a new monitor well is extraordinarily difficult. Without knowing the steady state conditions associated with the remediation efforts, the installation of a new well will have a low likelihood of providing useful water quality data. As a result, TJC proposes to not install a new groundwater monitoring well.

Once the ground water regime stabilizes, TJC will assess the long-term ground water monitoring requirements of the landfill and install monitoring wells if deemed necessary.

Proposed Ground Water Monitoring

TJC is in contact with KUC and discussing the potential of accessing adjacent KUC wells for potential groundwater sampling. If KUC grants access, TJC will analyze the water sampled from the production well for a list of constituents mutually agreeable to the State Department of Solid and Hazardous Waste (DSHW), TJC and KUC.

APPENDIX D – UPDES Permit

STATE OF UTAH, DEPARTMENT OF ENVIRONMENTAL QUALITY, DIVISION OF WATER QUALITY

195 North 1950 West, P.O. Box 144870, Salt Lake City, Utah 84114-4870 (801)536-4300

NOI

Notice of Intent (NOI) for Coverage Under the UPDES General Multi-Sector Storm Water Permit for Discharges Associated with Industrial Activity, Permit No. UTR262281 **INSTRUCTIONS ON BACK PAGE**

Submission of this Notice of Intent constitutes notice that the party identified in Section I of this form intends to be authorized by a UPDES permit issued for storm water discharges associated with industrial activity in the State of Utah. Becoming a permittee obligates such discharger to comply with the terms and conditions of the permit. ALL NECESSARY INFORMATION MUST BE PROVIDED ON THIS FORM. A different NOI form is provided for construction activities.

I. FACILITY OPERATOR INFORMATION **Issued Date** 12/18/2012 **Expiration Date** 12/31/2022

Name: Trans-Jordan Cities **Phone:** 801-569-8994

Address: PO Box 95610 **Status of Owner/Operator:** PUBLIC

City: SOUTH JORDAN **State:** UT **Zip:** 84095-0610

Facility Contact Person: Dwayne J. Woolley **Phone:** 801-569-8994

Facility Contact Person Title: General Manager

II. FACILITY SITE/LOCATION INFORMATION

Is the facility located in Indian Country? (Y or N) No

Name: Trans-Jordan Landfill

Address: 10873 South Bacchus Highway **County:** SALT LAKE

City: SOUTH JORDAN **State:** UT **Zip:** 84095-0610

Latitude: 40.560278 **Longitude:** 112.061667 **Quarter:** __________ **Section:** _________ **Township:** ___________ **Range:** ________

Site Contact Person: Dwayne J. Woolley **Phone:** 801-569-8994

Site Contact Person Title: General Manager

III. SITE ACTIVITY INFORMATION

Name of Municipality which Operates the Storm Sewer System: South Jordan City

Receiving Water Body(s): Bingham Creek null

Is there existing quantitative storm water discharge data? ☐ Yes ☒ No

Is the facility required to do analytical monitoring? (See permit conditions Part V. and Sector monitoring requirements.) ☐ Yes ☒ No

Is the facility required to do visual monitoring? (See permit conditions near the end of applicable Sector(s); Appendix A to AD) ☒ Yes ☐ No

Is the facility required to submit monitoring data or retain it on site? ☐ Submit ☒ Retain on site

Is This a New Facility, or is it an Existing Facility? ☐ New ☒ Existing

If This is an Existing Facility, and the Start-up Date was After Oct. 1992, Please Fill in the Start-up Month:

Month: 01 **Year:** 1958

SIC or Designated Activity Code: **Primary:** 4953 **2nd:** ____________ **3rd:** _____________ **4th:** _____________

If You Have Other Existing UPDES Permits, Enter Permit #'s: ____

IV. SECTOR IDENTIFICATION: The General Multi-Sector Permit covers all industrial activity that is required by law to be covered by a storm water permit. On the following pages the sectors are listed with a description of the industrial activity that is covered by that sector. Please check each sector that covers industrial activities which occur at your site. The sector covered in Appendix AD is the catch-all sector and should only be used if positively no other sector covers your industrial activity. If you should select AD, please call the Storm Water Coordinator at DWQ to discuss the need for choosing Sector AD (Non-Classified Facilities).

☐ A. Timber Products Facilities – establishments [generally classified under Standard Industrial Classification (SIC) Major Group 24] that are engaged in cutting timber and pulpwood, merchant sawmills, lath mills, shingle mills, cooperage stock mills, planing mills, and plywood and veneer mills engaged in producing lumber and wood basic materials; and establishments engaged in wood preserving or in manufacturing finished articles made entirely of wood or related materials, except for wood kitchen cabinet manufacturers (SIC Code 2434), which are addressed under sector W.

☐ B. Paper and Allied Products Manufacturing Facilities – facilities engaged in the manufacture of pulps from wood and other cellulose fibers and from rags; the manufacture of paper and paperboard into converted products, such as paper coated off the paper machine, paper bags, paper boxes and envelopes; and establishments primarily engaged in manufacturing bags of plastic film and sheet. These facilities are commonly identified by Standard Industrial Classification (SIC) Major Group 26.

☐ C. Chemical and Allied Products Manufacturing Facilities – 1) Basic industrial inorganic chemicals (including SIC 281), 2) Plastic materials and synthetic resins, synthetic rubbers, and cellulosic and other humanmade fibers, except glass (including SIC 282), 3) Soap and other detergents and in producing glycerin from vegetable and animal fats and oils; specialty cleaning, polishing, and sanitation preparations; surface active preparations used as emulsifiers, wetting agents, and finishing agents, including sulfonated oils; and perfumes, cosmetics, and other toilet preparations (including SIC 284), 4) Paints (in paste and ready-mixed form); varnishes; lacquers; enamels and shellac; putties, wood fillers, and sealers; paint and varnish removers; paint brush cleaners; and allied paint products (including SIC 285), 5) Industrial organic chemicals (including SIC 286), 6) Nitrogenous and phosphatic basic fertilizers, mixed fertilizer, pesticides, and other agricultural chemicals (including SIC 287), 7) Industrial and household adhesives, glues, caulking compounds, sealants, and linoleum, tile, and rubber cements from vegetable, animal, or synthetic plastics materials; explosives; printing ink, including gravure ink, screen process ink, and lithographic; miscellaneous chemical preparations, such as fatty acids, essential oils, gelatin (except vegetable), sizes, bluing, laundry sours, writing and stamp pad ink, industrial compounds, such as boiler and heat insulating compounds, metal, oil, and water treatment compounds, waterproofing compounds, and chemical supplies for foundries (including facilities with SIC 289), 8) Ink and paints, including china painting enamels, india ink, drawing ink, platinum paints for burnt wood or leather work, paints for china painting, artists' paints and artists' water colors (SIC 3952, limited to those listed; for others see sector Y.), 9) Medicinal chemicals and pharmaceutical products, including the grading grinding and milling of botanicals (including SIC 283).

☐ D. Asphalt Paving, Roofing Materials, and Lubricant Manufacturing Facilities – 1) facilities engaged in manufacturing asphalt paving and roofing materials, including those facilities commonly identified by Standard Industrial Classification (SIC) codes 2951 and 2952, 2) portable asphalt plant facilities (also commonly identified by SIC code 2951), 3) facilities engaged in manufacturing lubricating oils and greases, including those facilities classified as SIC code 2992. <u>Not covered</u> are: 1) petroleum refining facilities, including those that manufacture asphalt or asphalt products and that are classified as SIC code 2911 (see sector I.), 2) oil recycling facilities (see sector N.), and 3) fats and oils rendering (see sector U.).

☐ E. Glass, Clay, Cement, Concrete, and Gypsum Product Manufacturing Facilities – manufacturing flat, pressed, or blown glass or glass containers; manufacturing hydraulic cement; manufacturing clay products including tile and brick; manufacturing of pottery and porcelain electrical supplies; manufacturing concrete products; manufacturing gypsum products; nonclay refractories; and grinding or otherwise treating minerals and earths. This section generally includes the following types of manufacturing operations: flat glass, (SIC code 3211); glass containers, (SIC code 3221); pressed and blown glass, not elsewhere classified, (SIC code 3229); glass products made of purchased glass (SIC code 3231) where material handling equipment or activities, raw materials, intermediate products, final products, waste materials, by-products, or industrial machinery are exposed to storm water; hydraulic cement, (SIC code 3241); brick and structural clay tile, (SIC code 3251); ceramic wall and floor tile, (SIC code 3253); clay refractories, (SIC code 3255); structural clay products not elsewhere classified (SIC code 3259); vitreous china plumbing fixtures, and china and earthen ware fittings and bathroom accessories (SIC code 3261); vitreous china table and kitchen articles (SIC code 3262); fine earthenware table and kitchen articles (SIC code 3263); porcelain electrical supplies, (SIC code 3264); pottery products, (SIC code 3269); concrete block and brick, (SIC code 3271); concrete products, except block and brick (SIC code 3272); ready-mix concrete, (SIC code 3273); lime (SIC code 3274); gypsum products, (SIC code 3275); cut stone and stone products (SIC code 3281); abrasive products (SIC code 3291); asbestos products (SIC code 3292); minerals and earths, ground or otherwise treated, (SIC code 3295); mineral wool (SIC code 3296); nonclay refractories, (SIC code 3297); and nonmetallic mineral products not elsewhere classified (SIC code 3299.

☐ F. Primary Metals Facilities – coking operations, sintering plants, blast furnaces, smelting operations, rolling mills, casting operations, heat treating, extruding, drawing, or forging of all types of ferrous and nonferrous metals, scrap, and ore. Coverage includes the following types of facilities: 1) Steel works, blast furnaces, and rolling and finishing mills including: steel wiredrawing and steel nails and spikes; cold-rolled steel sheet, strip, and bars; and steel pipes and tubes (SIC code 331), 2) Iron and steel foundries, including: gray and ductile iron, malleable iron, steel investment, and steel foundries not elsewhere classified (SIC code 332), 3) Primary smelting and refining of nonferrous metals, including: primary smelting and refining of copper, and primary production of aluminum (SIC code 333), 4) Secondary smelting and refining of nonferrous metals (SIC code 334), 5) Rolling, drawing, and extruding of nonferrous metals, including: rolling, drawing, and extruding of copper; rolling, drawing, and extruding of nonferrous metals, except copper and aluminum; and drawing and insulating of nonferrous wire (SIC code 335), 6) Nonferrous foundries (castings), including: aluminum die-castings, nonferrous die-castings, except aluminum, aluminum foundries, copper foundries, and nonferrous foundries, except copper and aluminum (SIC code 336), 7) Miscellaneous primary metal products, not elsewhere classified, including: metal heat treating, and primary metal products, not elsewhere classified (SIC code 339).

☐ G. Metal Mines (Ore Mining and Dressing) – active and inactive metal mining and ore dressing facilities [Standard Industrial Classification (SIC) Major Group 10] if the storm water has come into contact with, or is contaminated by, any overburden, raw material, intermediate product, finished product, byproduct, or waste product located on the site of the operation. SIC Major Group 10 includes establishments primarily engaged in mining, developing mines, or exploring for metallic minerals (ores) and also includes all ore dressing and beneficiating operations, whether performed at mills operated in conjunction with the mines served or at mills, such as custom mills, operated separately. For the purposes of this part of the permit, the term "metal mining" includes all ore mining and/or dressing and beneficiating operations, whether performed at mills operated in conjunction with the mines served or at mills, such as custom mills, operated separately. All storm water discharges from inactive metal mining facilities and the storm water discharges from the following areas of active, and temporarily inactive, metal mining facilities are the only discharges covered by this section of the permit: topsoil piles; offsite haul/access roads if off active area; onsite haul roads if not constructed of waste rock or if spent ore and mine water is not used for dust control; runoff from tailings dams/dikes when not constructed of waste rock/tailings and no process fluids are present; concentration building, if no contact with material piles; mill site, if no contact with material piles; chemical storage area; docking facility, if no excessive contact with waste product; explosive storage; reclaimed areas released from reclamation bonds prior to December 17, 1990; and partially/inadequately reclaimed areas or areas not released from reclamation bonds. <u>Not covered</u> are: 1) active metal mining facilities that are subject to the effluent limitation guidelines for the Ore Mining and Dressing Point Source Point Source Category (40 CFR Part 440). Coverage under this permit does not include adit drainage or contaminated springs or seeps at active facilities, temporarily inactive facilities, or inactive facilities. Also see permit conditions, Limitations on Coverage, Part I.B.3. 2) Storm water discharges associated with an industrial activity that the *Executive Secretary* has determined to be, or may reasonably be expected to be, contributing to a violation of a water quality standard, 3) Storm water discharges associated with industrial activity from inactive mining operations occurring on Federal lands where an operator cannot be identified.

☐ H. Coal Mines and Coal Mine-Related Facilities – coal mining-related areas (SIC Major Group 12) if they are not subject to effluent limitations guidelines under *40 CFR Part 434*. <u>Not covered</u> are: inactive mining activities occurring on Federal lands where an operator cannot be identified.

☐ I. Oil and Gas Extraction Facilities – oil and gas facilities listed under Standard Industrial Classification (SIC) Major Group 13 which are required to be permitted under *UAC R317-8-3.9(2)(a)3*. These include oil and gas exploration, production, processing, or treatment operations, or transmission facilities that discharge storm water contaminated by contact with or that has come into contact with any overburden raw material, intermediate products, finished products, by-products or waste products located on the site of such operations.' Industries in SIC Major Group 13 include the extraction and production of crude oil, natural gas, oil sands and shale; the production of hydrocarbon liquids and natural gas from coal; and associated oil field service, supply and repair industries. This section also covers petroleum refineries listed under SIC code 2911. Contaminated storm water discharges from petroleum refining or drilling operations that are subject to nationally established BAT or BPT guidelines found at *40 CFR 419* and *435* respectively are not included. [Note that areas eligible for coverage at petroleum refineries will be very limited because the term “contaminated runoff”,' as defined under *40 CFR 419.11*, includes “... runoff which comes into contact with any raw material, intermediate product, finished product, by-product or waste product located on petroleum refinery property”. Areas at petroleum refineries which may be eligible for permit coverage, provided discharges from these areas are not co-mingled with “contaminated runoff”, include: vehicle and equipment storage, maintenance and refueling areas. Most areas at refineries will not be eligible for coverage including: raw material, intermediate product, by-product, waste material, chemical, and material storage areas; loading and unloading areas; transmission pipelines, and, processing areas.] <u>Not covered</u> are: inactive oil and gas operations occurring on Federal lands where an operator cannot be identified are not covered by this permit.

☐ J. Mineral Mining and Processing Facilities – active and inactive mineral mining and processing facilities (generally identified by Standard Industrial Classification (SIC) Major Group 14). Not covered are: 1) facilities associated with industrial activity which are subject to an existing effluent limitation guideline (*40 CFR Part 436*), 2) inactive mineral mining activities occurring on Federal lands where an operator cannot be identified are not eligible for coverage under this permit.

☐ K. Hazardous Waste Treatment Storage or Disposal Facilities – facilities that treat, store, or dispose of hazardous wastes, including those that are operating under interim status or a permit under subtitle C of RCRA. [Disposal facilities that have been properly closed and capped, and have no significant materials exposed to storm water, are considered inactive and do not require permits (*UAC R317-8-3.9(6)(c))*.]

☒ L. Landfills and Land Application Sites – waste disposal at landfills, land application sites, and open dumps that receive or have received industrial wastes. Open dumps are solid waste disposal units that are not in compliance with Sate/Federal criteria established under RCRA Subtitle D. Not covered are: inactive landfills, land application sites, and open dumps occurring on Federal lands where an operator cannot be identified.

☐ M. Automobile Salvage Yards – facilities engaged in dismantling or wrecking used motor vehicles for parts recycling or resale and for scrap (SIC Code 5015).

☐ N. Scrap Recycling and Waste Recycling Facilities – facilities that are engaged in the processing, reclaiming and wholesale distribution of scrap and waste materials such as ferrous and nonferrous metals, paper, plastic, cardboard, glass, animal hides (these types of activities are typically identified as SIC code 5093). Facilities that are engaged in reclaiming and recycling liquid wastes such as used oil, antifreeze, mineral spirits, and industrial solvents (also identified as SIC code 5093) are also covered under this section. Separate permit requirements have been established for recycling facilities that only receive source-separated recyclable materials primarily from non- industrial and residential sources (also identified as SIC 5093) (e.g., common consumer products including paper, newspaper, glass, cardboard, plastic containers, aluminum and tin cans). This includes recycling facilities commonly referred to as material recovery facilities (MRF).

☐ O. Steam Electric Power Generating Facilities – steam electric power generating facilities, including coal handling areas. Non-storm water discharges subject to effluent limitations guidelines are not covered by this permit. Storm water discharges from coal pile runoff subject to numeric limitations are eligible for coverage under this permit, but are subject to the limitations established by *40 CFR 423*. Not covered are: ancillary facilities such as fleet centers, gas turbine stations, and substations that are not contiguous to a steam electric power generating facility are not covered by this permit. Heat capture co-generation facilities are not covered by this permit; however, dual fuel co-generation facilities are included.

☐ P. Vehicle Maintenance or Equipment Cleaning areas at Motor Freight Transportation Facilities, Passenger Transportation Facilities, Petroleum Bulk Oil Stations and Terminals, the United States Postal Service, or Railroad Transportation Facilities – ground transportation facilities and rail transportation facilities (generally identified by Standard Industrial Classification (SIC) codes 40, 41, 42, 43, and 5171), that have vehicle and equipment maintenance shops (vehicle and equipment rehabilitation, mechanical repairs, painting, fueling and lubrication) and/or equipment cleaning operations are eligible for coverage under this section. Also covered under this section are facilities found under SIC code 4221-4225 (public warehousing and storage) that do not have vehicle and equipment maintenance shops and/or equipment cleaning operations but have areas (exclusive of access roads and rail lines) where material handling equipment or activities, raw materials, intermediate products, final products, waste materials, by-products or industrial machinery are exposed to storm water.

☐ Q. Vehicle Maintenance Areas and Equipment Cleaning Areas of Water Transportation Facilities – water transportation facilities that have vehicle (vessel) maintenance shops and/or equipment cleaning operations. The water transportation industry includes facilities engaged in foreign or domestic transport of freight or passengers in deep sea or inland waters; marine cargo handling operations; ferry operations; towing and tugboat services; and marinas (facilities commonly identified by SIC code Major Group 44).

☐ R. Ship or Boat Building and Repair Yards – facilities engaged in ship building and repairing and boat building and repairing (SIC code 373).

☐ S. Vehicle Maintenance Areas, Equipment Cleaning Areas or Airport Deicing Operations located at Air Transportation Facilities – establishments and/or facilities including airports, air terminals, air carriers, flying fields, and establishments engaged in servicing or maintaining airports and/or aircraft (generally classified under Standard Industrial Classification (SIC) code 45) which have vehicle maintenance shops, material handling facilities, equipment cleaning operations or airport and/or aircraft deicing/anti-icing operations. For the purpose of this permit, the term "deicing" is defined as the process to remove frost, snow, or ice and "anti-icing" is the process which prevents the accumulation of frost, snow, or ice. Only those portions of the facility or establishment that are either involved in vehicle maintenance (including vehicle rehabilitation, mechanical repairs, painting, fueling, and lubrication), equipment cleaning operations, or deicing/anti-icing operations are addressed under this section.

☐ T. Wastewater Treatment Works – treatment works treating domestic sewage or any other sewage sludge or wastewater treatment device or system, used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage, including lands dedicated to the disposal of sewage sludge that are located within the confines of the facility with a design flow of 1.0 MGD or more, or required to have an approved pretreatment program under *40 CFR Part 403*.

☐ U. Food and Kindred Products Facilities – food and kindred products processing facilities (commonly identified by Standard Industrial Classification (SIC) code 20), including: meat products; dairy products; canned, frozen and preserved fruits, vegetables, and food specialties; grain mill products; bakery products; sugar and confectionery products; fats and oils; beverages; and miscellaneous food preparations and kindred products and tobacco products manufacturing (SIC Code 21), except for storm water discharges identified under paragraph I.B.3. where industrial plant yards; material handling sites; refuse sites; sites used for application or disposal of process wastewaters; sites used for storage and maintenance of material handling equipment; sites used for residential treatment, storage, or disposal; shipping and receiving areas; manufacturing buildings; and storage areas for raw material and intermediate and finished products are exposed to storm water and areas where industrial activity has taken place in the past and significant materials remain. For the purposes of this paragraph, material handling activities include the storage, loading, and unloading, transportation, or conveyance of any raw material, intermediate product, finished product, by-product, or waste product.

☐ V. Textile Mills, Apparel and other Fabric Product Manufacturing Facilities – Textile Mill Products, of and regarding facilities and establishments engaged in the preparation of fiber and subsequent manufacturing of yarn, thread, braids, twine, and cordage, the manufacturing of broad woven fabrics, narrow woven fabrics, knit fabrics, and carpets and rugs from yarn; processes involved in the dyeing and finishing of fibers, yarn fabrics, and knit apparel; the integrated manufacturing of knit apparel and other finished articles of yarn; the manufacturing of felt goods (wool), lace goods, nonwoven fabrics; miscellaneous textiles, and other apparel products (generally described by SIC codes 22 and 23). This section also covers facilities engaged in manufacturing finished leather and artificial leather products (SIC 31, except 3111).

☐ W. Furniture and Fixture Manufacturing Facilities – facilities involved in the manufacturing of: wood kitchen cabinets (generally described by SIC code 2434); household furniture (generally described by SIC code 251); office furniture (generally described by SIC code 252); public buildings and related furniture (generally described by SIC code 253); partitions, shelving, lockers, and office and store fixtures (generally described by SIC code 254); and miscellaneous furniture and fixtures (generally described by SIC code 259).

☐ X. Printing and Publishing Facilities – newspaper, periodical, and book publishing or publishing and printing (SIC Codes 2711-2731); book printing (SIC Code 2732); miscellaneous publishing (SIC Code 2741); commercial printing, lithographic (SIC Code 2752); commercial printing, gravure (SIC Code 2754); commercial printing, not elsewhere classified (SIC Code 2759); manifold business forms, greeting cards, bankbooks, looseleaf binders and devices, bookbinding and related work, and typesetting (SIC Codes 2761-2791); and, plate making and related services (SIC Code 2796).

☐ Y. Rubber and Miscellaneous Plastic Product Manufacturing Facilities – rubber and miscellaneous plastic products manufacturing facilities (SIC major group 30) and miscellaneous manufacturing industries, except jewelry, silverware, and plated ware (SIC major group 39, except 391).

☐ Z. Leather Tanning and Finishing Facilities – leather tanning, currying and finishing (commonly identified by Standard Industrial Classification (SIC) code 3111). Discharges from facilities that make fertilizer solely from leather scraps and leather dust are also covered under this section.

☐ AA. Facilities That Manufacture Metal Products including Jewelry, Silverware and Plated Ware -- fabricated metals industry listed below, except for electrical related industries: fabricated metal products, except machinery and transportation equipment, SIC 34, and jewelry, silverware, and plated ware (SIC Code 391).

☐ AB. Facilities That Manufacture Transportation Equipment, Industrial or Commercial Machinery – transportation equipment, industrial or commercial machinery manufacturing facilities (commonly described by SIC Major Group 35 except SIC 357, and SIC Major Group 37, except SIC 373). Common activities include: industrial plant yards; material handling sites; refuse sites; sites used for application or disposal of process wastewaters; sites used for storage and maintenance of material handling equipment; sites used for residual treatment, storage, or disposal; shipping and receiving areas; manufacturing buildings; storage areas for raw material and intermediate and finished products; and areas where industrial activity has taken place in the past and significant materials remain and are exposed to storm water.

☐ AC. Facilities That Manufacture Electronic and Electrical Equipment and Components, Photographic and Optical Goods – facilities that manufacture: electronic and other electrical equipment and components, except computer equipment (SIC major group 36);measuring, analyzing, and controlling instruments; photographic, medical and optical goods; watches and clocks (SIC major group 38) and computer and office equipment (SIC code 357).

☐ AD. Non-Classified Facilities – facilities that meet the definition of storm water associated with industrial activity (*UAC R317-8-3.9(6)(c) & (d)*, except for construction activities as defined under *UAC R317-8-3.9(6)(d)10.*) but, can not be classified in another industrial sector (i.e., sectors A to AC), and are not excluded from permit coverage elsewhere in this permit; or, the *Executive Secretary* has designated as needing a storm water permit under *UAC R317-8-3.9(1)(a)5*. Should conditions at a facility covered by this section change and industrial activities in another section(s) contained in sectors A to AC apply, the facility shall comply with any and all applicable monitoring and pollution prevention plan requirements of the other section(s) in addition to those contained in this section. The monitoring and pollution prevention plan terms and conditions of this permit are additive for industrial activities being conducted at the same industrial facility (co-located industrial activities). The operator of the facility shall determine which monitoring and pollution prevention plan section(s) of this permit (if any) are applicable to the facility.

V. CERTIFICATION: I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Print Name: Trans-Jordan Cities

Date: _____________________

Signature: ____

Amount of Permit Fee Enclosed: $ 110.00

Position Title: General Manager

Email Address: dwoolley@transjordan.org

WHO MUST FILE A NOTICE OF INTENT (NOI) FORM

State law at UAC R317-8-3.9 prohibits point source discharges of storm water associated with industrial activity to a water body(ies) of the State without a Utah Pollutant Discharge Elimination System (UPDES) permit. The operator of an industrial activity that has such a storm water discharge must submit a NOI to obtain coverage under the UPDES Multi-Sector Storm Water General Permit. If you have questions about whether you need a permit under the UPDES Storm Water program, contact (801) 536-4300.

INSTRUCTIONS

NOTICE OF INTENT (NOI) FOR STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
TO BE COVERED UNDER THE UPDES GENERAL PERMIT

WHERE TO FILE THE NOI FORM

NOIs, with fee payment(s), must be sent to the following address:

Department of Environmental Quality
Division of Water Quality
P.O. Box 144870
Salt Lake City, UT 84114-4870

COMPLETING THE NOI FORM

You must type or print, using upper-case letters, in the appropriate areas only. Please place each character between the marks. Abbreviate if necessary to stay within the number of characters allowed for each item. Use one space for breaks between words, but not for punctuation marks unless they are needed to clarify your response. If you have any questions on this form, call (801) 536-4300.

BEGINNING OF COVERAGE

Storm Water General Permits are drafted to cover a facility quickly avoiding delays, therefore there is no waiting time to receive coverage. The permittee should be aware that though you may not have a permit in hand, if you have submitted a completed NOI with the permit fee you are covered by the permit and will be expected to conform to the conditions in the permit. If you wish you may contact the Division of Water Quality at (801) 536-4300, to receive a generic copy of the permit. After we receive the NOI and the permit fee we will send you an official copy of the permit including your specific permit number.

PERMIT FEES(*MAKE CHECK PAYABLE TO: DIVISION OF WATER QUALITY*)

The permit fee is $550 (or is prorated) and must be submitted with the NOI to authorize immediate coverage under the permit. This provides five years of coverage under the permit (unless prorated). The minimum fee is $110 for 12 months of coverage; additional years are calculated at $110.00 each. The permit can be prorated on a yearly basis.

Permittees that have a new facility that began operating after the date that the Multi-Sector General Permit was issued, will be prorated from the day they began operations until the expiration date of the Permit.

GENERAL INFORMATION

Facilities within municipalities (such as Salt Lake City or Salt Lake County) that have been issued Municipal Storm Water Permits by DWQ must contact that city or the county and notify them of the new permit status for the facility. If you have questions that have not been answered above, or need an NOI for construction activities, please contact the Storm Water Coordinator, Division of Water Quality, at (801) 536-4300.

SECTION I - FACILITY OPERATOR INFORMATION

Give the legal name of the person, firm, public organization, or any other entity that operates the facility or site described in this application. The name of the operator may or may not be the same as the name of the facility. The responsible party is the legal entity that controls the facility's operation, rather than the plant or site manager. Do not use a colloquial name. Enter the complete address and telephone number of the operator.
Enter the appropriate letter to indicate the legal status of the operator of the facility.

F = FederalM = Public (other than Fed or State)
S = State P = Private

A contact person is someone that we may contact, that has knowledge of the facility and permit conditions, but not necessarily the person with signatory responsibility.

SECTION II - FACILITY/SITE LOCATION INFORMATION

Enter the facility's or site's official or legal name and complete street address, including city, state and ZIP code. If the facility or site lacks a street address, indicate the state, the latitude and longitude of the facility to the nearest 15 seconds, or the quarter, section, township, and range (to the nearest quarter section) of the approximate center of the site.

Indicate whether the facility is located on Indian Lands. If the facility is located on Indian Lands, EPA form 3510-6 should be used and submitted to EPA Region VIII except for facilities on the Navajo Reservation or on the Goshute Reservation which should submit EPA form 3510-6 to Region IX.

SECTION III - SITE ACTIVITY INFORMATION

If the storm water discharges to a municipal separate sewer system, enter the name of the operator of the municipality (e.g., municipality name, county name) <u>and</u> the receiving water of the discharge from the municipal storm sewer if it is known. (A municipal separate storm sewer system (MS4) is defined as a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains) that is owned or operated by a state, city, town, county, district, association or other public body which is designed or used for collecting or conveying storm water).

If the facility discharges storm water directly to receiving water(s), enter the name of the receiving water.

Indicate whether or not the owner or operator of the facility has existing quantitative data that represent the characteristics and concentration of pollutants in storm water discharges.

To answer the questions concerning analytical or visual monitoring you must examine a copy of the permit, Part V. and the sectors (in the appendix) that your facility will fall into. Upon examination you will be able to determine your monitoring and reporting (whether data must be submitted or retained in a storm water pollution prevention plan file) requirements.

A facility is an existing facility if it has been in operation, it is a new facility if it has not begun operation but is about to

List, in descending order of significance, up to four 4-digit standard industrial classification (SIC) codes that best describe the principal products or services provided at the facility or site identified in Section II of the application.

For industrial activities defined in UAC 317-8-**3.9**(6)(c) & (d)1 to 11. that do not have SIC codes that accurately describe the principal products produced or services provided, the following 2-character codes are to be used:

HZ = Hazardous waste treatment, storage, or disposal facilities, including those that are operating under interim status or a permit under subtitle C of RCRA [UAC R317-8-3.9(6)(d)4.];

LF = Landfills, land application sites, and open dumps that receive or have received any industrial wastes, including those that are subject to regulation under subtitle D of RCRA [UAC R317-8-3.9(6)(d)5.];

SE = Steam electric power generating facilities, including coal handling sites [UAC R317-8-3.9(6)(d)7];

TW = Treatment works treating domestic sewage or any other sewage sludge or wastewater treatment device or system, used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage [UAC R317-8-3.9(6)(d)9.].

If there are other UPDES permits presently issued for the facility or site listed in Section II, list the permit numbers. If an application for the facility has been submitted but no permit number has been assigned, enter the application number.

SECTION IV - SECTOR IDENTIFICATION

Select and check all the boxes indicating the sectors that describe activities that occur at the site described in section II.

SECTION V - CERTIFICATION

State statutes provide for severe penalties for submitting false information on this application form. State regulations require this application to be signed as follows:

For a corporation: by a responsible corporate officer, which means: (i) president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision making functions, or (ii) the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

For a partnership or sole proprietorship: by a general partner or the proprietor; or
For a municipality, state, Federal, or other public facility: by either a principal executive officer or ranking elected official.

STATE OF UTAH, DEPARTMENT OF ENVIRONMENTAL QUALITY, DIVISION OF WATER QUALITY

195 North 1950 West, PO Box 144870, Salt Lake City, Utah 84114-4870 (801) 536-4300

NOT

Notice of Termination (NOT) for Storm Water Discharges Associated with Industrial Activity Under the UPDES General Multi-Sector Permit. ________________________ **INSTRUCTIONS ON BACK**

Submission of this Notice of Termination constitutes notice that the party identified in Section II of this form is no longer authorized to discharge storm water associated with industrial activity under the UPDES program. ALL NECESSARY INFORMATION MUST BE PROVIDED ON THIS FORM.

I. Permit Information

UPDES Storm Water General Permit Number: UTR262281

Check Here if You are No Longer the Operator of the Facility: ☐ Check Here if the Storm Water Discharge is Being Terminated: ☐

II. Facility Operator Information

Name: ____

Address: ____ Phone: ______________________

City: ____ State: ___________ Zip: ________________________

III. Facility Site/Location Information

Name: ____

Address: ____ County: ____________________

City: ____ State: ___________ Zip: _______________________

Latitude: _____________ Longitude: ________________ Quarter: _________ Section: ________ Township: __________ Range: ________

IV. Certification: I certify under penalty of law that all storm water discharges associated with industrial activity from the identified facility that are authorized by a UPDES general permit have been eliminated or that I am no longer the operator of the industrial activity. I understand that by submitting this Notice of Termination, I am no longer authorized to discharge storm water associated with industrial activity under this general permit, and that discharging pollutants in storm water associated with industrial activity to waters of the State is unlawful under the State of Utah Water Quality Act where the discharge is not authorized by a UPDES permit. I also understand that the submittal of this Notice of Termination does not release an operator from liability for any violations of this permit or the Water Quality Act.

Print Name: Date:

Signature: ____

APPENDIX E – Storm Water Pollution Prevention Plan

,ˍcate of Utah

Department of Environmental Quality

Richard W. Sprott
Executive Director

DIVISION OF WATER QUALITY
Walter L. Baker, P.E.
Director

JON M. HUNTSMAN, JR.
Governor

GARY HERBERT
Lieutenant Governor

RECEIVED
MAR 21 2008

March 11, 2008

Mr. Dwayne J. Woolley
General Manager
Trans-Jordan Cities
10873 South 7200 West
P.O. Box 95610
South Jordan, Utah 84095-0610

Dear Mr. Woolley:

Subject: Utah Pollutant Discharge Elimination System (UPDES) Multi-Sector General Permit for Storm Water Discharges Associated with Industrial Activity, Coverage No. **UTR000109.**

Our office received your "notice of intent" (NOI) for **Trans-Jordan Cities** to obtain coverage under the *UPDES Multi-Sector General Permit for Storm Water Discharges Associated with Industrial Activity, General Permit No. UTR000000* on December 07, 2007. The received NOI is for the Trans-Jordan Landfill facility located at, 10873 South 7200 West, South Jordan, Utah, Salt Lake County. This letter confirms your coverage under the general permit; the permit coverage number for the facility is **No. UTR000109**. Please use this number in any future correspondence associated with this project.

This coverage is effective **March 01, 2008** and expires at midnight, **December 31, 2012**. There was no lapse in coverage because the old pennit was extended until the new permit was issued.

The permit requires a Storm Water Pollution Prevention Plan (SWP3). Maintaining a current copy of the SWP3 at the site is a requirement of the permit. Monitoring is also required as outlined in appendix II requirements. Please review these requirements if you are not familiar with them. A copy of the general permit and appendix requirements can be found on our website at http://www.waterquality.utah.gov/updes/stormwater.htm.

Storm water discharge monitoring report (SWDMR) forms are enclosed for your convenience. These forms may be used to record visual and/or analytical monitoring results.

As the agency charged with the administration of issuing UPDES Permits, we are continuously looking for ways to improve our quality of service to you. Please take a few moments to complete the enclosed questionnaire, and return it in the enclosed, self-addressed, postage paid, envelope. The results will be used to improve our quality and responsiveness and give us feed back on customer satisfaction.

If you have any questions concerning this letter or your permit coverage please do not hesitate to contact me by phone at (801) 538-9325 or by e-mail at mmgeorge@utah.gov. Thank you.

Sincerely,

Mike George, Environmental Scientist
UPDES IES Section

Enclosure

U:\WQ\PERMITS\Mgeorge\wp\storm water\group 5 2007\trans-jordan109.doc

TRANS-JORDAN CITIES
TRANS-JORDAN LANDFILL
10873 S. 7200 West
PO Box 95610
South Jordan, Utah 84095-0610

STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

Utah Division of Water Quality General Permit UTR000109
March 1, 2008

Authorization to Discharge Under the Utah Pollutant Discharge Elimination System (UPDES), General Multi-Sector Permit for Storm Water Discharges Associated with Industrial Activity

Dwayne J. Woolley
General Manager

February 29, 2008

STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

TABLE OF CONTENTS

1.0 SWPPP INTRODUCTION

A. PURPOSE OF THE PLAN

As set forth in the "General Multi-Sector Permit" issued by the Utah Division of Water Quality, a storm water pollution prevention plan (SWPPP) "Plan" has to be developed for all facilities covered by the above permit. The "Plan" should be prepared in accordance with good engineering practices and should:

1. Identify potential sources of pollution which may reasonably be expected to affect the quality of storm water discharges associated with industrial activities at the facility.
2. Describe and implement practices used to reduce the pollutants in storm water discharges.
3. Assure Compliance with the terms and conditions of the "Permit".

In addition, an annual comprehensive review of the "plan" and facility shall be used to maintain ongoing compliance with the "National Pollutant Discharge Elimination system" storm water regulations.

The requirements of SARA 313 do not apply to this facility because there are no materials stored that are above reportable quantities of listed chemicals.

B. PLAN CERTIFICATION

1. Company Certification

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision and the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonments for knowing violations."

Signature: Dwayne J. Woolley Date: March 4 2008
Dwayne J. Woolley - General Manager

C. POLLUTION PREVENTION TEAM

The pollution prevention team member's positions and responsibilities are listed below.

General Manager

- Overall responsibility for supervising the development, implementation, maintenance, coordination, and revision of the "Plan"

Operations Manager

- Leader in Spill Cleanup
- Overall responsibility for implementation of the "Plan"
- Preventive maintenance
- Alternate leadership and spill reporting
- Inspections
- Housekeeping

Operations Supervisor

- Reaction team member for spill cleanup
- Alternate spill cleanup leader, inspections, housekeeping, preventative maintenance.

Scalehands Supervisor

- Reaction team member for spills on or around scales
  Inspection, housekeeping and preventative maintenance of scales

Compliance Coordinator

- Record keeping
- Inspection and monitoring
- Housekeeping
- Storm water sample collector
- Employee training
- Spill reporting
- Plan Updating

Spotters

- Spot inspection of vehicles entering the landfill
- Random load inspections

D. CONSISTENCY WITH OTHER PLANS

This "Plan" is consistent with the Plan of Operations and will be consistent with and may reflect requirements of other plans as may be required such as Emergency Response Plan.

2.0 DESCRIPTION OF POTENTIAL POLLUTION SOURCES

A. DRAINAGE

The landfill is located on generally granular soil with some silt, clay, gravel and cobbles that tend to absorb the limited amount of precipitation. There is generally little run off from the side slopes of the landfill cells that would impact any surface water or storm water drainage. Bingham Creek is located to the north of the landfill and is generally dry with the exception of major run off. Isolated erosion of soils along the side slopes of the cells does not appear to contribute to the impact of the amount of run off. Figure 1 is a site map of the landfill with features including topography contours, drainages including Bingham Creek, property boundary, well locations, and the detention pond where surface and run off water could accumulate.

The paved access road from the entrance of the landfill to the scale house and office forms a barrier that delineates the facility and the adjacent highway drainage. The ditch to the east also collects run off from the west cell slopes and directs this water to the detention basin while the western ditch directs the run off to the adjacent highway drainage.

With the construction of the "lateral expansion" in 1997 - 1998, all run off from the facility to the east of the access road is directed to the detention basin. This basin is located in the north eastern part of the property. At this point Bingham Creek is located about 100-125 feet to the north. Along the north edge of the basin, a low spot on the berms is designated as the authorized discharge point for the facility. Due to the size of the basin it is unlikely that any run off within a typical storm precipitation would overflow the basin and make it to the creek. The pooled water evaporates over time.

B. EXPOSED INVENTORY OF MATERIALS

Landfill vehicles, earth moving equipment, employee parking area, de-icing salt pile, and trucks hauling solid waste materials are the only exposed material in areas of possible drainages.

C. SPILLS AND LEAKS

There have been no known spills or leaks of reportable quantities in the drainage area or on the landfill property. There are no known areas where leachate has leaked from failures in the landfill.

D. SAMPLING DATA

There is no existing discharge sampling data to date as there has not been a discharge from the site.

E. RISK IDENTIFICATION AND SUMMARY OF POTENTIAL POLLUTANT SOURCES

The only expected source of additional pollution aside from the landfill is from leaks or spills from vehicles, which includes earth moving equipment, and bird droppings from scavenging seagulls. The expected contaminates would be metals, oil and grease, anti-freeze (ethylene glycol), and fecal coli forms (bird droppings).

Soil used for landfill compaction and slope building is continuously transported around on the property. The soil is typically excavated and stockpiled to cover the solid waste in sections of the landfill cells. The landfill excavation and compaction activity at times creates dust and particulate matter that covers the drainage areas. This particulate matter is from existing soils that may contain metals from past mining operations at Kennecott's copper mine. Other than the metals in the existing soils, no additional hazardous substances from the landfill operations would be added to the Bingham Creek drainage area.

The landfill is located in an historic agricultural area that may have had fertilizer, herbicide and pesticide application onto crops which have been primarily wheat.

Waste such as sewage sludge, sewage liquids, liquid wastes, and hazardous materials have been formally prohibited from disposal at the landfill since 1977. This is enforced and monitored through inspection prior and after dumping by landfill personnel. All waste hauling and unloading occurs at the "face" which is within the leachate collection area and has no possibility of run off to the detention pond.

A leachate collection system has been installed as part of the construction of each cell. All new cell construction at the landfill will include a leachate collection system. There are no areas of standing water that are used for storage on the property.

A portable 3000 gallon above ground double wall diesel tank is used to fuel the larger equipment. A second above ground double wall 1000 gallon gasoline tank is used to fuel the facility support vehicles.

3.0 MEASURES AND CONTROLS

A. GOOD HOUSEKEEPING

A daily inspection of the drainage area will be preformed, any potential contaminate sources will be removed and reported, and maintenance will be performed as required.

B. PREVENTIVE MAINTENANCE

There are no devices in the storm water collection system that requires routine maintenance. The runoff ditches that direct all surface runoff to the designated detention pond located in the north eastern most corner of the property are graded as needed to ensure an open and unrestricted flow.

Salt used for de-icing is placed in a natural high area and covered to prevent exposure to precipitation except during actual use of the pile.

The yearly compliance inspection will evaluate the integrity of the roads and curbs as well as any erosion in the drainages. Repairs will be preformed as needed.

Each vehicle that enters the landfill is visually inspected as it passes the inspection/scale house and is inspected before it dumps at the landfill for leaks, prohibited items and unsafe loads. Entry and or dumping will be denied for any violation.

The vehicles and equipment that are owned by the landfill are under a preventative maintenance and inspection program. Maintenance is performed on site and a log is kept for each vehicle or piece of equipment. The routine maintenance of the earth moving equipment is preformed on site while major repairs are preformed off site.

Measures to scare away the seagull such as noise guns have been implemented at the property.

The leachate system is a closed system and contains all storm water that falls on the "face".

C. SPILL PREVENTION AND RESPONSE PROCEDURES

In the event of a spill, cleanup procedures will be activated and implemented by the pollution prevention team. The response will depend on the nature of the spill, the weather conditions, and toxicity of the contaminate.

Solid materials will be removed using shovels and, if the spill is large enough, a front end loader. Residuals will be swept up with a broom where feasible. The material will be, removed to the active landfill.

Liquid spills of materials that could affect water quality will be confined using earth berms made from locally available soils. The berms will be shoveled into place or pushed into place by available equipment. If possible, the liquids will be pumped into drums for containment. Liquids absorbed into soils will be contained in a drum. Empty drums are currently stored in the Household Hazardous Waste (HHW) area and are available for containment purposes. Once the spilled material is contained it will be stored until proper disposal can be arranged.

The amount of any spill will be estimated and compared to the reportable quantities listed in 40 CFR 117.3 and 40 CFR 302.4. A copy of these lists are included as Appendix A and B. If the quantity exceeds the reportable level the pollution prevention team leader will notify the National Response Center (800-424-8802) and the Utah Division of Water Quality (801-538-6146).

The team leader will be responsible for preparation of a written description of the release, date and time, circumstances, and mitigations undertaken within 14 days of the spill.

D. MONITORING

Trans-Jordan is required to only sample any outfall discharge. There has been no known discharge to this date. In the event of a discharge, sampling will occur and a storm water discharge monitoring report (SWDMR) will be filed per the reporting requirements.

E. REPORTING

Signed copies of any SWDMRs will be sent to the *Executive Secretary of the Water Quality Board* at the address listed below.

Department of Environmental Quality
Division of Water Quality
Attention Storm Water Coordinator
PO Box 144870
Salt Lake City, Utah 84114-4870

F. EMPLOYEE TRAINING

All employees will be trained on landfill operations upon employment. Members of the pollution prevention team will read this pollution prevention plan, attend an annual team orientation, and sign the acknowledgment in the back of this plan as an indication that they have done so. The compliance coordinator is responsible for insuring that the acknowledgment sheet is up to date. Topics addressed during both types of employee training shall include pollution control laws and regulations, the storm water pollution prevention plan and the particular features of the facility, inspections, spill response, good housekeeping, and material management practices.

G. INSPECTIONS

As required by the Solid Waste Permit pertaining to landfills, site conditions are inspected every seven days. The inspector which is a member of the pollution prevention team, inspects areas of the landfill that have not yet been finally stabilized, active land application areas, areas used for storage of materials/wastes that are exposed to precipitation, and locations where equipment and waste trucks enter and exit the site. In areas of the landfill that have been finally stabilized, inspections will be conducted once a month for erosion and sediment control measures to insure that they are operating correctly. A set of tracking or follow-up procedures is used to ensure that the appropriate actions are taken in response to the inspections. The pollution prevention plan will be revised to address any problems found during inspections. Records of the inspections will be maintained on file at the landfill office. The retention pond will be monitored during all significant rainfall episodes.

H. RECORD KEEPING AND REPORTING PROCEDURES

The Trans-Jordan Landfill will maintain a storm water file at the landfill office. The file contents will be:

- The Pollution Prevention Plan
- SWDMR (if any)
- Analysis (if any)
- Inventory of spill response equipment and its location

The following are maintained at the landfill office in each respective file.

- Inspections and maintenance activities
- Tracking system for types of waste disposed of in each cell of the landfill
- Tracking of quantities of waste

I. NON-STORM WATER DISCHARGES

All of the storm water system is open and drains to areas that do not have any other source of water discharge. There have been no known discharges of leachate or vehicle wash waters at the landfill property.

J. SEDIMENT AND EROSION CONTROL

Because of the granular nature of the soil, the low average rainfall (<16 inches per year) and the gentle slope of the landfill surface, erosion within the watershed and on the pavement is not likely. All areas of the landfill will be stabilized using native vegetation. As a sediment pond has been constructed to contain all run off from the site, it is anticipated no sediment will be released at the discharge point.

K. SECURITY

A six (6) foot chain link fence has been installed completely surrounding the facility and is locked during non business hours. The main access road from the highway entrance to the main structures has adequate lighting for traffic. Both the Operations and Maintenance building and the Scalehouse have outside night lighting and security systems installed which will notify the proper authorities of any unauthorized entry.

APPENDIX A

Reportable Quantities for the CWA (40 CFR 117.3)

APPENDIX B

Reportable Quantities for CERCLA (40 CFR 302.4.)

CWA (40 CFR 117.3)

Table 117.3 -- Reportable Quantities of Hazardous Substances Designated Pursuant to Section 311 of the Clean Water Act

Table 117.3--Reportable Quantities of Hazardous Substances Designated Pursuant to Section 311 of the Clean Water Act

Material	Category	RQ in pounds (kilograms)
Acetaldehyde	C	1,000 (454)
Acetic acid	D	5,000 (2,270)
Acetic anhydride	D	5,000 (2,270)
Acetone cyanohydrin	A	10 (4.54)
Acetyl bromide	D	5,000 (2,270)
Acetyl chloride	D	5,000 (2,270)
Acrolein	X	1 (0.454)
Acrylonitrile	B	100 (45.4)
Adipic acid	D	5,000 (2,270)
Aldrin	X	1 (0.454)
Allyl alcohol	B	100 (45.4)
Allyl chloride	C	1,000 (454)
Aluminum sulfate	D	5,000 (2,270)
Ammonia	B	100 (45.4)
Ammonium acetate	D	5,000 (2,270)
Ammonium benzoate	D	5,000 (2,270)
Ammonium bicarbonate	D	5,000 (2,270)
Ammonium bichromate	A	10 (4.54)
Ammonium bifluoride	B	100 (45.4)
Ammonium bisulfite	D	5,000 (2,270)
Ammonium carbamate	D	5,000 (2,270)
Ammonium carbonate	D	5,000 (2,270)
Ammonium chloride	D	5,000 (2,270)
Ammonium chromate	A	10 (4.54)
Ammonium citrate dibasic	D	5,000 (2,270)
Ammonium fluoborate	D	5,000 (2,270)
Ammonium fluoride	B	100 (45.4)
Ammonium hydroxide	C	1,000 (454)
Ammonium oxalate	D	5,000 (2,270)
Ammonium silicofluoride	C	1,000 (454)
Ammonium sulfamate	D	5,000 (2,270)
Ammonium sulfide	B	100 (45.4)
Ammonium sulfite	D	5,000 (2,270)
Ammonium tartrate	D	5,000 (2,270)
Ammonium thiocyanate	D	5,000 (2,270)
Amyl acetate	D	5,000 (2,270)
Aniline	D	5,000 (2,270)
Antimony pentachloride	C	1,000 (454)
Antimony potassium tartrate	B	100 (45.4)
Antimony tribromide	C	1,000 (454)
Antimony trichloride	C	1,000 (454)
Antimony trifluoride	C	1,000 (454)
Antimony trioxide	C	1,000 (454)
Arsenic disulfide	X	1 (0.454)
Arsenic pentoxide	X	1 (0.454)
Arsenic trichloride	X	1 (0.454)
Arsenic trioxide	X	1 (0.454)
Arsenic trisulfide	X	1 (0.454)

Barium cyanide	A	10 (4.54)
Benzene	A	10 (4.54)
Benzoic acid	D	5,000 (2,270)
Benzonitrile	D	5,000 (2,270)
Benzoyl chloride	C	1,000 (454)
Benzyl chloride	B	100 (45.4)
Beryllium chloride	X	1 (0.454)
Beryllium fluoride	X	1 (0.454)
Beryllium nitrate	X	1 (0.454)
Butyl acetate	D	5,000 (2,270)
Butylamine	C	1,000 (454)
n-Butyl phthalate	A	10 (4.54)
Butyric acid	D	5,000 (2,270)
Cadmium acetate	A	10 (4.54)
Cadmium bromide	A	10 (4.54)
Cadmium chloride	A	10 (4.54)
Calcium arsenate	X	1 (0.454)
Calcium arsenite	X	1 (0.454)
Calcium carbide	A	10 (4.54)
Calcium chromate	A	10 (4.54)
Calcium cyanide	A	10 (4.54)
Calcium dodecylbenzenesulfonate	C	1,000 (454)
Calcium hypochlorite	A	10 (4.54)
Captan	A	10 (4.54)
Carbaryl	B	100 (45.4)
Carbofuran	A	10 (4.54)
Carbon disulfide	B	100 (45.4)
Carbon tetrachloride	A	10 (4.54)
Chlordane	X	1 (0.454)
Chlorine	A	10 (4.54)
Chlorobenzene	B	100 (45.4)
Chloroform	A	10 (4.54)
Chlorosulfonic acid	C	1,000 (454)
Chlorpyrifos	X	1 (0.454)
Chromic acetate	C	1,000 (454)
Chromic acid	A	10 (4.54)
Chromic sulfate	C	1,000 (454)
Chromous chloride	C	1,000 (454)
Cobaltous bromide	C	1,000 (454)
Cobaltous formate	C	1,000 (454)
Cobaltous sulfamate	C	1,000 (454)
Coumaphos	A	10 (4.54)
Cresol	B	100 (45.4)
Crotonaldehyde	B	100 (45.4)
Cupric acetate	B	100 (45.4)
Cupric acetoarsenite	X	1 (0.454)
Cupric chloride	A	10 (4.54)
Cupric nitrate	B	100 (45.4)
Cupric oxalate	B	100 (45.4)
Cupric sulfate	A	10 (4.54)
Cupric sulfate, ammoniated	B	100 (45.4)
Cupric tartrate	B	100 (45.4)
Cyanogen chloride	A	10 (4.54)
Cyclohexane	C	1,000 (454)
2,4-D Acid	B	100 (45.4)
2,4-D Esters	B	100 (45.4)
DDT	X	1 (0.454)
Diazinon	X	1 (0.454)
Dicamba	C	1,000 (454)
Dichlobenil	B	100 (45.4)
Dichlone	X	1 (0.454)

Dichlorobenzene.................	B.................	100 (45.4)
Dichloropropane.................	C.................	1,000 (454)
Dichloropropene.................	B.................	100 (45.4)
Dichloropropene-Dichloropropane (mixture).	B.................	100 (45.4)
2,2-Dichloropropionic acid......	D.................	5,000 (2,270)
Dichlorvos......................	A.................	10 (4.54)
Dicofol.........................	A.................	10 (4.54)
Dieldrin........................	X.................	1 (0.454)
Diethylamine....................	B.................	100 (45.4)
Dimethylamine...................	C.................	1,000 (454)
Dinitrobenzene (mixed)..........	B.................	100 (45.4)
Dinitrophenol...................	A.................	10 (45.4)
Dinitrotoluene..................	A.................	10 (4.54)
Diquat..........................	C.................	1,000 (454)
Disulfoton......................	X.................	1 (0.454)
Diuron..........................	B.................	100 (45.4)
Dodecylbenzenesulfonic acid.....	C.................	1,000 (454)
Endosulfan......................	X.................	1 (0.454)
Endrin..........................	X.................	1 (0.454)
Epichlorohydrin.................	B.................	100 (45.4)
Ethion..........................	A.................	10 (4.54)
Ethylbenzene....................	C.................	1,000 (454)
Ethylenediamine.................	D.................	5,000 (2,270)
Ethylenediamine-tetraacetic acid (EDTA).	D.................	5,000 (2,270)
Ethylene dibromide..............	X.................	1 (0.454)
Ethylene dichloride.............	B.................	100 (45.4)
Ferric ammonium citrate.........	C.................	1,000 (454)
Ferric ammonium oxalate.........	C.................	1,000 (454)
Ferric chloride.................	C.................	1,000 (454)
Ferric fluoride.................	B.................	100 (45.4)
Ferric nitrate..................	C.................	1,000 (454)
Ferric sulfate..................	C.................	1,000 (454)
Ferrous ammonium sulfate........	C.................	1,000 (454)
Ferrous chloride................	B.................	100 (45.4)
Ferrous sulfate.................	C.................	1,000 (454)
Formaldehyde....................	B.................	100 (45.4)
Formic acid.....................	D.................	5,000 (2,270)
Fumaric acid....................	D.................	5,000 (2,270)
Furfural........................	D.................	5,000 (2,270)
Guthion.........................	X.................	1 (0.454)
Heptachlor......................	X.................	1 (0.454)
Hexachlorocyclopentadiene.......	A.................	10 (4.54)
Hydrochloric acid...............	D.................	5,000 (2,270)
Hydrofluoric acid...............	B.................	100 (45.4)
Hydrogen cyanide................	A.................	10 (4.54)
Hydrogen sulfide................	B.................	100 (45.4)
Isoprene........................	B.................	100 (45.4)
Isopropanolamine dodecylbenzenesulfonate.	C.................	1,000 (454)
Kepone..........................	X.................	1 (0.454)
Lead acetate....................	A.................	10 (4.54)
Lead arsenate...................	X.................	1 (0.454)
Lead chloride...................	A.................	10 (4.54)
Lead fluoborate.................	A.................	10 (4.54)
Lead fluoride...................	A.................	10 (4.54)
Lead iodide.....................	A.................	10 (4.54)
Lead nitrate....................	A.................	10 (4.54)
Lead stearate...................	A.................	10 (4.54)
Lead sulfate....................	A.................	10 (4.54)

Lead sulfide	A	10 (4.54)
Lead thiocyanate	A	10 (4.54)
Lindane	X	1 (0.454)
Lithium chromate	A	10 (4.54)
Malathion	B	100 (45.4)
Maleic acid	D	5,000 (2,270)
Maleic anhydride	D	5,000 (2,270)
Mercaptodimethur	A	10 (4.54)
Mercuric cyanide	X	1 (0.454)
Mercuric nitrate	A	10 (4.54)
Mercuric sulfate	A	10 (4.54)
Mercuric thiocyanate	A	10 (4.54)
Mercurous nitrate	A	10 (4.54)
Methoxychlor	X	1 (0.454)
Methyl mercaptan	B	100 (45.4)
Methyl methacrylate	C	1,000 (454)
Methyl parathion	B	100 (45.4)
Mevinphos	A	10 (4.54)
Mexacarbate	C	1,000 (454)
Monoethylamine	B	100 (45.4)
Monomethylamine	B	100 (45.4)
Naled	A	10 (4.54)
Naphthalene	B	100 (45.4)
Naphthenic acid	B	100 (45.4)
Nickel ammonium sulfate	B	100 (45.4)
Nickel chloride	B	100 (45.4)
Nickel hydroxide	A	10 (4.54)
Nickel nitrate	B	100 (45.4)
Nickel sulfate	B	100 (45.4)
Nitric acid	C	1,000 (454)
Nitrobenzene	C	1,000 (454)
Nitrogen dioxide	A	10 (4.54)
Nitrophenol (mixed)	B	100 (45.4)
Nitrotoluene	C	1,000 (454)
Paraformaldehyde	C	1,000 (454)
Parathion	A	10 (4.54)
Pentachlorophenol	A	10 (4.54)
Phenol	C	1,000 (454)
Phosgene	A	10 (4.54)
Phosphoric acid	D	5,000 (2,270)
Phosphorus	X	1 (0.454)
Phosphorus oxychloride	C	1,000 (454)
Phosphorus pentasulfide	B	100 (45.4)
Phosphorus trichloride	C	1,000 (454)
Polychlorinated biphenyls	X	1 (0.454)
Potassium arsenate	X	1 (0.454)
Potassium arsenite	X	1 (0.454)
Potassium bichromate	A	10 (4.54)
Potassium chromate	A	10 (4.54)
Potassium cyanide	A	10 (4.54)
Potassium hydroxide	C	1,000 (454)
Potassium permanganate	B	100 (45.4)
Propargite	A	10 (4.54)
Propionic acid	D	5,000 (2,270)
Propionic anhydride	D	5,000 (2,270)
Propylene oxide	B	100 (45.4)
Pyrethrins	X	1 (0.454)
Quinoline	D	5,000 (2,270)
Resorcinol	D	5,000 (2,270)
Selenium oxide	A	10 (4.54)
Silver nitrate	X	1 (0.454)

Sodium	A	10 (4.54)
Sodium arsenate	X	1 (0.454)
Sodium arsenite	X	1 (0.454)
Sodium bichromate	A	10 (4.54)
Sodium bifluoride	B	100 (45.4)
Sodium bisulfite	D	5,000 (2,270)
Sodium chromate	A	10 (4.54)
Sodium cyanide	A	10 (4.54)
Sodium dodecylbenzenesulfonate	C	1,000 (454)
Sodium fluoride	C	1,000 (454)
Sodium hydrosulfide	D	5,000 (2,270)
Sodium hydroxide	C	1,000 (454)
Sodium hypochlorite	B	100 (45.4)
Sodium methylate	C	1,000 (454)
Sodium nitrite	B	100 (45.4)
Sodium phosphate, dibasic	D	5,000 (2,270)
Sodium phosphate, tribasic	D	5,000 (2,270)
Sodium selenite	B	100 (45.4)
Strontium chromate	A	10 (4.54)
Strychnine	A	10 (4.54)
Styrene	C	1,000 (454)
Sulfuric acid	C	1,000 (454)
Sulfur monochloride	C	1,000 (454)
2,4,5-T acid	C	1,000 (454)
2,4,5-T amines	D	5,000 (2,270)
2,4,5-T esters	C	1,000 (454)
2,4,5-T salts	C	1,000 (454)
TDE	X	1 (0.454)
2,4,5-TP acid	B	100 (45.4)
2,4,5-TP acid esters	B	100 (45.4)
Tetraethyl lead	A	10 (4.54)
Tetraethyl pyrophosphate	A	10 (4.54)
Thallium sulfate	B	100 (45.4)
Toluene	C	1,000 (454)
Toxaphene	X	1 (0.454)
Trichlorfon	B	100 (45.4)
Trichloroethylene	B	100 (45.4)
Trichlorophenol	A	10 (4.54)
Triethanolamine dodecylbenzenesulfonate.	C	1,000 (454)
Triethylamine	D	5,000 (2,270)
Trimethylamine	B	100 (45.4)
Uranyl acetate	B	100 (45.4)
Uranyl nitrate	B	100 (45.4)
Vanadium pentoxide	C	1,000 (454)
Vanadyl sulfate	C	1,000 (454)
Vinyl acetate	D	5,000 (2,270)
Vinylidene chloride	B	100 (45.4)
Xylene (mixed)	B	100 (45.4)
Xylenol	C	1,000 (454)
Zinc acetate	C	1,000 (454)
Zinc ammonium chloride	C	1,000 (454)
Zinc borate	C	1,000 (454)
Zinc bromide	C	1,000 (454)
Zinc carbonate	C	1,000 (454)
Zinc chloride	C	1,000 (454)
Zinc cyanide	A	10 (4.54)
Zinc fluoride	C	1,000 (454)
Zinc formate	C	1,000 (454)
Zinc hydrosulfite	C	1,000 (454)
Zinc nitrate	C	1,000 (454)

Zinc phenolsulfonate	D	5,000 (2,270)
Zinc phosphide	B	100 (45.4)
Zinc silicofluoride	D	5,000 (2,270)
Zinc sulfate	C	1,000 (454)
Zirconium nitrate	D	5,000 (2,270)
Zirconium potassium fluoride	C	1,000 (454)
Zirconium sulfate	D	5,000 (2,270)
Zirconium tetrachloride	D	5,000 (2,270)

[50 FR 13513, Apr. 4, 1985, as amended at 51 FR 34547, Sept. 29, 1986; 54 FR 33482, Aug. 14, 1989; 58 FR 35327, June 30, 1993; 60 FR 30937, June 12, 1995]

Note: The first number under the column headed "RQ" is the reportable quantity in pounds. The number in parentheses is the metric equivalent in kilograms. For convenience, the table contains a column headed "Category" which lists the code letters "X", "A", "B", "C", and "D" associated with reportable quantities of 1, 10, 100, 1000, and 5000 pounds, respectively.

APPENDIX B

Reportable Quantities for CERCLA (40 CFR 302.4.)

CERCLA (40 CFR 302.4)

Table 302.4.--List of Hazardous Substances and Reportable Quantities
[Note: All Comments/Notes Are Located at the End of This Table]

Hazardous substance	CASRN	Statutory code[dagger]	RCRA waste No.	Final RQ pounds (Kg)
Acenaphthene	83-32-9	2		100 (45.4)
Acenaphthylene	208-96-8	2		5000 (2270)
Acetaldehyde	75-07-0	1,3,4	U001	1000 (454)
Acetaldehyde, chloro-	107-20-	4	P023	1000 (454)
Acetaldehyde, trichloro-	75-87-6	4	U034	5000 (2270)
Acetamide	60-35-5	3		100 (45.4)
Acetamide, N-(aminothioxomethyl)-	591-08-2	4	P002	1000 (454)
Acetamide, N-(4-ethoxyphenyl)-	62-44-2	4	U187	100 (45.4)
Acetamide, N-9H-fluoren-2-yl-	53-96-3	3,4	U005	1 (0.454)
Acetamide, 2-fluoro-	6417-640-19-7	4	P057	100 (45.4)
Acetic acid	64-19-7	1		5000 (2270)
Acetic acid, (2,4-dichlorophenoxy)-, salts & esters.	94-75-7	1,3,4	U240	100 (45.4)
Acetic acid, ethyl ester	141-78-6	4	U112	5000 (2270)
Acetic acid, fluoro-, sodium salt	62-74-8	4	P058	10 (4.54)
Acetic acid, lead(2+) salt	301-04-2	1,4	U144	10 (4.54)
Acetic acid, thallium(1+) salt	563-68-8	4	U214	100 (45.4)
Acetic acid, (2,4,5-trichlorophenoxy)-	93-76-5	1,4	See F027	1000 (454)
Acetic anhydride	108-24-7	1		5000 (2270)
Acetone	67-64-1	4	U002	5000 (2270)
Acetone cyanohydrin	75-86-5	1,4	P069	10 (4.54)
Acetonitrile	75-05-8	3,4	U003	5000 (2270)
Acetophenone	98-86-2	3,4	U004	5000 (2270)
2-Acetylaminofluorene	53-96-3	3,4	U005	1 (0.454)
Acetyl bromide	506-96-7	1		5000 (2270)
Acetyl chloride	75-36-5	1,4	U006	5000 (2270)
1-Acetyl-2-thiourea	591-08-2	4	P002	1000 (454)
Acrolein	107-02-8	1,2,3,4	P003	1 (0.454)
Acrylamide	79-06-1	3,4	U007	5000 (2270)
Acrylic acid	79-10-7	3,4	U008	5000 (2270)
Acrylonitrile	107-13-1	1,2,3,4	U009	100 (45.4)
Adipic acid	124-04-9	1		5000 (2270)
Aldicarb	116-06-3	4	P070	1 (0.454)
Aldrin	309-00-2	1,2,4	P004	1 (0.454)
Allyl alcohol	107-18-6	1,4	P005	100 (45.4)
Allyl chloride	107-05-1	1,3		1000 (454)
Aluminum phosphide	20859-73-8	4	P006	100 (45.4)
Aluminum sulfate	10043-01-3	1		5000 (2270)
4-Aminobiphenyl	92-67-1	3		1 (0.454)

5-(Aminomethyl)-3-isoxazolol	2763-96-4	4	P007	1000 (454)
4-Aminopyridine	504-24-5	4	P008	1000 (454)
Amitrole	61-82-5	4	U011	10 (4.54)
Ammonia	7664-41-7	1		100 (45.4)
Ammonium acetate	631-61-8	1		5000 (2270)
Ammonium benzoate	1863-63-4	1		5000 (2270)
Ammonium bicarbonate	1066-33-7	1		5000 (2270)
Ammonium bichromate	7789-09-5	1		10 (4.54)
Ammonium bifluoride	1341-49-7	1		100 (45.4)
Ammonium bisulfilte	10192-30-0	1		5000 (2270)
Ammonium carbamate	1111-78-0	1		5000 (2270)
Ammonium carbonate	506-87-6	1		5000 (2270)
Ammonium chloride	12125-02-9	1		5000 (2270)
Ammonium chromate	7788-98-9	1		10 (4.54)
Ammonium citrate, dibasic	3012-65-5	1		5000 (2270)
Ammonium fluoborate	13826-83-0	1		5000 (2270)
Ammonium fluoride	12125-01-8	1		100 (45.4)
Ammonium hydroxide	1336-21-6	1		1000 (454)
Ammonium oxalate	6009-70-7	1		5000 (2270)
	5972-73-6			
	14258-49-2			
Ammonium picrate	131-74-8	4	P009	10 (4.54)
Ammonium silicofluoride	16919-19-0	1		1000 (454)
Ammonium sulfamate	7773-06-0	1		5000 (2270)
Ammonium sulfide	12135-76-1	1		100 (45.4)
Ammonium sulfite	10196-04-0	1		5000 (2270)
Ammonium tartrate	14307-43-8	1		5000 (2270)
	3164-29-2			
Ammonium thiocyanate	1762-95-4	1		5000 (2270)
Ammonium vanadate	7803-55-6	4	P119	1000 (454)

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Amyl acetate	628-63-7	1		5000 (2270)
iso-Amyl acetate	123-92-2			
sec-Amyl acetate	626-38-0			
tert-Amyl acetate	625-16-1			
Aniline	62-53-3	1,3,4	U012	5000 (2270)
o-Anisidine	90-04-0	3		100 (45.4)
Anthracene	120-12-7	2		5000 (2270)
Antimony[dagger][dagger]	7440-36-0	2		5000 (2270)
ANTIMONY AND COMPOUNDS	N.A.	2,3		**
Antimony Compounds	N.A.	2,3		**
Antimony pentachloride	7647-18-9	1		1000 (454)
Antimony potassium tartrate	28300-74-5	1		100 (45.4)
Antimony tribromide	7789-61-9	1		1000 (454)
Antimony trichloride	10025-91-9	1		1000 (454)

Antimony trifluoride..................	7783-56-4	1	....	1000 (454)
Antimony trioxide.....................	1309-64-4	1	....	1000 (454)
Argentate(1-), bis(cyano-C)-, potassium.	506-61-6	4	P099	1 (0.454)
Aroclor 1016..........................	12674-11-2	1,2,3	....	1 (0.454)
Aroclor 1221..........................	11104-28-2	1,2,3	....	1 (0.454)
Aroclor 1232..........................	11141-16-5	1,2,3	....	1 (0.454)
Aroclor 1242..........................	53469-21-9	1,2,3	....	1 (0.454)
Aroclor 1248..........................	12672-29-6	1,2,3	....	1 (0.454)
Aroclor 1254..........................	11097-69-1	1,2,3	....	1 (0.454)
[dagger]Aroclor 1260..................	11096-82-5	1,2,3	....	1 (0.454)
Aroclors..............................	1336-36-3	1,2,3	....	1 (0.454)
Arsenic[dagger][dagger]...............	7440-38-2	2,3	....	1 (0.454)
Arsenic acid H3AsO4...................	7778-39-4	4	P010	1 (0.454)
ARSENIC AND COMPOUNDS.................	N.A.	2,3	....	**
Arsenic Compounds (inorganic including arsine).	N.A.	2,3	....	**
Arsenic disulfide.....................	1303-32-8	1	....	1 (0.454)
Arsenic oxide As2O3...................	1327-53-3	1,4	P012	1 (0.454)
Arsenic oxide As2O5...................	1303-28-2	1,4	P011	1 (0.454)
Arsenic pentoxide.....................	1303-28-2	1,4	P011	1 (0.454)
Arsenic trichloride...................	7784-34-1	1	....	1 (0.454)
Arsenic trioxide......................	1327-53-3	1,4	P012	1 (0.454)
Arsenic trisulfide....................	1303-33-9	1	....	1 (0.454)
Arsine, diethyl-......................	692-42-2	4	P038	1 (0.454)
Arsinic acid, dimethyl-...............	75-60-5	4	U136	1 (0.454)
Arsonous dichloride, phenyl-..........	696-28-6	4	P036	1 (0.454)
Asbestos[dagger][dagger][dagger]......	1332-21-4	2,3	....	1 (0.454)
Auramine..............................	492-80-8	4	U014	100 (45.4)
Azaserine.............................	115-02-6	4	U015	1 (0.454)
Aziridine.............................	151-56-4	3,4	P054	1 (0.454)
Aziridine, 2-methyl-..................	75-55-8	3,4	P067	1 (0.454)
Azirino[2',3':3,4]pyrrolo[1,2-a]indole-4,7-dione, 6-amino-8-[[(aminocarbonyl)oxy]methyl]-1,1a,2,8,8a,8b- hexahydro-8a-methoxy-5- methyl-,[1aS-(1aalpha,8beta,8aalpha, 8balpha)]-.	50-07-7	4	U010	10 (4.54)
Barium cyanide........................	542-62-1	1,4	P013	10 (4.54)
Benz[j]aceanthrylene, 1,2-dihydro-3-methyl-.	56-49-5	4	U157	10 (4.54)
Benz[c]acridine.......................	225-51-4	4	U016	100 (45.4)
Benzal chloride.......................	98-87-3	4	U017	5000 (2270)
Benzamide, 3,5-dichloro-N-(1,1-dimethyl-2-58-5 propynyl)-.	23950-58-5	4	U192	5000 (2270)
Benz[a]anthracene.....................	56-55-3	2,4	U018	10 (4.54)
1,2-Benzanthracene....................	56-55-3	2,4	U018	10 (4.54)
Benz[a]anthracene, 7,12-dimethyl-.....	57-97-6	4	U094	1 (0.454)

Benzenamine..........................	62-53-3	1,3,4	U012	5000 (2270)
Benzenamine, 4,4'-carbonimidoylbis (N,N dimethyl-.	492-80-8	4	U014	100 (45.4)
Benzenamine, 4-chloro-...............	106-47-8	4	P024	1000 (454)
Benzenamine, 4-chloro-2-methyl-, hydrochloride.	3165-93-3	4	U049	100 (45.4)
Benzenamine, N,N-dimethyl-4-(phenylazo)-.	60-11-7	3,4	U093	10 (4.54)
Benzenamine, 2-methyl-...............	95-53-4	3,4	U328	100 (45.4)
Benzenamine, 4-methyl-...............	106-49-0	4	U353	100 (45.4)
Benzenamine, 4,4'-methylenebis [2-chloro-.	101-14-4	3,4	U158	10 (4.54)
Benzenamine, 2-methyl-,hydrochloride..	636-21-5	4	U222	100 (45.4)
Benzenamine, 2-methyl-5-nitro-........	99-55-8	4	U181	100 (45.4)
Benzenamine, 4-nitro-................	100-01-6	4	P077	5000 (2270)
Benzene [a]...........................	71-43-2	1,2,3,4	U019	10 (4.54)
Benzeneacetic acid, 4-chloro-[alpha]-(4-chlorophenyl)- [alpha]-hydroxy-, ethyl ester.	510-15-6	3,4	U038	10 (4.54)
Benzene, 1-bromo-4-phenoxy-..........	101-55-3	2,4	U030	100 (45.4)

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Benzenebutanoic acid, 4-[bis(2-chloroethyl)amino]-.	305-03-3	4	U035	10 (4.54)
Benzene, chloro-.....................	108-90-7	1,2,3,4	U037	100 (45.4)
Benzene, (chloromethyl)-..............	100-44-7	1,3,4	P028	100 (45.4)
Benzenediamine, ar-methyl-...........	95-80-7 496-72- 0 823-40- 5 25376- 45-8	3,4	U221	10 (4.54)
1,2-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester.	117-81-7	2,3,4	U028	100 (45.4)
1,2-Benzenedicarboxylic acid, dibutyl ester.	84-74-2	1,2,3,4	U069	10 (4.54)
1,2-Benzenedicarboxylic acid, diethyl ester.	84-66-2	2,4	U088	1000 (454)
1,2-Benzenedicarboxylic acid, dimethyl ester.	131-11-3	2,3,4	U102	5000 (2270)
1,2-Benzenedicarboxylic acid, dioctyl ester.	117-84-0	2,4	U107	5000 (2270)
Benzene, 1,2-dichloro-...............	95-50-1	1,2,4	U070	100 (45.4)
Benzene, 1,3-dichloro-...............	541-73-1	2,4	U071	100 (45.4)
Benzene, 1,4-dichloro-...............	106-46-7	1,2,3,4	U072	100 (45.4)
Benzene, 1,1'-(2,2-dichloroethylidene) bis[4-chloro-.	72-54-8	1,2,4	U060	1 (0.454)
Benzene, (dichloromethyl)-...........	98-87-3	4	U017	5000 (2270)

Benzene, 1,3-diisocyanatomethyl-......	91-08-7 584-84-9 26471-62-5	3,4	U223	100 (45.4)
Benzene, dimethyl-....................	1330-20-7	1,3,4	U239	100 (45.4)
1,3-Benzenediol.......................	108-46-3	1,4	U201	5000 (2270)
1,2-Benzenediol,4-[1-hydroxy-2-(methyl amino)ethyl]-.	51-43-4	4	P042	1000 (454)
Benzeneethanamine, alpha,alpha-dimethyl-.	122-09-8	4	P046	5000 (2270)
Benzene, hexachloro-..................	118-74-1	2,3,4	U127	10 (4.54)
Benzene, hexahydro-...................	110-82-7	1,4	U056	1000 (454)
Benzene, methyl-......................	108-88-3	1,2,3,4	U220	1000 (454)
Benzene, 1-methyl-2,4-dinitro-........	121-14-2	1,2,3,4	U105	10 (4.54)
Benzene, 2-methyl-1,3-dinitro-........	606-20-2	1,2,4	U106	100 (45.4)
Benzene, (1-methylethyl)-.............	98-82-8	3,4	U055	5000 (2270)
Benzene, nitro-.......................	98-95-3	1,2,3,4	U169	1000 (454)
Benzene, pentachloro-.................	608-93-5	4	U183	10 (4.54)
Benzene, pentachloronitro-............	82-68-8	3,4	U185	100 (45.4)
Benzenesulfonic acid chloride.........	98-09-9	4	U020	100 (45.4)
Benzenesulfonyl chloride..............	98-09-9	4	U020	100 (45.4)
Benzene,1,2,4,5-tetrachloro-..........	95-94-3	4	U207	5000 (2270)
Benzenethiol..........................	108-98-5	4	P014	100 (45.4)
Benzene,1,1'-(2,2,2-trichloroethylidene) bis[4-chloro-.	50-29-3	1,2,4	U061	1 (0.454)
Benzene,1,1'-(2,2,2-trichloroethylidene) bis[4-methoxy-.	72-43-5	1,3,4	U247	1 (0.454)
Benzene, (trichloromethyl)-...........	98-07-7	3,4	U023	10 (4.54)
Benzene, 1,3,5-trinitro-..............	99-35-4	4	U234	10 (4.54)
Benzidine.............................	92-87-5	2,3,4	U021	1 (0.454)
1,2-Benzisothiazol-3(2H)-one, 1,1-dioxide, & salts.	81-07-2	4	U202	100 (45.4)
Benzo[a]anthracene....................	56-55-3	2,4	U018	10 (4.54)
1,3-Benzodioxole, 5-(1-propenyl)-1....	120-58-1	4	U141	100 (45.4)
1,3-Benzodioxole, 5-(2-propenyl)-.....	94-59-7	4	U203	100 (45.4)
1,3-Benzodioxole, 5-propyl-...........	94-58-6	4	U090	10 (4.54)
1,3-Benzodioxol-4-ol, 2,2-dimethyl-,	22961-82-6	4	U364	-
Benzoquinone................	106-51-4	3,4	U197	10 (4.54)
Benzotrichloride......................	98-07-7	3,4	U023	10 (4.54)
Benzoyl chloride......................	98-88-4	1	--	1000 (454)
Benzyl chloride.......................	100-44-7	1,3,4	P028	100 (45.4)
Beryllium [dagger][dagger]............	7440-41-7	2,3,4	P015	10 (4.54)

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BERYLLIUM AND COMPOUNDS...............	N.A.	2,3		**
Beryllium chloride....................	7787-47-5	1		1 (0.454)
Beryllium compounds...................	N.A.	2,3		**

Beryllium fluoride....................	7787-49-7	1		1 (0.454)
Beryllium nitrate....................	13597-99-4	1		1 (0.454)
	7787-55-5			
Beryllium powder [dagger][dagger].....	7440-41-7	2,3,4	P015	10 (4.54)
alpha-BHC............................	319-84-6	2		10 (4.54)
beta-BHC.............................	319-85-7	2		1 (0.454)
delta-BHC............................	319-86-8	2		1 (0.454)
gamma-BHC............................	58-89-9	1,2,3,4	U129	1 (0.454)
2,2'-Bioxirane.......................	1464-53-5	4	U085	10 (4.54)
Biphenyl.............................	92-52-4	3		100 (45.4)
[1,1'-Biphenyl]-4,4'-diamine..........	92-87-5	2,3,4	U021	1 (0.454)
[1,1'-Biphenyl]-4,4'-diamine,3,3'- dichloro-.	91-94-1	2,3,4	U073	1 (0.454)
[1,1'-Biphenyl]-4,4'-diamine,3,3'- dimethoxy-.	119-90-4	3,4	U091	100 (45.4)
[1,1'-Biphenyl]-4,4'-diamine,3,3'- dimethyl-.	119-93-7	3,4	U095	10 (4.54)
Bis(2-chloroethoxy) methane...........	111-91-1	2,4	U024	1000 (454)
Bis(2-chloroethyl) ether..............	111-44-4	2,3,4	U025	10 (4.54)
Bis(chloromethyl) ether...............	542-88-1	2,3,4	P016	10 (4.54)
Bis(2-ethylhexyl) phthalate...........	117-81-7	3,4	U028	100 (45.4)
Bromoacetone.........................	598-31-2	4	P017	1000 (454)
Bromoform............................	75-25-2	2,3,4	U225	100 (45.4)
Bromomethane.........................	74-83-9	2,3,4	U029	1000 (454)
4-Bromophenyl phenyl ether...........	101-55-3	2,4	U030	100 (45.4)
Brucine..............................	357-57-3	4	P018	100 (45.4)
1,3-Butadiene........................	106-99-0	3		10 (4.54)
1,3-Butadiene, 1,1,2,3,4,4-hexachloro-	87-68-3	2,3,4	U128	1 (0.454)
1-Butanamine, N-butyl-N-nitroso-......	924-16-3	4	U172	10 (4.54)
1-Butanol............................	71-36-3	4	U031	5000 (2270)
2-Butanone...........................	78-93-3	3,4	U159	5000 (2270)
2-Butanone, 3,3-dimethyl-1(methylthio)- , O-[(methylamino)carbonyl] oxime.	39196-18-4	4	P045	100 (45.4)
2-Butanone peroxide..................	1338-23-4	4	U160	10 (4.54)
2-Butenal............................	123-73-9	1,4	U053	100 (45.4)
	4170-30-3			
2-Butene, 1,4-dichloro-..............	764-41-0	4	U074	1 (0.454)
2-Butenoic acid, 2-methyl-, 7-[[2,3-dihydroxy-2-(1-methoxyethyl)-3-methyl-1-oxobutoxy] methyl]-2,3, 5,7a-tetrahydro- 1H-pyrrolizin-1-yl ester, [1S-[1alpha(Z), 7(2S*,3R*),7aalpha]]-.	303-34-4	4	U143	10 (4.54)
Butyl acetate........................	123-86-4	1		5000 (2270)
iso-Butyl acetate................	110-19-0			
sec-Butyl acetate................	105-46-4			
tert-Butyl acetate...............	540-88-5			
n-B[illegible]yl alcohol.....................	71-36-3	4	U031	5000 (2270)
Bu[illegible]mine..........................	109-73-9	1		1000 (45[illegible]

iso-Butylamine....................	78-81-9			
sec-Butylamine....................	513-49-5			
	13952-84-6			
tert-Butylamine....................	75-64-9			
Butyl benzyl phthalate...............	85-68-7	2		100 (45.4)
n-Butyl phthalate....................	84-74-2	1,2,3,4	U069	10 (4.54)
Butyric acid.........................	107-92-6	1		5000 (2270)
iso-Butyric acid....................	79-31-2			
Cacodylic acid.......................	75-60-5	4	U136	1 (0.454)
Cadmium [dagger][dagger]..............	7440-43-9	2		10 (4.54)
Cadmium acetate......................	543-90-8	1		10 (4.54)
CADMIUM AND COMPOUNDS.................	N.A.	2,3		**
Cadmium bromide......................	7789-42-6	1		10 (4.54)
Cadmium chloride.....................	10108-64-2	1		10 (4.54)
Cadmium compounds....................	N.A.	2,3		**
Calcium arsenate.....................	7778-44-1	1		1 (0.454)
Calcium arsenite.....................	52740-16-6	1		1 (0.454)
Calcium carbide......................	75-20-7	1		10 (4.54)
Calcium chromate.....................	13765-19-0	1,4	U032	10 (4.54)
Calcium cyanamide....................	156-62-7	3		1000 (454)
Calcium cyanide Ca(CN)2..............	592-01-8	1,4	P021	10 (4.54)
Calcium dodecylbenzenesulfonate.......	26264-06-2	1		1000 (454)
Calcium hypochlorite.................	7778-54-3	1		10 (4.54)
Captan................................	133-06-2	1,3		10 (4.54)

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Carbamic acid, 1H-benzimidazol-2-yl,	10605-21-7	4	U372	
[b]..............................	72-55-9	2	....	1 (0.454)

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DDE [b]..............................	3547-04-4	3	....	5000 (2270)
4,4'-DDE.............................	72-55-9	2	....	1 (0.454)
DDT..................................	50-29-3	1,2,4	U061	1 (0.454)
4,4'-DDT.............................	50-29-3	1,2,4	U061	1 (0.454)
DDT AND METABOLITES..................	N.A.	2	....	**
DEHP.................................	117-81-7	2,3,4	U028	100 (45.4)
Diallate.............................	2303-16-4	4	U062	100 (45.4)
Diazinon.............................	333-41-5	1	....	1 (0.454)
Diazomethane.........................	334-88-3	3		100 (45.4)
Dibenz[a,h]anthracene................	53-70-3	2,4	U063	1 (0.454)
1,2:5,6-Dibenzanthracene.............	53-70-3	2,4	U063	1 (0.454)
Dibenzo[a,h]anthracene...............	53-70-3	2,4	U063	1 (0.454)
Dibenzofuran.........................	132-64-9	3	....	100 (45.4)
Dibenzo[a,i]pyrene...................	189-55-9	4	U064	10 (4.54)

1,2-Dibromo-3-chloropropane	96-12-8	3,4	U066	1 (0.454)
Dibromoethane	106-93-4	1,3,4	U067	1 (0.454)
Dibutyl phthalate	84-74-2	1,2,3,4	U069	10 (4.54)
Di-n-butyl phthalate	84-74-2	1,2,3,4	U069	10 (4.54)
Dicamba	1918-00-9	1		1000 (454)
Dichlobenil	1194-1-65-6	1		100 (45.4)
Dichlone	117-80-6	1		1 (0.454)
Dichlorobenzene	25321-22-6	1		100 (45.4)
1,2-Dichlorobenzene	95-50-1	1,2,4	U070	100 (45.4)
1,3-Dichlorobenzene	541-73-1	2,4	U071	100 (45.4)
1,4-Dichlorobenzene	106-46-7	1,2,3,4	U072	100 (45.4)
m-Dichlorobenzene	541-73-1	2,4	U071	100 (45.4)
o-Dichlorobenzene	95-50-1	1,2,4	U070	100 (45.4)
p-Dichlorobenzene	106-46-7	1,2,3,4	U072	100 (45.4)
DICHLOROBENZIDINE	N.A.	2		**
3,3'-Dichlorobenzidine	91-94-1	2,3,4	U073	1 (0.454)
Dichlorobromomethane	75-27-4	2		5000 (2270)
1,4-Dichloro-2-butene	764-41-0	4	U074	1 (0.454)
Dichlorodifluoromethane	75-71-8	4	U075	5000 (2270)
1,1-Dichloroethane	75-34-3	2,3,4	U076	1000 (454)
1,2-Dichloroethane	107-06-2	1,2,3,4	U077	100 (45.4)
1,1-Dichloroethylene	75-35-4	1,2,3,4	U078	100 (45.4)
1,2-Dichloroethylene	156-60-5	2,4	U079	1000 (454)
Dichloroethyl ether	111-44-4	2,3,4	U025	10 (4.54)
Dichloroisopropyl ether	108-60-1	2,4	U027	1000 (454)
Dichloromethane	75-09-2	2,3,4	U080	1000 (454)
Dichloromethoxyethane	111-91-1	2,4	U024	1000 (454)
Dichloromethyl ether	542-88-1	2,3,4	P016	10 (4.54)
2,4-Dichlorophenol	120-83-2	2,4	U081	100 (45.4)
2,6-Dichlorophenol	87-65-0	4	U082	100 (45.4)
Dichlorophenylarsine	696-28-6	4	P036	1 (0.454)
Dichloropropane	26638-19-7	1		1000 (454)
1,1-Dichloropropane	78-99-9			
1,3-Dichloropropane	142-28-9			
1,2-Dichloropropane	78-87-5	1,2,3,4	U083	1000 (454)
Dichloropropane--Dichloropropene (mixture).	8003-19-8	1		100 (45.4)
Dichloropropene	26952-23-8	1		100 (45.4)
2,3-Dichloropropene	78-88-6			
1,3-Dichloropropene	542-75-6	1,2,3,4	U084	100 (45.4)
2,2-Dichloropropionic acid	75-99-0	1		5000 (2270)
Dichlorvos	62-73-7	1,3		10 (4.54)
Dicofol	115-32-2	1		10 (4.54)
Dieldrin	60-57-1	1,2,4	P037	1 (0.454)
1,2:3,4-Diepoxybutane	1464-53-5	4	U085	10 (4.54)
Diethanolamine	111-42-2	3		100 (45.4)
Diethylamine	109-89-7	1		100 (45.4)
N,N-Diethylaniline	91-66-7	3		1000 (454)

Diethylarsine........................	692-42-2	4	P038	1 (0.454)
1,4-Diethyleneoxide..................	123-91-1	3,4	U108	100 (45.4)
Diethylhexyl phthalate...............	117-81-7	2,3,4	U028	100 (45.4)
N,N'-Diethylhydrazine................	1615-80-1	4	U086	10 (4.54)
O,O-Diethyl S-methyl dithiophosphate..	3288-58-2	4	U087	5000 (2270)
Diethyl-p-nitrophenyl phosphate.......	311-45-5	4	P041	100 (45.4)
Diethyl phthalate....................	84-66-2	2,4	U088	1000 (454)

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O,O-Diethyl O-pyrazinyl phosphorothioate.	297-97-2	4	P040	100 (45.4)
Diethylstilbestrol...................	56-53-1	4	U089	1 (0.454)
Diethyl sulfate......................	64-67-5	3	....	10 (4.54)
Dihydrosafrole.......................	94-58-6	4	U090	10 (4.54)
Diisopropylfluorophosphate (DFP)......	55-91-4	4	P043	100 (45.4)
1,4:5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro- 1,4,4a,5,8,8a-hexahydro-, (1alpha,4alpha,4abeta,5alpha, 8alpha,8abeta)-.	309-00-2	1,2,4	P004	1 (0.454)
1,4:5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro- 1,4,4a,5,8,8a-hexahydro-, (1alpha,4alpha,4abeta, 5beta,8beta,8abeta)-.	465-73-6	4	P060	1 (0.454)
2,7:3,6-Dimethanonaphth[2,3- b]oxirene,3,4,5,6,9,9- hexachloro- 1a,2,2a,3,6,6a,7,7a- octahydro- ,(1aalpha,2beta, 2aalpha,3beta,6beta,6aalpha, 7beta,7aalpha)-.	60-57-1	1,2,4	P037	1 (0.454)
2,7:3,6-Dimethanonaphth[2, 3- b]oxirene,3,4,5,6,9,9- hexachloro- 1a,2,2a,3,6,6a,7,7a- octahydro- ,(1aalpha,2beta, 2abeta,3alpha,6alpha, 6abeta,7beta,7aalpha)-, & metabolites.	72-20-8	1,2,4	P051	1 (0.454)
Dimethoate...........................	60-51-5	4	P044	10 (4.54)
3,3'-Dimethoxybenzidine..............	119-90-4	3,4	U091	100 (45.4)
Dimethylamine........................	124-40-3	1,4	U092	1000 (454)
Dimethyl aminoazobenzene.............	60-11-7	3,4	U093	10 (4.54)
p-Dimethylaminoazobenzene............	60-11-7	3,4	U093	10 (4.54)
N,N-Dimethylaniline..................	121-69-7	3	....	100 (45.4)
7,12-Dimethylbenz[a]anthracene........	57-97-6	4	U094	1 (0.454)
3,3'-Dimethylbenzidine...............	119-93-7	3,4	U095	10 (4.54)
alpha,alpha-	80-15-9	4	U096	10 (4.54)

Dimethylbenzylhydroperoxide.				
Dimethylcarbamoyl chloride............	79-44-7	3,4	U097	1 (0.454)
Dimethylformamide......................	68-12-2	3	....	100 (45.4)
1,1-Dimethylhydrazine.................	57-14-7	3,4	U098	10 (4.54)
1,2-Dimethylhydrazine.................	540-73-8	4	U099	1 (0.454)
alpha,alpha-Dimethylphenethylamine....	122-09-8	4	P046	5000 (2270)
2,4-Dimethylphenol....................	105-67-9	2,4	U101	100 (45.4)
Dimethyl phthalate....................	131-11-3	2,3,4	U102	5000 (2270)
Dimethyl sulfate......................	77-78-1	3,4	U103	100 (45.4)
Dinitrobenzene (mixed)................	25154-54-5	1	....	100 (45.4)
m-Dinitrobenzene..................	99-65-0			
o-Dinitrobenzene..................	528-29-0			
p-Dinitrobenzene..................	100-25-4			
4,6-Dinitro-o-cresol, and salts.......	534-52-1	2,3,4	P047	10 (4.54)
Dinitrophenol.........................	25550-58-7	1	....	10 (4.54)
2,5-Dinitrophenol.................	329-71-5			
2,6-Dinitrophenol.................	573-56-8			
2,4-Dinitrophenol.....................	51-28-5	1,2,3,4	P048	10 (4.54)
Dinitrotoluene........................	25321-14-6	1,2	....	10 (4.54)
3,4-Dinitrotoluene................	610-39-9			
2,4-Dinitrotoluene....................	121-14-2	1,2,3,4	U105	10 (4.54)
2,6-Dinitrotoluene....................	606-20-2	1,2,4	U106	100 (45.4)
Dinoseb...............................	88-85-7	4	P020	1000 (454)
Di-n-octyl phthalate..................	117-84-0	2,4	U107	5000 (2270)
1,4-Dioxane...........................	123-91-1	3,4	U108	100 (45.4)
DIPHENYLHYDRAZINE.....................	N.A.	2	....	**
1,2-Diphenylhydrazine.................	122-66-7	2,3,4	U109	10 (4.54)
Diphosphoramide, octamethyl-..........	152-16-9	4	P085	100 (45.4)
Diphosphoric acid, tetraethyl ester...	107-49-3	1,4	P111	10 (4.54)
Dipropylamine.........................	142-84-7	4	U110	5000 (2270)
Di-n-propylnitrosamine................	621-64-7	2,4	U111	10 (4.54)
Diquat................................	85-00-7 2764-72-9	1	....	1000 (454)
Disulfoton............................	298-04-4	1,4	P039	1 (0.454)
Dithiobiuret..........................	541-53-7	4	P049	100 (45.4)
1,3-Dithiolane-2- carboxaldehyde, 2,4-	26419-73-8	4	P185	
c................. N.A.	3		**	
Fluoranthene..........................	206-44-0	2,4	U120	100 (45.4)
Fluorene..............................	86-73-7	2	....	5000 (2270)
Fluorine..............................	7782-41-4	4	P056	10 (4.54)
Fluoroacetamide.......................	640-19-7	4	P057	100 (45.4)
Fluoroacetic acid, sodium salt........	62-74-8	4	P058	10 (4.54)
Formaldehyde..........................	50-00-0	1,3,4	U122	100 (45.4)
Formic acid...........................	64-18-6	1,4	U123	5000 (2270)
Fulminic acid, mercury(2+)salt........	628-86-4	4	P065	10 (4.54)
Fumaric acid..........................	110-17-8	1	....	5000 (2270)
Furan.................................	110-00-9	4	U124	100 (45.4)
2-F[illegible]carboxaldehyde................	98-01-1	1,4	U125	5000 (2270)

2,5-Furandione	108-31-6	1,3,4	U147	5000 (2270)
Furan, tetrahydro-	109-99-9	4	U213	1000 (454)
Furfural	98-01-1	1,4	U125	5000 (2270)
Furfuran	110-00-9	4	U124	100 (45.4)
Glucopyranose, 2-deoxy-2-(3-methyl-3-nitrosoureido)-,D-.	18883-66-4	4	U206	1 (0.454)
D-Glucose, 2-deoxy-2-[[(methylnitrosoamino)-carbonyl]amino]-.	18883-66-4	4	U206	1 (0.454)
Glycidylaldehyde	765-34-4	4	U126	10 (4.54)
Glycol ethers [d]	N.A.	3	...	**
Guanidine, N-methyl-N'-nitro-N-nitroso-.	70-25-7	4	U163	10 (4.54)
Guthion	86-50-0	1	...	1 (0.454)
HALOETHERS	N.A.	2	...	**
HALOMETHANES	N.A.	2	...	**
Heptachlor	76-44-8	1,2,3,4	P059	1 (0.454)
HEPTACHLOR AND METABOLITES	N.A.	2	...	**
Heptachlor epoxide	1024-57-3	2	...	1 (0.454)
Hexachlorobenzene	118-74-1	2,3,4	U127	10 (4.54)
Hexachlorobutadiene	87-68-3	2,3,4	U128	1 (0.454)
HEXACHLOROCYCLOHEXANE (all isomers)	608-73-1	2	...	**
Hexachlorocyclopentadiene	77-47-4	1,2,3,4	U130	10 (4.54)
Hexachloroethane	67-72-1	2,3,4	U131	100 (45.4)
Hexachlorophene	70-30-4	4	U132	100 (45.4)
Hexachloropropene	1888-71-7	4	U243	1000 (454)
Hexaethyl tetraphosphate	757-58-4	4	P062	100 (45.4)
Hexamethylene-1,6-diisocyanate	822-06-0	3	...	100 (45.4)
Hexamethylphosphoramide	680-31-9	3	...	1 (0.454)
Hexane	110-54-3	3	...	5000 (2270)
Hexone	108-10-1	3,4	U161	5000 (2270)
Hydrazine	302-01-2	3,4	U133	1 (0.454)
Hydrazinecarbothioamide	79-19-6	4	P116	100 (45.4)
Hydrazine, 1,2-diethyl-	1615-80-1	4	U086	10 (4.54)
Hydrazine, 1,1-dimethyl-	57-14-7	3,4	U098	10 (4.54)
Hydrazine, 1,2-dimethyl-	540-73-8	4	U099	1 (0.454)
Hydrazine, 1,2-diphenyl-	122-66-7	2,3,4	U109	10 (4.54)
Hydrazine, methyl-	60-34-4	3,4	P068	10 (4.54)
Hydrochloric acid	7647-01-0	1,3	...	5000 (2270)
Hydrocyanic acid	74-90-8	1,4	P063	10 (4.54)
Hydrofluoric acid	7664-39-3	1,3,4	U134	100 (45.4)
Hydrogen chloride	7647-01-0	1,3	...	5000 (2270)
Hydrogen cyanide	74-90-8	1,4	P063	10 (4.54)
Hydrogen fluoride	7664-39-3	1,3,4	U134	100 (45.4)
Hydrogen phosphide	7803-51-2	3,4	P096	100 (45.4)
Hydrogen sulfide H2S	7783-06-4	1,4	U135	100 (45.4)
Hydroperoxide, 1-methyl-1-phenylethyl-	80-15-9	4	U096	10 (4.54)
Hydroquinone	123-31-9	3	...	100 (45.4)

2-Imidazolidinethione..................	96-45-7	3,4	U116	10 (4.54)
Indeno(1,2,3-cd)pyrene................	193-39-5	2,4	U137	100 (45.4)
Iodomethane...........................	74-88-4	3,4	U138	100 (45.4)
1,3-Isobenzofurandione................	85-44-9	3,4	U190	5000 (2270)
Isobutyl alcohol......................	78-83-1	4	U140	5000 (2270)
Isodrin...............................	465-73-6	4	P060	1 (0.454)
Isophorone............................	78-59-1	2,3	....	5000 (2270)
Isoprene..............................	78-79-5	1	....	100 (45.4)

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Isopropanolamine dodecylbenzenesulfonate.	42504-46-1	1	....	1000 (454)
Isosafrole............................	120-58-1	4	U141	100 (45.4)
3(2H)-Isoxazolone, 5-(aminomethyl)-...	2763-96-4	4	P007	1000 (454)
Kepone................................	143-50-0	1,4	U142	1 (0.454)
Lasiocarpine..........................	303-34-4	4	U143	10 (4.54)
Lead[Dagger][Dagger]..................	7439-92-1	2	....	10 (4.54)
Lead acetate..........................	301-04-2	1,4	U144	10 (4.54)
LEAD AND COMPOUNDS....................	N.A.	2,3	....	**
Lead arsenate.........................	7784-40-9 7645-25-2 10102-48-4	1	....	1 (0.454)
Lead, bis(acetato-O)tetrahydroxytri-..	1335-32-6	4	U146	10 (4.54)
Lead chloride.........................	7758-95-4	1	....	10 (4.54)
Lead compounds........................	N.A.	2,3	....	**
Lead fluoborate.......................	13814-96-5	1	....	10 (4.54)
Lead fluoride.........................	7783-46-2	1	....	10 (4.54)
Lead iodide...........................	10101-63-0	1	....	10 (4.54)
Lead nitrate..........................	10099-74-8	1	....	10 (4.54)
Lead phosphate........................	7446-27-7	4	U145	10 (4.54)
Lead stearate.........................	1072-35-1 7428-48-0 52652-59-2 56189-09-4	1	....	10 (4.54)
Lead subacetate.......................	1335-32-6	4	U146	10 (4.54)
Lead sulfate..........................	7446-14-2 15739-80-7	1	....	10 (4.54)
Lead sulfide..........................	1314-87-0	1	....	10 (4.54)
Lead thiocyanate......................	592-87-0	1	....	10 (4.54)
Lindane...............................	58-89-9	1,2,3,4	U129	1 (0.454)
Lindane (all isomers).................	58-89-9	1,2,3,4	U129	1 (0.454)
Lithium chromate......................	14307-35-8	1	....	10 (4.54)
Malathion.............................	121-75-5	1	....	100 (45.4)
Maleic acid...........................	110-16-7	1	....	5000 (2270)
Maleic anhydride......................	108-31-6	1,3,4	U147	5000 (2270)
Ma[illegible]ydrazide......................	123-33-1	4	U148	5000 (2270)

Malononitrile........................	109-77-3	4	U149	1000 (454)
Manganese,	15339-36-3	4	P196	e...........
N.A. 3		**		
POLYNUCLEAR AROMATIC HYDROCARBONS.....	N.A.	2	....	**
Potassium arsenate..................	7784-41-0	1	....	1 (0.454)
Potassium arsenite..................	10124-50-2	1	....	1 (0.454)
Potassium bichromate................	7778-50-9	1	....	10 (4.54)
Potassium chromate..................	7789-00-6	1	....	10 (4.54)
Potassium cyanide K(CN).............	151-50-8	1,4	P098	10 (4.54)
Potassium hydroxide.................	1310-58-3	1	....	1000 (454)
Potassium permanganate..............	7722-64-7	1	....	100 (45.4)
Potassium silver cyanide............	506-61-6	4	P099	1 (0.454)
Pronamide...........................	23950-58-5	4	U192	5000 (2270)

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Propanal, 2-methyl-2-(methylsulfonyl)-	1646-88-4	4	P203	
f.............................	....	4	K169	10 (4.54)
Crude oil storage tank sediment from petroleum refining operations.				
K170[f].............................	....	4	K170	1 (0.454)
Clarified slurry oil tank sediment and/ or in-line filter/separation solids from petroleum refining operations.				
K171[f].............................	....	4	K171	1 (0.454)
Spent hydrotreating catalyst from petroleum refining operations. (This listing does not include inert support media.)				
K172[f].............................	....	4	K172	1 (0.454)
Spent hydrorefining catalyst from petroleum refining operations. (This listing does not include inert support media.)				
K174[f].............................	....	4	K174	1 (0.454)
K175[f].............................	....	4	K175	1 (0.454)
K176................................	....		....	
Baghouse filters from the production of antimony oxide, including filters from the production of intermediates (e.g., antimony metal or crude antimony oxide)	....	4	K176	1 (0.454)
K177................................	....		....	
Slag from the production of antimony oxide that is speculatively accumulated or disposed, including slag from the production of	....	4	K177	5,000 (2270)

intermediates (e.g., antimony metal or crude antimony oxide)					
K178	....	....			
Residues from manufacturing and manufacturing-site storage of ferric chloride from acids formed during the production of titanium dioxide using the chloride ilmenite process	....		4	K178	1 (0.454)

[dagger] Indicates the statutory source defined by 1,2,3, and 4, as described in the note preceding Table 302.4.

[dagger][dagger] No reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is larger than 100 micrometers (0.004 inches).

[dagger][dagger][dagger] The RQ for asbestos is limited to friable forms only.

The Agency may adjust the statutory RQ for this hazardous substance in a future rulemaking; until then the statutory one-pound RQ applies.

Sec. The adjusted RQs for radionuclides may be found in Appendix B to this table.

** Indicates that no RQ is being assigned to the generic or broad class.

[a] Benzene was already a CERCLA hazardous substance prior to the CAA Amendments of 1990 and received an adjusted 10-pound RQ based on potential carcinogenicity in an August 14, 1989, final rule (54 FR 33418). The CAA Amendments specify that ``benzene (including benzene from gasoline)'' is a hazardous air pollutant and, thus, a CERCLA hazardous substance.

[b] The CAA Amendments of 1990 list DDE (3547-04-4) as a CAA hazardous air pollutant. The CAS number, 3547-04-4, is for the chemical, p,p'dichlorodiphenylethane. DDE or p,p'-dichlorodiphenyldichloroethylene, CAS number 72-55-9, is already listed in Table 302.4 with a final RQ of 1 pound. The substance identified by the CAS number 3547-04-4 has been evaluated and listed as DDE to be consistent with the CAA section 112 listing, as amended.

[c] Includes mineral fiber emissions from facilities manufacturing or processing glass, rock, or slag fibers (or other mineral derived fibers) of average diameter 1 micrometer or less.

[d] Includes mono- and di-ethers of ethylene glycol, diethylene glycol, and triethylene glycol R-(OCH2CH2)n-OR' where:
n = 1, 2, or 3;
R = alkyl C7 or less; or
R = phenyl or alkyl substituted phenyl;
R' = H or alkyl C7 or less; or
OR' consisting of carboxylic acid ester, sulfate, phosphate, nitrate, or sulfonate.

[e] Includes organic compounds with more than one benzene ring, and which have a boiling point greater than or equal to 100 deg.C.

[f] See 40 CFR 302.6(b)(1) for application of the mixture rule to this hazardous waste.

APPENDIX C

Acknowledgment Sheet

SWPP Acknowledgment Agreement

I have read and understand the Tran-Jordan Landfill's Storm Water Pollution Prevention Plan (SWPP). I acknowledge and agree that I am responsible for knowing the information contained in the SWPP in case of an incident associated to the specifications in the plan.

I understand that by signing this document it certifies that I have examined the SWPP and have been prepared in case of an incident.

____

Print Name and Title

____________________________________ ________________

Employee's Signature Date

RECEIVED
By Division of Waste Management and Radiation Control at 2:52 pm, Jul 14, 2022

2702 South 1030 West, Suite 10, Salt Lake City, Utah 84119
Ph: 801.270.9400 Fax: 801.270.9401

TRANSMITTAL

TO: Doug Hansen Utah Division of Waste Management and Radiation Control 195 North 1950 West Salt Lake City, Utah 84116	DATE: 7/14/22 IGES JOB #: 00102-014 SENT VIA: Email

We are sending you the following:

Copies	Date	Description
1	7/14/22	2022 Trans Jordan Landfill Repermit Application (Appendices F – H)

x	For approval		Approved as submitted		Resubmit		Copies for approval
	For your use		Approved as noted		Submit		Copies for distribution
	As requested		Returned for corrections		Return		Corrected prints
	For your review and comment		Other				

Remarks:
Attached are Appendices F through H of the 2022 Trans Jordan Landfill Repermit Application.

SIGNED: Brett Mickelson

APPENDIX F – Landfill Forms

Load Rejection

Policy and Procedure

POLICY

Trans-Jordan has the right to refuse to accept any load coming into the facility. A rejection may be made because of laws, permits, and company policy or supervisor discretion.

PROCEDURE

SCALEHOUSE

When, during the course of a regular transaction, a scalehand ascertains that something in the load or the load itself is not accepted at the landfill they will:

1. Inform the customer that they will not be allowed to leave their item(s) at the landfill.
2. If the rejection is based on a Salt Lake County Health Department (SLCoHD) requirement, complete a load rejection slip.
3. If agreeable, have the driver sign the slip.
4. Remind driver that they must contact the SLCoHD within five days to inform them where the item was disposed.
5. Give the pink copy to the customer.
6. Immediately fax a copy of the slip to the SLCoHD.

SPOTTERS AND OPERATORS / HHW

If an employee, in the field, recognizes what they believe may be a load containing suspected non-disposable trash they will:

1. Stop the driver from unloading his material.
    a. Explain to driver that a supervisor will be called to discuss the items in the load.
2. Call a supervisor.

OPERATIONS MANAGEMENT TEAM

1. Meet with the customer.
2. Inspect the load and determine whether the load will be rejected.
3. If the load is found unacceptable for disposal:
    - Fill out the load rejection slip.
    - If agreeable, have the driver sign the slip.
    - Remind driver that they must contact the SLCoD within five days to inform them where the item was disposed.
    - Give the pink copy to the customer.
4. As soon as possible, fax the slip to the SLCoD.
5. Put both slips in Compliance Coordinator mail slot.

COMPLIANCE COORDINATOR

1. File and retain as appropriate

RELATED FORMS / POLICIES

- Load Rejection Form as provided by the Salt Lake County Health Department

Trans-Jordan Water Truck Loads

Date	Driver	Start Gallons	End Gallons	Kennecott	Fire Hydrant	So. Valley Building	Roads	Rows							
								1	2	3	4	5	6	7	8
								9	10	11	12	13	14	15	16
								17	18	19	20	21	22	23	X
								1	2	3	4	5	6	7	8
								9	10	11	12	13	14	15	16
								17	18	19	20	21	22	23	X
								1	2	3	4	5	6	7	8
								9	10	11	12	13	14	15	16
								17	18	19	20	21	22	23	X
								1	2	3	4	5	6	7	8
								9	10	11	12	13	14	15	16
								17	18	19	20	21	22	23	X
								1	2	3	4	5	6	7	8
								9	10	11	12	13	14	15	16
								17	18	19	20	21	22	23	X
								1	2	3	4	5	6	7	8
								9	10	11	12	13	14	15	16
								17	18	19	20	21	22	23	X
								1	2	3	4	5	6	7	8
								9	10	11	12	13	14	15	16
								17	18	19	20	21	22	23	X
								1	2	3	4	5	6	7	8
								9	10	11	12	13	14	15	16
								17	18	19	20	21	22	23	X
								1	2	3	4	5	6	7	8
								9	10	11	12	13	14	15	16
								17	18	19	20	21	22	23	X
								1	2	3	4	5	6	7	8
								9	10	11	12	13	14	15	16
								17	18	19	20	21	22	23	X
								1	2	3	4	5	6	7	8
								9	10	11	12	13	14	15	16
								17	18	19	20	21	22	23	X
								1	2	3	4	5	6	7	8
								9	10	11	12	13	14	15	16
								17	18	19	20	21	22	23	X
								1	2	3	4	5	6	7	8
								9	10	11	12	13	14	15	16
								17	18	19	20	21	22	23	X
								1	2	3	4	5	6	7	8
								9	10	11	12	13	14	15	16
								17	18	19	20	21	22	23	X

Trans-Jordan Water Truck Loads

*Thank you for keeping a log of your water truck loads. T*rans-Jordan needs an accurate count of the number of trips where water is place on the roads; please fill out the document carefully.

When you are the only vehicle filling from a water source you may fill in only one line on the sheet. If there is more than one truck filling from the water source you must fill out a new line with new begininng and ending gallons so that the gallons of water used can be accurately accounted for. Please be sure to mark the rows that you watered so that we can be sure to keep them evenly watered and make the best end product possible.

ALSET	Spotters	Scalehouse	HHW	Truck Drivers	Equipment Operators	Greenwaste Operators	Mechanics	Safety/Compliance	Scalehouse Supervisor	Operations Supervisors	Operations Manager	Accountant	Human Resources	Executive Director		Proposed date	Actual date	Safety trainings	Tail gate meetings	
OSHA required																				
OSHA, Employee rights and responsibilties, Employer rights and responsibilities	x	x	x	x	x	x	x	x	x	x	x	x	x	x		ALSET	Feb-22			
Government Agencies and TJ Permits: RCRA, SARA, CAA, CWA, permits: Solid Waste, Water (SWPPP). Radiation, and GHG	x	x	x	x	x	x	x	x	x	x	x	x	x	x		ALSET	Feb-22			
SWPPP Awareness	x	x	x	x	x	x	x	x	x	x	x	x	x	x						
Emergency Action Plan (subpart E)	x	x	x	x	x	x	x	x	x	x	x	x	x	x						
HAZCOM: SDS, ERG	x	x	x	x	x	x	x	x	x	x	x	x	x	x		ALSET	Feb-22			
Handling chemicals	x	x	x	x	x	x	x	x	x	x	x	x	x	x		ALSET	Feb-22			
Powered Platforms, Manlifts, etc.: Operations and Training (Subpart F)	x	x	x	x	x	x	x	x	x	x	x	x	x	x						
Fire Prevention (Subpart E)	x	x	x	x	x	x	x	x	x	x	x	x	x	x		ALSET	Feb-22			
Fire Prevention: Training and Education (Subpart E)	x	x	x	x	x	x	x	x	x	x	x	x	x	x		ALSET	Feb-22			
Radiation Load Procedures & Awareness	X	X	X	X	X	X	X	X	X	X	X	X	X	X		ALSET	Feb-22			
PCB Awareness	X	X	X	X	X	X	X	X	X	X	X	X	X	X		ALSET	Feb-22			
Slips, Trips and Falls (Subpart D)	x	x	x	x	x	x	x	x	x	x	x	x	x	x		ALSET	Jan-20			
Machine guarding	X	X	X	X	X	X	X	X	X	X	X	X	X	X		ALSET	Feb-22			
LOTO	X	X	X	X	X	X	X	X	X	X	X	X	X	X		ALSET	Feb-22			
Material Handling,	X	X	X	X	X	X	X	X	X	X	X	X	X	X		ALSET	Feb-22			
- handling, storage, use	x	x	x	x	x	x	x	x	x	x	x	x	x	x		ALSET	Feb-22			
Flammable-combustible	x	x	x	x	x	x	x	x	x	x	x	x	x	x		ALSET	Feb-22			
Asbestos Awareness	x	x	x	x	x	x	x	x	x	x	x	x	x	x						
Ladder Safety	x	x	x	x	x	x	x	x	x	x	x	x	x	x		ALSET	Feb-22			
	x	x	x	x	x	x	x	x	x	x	x	x	x	x						
	x	x	x	x	x	x	x	x	x	x	x	x	x	x						
Health	x	x	x	x	x	x	x	x	x	x	x	x	x	x						
Hand Injury Prevention	x	x	x	x	x	x	x	x	x	x	x	x	x	x						
Eye Injury Protection	x	x	x	x	x	x	x	x	x	x	x	x	x	x						
Hearing Protection (Subpart G)	x	x	x	x	x	x	x	x	x	x	x	x	x	x						
Heat awareness	x	x	x	x	x	x	x	x	x	x	x	x	x	x						
Cold Awareness	x	x	x	x	x	x	x	x	x	x	x	x	x	x						
Respiratory Protection Awareness (Subpart I)	x	x	x	x	x	x	x	x	x	x	x	x	x	x			Feb-22			
	x	x	x	x	x	x	x	x	x	x	x	x	x	x						
TRANS-JORDAN SPECIFIC	x	x	x	x	x	x	x	x	x	x	x	x	x	x						
TJ Basics	x	x	x	x	x	x	x	x	x	x	x	x	x	x			Feb-22			
- Load checks & waste sreening	x	x	x	x	x	x	x	x	x	x	x	x	x	x			Feb-22			
- Indemnity form	x	x	x	x	x	x	x	x	x	x	x	x	x	x			Feb-22			
- Awareness around equipment	x	x	x	x	x	x	x	x	x	x	x	x	x	x			Feb-22			
- walking working surfaces	x	x	x	x	x	x	x	x	x	x	x	x	x	x			Feb-22			
HHW Awareness	x	x	x	x	x	x	x	x	x	x	x	x	x	x			Feb-22			
Liner Protection	x	x	x	x	x	x	x	x	x	x	x	x	x	x			May-22			
Leachate Awareness	x	x	x	x	x	x	x	x	x	x	x	x	x	x			May-22			
Methane awareness	x	x	x	x	x	x	x	x	x	x	x	x	x	x			Feb-22			
	x	x	x	x	x	x	x	x	x	x	x	x	x	x			Feb-22			
	x	x	x	x	x	x	x	x	x	x	x	x	x	x						
	x	x	x	x	x	x	x	x	x	x	x	x	x	x						
HHW Acceptance Awareness (Permit Required)	x	x	x	x	x	x	x	x	x	x	x	x	x	x						
Welding, Cutting, and Brazing: General Requirements (Subpart Q)							X			X	X						Feb-22			
Welding, Cutting, and Brazing: Arc Welding and Cutting (Subpart Q)			X				X			X	X									
Respiratory Protection, Full (Subpart I)								X		X								22-Mar		
Occupational Health & Environmental Control:Inspection, Maintenance, and Installation ie proper signage at points of hazard (Subpart G)	x						X	X		X	X									
Occupational Health & Environmental Control: Training Program ie Flagger training(Subpart G)							X			X	X									

OSHA Forklift Training (Every 3 years, 2020)	X	X	X	X	X	X	X	X	X	X	X	X	X	X			Feb-22			

Cold Weather Safety (Driving)	X	X	X	X	X	X	X	X	X	X	X	X	X	X						
Driving in Adverse Weather																				
OSHA Workplace Violence	X	X	X	X	X	X	X	X	X	X	X	X	X	X						
Sexual Harassment	X	X	X	X	X	X	X	X	X	X	X	X	X	X						
Drivers License Check (reported monthly)	X	X	X	X	X	X	X	X	X	X	X	X	X	X						
Update Meeting	X	X	X	X	X	X	X	X	X	X	X	X	X	X						

	Spotters	Scalehouse	HHW	Truck Drivers	Equipment Operators	Greenwaste Operators	Mechanics	Safety/Compliance	Scalehouse Supervisor	Operations Supervisors	Operations Manager	Accountant	Human Resources	Executive Director		Proposed date	Actual date	Safety trainings	Tail gate meetings	
Customer Service	X	X	X	X	X	X	X	X	X	X	X	X	X	X						
Benefits Open Enrollment	X	X	X	X	X	X	X	X	X	X	X	X	X	X			Nov-22			
IRS 125 Open Enrollment	X	X	X	X	X	X	X	X	X	X	X	X	X	X			Nov-22			
URS Retirement Training	X	X	X	X	X	X	X	X	X	X	X	X	X	X						
Incident Reporting (New area for employees to write down their account)	X	X	X	X	X	X	X	X	X	X	X	X	X	X						
Accident Investigation	X	X	X	X	X	X	X	X	X	X	X	X	X	X						
Spotter Awareness Training	X	X	X	X	X	X	X	X	X	X	X	X	X	X						
Drug Awareness in the Workplace			X																	
Chemistry for Non-Chemist (frequency?)			X																	
DOT (every 3 years)																				
	X	X	X	X	X	X	X	X	X	X	X	X	X	X						
OSHA Bloodborne Pathogens Awarness (Subpart Z)	X	X	X	X	X	X	X	X	X	X	X	X	X	X						
OSHA General Environmental Controls: Outside Personnel (Subpart J) -Confined space-awareness		X																		
Robbery or threats at the scalehouse (conducted by South Jordan police?)																				

TRANS-JORDAN

METHANE OBSERVATION FORM

Date	Inspector	Well Number	Reading at ground level	Reading within boreholes	Comments
		1			
		2			
		3			
		4			
		5			
		6			
		A			
		B			
		C			
		D			
		E			
		F			
		G			
		H			

Methane
Quarterly Maintenance Log

Date ____________________

Channel	Physical condition of sensor	Calibration of sensor pass/fail	% of remaining life of sensor	Action required
#1 Inside north		pass/fail		
#2 Inside south		pass/fail		
#3 Outbound scale		pass/fail		
#4 Autoscale		pass/fail		
#5 Inbound scale		pass/fail		
# 6 Not in use				

Signed ____
Name and Title

Date______________________

TRANS-JORDAN

LOAD CHECKS

Policy and Procedure

POLICY

Trans-Jordan, by State and County permit, must complete a designated percentage of Load Checks on all loads entering the landfill. The loads inspected are chosen at random, by computer. The inspections are completed to ensure that items that non-accepted items are not within the load.

PROCEDURE

SCALEHOUSE

The Paradigm software will randomly choose 4% (determined by the GM) of all loads coming through the scalehouse for a load check. The scalehand, after receiving an onscreen alert, will determine if the load check has been assigned to a vehicle transporting items into the landfill; if it is, complete the following:

1. The scalehand will note the make, model, color and destination of the vehicle; this information will then be relayed by radio to the appropriate spotter.
2. Record the request on the Random Load Check Log.
3. Document total number of Load Check Transactions for the day on the Load Check Log.

SPOTTERS

When the identified vehicle approaches the tipping area the spotter will:

1. Respond to the Scalehouse radio call to ensure that they know the message was received.
2. Advise the driver of the vehicle that a random load check has been called for his transaction.
3. Direct the vehicle to an area where the load check can be safely completed.
4. Using a load check form, perform the load check
   a. Fill out the top section completely including the complete date.
   b. Investigate load, checking off items observed
   c. Report any actions or comments
   d. Legibly print and sign name
5. Turn load check forms into the supervisor's door file box at the end of the shift.

COMPLIANCE COORDINATOR

1. Compile and log the forms
2. File as appropriate
3. Prepare monthly report

RELATED FORMS / POLICIES

- Random Load Check Log
- Load check form

TRANS-JORDAN

Load Check Form

Date: __________ Time: ____________ Company: _______________________

Driver: _________________________ Truck # / License #:__________________

TJ Area: ❒ PCC ❒ Cell ❒ HHW ❒ Greenwaste

Origin: ____

Waste Description

- ❒ Appliances
- ❒ Auto Parts
- ❒ Barrels (ends cut)
- ❒ Cardboard
- ❒ Carpet
- ❒ Carpet Pad
- ❒ Cloth
- ❒ Concrete
- ❒ Containers
  - ❒ Empty
  - ❒ Full
- ❒ Dirt
- ❒ Rock
- ❒ Electrical
- ❒ Food
- ❒ Furniture
- ❒ Glass
- ❒ Insulation
- ❒ Metals
- ❒ Paper
- ❒ Paint Cans (empty)
- ❒ Pipe
- ❒ Plastic
- ❒ Roofing Material
- ❒ Rubber
- ❒ Sheetrock
- ❒ Sod
- ❒ Toys
- ❒ Wire
- ❒ Wood
- ❒ Yard Waste
- ❒ Miscellaneous

____

____

____

____

HHW

- ❒ Acids
- ❒ Antifreeze
- ❒ Rechargeable Batteries
- ❒ Fluorescent Lights
- ❒ Fuels
- ❒ Oil
- ❒ Paint Cans (Full / Wet)
- ❒ Pesticides / Poisons
- ❒ Solvents
- ❒ Miscellaneous

Unacceptable Waste

- ❒ Asbestos
- ❒ Dead Animals
- ❒ Freon Based Systems
- ❒ PCB's
- ❒ Medical Waste (Red Bags)
- ❒ Wet Loads
- ❒ 55 Gallon Drums

Action Taken: ____

Comments: ____

TJ Staff (Print Name): ____

TJ Staff Signature:____

TRANS-JORDAN

Load Check Form

Date: __________ Time: ____________ Company: _______________________

Driver: _________________________ Truck # / License #:__________________

TJ Area: ❒ PCC ❒ Cell ❒ HHW ❒ Greenwaste

Origin: ____

Waste Description

❒ Appliances
❒ Auto Parts
❒ Barrels (ends cut)
❒ Cardboard
❒ Carpet
❒ Carpet Pad
❒ Cloth
❒ Concrete
❒ Containers
❒ Empty
❒ Full
❒ Dirt
❒ Rock
❒ Electrical
❒ Food
❒ Furniture
❒ Glass
❒ Insulation
❒ Metals
❒ Paper
❒ Paint Cans (empty)
❒ Pipe
❒ Plastic
❒ Roofing Material
❒ Rubber
❒ Sheetrock
❒ Sod
❒ Toys
❒ Wire
❒ Wood
❒ Yard Waste
❒ Miscellaneous

____

____

____

____

HHW

❒ Acids
❒ Antifreeze
❒ Rechargeable Batteries
❒ Fluorescent Lights
❒ Fuels
❒ Oil
❒ Paint Cans (Full / Wet)
❒ Pesticides / Poisons
❒ Solvents
❒ Miscellaneous

Unacceptable Waste

❒ Asbestos
❒ Dead Animals
❒ Freon Based Systems
❒ PCB's
❒ Medical Waste (Red Bags)
❒ Wet Loads
❒ 55 Gallon Drums

Action Taken: ____

Comments: ____

TJ Staff (Print Name): ____

TJ Staff Signature:____

File Effective Date: April 2014
X:\Forms\Load Check Forms.docx

TRANS-JORDAN MONTHLY INSPECTIONS

DATE: ____

LANDFILL OPERATIONS INSPECTION SHEET

PUBLIC CONVENIENCE CENTER (PCC)				
Item	*Location*	*#*	*Functional*	*Comments (If item not functional / damaged- give location and problem)*
Flood lights	PCC		Yes / No	
GFCI Outlets	PCC	1	Yes / No	
Signs	PCC		Yes / No	
Fire extinguisher	PCC	1	Yes / No	
CELL AND CELL ROAD				
Signs	Cell		Yes / No	
BERMS	Cell and excavation roads		Yes / No	

X ____________________________

Supervisor

TRANS-JORDAN MONTHLY INSPECTIONS

GREENWASTE/COMPOST SUPERVISOR INSPECTION SHEET

DATE: ____

Greenwaste				
Lights		13	Yes / No	
Shack		1	Yes / No	
GFI on poles		15	Yes / No	
Fire Extinguisher		1(shack)	Yes/ No	
Emergency Fire Hose	Unwind and check 2 X per year			Last date checked:
South Valley Building				
SDS		1	Yes / No	
Bay Doors	Damaged, auto door stop	7	Yes / No	
Fire extinguishers		4	Yes / No	
Fuel tanks	Check for signs, damage, leaks	2	Yes/ No	
Pond levels	Acceptable levels, pumping?		Yes/ No	
Other				
Hydrant meter reading	Email reading to South Jordan	1	Yes/ No	Due first week of the month

X ______________________________

Supervisor

SCALEHOUSE SUPERVISOR INSPECTION SHEET

DATE:___________________________________

Scale House

Scale H_2O Drains	Under Scale	6	Yes/No	Scale calibrator checks quarterly, reports on sheet
GFCI Outlets	Bathroom	2	Yes/No	
	Outside	5	Yes/No	
Central Air Filters	Roof	1	Yes / No	
	Note: Replace Quarterly	Last Date Replaced:		
Signs	Outside Bldg.	14	Yes/No	
Fire Extinguishers	Inside Bldg Inside Autoscale Bldg.	2 1	Yes/No Yes/No	
SDS Book and links on all computers			Yes / No	
Scale vent - turning	Southwest roof top	1	Yes/No	
Silent Alarm	Under inbound and outbound workstation	2	Yes/No	

X ____________________________

Supervisor

TRANS-JORDAN MONTHLY INSPECTIONS

DATE: ____

PROJECT MANAGER INSPECTION SHEET

PUBLIC CONVENIENCE CENTER (PCC)				
Item	*Location*	*#*	*Functional*	*Comments (If item not functional / damaged- give location and problem)*
Used Oil Tank Alarm in Shop	Test when recycler onsite	1	Yes / No	
Adopt-A-Highway	South side of New Bingham Highway		Yes/ No	Litter control
Trimble Base Station	Operations building/Education office	1	Yes / No	
Survey Equipment	Survey Office	1	Yes / No	
Go Pro Camera	Cell 5	1	Yes / No	

X ______________________________

Supervisor

TRANS-JORDAN MONTHLY INSPECTIONS COMPLIANCE

Visual Emission Observations		Yes/No	
AED Inspection		Yes/No	Inspected monthly by Compliance Coordinator
Spill Containment Kit	By Salt Shed	Yes/No	Quarterly: Feb., May, Aug., Nov. Inspected by CC
First Aid Supplies	Lunchroom, Scalehouse/Shop/ vehicles	Yes/No	
SDS Books	Outside South Lunchroom Door	Yes/No	
Methane Well Monitoring	Completed	Yes/No	Last test date: (to be done qrtly.)
Service Truck Crane Inspection	Odd number months	Yes/No	Inspected by Compliance Coordinator with Mechanic
Ladder Inspection		Yes/No	Quarterly: Feb., May, Aug., Nov. Inspected by Compliance Coordinator
Hot Work Permits	Inside O&M shop Inside Maintenance SV	Yes/No Yes/No	Inspected monthly by Compliance Coordinator
MISCELLANEOUS WATER SAMPLING			
Ground Water Sampling	Quarterly Feb., May, Aug., Nov.	Yes / No	
Leachate Water Sampling	Bi-annually May and Nov.	Yes / No	
WATER MONITORING WELLS			
Well #	*Location*	*Functional*	*Comments (If item not functional / damaged- give location and problem)*
Well 1	Northwest	Yes / No	
Well 2	Northeast	Yes / No	
Well 4	West of Cell #6	Yes / No	**Closed 2010**
Well 5	West of O&M	Yes / No	

HOUSEHOLD HAZARDOUS WASTE (HHW)				
Item	*Location*	*#*	*Functional*	*Comments (If item not functional / damaged- give location and problem)*
GFCI Outlets	HHW	5	Yes / No	
	Middle Wall	4	Yes / No	
Eyewash Station	HHW Shed	1	Yes / No	
Heater		2	Yes / No	
Fire Extinguisher	Outside	2	Yes / No	
Alert bell	HHW/ PCC	2	Yes / No	

______________________________ Date: ______________________

TRANS-JORDAN MONTHLY INSPECTIONS

Date: ____

SUPERVISOR #1 INSPECTION SHEET

Main Office				
Item	*Location*	*#*	*Functional*	*Comments (If item not functional / damaged- give location and problem)*
Elevator	Elevator	1	Yes / No	
Elevator Phone	Elevator	1	Yes / No	
Elevator Room	Fire extinguisher	1	Yes / No	
GFCI Outlets	Bathrooms – Main Bathrooms – 2n Floor	5 1	Yes / No	
	Outside	5	Yes / No	
	Kitchen- Main Kitchen – 2nd Floor	7 2	Yes / No	
Central Air Filters	Roof	2	Yes / No	
	Note: Replace Quarterly	Last Replaced:		
Signs	Information	1	Yes/No	
	Handicapped	1	Yes/No	
	Water Warning (south of building)	3	Yes/No	
Maintenance Shop				
Safety Devices	Garage Doors	4	Yes/ No	
GFCI Outlets	Maintenance shop	7	Yes/ No	
Fuel tank supports and foundations	Diesel and gasoline fuel tanks	2	Yes/ No	
Safety Devices	Garage Doors	4	Yes / No	
Generator Test (power shut down)	Quarterly	1	Yes / No	
Peak Alarm System	Main building and scalehouse	2	Yes / No	

LANDFILL ROAD & WARNING SIGNS				
Item	*Location*	*#*	*Functional*	*Comments (If item not functional / damaged- give location and problem)*
Greenwaste access road	Water Monitoring	6	Yes / No	
	Information (green and Flourescent green)	15	Yes / No	
	Stop	1	Yes / No	
From entrance to gravel road	Informational / Warning	24	Yes / No	

TRANS-JORDAN MONTHLY INSPECTIONS

Road to new & old cell dumping face (gravel)	Informational / Warning	6	Yes / No	
MISCELLANEOUS				
Check time on gate	Front Gate	2	Yes / No	
Fire Extinguishers	Various	76	Yes / No	Inspection Date by State Fire:
	O&M Building		Yes/No	Inspection Date by State Fire :
Above Ground Storage Tank Inspections	Outside O&M building	3	Yes / No	(Complete AST inspection sheet)
Snow Removal and salt usage	October through May		Yes / No	Please turn all salt usage data to Compliance Coordinator monthly
Road sweeper	Weekly		Yes/No	

X ______________________________

Supervisor

APPENDIX G – Fugitive Dust Control Plan

195 North 1950 West
Salt Lake City, Utah 84114-4820
Attn: DAQ, Fugitive Dust Control Plan

Fugitive Dust Control Plan Application

Applicants have the option to complete the online dust control plan on the DEQ Online Services webpage or to submit a hard copy application.

Activities regulated by R307-309 may not commence before obtaining approval of the fugitive dust control plan. Therefore, online filing is encouraged because it provides instant approval.

Blank spaces must be completed for the application to be processed. If not applicable, enter N/A.

1. Applicant Information

Name:	Trans-Jordan Landfill
Address:	P.O. Box 95610 South Jordan, UT 84095
Phone:	801-569-8994
Email:	edavis@transjordan.org
Applicant Type:	Property Owner

2. Project Information

Project Name:	Trans-Jordan Landfill
Address:	10473 South Bacchus Highway SOUTH JORDAN, UT 84009
County:	SALT LAKE
Directions:	None
Acreage:	5.0
Latitude:	40.560278
Longitude:	112.061667

3. Point of Contact

Name: Esther K. Davis

Company Name: Trans-Jordan Landfill

Address: P.O. Box 95610 South Jordan, UT 84095

Phone: 801-256-2823

Fax:

Cell: 801-560-5168

4. On-site Superintendent/Supervisor/Foreman Contact

Name: Jaren Scott

Company Name: Trans-Jordan Landfill

On-Site Phone: 801-569-8994

Cell: 4355316270

5. By signing this permit application I certify that:

A. I am authorized, on behalf of the individual or company listed in Section 1, as Applicant, to apply for a Fugitive Dust Control Plan and to commit to all of the terms and conditions of the requested plan.

B. Construction activities will be limited to lands that the applicant either owns or is authorized to use for construction activities.

C. The applicant accepts responsibility for assuring that all contractors, subcontractors, and all other persons on the construction site covered by this plan, comply with the terms and conditions of the Fugitive Dust Control Plan.

D. I understand that any false material statement, representation or certification made in this application may invalidate the plan or cause me to be subject to enforcement action pursuant to Utah Code Ann. 19-2-115.

E. Failure to comply with fugitive dust rules may result in compliance action and penalties up to $10,000 per violation/day.

Date: 05/08/2017
Printed Name: Trans-Jordan Landfill
Title: Property Owner
Company Name: Trans-Jordan Landfill
Dust Plan Number: 12051

Dust Suppressants

	Check All that Apply
	Clay additives.
	Calcium chloride.
	Lime (calcium oxide).
	Magnesium chloride.
	Organic non-petroleum products, (ligninsulfonate, tall (pine) oil, and vegetable derivatives).
	Synthetic polymers (for example; polyvinyl acetate and vinyl acrylic).

FUGITIVE DUST CONTROL PLAN

PROJECT ACTIVITIES CHECKLIST INSTRUCTIONS:

PLACE A CHECK MARK NEXT TO EVERY ACTIVITY THAT WILL BE CONDUCTED ON THIS SITE, FOR EACH CHECKED ACTIVITY, COMPLETE THE CORRESPONDING CONTROL MEASURES/BEST MANAGEMENT PRACTICE (BMP) SELECTION PAGE. WHEN COMPLETED, YOU WILL HAVE THE OPTION TO PRINT THE ENTIRE PLAN.

	Project Activity	Check All that Apply
01	Backfilling area previously excavated or trenched.	
02	Blasting soil & rock - drilling and blasting.	
03	Clearing for site preparation and vacant land cleanup.	
04	Clearing forms, foundations, slab clearing and cleaning of forms, foundations and slabs prior to pouring concrete.	
05	Crushing of construction and demolition debris, rock and soil.	
06	Cut and fill soils for site grade preparation.	**X**
07	Demolition - Implosive demolition of a structure, using explosives.	
08	Demolition - mechanical/manual demolition of walls, stucco, concrete, freestanding structures, buildings and other structures.	
09	Disturbed soil throughout project including between structures. THIS ACTIVITY MUST BE SELECTED FOR ALL PROJECTS.	**X**
10	Disturbed land - long term stabilization and erosion control of large tracts of disturbed land that will not have continuing activity for more than 30 days.	
11	Hauling materials.	**X**
12	Paving/subgrade preparation for paving streets, parking lots, etc.	**X**
13	Sawing/cutting material, concrete, asphalt, block or pipe.	
14	Screening of rock, soil or construction debris.	
15	Staging areas, equipment storage, vehicle parking lots, and material storage areas.	
16	Stockpiles materials (storage), other soils, rock or debris, for future use or export.	**X**
17	Tailings piles, ponds and erosion control.	

18	Trackout Prevention and Cleanup of mud, silt and soil tracked out onto paved roads.	**X**
19	Traffic - unpaved routes and parking, construction related traffic on unpaved interior and/or access roads and unpaved employee/worker parking areas.	**X**
20	Trenching with track or wheel mounted excavator, shovel, backhoe or trencher.	
21	Truck loading with materials including construction and demolition debris, rock and soil.	**X**

Cut and fill soils for site grade preparation.	BMP 06

GENERAL REQUIREMENT: ALL ACTIVITIES MUST MEET OPACITY REQUIREMENTS IN R307-309-5

MAKE AT LEAST ONE SELECTION FROM EACH SECTION.

Stabilize surface soils where support equipment and vehicles will operate.

X 06-01	Pre-water and maintain surface soils in a stabilized condition.
_ 06-02	Apply and maintain a chemical stabilizer to surface soils.

Pre-water soils.

X 06-03	Dig a test hole to depth of cut or equipment penetration to determine if soils are moist at depth. Continue to pre-water if not moist to depth of cut.

Stabilize soil during cut activities.

X 06-04	Apply water to depth of cut prior to subsequent cuts.

Stabilize soil after cut and fill activities.

X 06-05	Water disturbed soils to maintain moisture.
_ 06-06	Apply and maintain a chemical stabilizer on disturbed soils to form crust following fill and compaction.
_ 06-07	Apply cover (natural or synthetic).

Disturbed soil throughout project including between structures. THIS ACTIVITY MUST BE SELECTED FOR ALL PROJECTS.	**BMP 09**

GENERAL REQUIREMENT: ALL ACTIVITIES MUST MEET OPACITY REQUIREMENTS IN R307-309-5

MAKE AT LEAST ONE SELECTION FROM EACH SECTION.

Limit disturbance of soils where possible.

_ 09-01	Limit disturbance of soils with the use of fencing, barriers, barricades, and/or wind barriers.
X 09-02	Limit vehicle mileage and reduce speed.

Stabilize and maintain stability of all disturbed soil throughout construction site.

X 09-03	Apply water to stabilize disturbed soils. Soil moisture must be maintained such that soils can be worked without generating fugitive dust.
_ 09-04	Apply and maintain a chemical stabilizer.
_ 09-05	Use wind breaks.
_ 09-06	Apply cover (natural or synthetic).

Hauling materials.	BMP 11

GENERAL REQUIREMENT: ALL ACTIVITIES MUST MEET OPACITY REQUIREMENTS IN R307-309-5

MAKE AT LEAST ONE SELECTION FROM EACH SECTION.

Limit visible dust opacity from vehicular operations.

X 11-01	Apply and maintain water/chemical suppressant to operational areas and haul routes.
X 11-02	Limit vehicle mileage and speed.

Stabilize materials during transport on site.

_ 11-03	Use tarps or other suitable enclosures on haul trucks.
X 11-04	Apply water prior to transport.

Clean wheels and undercarriage of haul trucks prior to leaving construction site.

_ 11-05	Clean wheels.
X 11-06	Sweep or water haul road.

Paving/subgrade preparation for paving streets, parking lots, etc.	BMP 12

GENERAL REQUIREMENT: ALL ACTIVITIES MUST MEET OPACITY REQUIREMENTS IN R307-309-5

MAKE AT LEAST ONE SELECTION.

Stabilize adjacent disturbed soils following paving activities.

X 12-01	Apply and maintain water on disturbed soils.
_ 12-02	Apply and maintain chemical stabilizer on disturbed soils.
_ 12-03	Stabilize disturbed soils with vegetation or hydroseeding.
_ 12-04	Apply synthetic cover to disturbed soils.
_ 12-05	There are no soils adjacent to paving activities.

Stockpiles materials (storage), other soils, rock or debris, for future use or export.	**BMP 16**

GENERAL REQUIREMENT: ALL ACTIVITIES MUST MEET OPACITY REQUIREMENTS IN R307-309-5

MAKE AT LEAST ONE SELECTION FROM EACH SECTION.

Stabilize surface soils where support equipment and vehicles will operate.

X 16-01	Pre-water and maintain surface soils in a stabilized condition.
_ 16-02	Apply and maintain a chemical stabilizer on surface soils.
X 16-03	Pave area.

Stabilize stockpile materials during handling.

X 16-04	Remove material from the downwind side of the stockpile, when safe to do so.
_ 16-05	Reduce height.
_ 16-06	Create wind screen

Stabilize stockpiles after handling.

X 16-07	Water stockpiles to form a crust immediately.
_ 16-08	Apply and maintain a chemical stabilizer to all outer surfaces of the stockpiles.
_ 16-09	Provide and maintain wind barriers on 3 sides of the pile.
_ 16-10	Apply a cover (natural or synthetic)
_ 16-11	Wind screen.
_ 16-12	Avoid steep sides to prevent material sloughing.
_ 16-13	Reduce height.

Trackout Prevention and Cleanup of mud, silt and soil tracked out onto paved roads.	**BMP 18**

GENERAL REQUIREMENT: ALL ACTIVITIES MUST MEET OPACITY REQUIREMENTS IN R307-309-5

MAKE AT LEAST ONE SELECTION FROM EACH SECTION.

Prevent dust from trackout.

X 18-01	Clean trackout at the end of the work shift from paved surfaces to maintain dust control
_ 18-02	Maintain dust control during working hours and clean trackout from paved surfaces at the end of the work shift/day.
_ 18-03	Install gravel pad(s), clean, well-graded gravel or crushed rock. Minimum dimensions must be 30 feet wide by 3 inches deep, and, at minimum, 50' or the length of the longest haul truck, whichever is greater. Re-screen, wash or apply additional rock in gravel pad to maintain effectiveness.
_ 18-04	Install wheel shakers. Clean wheel shakers on a regular basis to maintain effectiveness.
_ 18-05	Install wheel washers. Maintain wheel washers on a regular basis to maintain effectiveness.
X 18-06	Motorized vehicles will only operate on paved surfaces.
_ 18-07	Install cattle guard before paved road entrance.

All exiting traffic must be routed over selected trackout control device(s).

_ 18-08	Clearly establish and enforce traffic patterns to route traffic over selected trackout control device(s).
X 18-09	Limit site accessibility to routes with trackout control devices in place by installing effective barriers on unprotected routes.

Traffic - unpaved routes and parking, construction related traffic on unpaved interior and/or access roads and unpaved employee/worker parking areas.	**BMP 19**

GENERAL REQUIREMENT: ALL ACTIVITIES MUST MEET OPACITY REQUIREMENTS IN R307-309-5

MAKE AT LEAST ONE SELECTION.

Stabilize surface soils where support equipment and vehicles will operate.

X 19-01	Limit vehicle mileage and speeds.
X 19-02	Apply and maintain water on surface soils.
_ 19-03	Apply and maintain chemical stabilizers on surface soils.
_ 19-04	Apply and maintain gravel on surface soils.
_ 19-05	Supplement chemical stabilizers, water or aggregate applications as necessary.
X 19-06	Apply recycled asphalt (RAP) to surface soils.

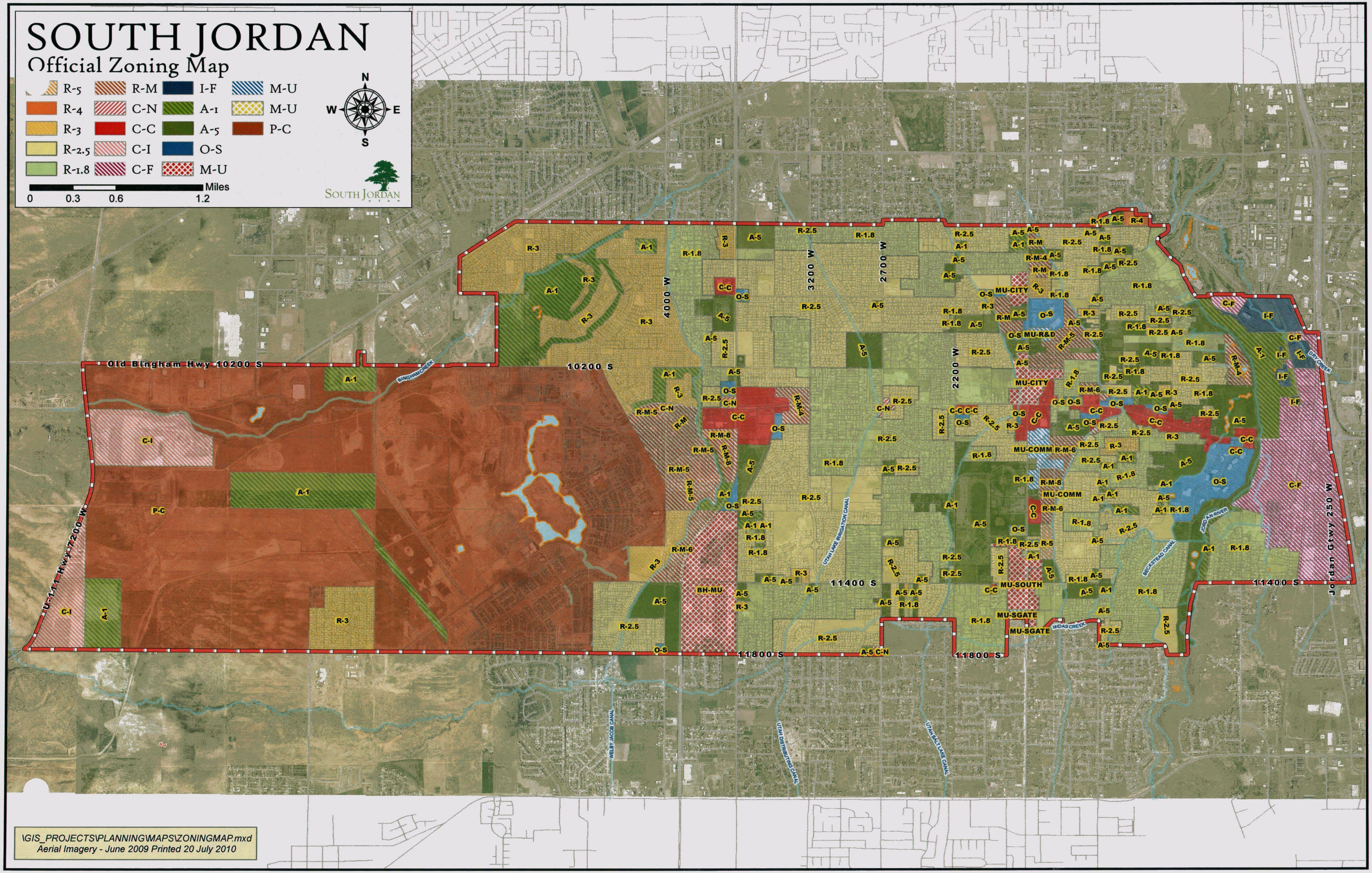
Truck loading with materials including construction and demolition debris, rock and soil.	**BMP 21**

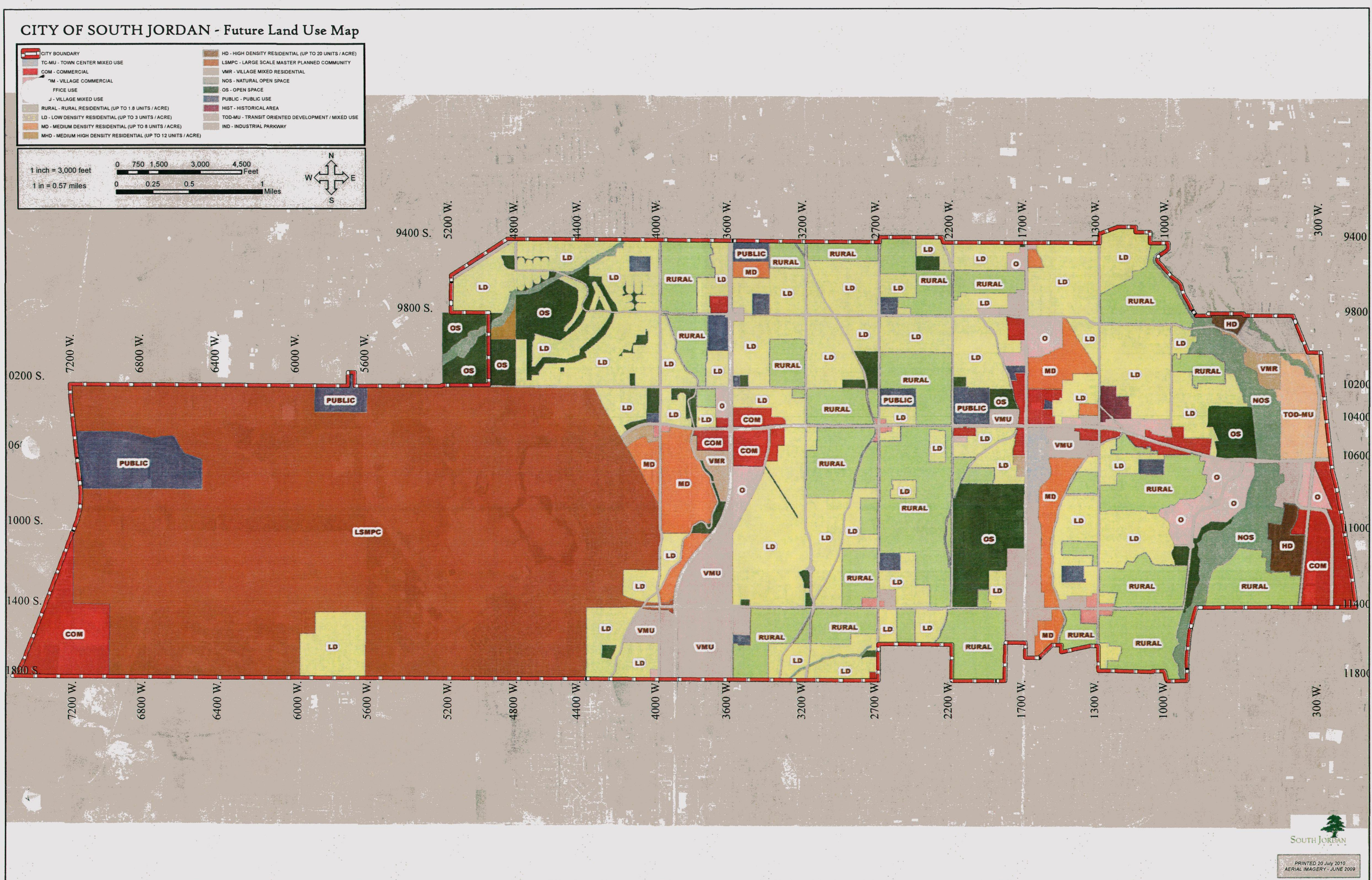
GENERAL REQUIREMENT: ALL ACTIVITIES MUST MEET OPACITY REQUIREMENTS IN R307-309-5

MAKE AT LEAST ONE SELECTION.

X 21-01	Pre-water and maintain surface soils in a stabilized condition where loaders, support equipment and vehicles will operate.
_ 21-02	Apply and maintain a chemical stabilizer on surface soils where loaders, support equipment and vehicles will operate.
X 21-03	Empty loader bucket slowly and keep loader bucket close to the truck to minimize the drop height while dumping.

APPENDIX H – Local Land Use


SOUTH JORDAN
Official Zoning Map
R-5
R-4
R-3
R-2.5
R-1.8
R-M
C-N
C-C
C-I
C-F
I-F
A-1
A-5
O-S
M-U
M-U
M-U
P-C
N
W
E
S
0
0.3
0.6
1.2
Miles
SOUTH JORDAN
Old Bingham Hwy 10200 S
10200 S
4000 W
3200 W
2700 W
2200 W
11400 S
11800 S
U-111 Hwy 7200 W
Jordan Gtwy 250 W
MU-CITY
MU-R&D
MU-COMM
MU-SOUTH
MU-SGATE
BH-MU
\GIS_PROJECTS\PLANNINGMAPS\ZONINGMAP.mxd
Aerial Imagery - June 2009 Printed 20 July 2010


CITY OF SOUTH JORDAN - Future Land Use Map
CITY BOUNDARY
TC-MU - TOWN CENTER MIXED USE
COM - COMMERCIAL
OM - VILLAGE COMMERCIAL
FFICE USE
J - VILLAGE MIXED USE
RURAL - RURAL RESIDENTIAL (UP TO 1.8 UNITS / ACRE)
LD - LOW DENSITY RESIDENTIAL (UP TO 3 UNITS / ACRE)
MD - MEDIUM DENSITY RESIDENTIAL (UP TO 8 UNITS / ACRE)
MHD - MEDIUM HIGH DENSITY RESIDENTIAL (UP TO 12 UNITS / ACRE)
HD - HIGH DENSITY RESIDENTIAL (UP TO 20 UNITS / ACRE)
LSMPC - LARGE SCALE MASTER PLANNED COMMUNITY
VMR - VILLAGE MIXED RESIDENTIAL
NOS - NATURAL OPEN SPACE
OS - OPEN SPACE
PUBLIC - PUBLIC USE
HIST - HISTORICAL AREA
TOD-MU - TRANSIT ORIENTED DEVELOPMENT / MIXED USE
IND - INDUSTRIAL PARKWAY
1 inch = 3,000 feet
1 in = 0.57 miles
0 750 1,500 3,000 4,500 Feet
0 0.25 0.5 1 Miles
N
W
E
S
7200 W.
6800 W.
6400 W.
6000 W.
5600 W.
5200 W.
4800 W.
4400 W.
4000 W.
3600 W.
3200 W.
2700 W.
2200 W.
1700 W.
1300 W.
1000 W.
300 W.
9400 S.
9800 S.
0200 S.
1000 S.
1400 S.
1800 S.
LSMPC
PUBLIC
COM
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SOUTH JORDAN
PRINTED 20 July 2010
AERIAL IMAGERY - JUNE 2009

APPENDIX F – Landfill Forms

Load Rejection

Policy and Procedure

POLICY

Trans-Jordan has the right to refuse to accept any load coming into the facility. A rejection may be made because of laws, permits, and company policy or supervisor discretion.

PROCEDURE

SCALEHOUSE

When, during the course of a regular transaction, a scalehand ascertains that something in the load or the load itself is not accepted at the landfill they will:

1. Inform the customer that they will not be allowed to leave their item(s) at the landfill.
2. If the rejection is based on a Salt Lake County Health Department (SLCoHD) requirement, complete a load rejection slip.
3. If agreeable, have the driver sign the slip.
4. Remind driver that they must contact the SLCoHD within five days to inform them where the item was disposed.
5. Give the pink copy to the customer.
6. Immediately fax a copy of the slip to the SLCoHD.

SPOTTERS AND OPERATORS / HHW

If an employee, in the field, recognizes what they believe may be a load containing suspected non-disposable trash they will:

1. Stop the driver from unloading his material.
    a. Explain to driver that a supervisor will be called to discuss the items in the load.
2. Call a supervisor.

OPERATIONS MANAGEMENT TEAM

1. Meet with the customer.
2. Inspect the load and determine whether the load will be rejected.
3. If the load is found unacceptable for disposal:
    - Fill out the load rejection slip.
    - If agreeable, have the driver sign the slip.
    - Remind driver that they must contact the SLCoD within five days to inform them where the item was disposed.
    - Give the pink copy to the customer.
4. As soon as possible, fax the slip to the SLCoD.
5. Put both slips in Compliance Coordinator mail slot.

COMPLIANCE COORDINATOR

1. File and retain as appropriate

RELATED FORMS / POLICIES

- Load Rejection Form as provided by the Salt Lake County Health Department

Trans-Jordan Water Truck Loads

Date	Driver	Start Gallons	End Gallons	Kennecott	Fire Hydrant	So. Valley Building	Roads	Rows							
								1	2	3	4	5	6	7	8
								9	10	11	12	13	14	15	16
								17	18	19	20	21	22	23	X
								1	2	3	4	5	6	7	8
								9	10	11	12	13	14	15	16
								17	18	19	20	21	22	23	X
								1	2	3	4	5	6	7	8
								9	10	11	12	13	14	15	16
								17	18	19	20	21	22	23	X
								1	2	3	4	5	6	7	8
								9	10	11	12	13	14	15	16
								17	18	19	20	21	22	23	X
								1	2	3	4	5	6	7	8
								9	10	11	12	13	14	15	16
								17	18	19	20	21	22	23	X
								1	2	3	4	5	6	7	8
								9	10	11	12	13	14	15	16
								17	18	19	20	21	22	23	X
								1	2	3	4	5	6	7	8
								9	10	11	12	13	14	15	16
								17	18	19	20	21	22	23	X
								1	2	3	4	5	6	7	8
								9	10	11	12	13	14	15	16
								17	18	19	20	21	22	23	X
								1	2	3	4	5	6	7	8
								9	10	11	12	13	14	15	16
								17	18	19	20	21	22	23	X
								1	2	3	4	5	6	7	8
								9	10	11	12	13	14	15	16
								17	18	19	20	21	22	23	X
								1	2	3	4	5	6	7	8
								9	10	11	12	13	14	15	16
								17	18	19	20	21	22	23	X
								1	2	3	4	5	6	7	8
								9	10	11	12	13	14	15	16
								17	18	19	20	21	22	23	X
								1	2	3	4	5	6	7	8
								9	10	11	12	13	14	15	16
								17	18	19	20	21	22	23	X
								1	2	3	4	5	6	7	8
								9	10	11	12	13	14	15	16
								17	18	19	20	21	22	23	X

Trans-Jordan Water Truck Loads

*Thank you for keeping a log of your water truck loads. T*rans-Jordan needs an accurate count of the number of trips where water is place on the roads; please fill out the document carefully.

When you are the only vehicle filling from a water source you may fill in only one line on the sheet. If there is more than one truck filling from the water source you must fill out a new line with new begininng and ending gallons so that the gallons of water used can be accurately accounted for. Please be sure to mark the rows that you watered so that we can be sure to keep them evenly watered and make the best end product possible.

ALSET	Spotters	Scalehouse	HHW	Truck Drivers	Equipment Operators	Greenwaste Operators	Mechanics	Safety/Compliance	Scalehouse Supervisor	Operations Supervisors	Operations Manager	Accountant	Human Resources	Executive Director		Proposed date	Actual date	Safety trainings	Tail gate meetings	
OSHA required																				
OSHA, Employee rights and responsibilties, Employer rights and responsibilities	x	x	x	x	x	x	x	x	x	x	x	x	x	x		ALSET	Feb-22			
Government Agencies and TJ Permits: RCRA, SARA, CAA, CWA, permits: Solid Waste, Water (SWPPP). Radiation, and GHG	x	x	x	x	x	x	x	x	x	x	x	x	x	x		ALSET	Feb-22			
SWPPP Awareness	x	x	x	x	x	x	x	x	x	x	x	x	x	x						
Emergency Action Plan (subpart E)	x	x	x	x	x	x	x	x	x	x	x	x	x	x						
HAZCOM: SDS, ERG	x	x	x	x	x	x	x	x	x	x	x	x	x	x		ALSET	Feb-22			
Handling chemicals	x	x	x	x	x	x	x	x	x	x	x	x	x	x		ALSET	Feb-22			
Powered Platforms, Manlifts, etc.: Operations and Training (Subpart F)	x	x	x	x	x	x	x	x	x	x	x	x	x	x						
Fire Prevention (Subpart E)	x	x	x	x	x	x	x	x	x	x	x	x	x	x		ALSET	Feb-22			
Fire Prevention: Training and Education (Subpart E)	x	x	x	x	x	x	x	x	x	x	x	x	x	x		ALSET	Feb-22			
Radiation Load Procedures & Awareness	X	X	X	X	X	X	X	X	X	X	X	X	X	X		ALSET	Feb-22			
PCB Awareness	X	X	X	X	X	X	X	X	X	X	X	X	X	X		ALSET	Feb-22			
Slips, Trips and Falls (Subpart D)	x	x	x	x	x	x	x	x	x	x	x	x	x	x		ALSET	Jan-20			
Machine guarding	X	X	X	X	X	X	X	X	X	X	X	X	X	X		ALSET	Feb-22			
LOTO	X	X	X	X	X	X	X	X	X	X	X	X	X	X		ALSET	Feb-22			
Material Handling,	X	X	X	X	X	X	X	X	X	X	X	X	X	X		ALSET	Feb-22			
- handling, storage, use	x	x	x	x	x	x	x	x	x	x	x	x	x	x		ALSET	Feb-22			
Flammable-combustible	x	x	x	x	x	x	x	x	x	x	x	x	x	x		ALSET	Feb-22			
Asbestos Awareness	x	x	x	x	x	x	x	x	x	x	x	x	x	x						
Ladder Safety	x	x	x	x	x	x	x	x	x	x	x	x	x	x		ALSET	Feb-22			
	x	x	x	x	x	x	x	x	x	x	x	x	x	x						
	x	x	x	x	x	x	x	x	x	x	x	x	x	x						
Health	x	x	x	x	x	x	x	x	x	x	x	x	x	x						
Hand Injury Prevention	x	x	x	x	x	x	x	x	x	x	x	x	x	x						
Eye Injury Protection	x	x	x	x	x	x	x	x	x	x	x	x	x	x						
Hearing Protection (Subpart G)	x	x	x	x	x	x	x	x	x	x	x	x	x	x						
Heat awareness	x	x	x	x	x	x	x	x	x	x	x	x	x	x						
Cold Awareness	x	x	x	x	x	x	x	x	x	x	x	x	x	x						
Respiratory Protection Awareness (Subpart I)	x	x	x	x	x	x	x	x	x	x	x	x	x	x			Feb-22			
	x	x	x	x	x	x	x	x	x	x	x	x	x	x						
TRANS-JORDAN SPECIFIC	x	x	x	x	x	x	x	x	x	x	x	x	x	x						
TJ Basics	x	x	x	x	x	x	x	x	x	x	x	x	x	x			Feb-22			
- Load checks & waste sreening	x	x	x	x	x	x	x	x	x	x	x	x	x	x			Feb-22			
- Indemnity form	x	x	x	x	x	x	x	x	x	x	x	x	x	x			Feb-22			
- Awareness around equipment	x	x	x	x	x	x	x	x	x	x	x	x	x	x			Feb-22			
- walking working surfaces	x	x	x	x	x	x	x	x	x	x	x	x	x	x			Feb-22			
HHW Awareness	x	x	x	x	x	x	x	x	x	x	x	x	x	x			Feb-22			
Liner Protection	x	x	x	x	x	x	x	x	x	x	x	x	x	x			May-22			
Leachate Awareness	x	x	x	x	x	x	x	x	x	x	x	x	x	x			May-22			
Methane awareness	x	x	x	x	x	x	x	x	x	x	x	x	x	x			Feb-22			
	x	x	x	x	x	x	x	x	x	x	x	x	x	x			Feb-22			
	x	x	x	x	x	x	x	x	x	x	x	x	x	x						
	x	x	x	x	x	x	x	x	x	x	x	x	x	x						
HHW Acceptance Awareness (Permit Required)	x	x	x	x	x	x	x	x	x	x	x	x	x	x						
Welding, Cutting, and Brazing: General Requirements (Subpart Q)							X			X	X						Feb-22			
Welding, Cutting, and Brazing: Arc Welding and Cutting (Subpart Q)			X				X			X	X									
Respiratory Protection, Full (Subpart I)								X		X								22-Mar		
Occupational Health & Environmental Control:Inspection, Maintenance, and Installation ie proper signage at points of hazard (Subpart G)	x						X	X		X	X									
Occupational Health & Environmental Control: Training Program ie Flagger training(Subpart G)							X			X	X									

OSHA Forklift Training (Every 3 years, 2020)	X	X	X	X	X	X	X	X	X	X	X	X	X	X			Feb-22			

Cold Weather Safety (Driving)	X	X	X	X	X	X	X	X	X	X	X	X	X	X						
Driving in Adverse Weather																				
OSHA Workplace Violence	X	X	X	X	X	X	X	X	X	X	X	X	X	X						
Sexual Harassment	X	X	X	X	X	X	X	X	X	X	X	X	X	X						
Drivers License Check (reported monthly)	X	X	X	X	X	X	X	X	X	X	X	X	X	X						
Update Meeting	X	X	X	X	X	X	X	X	X	X	X	X	X	X						

	Spotters	Scalehouse	HHW	Truck Drivers	Equipment Operators	Greenwaste Operators	Mechanics	Safety/Compliance	Scalehouse Supervisor	Operations Supervisors	Operations Manager	Accountant	Human Resources	Executive Director		Proposed date	Actual date	Safety trainings	Tail gate meetings	
Customer Service	X	X	X	X	X	X	X	X	X	X	X	X	X	X						
Benefits Open Enrollment	X	X	X	X	X	X	X	X	X	X	X	X	X	X			Nov-22			
IRS 125 Open Enrollment	X	X	X	X	X	X	X	X	X	X	X	X	X	X			Nov-22			
URS Retirement Training	X	X	X	X	X	X	X	X	X	X	X	X	X	X						
Incident Reporting (New area for employees to write down their account)	X	X	X	X	X	X	X	X	X	X	X	X	X	X						
Accident Investigation	X	X	X	X	X	X	X	X	X	X	X	X	X	X						
Spotter Awareness Training	X	X	X	X	X	X	X	X	X	X	X	X	X	X						
Drug Awareness in the Workplace			X																	
Chemistry for Non-Chemist (frequency?)			X																	
DOT (every 3 years)																				
	X	X	X	X	X	X	X	X	X	X	X	X	X	X						
OSHA Bloodborne Pathogens Awarness (Subpart Z)	X	X	X	X	X	X	X	X	X	X	X	X	X	X						
OSHA General Environmental Controls: Outside Personnel (Subpart J) -Confined space-awareness		X																		
Robbery or threats at the scalehouse (conducted by South Jordan police?)																				

TRANS-JORDAN

METHANE OBSERVATION FORM

Date	Inspector	Well Number	Reading at ground level	Reading within boreholes	Comments
		1			
		2			
		3			
		4			
		5			
		6			
		A			
		B			
		C			
		D			
		E			
		F			
		G			
		H			

Methane
Quarterly Maintenance Log

Date ______________________

Channel	Physical condition of sensor	Calibration of sensor pass/fail	% of remaining life of sensor	Action required
#1 Inside north		pass/fail		
#2 Inside south		pass/fail		
#3 Outbound scale		pass/fail		
#4 Autoscale		pass/fail		
#5 Inbound scale		pass/fail		
# 6 Not in use				

Signed ____
Name and Title

Date________________________

LOAD CHECKS

Policy and Procedure

POLICY

Trans-Jordan, by State and County permit, must complete a designated percentage of Load Checks on all loads entering the landfill. The loads inspected are chosen at random, by computer. The inspections are completed to ensure that items that non-accepted items are not within the load.

PROCEDURE

SCALEHOUSE

The Paradigm software will randomly choose 4% (determined by the GM) of all loads coming through the scalehouse for a load check. The scalehand, after receiving an onscreen alert, will determine if the load check has been assigned to a vehicle transporting items into the landfill; if it is, complete the following:

1. The scalehand will note the make, model, color and destination of the vehicle; this information will then be relayed by radio to the appropriate spotter.
2. Record the request on the Random Load Check Log.
3. Document total number of Load Check Transactions for the day on the Load Check Log.

SPOTTERS

When the identified vehicle approaches the tipping area the spotter will:

1. Respond to the Scalehouse radio call to ensure that they know the message was received.
2. Advise the driver of the vehicle that a random load check has been called for his transaction.
3. Direct the vehicle to an area where the load check can be safely completed.
4. Using a load check form, perform the load check
    a. Fill out the top section completely including the complete date.
    b. Investigate load, checking off items observed
    c. Report any actions or comments
    d. Legibly print and sign name
5. Turn load check forms into the supervisor's door file box at the end of the shift.

COMPLIANCE COORDINATOR

1. Compile and log the forms
2. File as appropriate
3. Prepare monthly report

RELATED FORMS / POLICIES

- Random Load Check Log
- Load check form

Load Check Form

Date: _________ Time: ___________ Company: _____________________

Driver: _______________________ Truck # / License #:_________________

TJ Area: ❒ PCC ❒ Cell ❒ HHW ❒ Greenwaste

Origin: ____

Waste Description

- ❒ Appliances
- ❒ Auto Parts
- ❒ Barrels (ends cut)
- ❒ Cardboard
- ❒ Carpet
- ❒ Carpet Pad
- ❒ Cloth
- ❒ Concrete
- ❒ Containers
  - ❒ Empty
  - ❒ Full
- ❒ Dirt
- ❒ Rock
- ❒ Electrical
- ❒ Food
- ❒ Furniture
- ❒ Glass
- ❒ Insulation
- ❒ Metals
- ❒ Paper
- ❒ Paint Cans (empty)
- ❒ Pipe
- ❒ Plastic
- ❒ Roofing Material
- ❒ Rubber
- ❒ Sheetrock
- ❒ Sod
- ❒ Toys
- ❒ Wire
- ❒ Wood
- ❒ Yard Waste
- ❒ Miscellaneous

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HHW

- ❒ Acids
- ❒ Antifreeze
- ❒ Rechargeable Batteries
- ❒ Fluorescent Lights
- ❒ Fuels
- ❒ Oil
- ❒ Paint Cans (Full / Wet)
- ❒ Pesticides / Poisons
- ❒ Solvents
- ❒ Miscellaneous

Unacceptable Waste

- ❒ Asbestos
- ❒ Dead Animals
- ❒ Freon Based Systems
- ❒ PCB's
- ❒ Medical Waste (Red Bags)
- ❒ Wet Loads
- ❒ 55 Gallon Drums

Action Taken: ____

Comments: ____

TJ Staff (Print Name): ____

TJ Staff Signature:____

File Effective Date: April 2014
X:\Forms\Load Check Forms.docx

Load Check Form

Date: _________ Time: ___________ Company: _____________________

Driver: _______________________ Truck # / License #:_________________

TJ Area: ❒ PCC ❒ Cell ❒ HHW ❒ Greenwaste

Origin: ____

Waste Description

- ❒ Appliances
- ❒ Auto Parts
- ❒ Barrels (ends cut)
- ❒ Cardboard
- ❒ Carpet
- ❒ Carpet Pad
- ❒ Cloth
- ❒ Concrete
- ❒ Containers
  - ❒ Empty
  - ❒ Full
- ❒ Dirt
- ❒ Rock
- ❒ Electrical
- ❒ Food
- ❒ Furniture
- ❒ Glass
- ❒ Insulation
- ❒ Metals
- ❒ Paper
- ❒ Paint Cans (empty)
- ❒ Pipe
- ❒ Plastic
- ❒ Roofing Material
- ❒ Rubber
- ❒ Sheetrock
- ❒ Sod
- ❒ Toys
- ❒ Wire
- ❒ Wood
- ❒ Yard Waste
- ❒ Miscellaneous

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HHW

- ❒ Acids
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Unacceptable Waste

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- ❒ Freon Based Systems
- ❒ PCB's
- ❒ Medical Waste (Red Bags)
- ❒ Wet Loads
- ❒ 55 Gallon Drums

Action Taken: ____

Comments: ____

TJ Staff (Print Name): ____

TJ Staff Signature:____

File Effective Date: April 2014
X:\Forms\Load Check Forms.docx

TRANS-JORDAN MONTHLY INSPECTIONS

DATE: ____

LANDFILL OPERATIONS INSPECTION SHEET

PUBLIC CONVENIENCE CENTER (PCC)				
Item	*Location*	*#*	*Functional*	*Comments (If item not functional / damaged- give location and problem)*
Flood lights	PCC		Yes / No	
GFCI Outlets	PCC	1	Yes / No	
Signs	PCC		Yes / No	
Fire extinguisher	PCC	1	Yes / No	
CELL AND CELL ROAD				
Signs	Cell		Yes / No	
BERMS	Cell and excavation roads		Yes / No	

X ______________________________

Supervisor

TRANS-JORDAN MONTHLY INSPECTIONS

GREENWASTE/COMPOST SUPERVISOR INSPECTION SHEET

DATE: ____

Greenwaste				
Lights		13	Yes / No	
Shack		1	Yes / No	
GFI on poles		15	Yes / No	
Fire Extinguisher		1(shack)	Yes/ No	
Emergency Fire Hose	Unwind and check 2 X per year			Last date checked:
South Valley Building				
SDS		1	Yes / No	
Bay Doors	Damaged, auto door stop	7	Yes / No	
Fire extinguishers		4	Yes / No	
Fuel tanks	Check for signs, damage, leaks	2	Yes/ No	
Pond levels	Acceptable levels, pumping?		Yes/ No	
Other				
Hydrant meter reading	Email reading to South Jordan	1	Yes/ No	Due first week of the month

X ___________________________

Supervisor

SCALEHOUSE SUPERVISOR INSPECTION SHEET

DATE:___________________________________

Scale House

Scale H_2O Drains	Under Scale	6	Yes/No	Scale calibrator checks quarterly, reports on sheet
GFCI Outlets	Bathroom	2	Yes/No	
	Outside	5	Yes/No	
Central Air Filters	Roof	1	Yes / No	
	Note: Replace Quarterly	Last Date Replaced:		
Signs	Outside Bldg.	14	Yes/No	
Fire Extinguishers	Inside Bldg Inside Autoscale Bldg.	2 1	Yes/No Yes/No	
SDS Book and links on all computers			Yes / No	
Scale vent - turning	Southwest roof top	1	Yes/No	
Silent Alarm	Under inbound and outbound workstation	2	Yes/No	

X ______________________

Supervisor

TRANS-JORDAN MONTHLY INSPECTIONS

DATE: ____

PROJECT MANAGER INSPECTION SHEET

PUBLIC CONVENIENCE CENTER (PCC)				
Item	*Location*	*#*	*Functional*	*Comments (If item not functional / damaged- give location and problem)*
Used Oil Tank Alarm in Shop	Test when recycler onsite	1	Yes / No	
Adopt-A-Highway	South side of New Bingham Highway		Yes/ No	Litter control
Trimble Base Station	Operations building/Education office	1	Yes / No	
Survey Equipment	Survey Office	1	Yes / No	
Go Pro Camera	Cell 5	1	Yes / No	

X ______________________________

Supervisor

TRANS-JORDAN MONTHLY INSPECTIONS COMPLIANCE

Visual Emission Observations		Yes/No	
AED Inspection		Yes/No	Inspected monthly by Compliance Coordinator
Spill Containment Kit	By Salt Shed	Yes/No	Quarterly: Feb., May, Aug., Nov. Inspected by CC
First Aid Supplies	Lunchroom, Scalehouse/Shop/ vehicles	Yes/No	
SDS Books	Outside South Lunchroom Door	Yes/No	
Methane Well Monitoring	Completed	Yes/No	Last test date: (to be done qrtly.)
Service Truck Crane Inspection	Odd number months	Yes/No	Inspected by Compliance Coordinator with Mechanic
Ladder Inspection		Yes/No	Quarterly: Feb., May, Aug., Nov. Inspected by Compliance Coordinator
Hot Work Permits	Inside O&M shop Inside Maintenance SV	Yes/No Yes/No	Inspected monthly by Compliance Coordinator
MISCELLANEOUS WATER SAMPLING			
Ground Water Sampling	Quarterly Feb., May, Aug., Nov.	Yes / No	
Leachate Water Sampling	Bi-annually May and Nov.	Yes / No	
WATER MONITORING WELLS			
Well #	*Location*	*Functional*	*Comments (If item not functional / damaged- give location and problem)*
Well 1	Northwest	Yes / No	
Well 2	Northeast	Yes / No	
Well 4	West of Cell #6	Yes / No	**Closed 2010**
Well 5	West of O&M	Yes / No	

HOUSEHOLD HAZARDOUS WASTE (HHW)				
Item	*Location*	*#*	*Functional*	*Comments (If item not functional / damaged- give location and problem)*
GFCI Outlets	HHW	5	Yes / No	
	Middle Wall	4	Yes / No	
Eyewash Station	HHW Shed	1	Yes / No	
Heater		2	Yes / No	
Fire Extinguisher	Outside	2	Yes / No	
Alert bell	HHW/ PCC	2	Yes / No	

______________________________ Date: ______________________

TRANS-JORDAN MONTHLY INSPECTIONS

Date: ____

SUPERVISOR #1 INSPECTION SHEET

Main Office				
Item	*Location*	*#*	*Functional*	*Comments (If item not functional / damaged- give location and problem)*
Elevator	Elevator	1	Yes / No	
Elevator Phone	Elevator	1	Yes / No	
Elevator Room	Fire extinguisher	1	Yes / No	
GFCI Outlets	Bathrooms – Main Bathrooms – 2n Floor	5 1	Yes / No	
	Outside	5	Yes / No	
	Kitchen- Main Kitchen – 2nd Floor	7 2	Yes / No	
Central Air Filters	Roof	2	Yes / No	
	Note: Replace Quarterly	Last Replaced:		
Signs	Information	1	Yes/No	
	Handicapped	1	Yes/No	
	Water Warning (south of building)	3	Yes/No	
Maintenance Shop				
Safety Devices	Garage Doors	4	Yes/ No	
GFCI Outlets	Maintenance shop	7	Yes/ No	
Fuel tank supports and foundations	Diesel and gasoline fuel tanks	2	Yes/ No	
Safety Devices	Garage Doors	4	Yes / No	
Generator Test (power shut down)	Quarterly	1	Yes / No	
Peak Alarm System	Main building and scalehouse	2	Yes / No	

Landfill Road & Warning Signs				
Item	*Location*	*#*	*Functional*	*Comments (If item not functional / damaged- give location and problem)*
Greenwaste access road	Water Monitoring	6	Yes / No	
	Information (green and Flourescent green)	15	Yes / No	
	Stop	1	Yes / No	
From entrance to gravel road	Informational / Warning	24	Yes / No	

TRANS-JORDAN MONTHLY INSPECTIONS

Road to new & old cell dumping face (gravel)	Informational / Warning	6	Yes / No	
MISCELLANEOUS				
Check time on gate	Front Gate	2	Yes / No	
Fire Extinguishers	Various	76	Yes / No	Inspection Date by State Fire:
	O&M Building		Yes/No	Inspection Date by State Fire :
Above Ground Storage Tank Inspections	Outside O&M building	3	Yes / No	(Complete AST inspection sheet)
Snow Removal and salt usage	October through May		Yes / No	Please turn all salt usage data to Compliance Coordinator monthly
Road sweeper	Weekly		Yes/No	

X

Supervisor

APPENDIX G – Fugitive Dust Control Plan

195 North 1950 West
Salt Lake City, Utah 84114-4820
Attn: DAQ, Fugitive Dust Control Plan

Fugitive Dust Control Plan Application

Applicants have the option to complete the online dust control plan on the DEQ Online Services webpage or to submit a hard copy application.

Activities regulated by R307-309 may not commence before obtaining approval of the fugitive dust control plan. Therefore, online filing is encouraged because it provides instant approval.

Blank spaces must be completed for the application to be processed. If not applicable, enter N/A.

1. Applicant Information

Name:	Trans-Jordan Landfill
Address:	P.O. Box 95610 South Jordan, UT 84095
Phone:	801-569-8994
Email:	edavis@transjordan.org
Applicant Type:	Property Owner

2. Project Information

Project Name:	Trans-Jordan Landfill
Address:	10473 South Bacchus Highway SOUTH JORDAN, UT 84009
County:	SALT LAKE
Directions:	None
Acreage:	5.0
Latitude:	40.560278
Longitude:	112.061667

3. Point of Contact

Name:	Esther K. Davis
Company Name:	Trans-Jordan Landfill
Address:	P.O. Box 95610 South Jordan, UT 84095
Phone:	801-256-2823
Fax:	
Cell:	801-560-5168

4. On-site Superintendent/Supervisor/Foreman Contact

Name:	Jaren Scott
Company Name:	Trans-Jordan Landfill
On-Site Phone:	801-569-8994
Cell:	4355316270

5. By signing this permit application I certify that:

A. I am authorized, on behalf of the individual or company listed in Section 1, as Applicant, to apply for a Fugitive Dust Control Plan and to commit to all of the terms and conditions of the requested plan.

B. Construction activities will be limited to lands that the applicant either owns or is authorized to use for construction activities.

C. The applicant accepts responsibility for assuring that all contractors, subcontractors, and all other persons on the construction site covered by this plan, comply with the terms and conditions of the Fugitive Dust Control Plan.

D. I understand that any false material statement, representation or certification made in this application may invalidate the plan or cause me to be subject to enforcement action pursuant to Utah Code Ann. 19-2-115.

E. Failure to comply with fugitive dust rules may result in compliance action and penalties up to $10,000 per violation/day.

Date: 05/08/2017
Printed Name: Trans-Jordan Landfill
Title: Property Owner
Company Name: Trans-Jordan Landfill
Dust Plan Number: 12051

Dust Suppressants

	Check All that Apply
	Clay additives.
	Calcium chloride.
	Lime (calcium oxide).
	Magnesium chloride.
	Organic non-petroleum products, (ligninsulfonate, tall (pine) oil, and vegetable derivatives).
	Synthetic polymers (for example; polyvinyl acetate and vinyl acrylic).

FUGITIVE DUST CONTROL PLAN

PROJECT ACTIVITIES CHECKLIST INSTRUCTIONS:

PLACE A CHECK MARK NEXT TO EVERY ACTIVITY THAT WILL BE CONDUCTED ON THIS SITE, FOR EACH CHECKED ACTIVITY, COMPLETE THE CORRESPONDING CONTROL MEASURES/BEST MANAGEMENT PRACTICE (BMP) SELECTION PAGE. WHEN COMPLETED, YOU WILL HAVE THE OPTION TO PRINT THE ENTIRE PLAN.

	Project Activity	Check All that Apply
01	Backfilling area previously excavated or trenched.	
02	Blasting soil & rock - drilling and blasting.	
03	Clearing for site preparation and vacant land cleanup.	
04	Clearing forms, foundations, slab clearing and cleaning of forms, foundations and slabs prior to pouring concrete.	
05	Crushing of construction and demolition debris, rock and soil.	
06	Cut and fill soils for site grade preparation.	**X**
07	Demolition - Implosive demolition of a structure, using explosives.	
08	Demolition - mechanical/manual demolition of walls, stucco, concrete, freestanding structures, buildings and other structures.	
09	Disturbed soil throughout project including between structures. THIS ACTIVITY MUST BE SELECTED FOR ALL PROJECTS.	**X**
10	Disturbed land - long term stabilization and erosion control of large tracts of disturbed land that will not have continuing activity for more than 30 days.	
11	Hauling materials.	**X**
12	Paving/subgrade preparation for paving streets, parking lots, etc.	**X**
13	Sawing/cutting material, concrete, asphalt, block or pipe.	
14	Screening of rock, soil or construction debris.	
15	Staging areas, equipment storage, vehicle parking lots, and material storage areas.	
16	Stockpiles materials (storage), other soils, rock or debris, for future use or export.	**X**
17	Tailings piles, ponds and erosion control.	

18	Trackout Prevention and Cleanup of mud, silt and soil tracked out onto paved roads.	**X**
19	Traffic - unpaved routes and parking, construction related traffic on unpaved interior and/or access roads and unpaved employee/worker parking areas.	**X**
20	Trenching with track or wheel mounted excavator, shovel, backhoe or trencher.	
21	Truck loading with materials including construction and demolition debris, rock and soil.	**X**

Cut and fill soils for site grade preparation.	BMP 06

GENERAL REQUIREMENT: ALL ACTIVITIES MUST MEET OPACITY REQUIREMENTS IN R307-309-5

MAKE AT LEAST ONE SELECTION FROM EACH SECTION.

Stabilize surface soils where support equipment and vehicles will operate.

X	06-01	Pre-water and maintain surface soils in a stabilized condition.
_	06-02	Apply and maintain a chemical stabilizer to surface soils.

Pre-water soils.

X	06-03	Dig a test hole to depth of cut or equipment penetration to determine if soils are moist at depth. Continue to pre-water if not moist to depth of cut.

Stabilize soil during cut activities.

X	06-04	Apply water to depth of cut prior to subsequent cuts.

Stabilize soil after cut and fill activities.

X	06-05	Water disturbed soils to maintain moisture.
_	06-06	Apply and maintain a chemical stabilizer on disturbed soils to form crust following fill and compaction.
_	06-07	Apply cover (natural or synthetic).

Disturbed soil throughout project including between structures. THIS ACTIVITY MUST BE SELECTED FOR ALL PROJECTS.	**BMP 09**

GENERAL REQUIREMENT: ALL ACTIVITIES MUST MEET OPACITY REQUIREMENTS IN R307-309-5

MAKE AT LEAST ONE SELECTION FROM EACH SECTION.

Limit disturbance of soils where possible.

_ 09-01	Limit disturbance of soils with the use of fencing, barriers, barricades, and/or wind barriers.
X 09-02	Limit vehicle mileage and reduce speed.

Stabilize and maintain stability of all disturbed soil throughout construction site.

X 09-03	Apply water to stabilize disturbed soils. Soil moisture must be maintained such that soils can be worked without generating fugitive dust.
_ 09-04	Apply and maintain a chemical stabilizer.
_ 09-05	Use wind breaks.
_ 09-06	Apply cover (natural or synthetic).

Hauling materials.	BMP 11

GENERAL REQUIREMENT: ALL ACTIVITIES MUST MEET OPACITY REQUIREMENTS IN R307-309-5

MAKE AT LEAST ONE SELECTION FROM EACH SECTION.

Limit visible dust opacity from vehicular operations.

X 11-01	Apply and maintain water/chemical suppressant to operational areas and haul routes.
X 11-02	Limit vehicle mileage and speed.

Stabilize materials during transport on site.

_ 11-03	Use tarps or other suitable enclosures on haul trucks.
X 11-04	Apply water prior to transport.

Clean wheels and undercarriage of haul trucks prior to leaving construction site.

_ 11-05	Clean wheels.
X 11-06	Sweep or water haul road.

Paving/subgrade preparation for paving streets, parking lots, etc.	BMP 12

GENERAL REQUIREMENT: ALL ACTIVITIES MUST MEET OPACITY REQUIREMENTS IN R307-309-5

MAKE AT LEAST ONE SELECTION.

Stabilize adjacent disturbed soils following paving activities.

X 12-01	Apply and maintain water on disturbed soils.
_ 12-02	Apply and maintain chemical stabilizer on disturbed soils.
_ 12-03	Stabilize disturbed soils with vegetation or hydroseeding.
_ 12-04	Apply synthetic cover to disturbed soils.
_ 12-05	There are no soils adjacent to paving activities.

Stockpiles materials (storage), other soils, rock or debris, for future use or export.	**BMP 16**

GENERAL REQUIREMENT: ALL ACTIVITIES MUST MEET OPACITY REQUIREMENTS IN R307-309-5

MAKE AT LEAST ONE SELECTION FROM EACH SECTION.

Stabilize surface soils where support equipment and vehicles will operate.

X 16-01	Pre-water and maintain surface soils in a stabilized condition.
_ 16-02	Apply and maintain a chemical stabilizer on surface soils.
X 16-03	Pave area.

Stabilize stockpile materials during handling.

X 16-04	Remove material from the downwind side of the stockpile, when safe to do so.
_ 16-05	Reduce height.
_ 16-06	Create wind screen

Stabilize stockpiles after handling.

X 16-07	Water stockpiles to form a crust immediately.
_ 16-08	Apply and maintain a chemical stabilizer to all outer surfaces of the stockpiles.
_ 16-09	Provide and maintain wind barriers on 3 sides of the pile.
_ 16-10	Apply a cover (natural or synthetic)
_ 16-11	Wind screen.
_ 16-12	Avoid steep sides to prevent material sloughing.
_ 16-13	Reduce height.

Trackout Prevention and Cleanup of mud, silt and soil tracked out onto paved roads.	BMP 18

GENERAL REQUIREMENT: ALL ACTIVITIES MUST MEET OPACITY REQUIREMENTS IN R307-309-5

MAKE AT LEAST ONE SELECTION FROM EACH SECTION.

Prevent dust from trackout.

X 18-01	Clean trackout at the end of the work shift from paved surfaces to maintain dust control
_ 18-02	Maintain dust control during working hours and clean trackout from paved surfaces at the end of the work shift/day.
_ 18-03	Install gravel pad(s), clean, well-graded gravel or crushed rock. Minimum dimensions must be 30 feet wide by 3 inches deep, and, at minimum, 50' or the length of the longest haul truck, whichever is greater. Re-screen, wash or apply additional rock in gravel pad to maintain effectiveness.
_ 18-04	Install wheel shakers. Clean wheel shakers on a regular basis to maintain effectiveness.
_ 18-05	Install wheel washers. Maintain wheel washers on a regular basis to maintain effectiveness.
X 18-06	Motorized vehicles will only operate on paved surfaces.
_ 18-07	Install cattle guard before paved road entrance.

All exiting traffic must be routed over selected trackout control device(s).

_ 18-08	Clearly establish and enforce traffic patterns to route traffic over selected trackout control device(s).
X 18-09	Limit site accessibility to routes with trackout control devices in place by installing effective barriers on unprotected routes.

Traffic - unpaved routes and parking, construction related traffic on unpaved interior and/or access roads and unpaved employee/worker parking areas.	**BMP 19**

GENERAL REQUIREMENT: ALL ACTIVITIES MUST MEET OPACITY REQUIREMENTS IN R307-309-5

MAKE AT LEAST ONE SELECTION.

Stabilize surface soils where support equipment and vehicles will operate.

X	19-01	Limit vehicle mileage and speeds.
X	19-02	Apply and maintain water on surface soils.
_	19-03	Apply and maintain chemical stabilizers on surface soils.
_	19-04	Apply and maintain gravel on surface soils.
_	19-05	Supplement chemical stabilizers, water or aggregate applications as necessary.
X	19-06	Apply recycled asphalt (RAP) to surface soils.

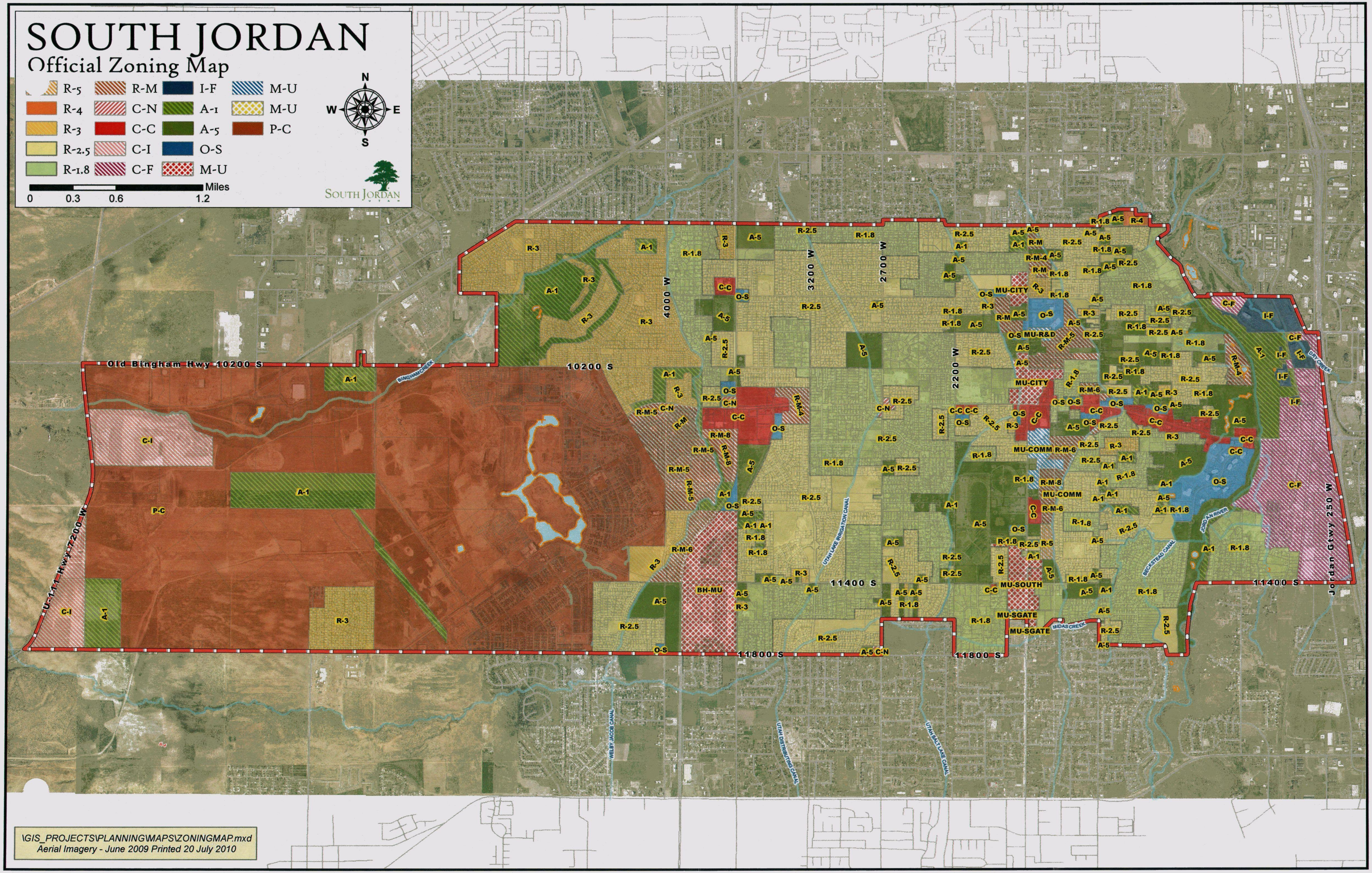
Truck loading with materials including construction and demolition debris, rock and soil.	BMP 21

GENERAL REQUIREMENT: ALL ACTIVITIES MUST MEET OPACITY REQUIREMENTS IN R307-309-5

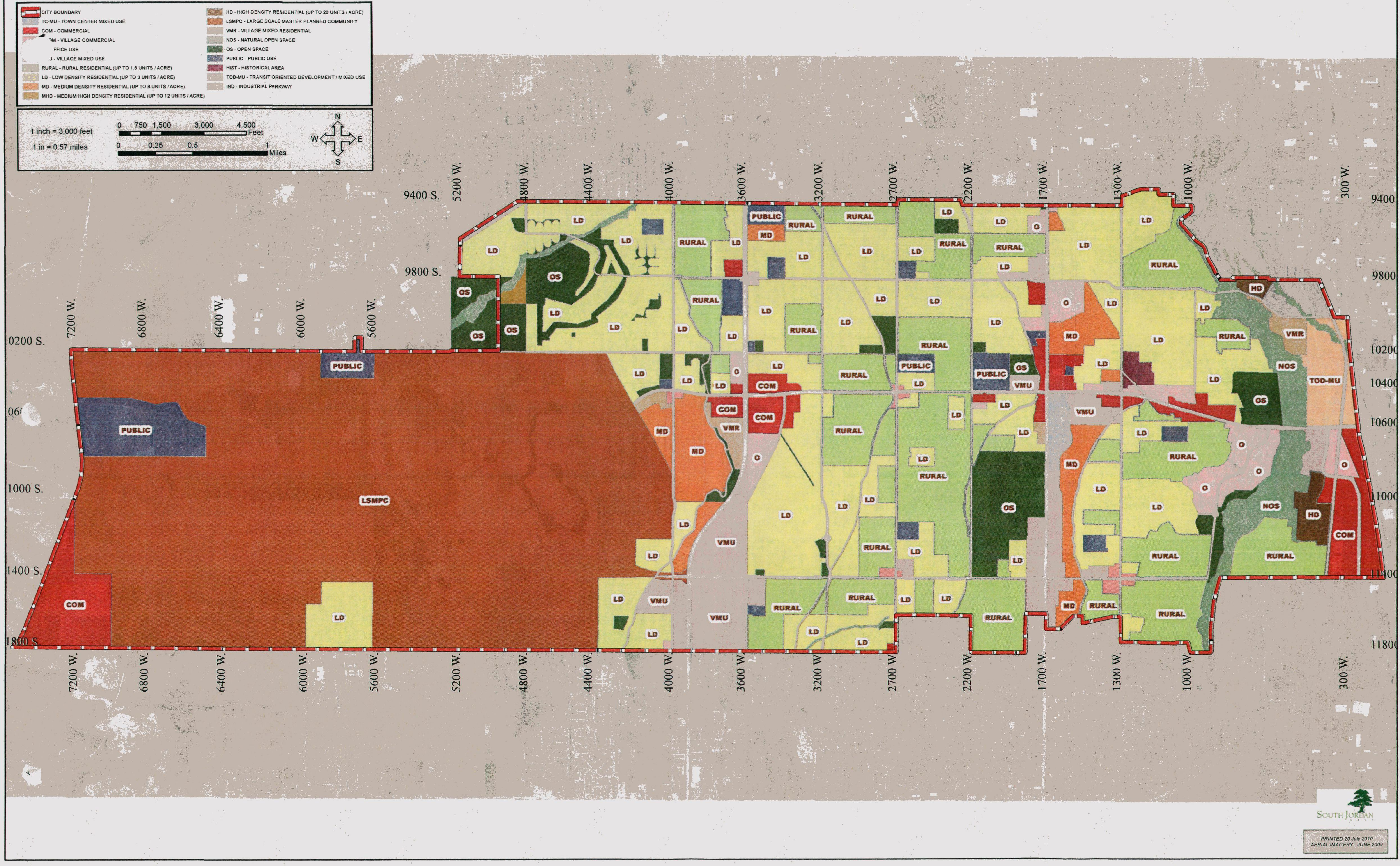
MAKE AT LEAST ONE SELECTION.

X 21-01	Pre-water and maintain surface soils in a stabilized condition where loaders, support equipment and vehicles will operate.
_ 21-02	Apply and maintain a chemical stabilizer on surface soils where loaders, support equipment and vehicles will operate.
X 21-03	Empty loader bucket slowly and keep loader bucket close to the truck to minimize the drop height while dumping.

APPENDIX H – Local Land Use


SOUTH JORDAN
Official Zoning Map
R-5
R-4
R-3
R-2.5
R-1.8
R-M
C-N
C-C
C-I
C-F
I-F
A-1
A-5
O-S
M-U
M-U
M-U
P-C
Miles
0
0.3
0.6
1.2
N
S
E
W
SOUTH JORDAN
Old Bingham Hwy 10200 S
10200 S
11400 S
11800 S
4000 W
3200 W
2700 W
2200 W
U-111 Hwy 7200 W
Jordan Gtwy 250 W
\GIS_PROJECTS\PLANNINGMAPS\ZONINGMAP.mxd
Aerial Imagery - June 2009 Printed 20 July 2010

CITY OF SOUTH JORDAN - Future Land Use Map



IGES
2702 South 1030 West, Suite 10, Salt Lake City, Utah 84119
Ph: 801.270.9400 Fax: 801.270.9401

TRANSMITTAL

TO: Doug Hansen Utah Division of Waste Management and Radiation Control 195 North 1950 West Salt Lake City, Utah 84116	DATE: 7/14/22 IGES JOB #: 00102-014 SENT VIA: Email

We are sending you the following:

Copies	Date	Description
1	7/14/22	2022 Trans Jordan Landfill Repermit Application (Appendices J – P)

x	For approval		Approved as submitted		Resubmit		Copies for approval
	For your use		Approved as noted		Submit		Copies for distribution
	As requested		Returned for corrections		Return		Corrected prints
	For your review and comment		Other				

Remarks:
Attached are Appendices J through P of the 2022 Trans Jordan Landfill Repermit Application.

SIGNED: Brett Mickelson

APPENDIX J – Water Rights

Water Rights - Near Trans Jordan Landfill

Utah Division of Water Rights

Search Radius: 3000 ft.

From the NE corner South 2600 West 2600 section 15 township 3S range 2W SLbm

WR Number	Diversion Type	Well Log	Location	Status	Priority	Uses	CFS	ACFT	Address	Owner Name
a38009	Underground	26793	N1336 E545 S4 15 3S 2W SL	A	20120320	MO	0.000	6486.860	ATTN TED BALLING	KENNECOTT UTAH COPPER LLC
59-1653	Underground	26793	N1336 E545 S4 15 3S 2W SL	P	19611121	MO	0.000	2895.920	ATTN TED BALLING	KENNECOTT UTAH COPPER LLC
59-5841	Underground		N1337 E546 S4 15 3S 2W SL	A	19820426	IX	4.400	3185.512	ATTN TED BALLING	KENNECOTT UTAH COPPER LLC
a32546	Underground		N1337 E546 S4 15 3S 2W SL	A	20070228	X	4.400	3185.512	ATTN TED BALLING	KENNECOTT UTAH COPPER LLC
t48554	Surface		S470 E1185 N4 15 3S 2W SL	A	20220308	O	0.000	3.620	ATTN TED BALLING	KENNECOTT UTAH COPPER LLC
59-1042	Underground	26793	N1336 E545 S4 15 3S 2W SL	P	19621213	MO	0.000	3214.471	ATTN TED BALLING	KENNECOTT UTAH COPPER LLC
59-5314	Underground	26793	N1336 E545 S4 15 3S 2W SL	P	19621213	MO	0.000	376.470	ATTN TED BALLING	KENNECOTT UTAH COPPER LLC
t47037	Surface		S470 E1185 N4 15 3S 2W SL	A	20210407	O	0.000	3.620	ATTN TED BALLING	KENNECOTT UTAH COPPER LLC

APPENDIX K – Current Groundwater Data

B 2 G 1 1 9 3
B S G 1 2 0 1
E C G 1 1 4 6
Bingham Creek
Crimson View Drive
Bacchus Hwy
W Copper Hawk Dr
N
2000 ft
Google Earth

5/17/2022

Work Order: 22E0457
Project: VOC Sampling KUC Wells

Trans-Jordan Cities
Attn: Esther Davis
PO Box 95610
South Jordan, UT 84095

Client Service Contact: 801.262.7299

The analyses presented on this report were performed in accordance with the National Environmental Laboratory Accreditation Program (NELAP) unless noted in the comments, flags, or case narrative. If the report is to be used for regulatory compliance, it should be presented in its entirety, and not be altered.

Approved By:

Dave Gayer, Laboratory Director

CHEMTECH-FORD LABORATORIES

Chemtech-Ford Laboratories
Serving the Intermountain West Since 1953

9632 South 500 West
Sandy, UT 84070
O:(801) 262-7299 F: (866) 792-0093
www.ChemtechFord.com

Certificate of Analysis

Trans-Jordan Cities
Esther Davis
PO Box 95610
South Jordan, UT 84095

PO#:
Receipt: **5/5/22 15:00 @ 2.7** °C
Date Reported: 5/17/2022
Project Name: **VOC Sampling KUC Wells**

Sample ID: **B2G1193 - Down Gradient**

Matrix: **Water**
Lab ID: **22E0457-01**
Date Sampled: **5/5/22 10:25**
Sampled By: **Trevor Paulson**

	Result	Units	Minimum Reporting Limit	Method	Preparation Date/Time	Analysis Date/Time	Flag(s)
Volatile Organic Compounds							
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
1,1,1-Trichloroethane	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
1,1,2-Trichloroethane	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
1,1-Dichloroethane	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
1,1-Dichloroethene	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
1,1-Dichloropropene	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
2-Hexanone	ND	ug/L	20.0	EPA 8260D /5030A	5/13/22	5/13/22	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
1,2,3-Trichloropropane	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
1,2-Dibromo-3-chloropropane	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
1,2-Dichlorobenzene	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
1,2-Dichloroethane	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
1,2-Dichloropropane	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
1,3-Dichlorobenzene	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
1,3-Dichloropropane	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
1,4-Dichlorobenzene	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
2,2-Dichloropropane	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
2-Chlorotoluene	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
2-Nitropropane	ND	ug/L	10.0	EPA 8260D /5030A	5/13/22	5/13/22	
4-Chlorotoluene	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
Acetone	ND	ug/L	10.0	EPA 8260D /5030A	5/13/22	5/13/22	
Acrylonitrile	ND	ug/L	10.0	EPA 8260D /5030A	5/13/22	5/13/22	
Benzene	ND	ug/L	0.4	EPA 8260D /5030A	5/13/22	5/13/22	
Bromobenzene	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
Bromochloromethane	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
Bromodichloromethane	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
Bromoform	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
Bromomethane	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
Carbon Disulfide	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
Carbon Tetrachloride	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
Chlorobenzene	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	

9632 South 500 West
Sandy, UT 84070
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Certificate of Analysis

Trans-Jordan Cities
Esther Davis
PO Box 95610
South Jordan, UT 84095

PO#:
Receipt: **5/5/22 15:00 @ 2.7 °C**
Date Reported: 5/17/2022
Project Name: **VOC Sampling KUC Wells**

Sample ID: **B2G1193 - Down Gradient (cont.)**

Matrix: **Water** Lab ID: **22E0457-01**

Date Sampled: **5/5/22 10:25** Sampled By: **Trevor Paulson**

	Result	Units	Minimum Reporting Limit	Method	Preparation Date/Time	Analysis Date/Time	Flag(s)
Volatile Organic Compounds (cont.)							
Chloroethane	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
Chloroform	1.1	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
Chloromethane	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	J-LOW
cis-1,2-Dichloroethene	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
cis-1,3-Dichloropropene	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
Cyclohexanone	ND	ug/L	20.0	EPA 8260D /5030A	5/13/22	5/13/22	
Dibromochloromethane	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
Dibromomethane	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
Dichlorodifluoromethane	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
Ethyl Acetate	ND	ug/L	10.0	EPA 8260D /5030A	5/13/22	5/13/22	
Ethylbenzene	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
Ethyl Ether	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
Hexachlorobutadiene	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
Isobutanol	ND	ug/L	10.0	EPA 8260D /5030A	5/13/22	5/13/22	
Isopropylbenzene	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
Methyl Ethyl Ketone	ND	ug/L	10.0	EPA 8260D /5030A	5/13/22	5/13/22	
Methyl Isobutyl Ketone	ND	ug/L	10.0	EPA 8260D /5030A	5/13/22	5/13/22	
Methylene Chloride	ND	ug/L	2.0	EPA 8260D /5030A	5/13/22	5/13/22	
Methyl-tert-butyl ether (MTBE)	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
Naphthalene	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
n-Butyl Alcohol	ND	ug/L	40.0	EPA 8260D /5030A	5/13/22	5/13/22	
n-Butylbenzene	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
Nitrobenzene	ND	ug/L	20.0	EPA 8260D /5030A	5/13/22	5/13/22	
n-Propyl Benzene	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
p-Isopropyltoluene	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
sec-Butyl Benzene	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
Styrene	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
tert-Butylbenzene	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
Tetrachloroethene	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
Toluene	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
trans-1,2-Dichloroethene	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
trans-1,3-Dichloropropene	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
Trichloroethene	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
Trichlorofluoromethane	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
Vinyl Chloride	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	
Xylenes, total	ND	ug/L	1.0	EPA 8260D /5030A	5/13/22	5/13/22	

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Certificate of Analysis

Trans-Jordan Cities
Esther Davis
PO Box 95610
South Jordan, UT 84095

PO#:
Receipt: **5/5/22 15:00 @ 2.7** °C
Date Reported: 5/17/2022
Project Name: **VOC Sampling KUC Wells**

Sample ID: **ECG1146 - Up Gradient**

Matrix: **Water**
Lab ID: **22E0457-02**
Date Sampled: **5/5/22 10:05**
Sampled By: **Trevor Paulson**

	Result	Units	Minimum Reporting Limit	Method	Preparation Date/Time	Analysis Date/Time	Flag(s)
Volatile Organic Compounds							
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
1,1,1-Trichloroethane	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
1,1,2-Trichloroethane	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
1,1-Dichloroethane	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
1,1-Dichloroethene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
1,1-Dichloropropene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
2-Hexanone	ND	ug/L	20.0	EPA 8260D /5030A	5/11/22	5/11/22	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
1,2,3-Trichloropropane	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
1,2-Dibromo-3-chloropropane	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
1,2-Dichlorobenzene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
1,2-Dichloroethane	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
1,2-Dichloropropane	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
1,3-Dichlorobenzene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
1,3-Dichloropropane	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
1,4-Dichlorobenzene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
2,2-Dichloropropane	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
2-Chlorotoluene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
2-Nitropropane	ND	ug/L	10.0	EPA 8260D /5030A	5/11/22	5/11/22	
4-Chlorotoluene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Acetone	ND	ug/L	10.0	EPA 8260D /5030A	5/11/22	5/11/22	
Acrylonitrile	ND	ug/L	10.0	EPA 8260D /5030A	5/11/22	5/11/22	
Benzene	ND	ug/L	0.4	EPA 8260D /5030A	5/11/22	5/11/22	
Bromobenzene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Bromochloromethane	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Bromodichloromethane	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Bromoform	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Bromomethane	1.1	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Carbon Disulfide	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Carbon Tetrachloride	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Chlorobenzene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	

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Esther Davis
PO Box 95610
South Jordan, UT 84095

PO#:
Receipt: **5/5/22 15:00 @ 2.7** °C
Date Reported: 5/17/2022
Project Name: **VOC Sampling KUC Wells**

Sample ID: **ECG1146 - Up Gradient (cont.)**

Matrix: **Water**
Lab ID: **22E0457-02**
Date Sampled: **5/5/22 10:05**
Sampled By: **Trevor Paulson**

	Result	Units	Minimum Reporting Limit	Method	Preparation Date/Time	Analysis Date/Time	Flag(s)
Volatile Organic Compounds (cont.)							
Chloroethane	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Chloroform	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Chloromethane	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
cis-1,2-Dichloroethene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
cis-1,3-Dichloropropene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Cyclohexanone	ND	ug/L	20.0	EPA 8260D /5030A	5/11/22	5/11/22	
Dibromochloromethane	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Dibromomethane	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Dichlorodifluoromethane	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Ethyl Acetate	ND	ug/L	10.0	EPA 8260D /5030A	5/11/22	5/11/22	
Ethylbenzene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Ethyl Ether	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Hexachlorobutadiene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	J-LOW
Isobutanol	ND	ug/L	10.0	EPA 8260D /5030A	5/11/22	5/11/22	
Isopropylbenzene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Methyl Ethyl Ketone	ND	ug/L	10.0	EPA 8260D /5030A	5/11/22	5/11/22	
Methyl Isobutyl Ketone	ND	ug/L	10.0	EPA 8260D /5030A	5/11/22	5/11/22	
Methylene Chloride	ND	ug/L	2.0	EPA 8260D /5030A	5/11/22	5/11/22	
Methyl-tert-butyl ether (MTBE)	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Naphthalene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
n-Butyl Alcohol	ND	ug/L	40.0	EPA 8260D /5030A	5/11/22	5/11/22	
n-Butylbenzene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Nitrobenzene	ND	ug/L	20.0	EPA 8260D /5030A	5/11/22	5/11/22	
n-Propyl Benzene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
p-Isopropyltoluene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
sec-Butyl Benzene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Styrene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
tert-Butylbenzene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Tetrachloroethene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Toluene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
trans-1,2-Dichloroethene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
trans-1,3-Dichloropropene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Trichloroethene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Trichlorofluoromethane	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Vinyl Chloride	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Xylenes, total	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	

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South Jordan, UT 84095

PO#:
Receipt: **5/5/22 15:00 @ 2.7** °C
Date Reported: 5/17/2022
Project Name: **VOC Sampling KUC Wells**

Sample ID: **B5G2828 - Down Gradient**

Matrix: **Water**

Lab ID: **22E0457-03**

Date Sampled: **5/5/22 10:40**

Sampled By: **Trevor Paulson**

	Result	Units	Minimum Reporting Limit	Method	Preparation Date/Time	Analysis Date/Time	Flag(s)
Volatile Organic Compounds							
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
1,1,1-Trichloroethane	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
1,1,2-Trichloroethane	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
1,1-Dichloroethane	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
1,1-Dichloroethene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
1,1-Dichloropropene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
2-Hexanone	ND	ug/L	20.0	EPA 8260D /5030A	5/11/22	5/11/22	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
1,2,3-Trichloropropane	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
1,2-Dibromo-3-chloropropane	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
1,2-Dichlorobenzene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
1,2-Dichloroethane	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
1,2-Dichloropropane	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
1,3-Dichlorobenzene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
1,3-Dichloropropane	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
1,4-Dichlorobenzene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
2,2-Dichloropropane	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
2-Chlorotoluene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
2-Nitropropane	ND	ug/L	10.0	EPA 8260D /5030A	5/11/22	5/11/22	
4-Chlorotoluene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Acetone	ND	ug/L	10.0	EPA 8260D /5030A	5/11/22	5/11/22	
Acrylonitrile	ND	ug/L	10.0	EPA 8260D /5030A	5/11/22	5/11/22	
Benzene	ND	ug/L	0.4	EPA 8260D /5030A	5/11/22	5/11/22	
Bromobenzene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Bromochloromethane	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Bromodichloromethane	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Bromoform	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Bromomethane	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Carbon Disulfide	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Carbon Tetrachloride	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Chlorobenzene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	

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Certificate of Analysis

Trans-Jordan Cities
Esther Davis
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South Jordan, UT 84095

PO#:
Receipt: **5/5/22 15:00 @ 2.7** °C
Date Reported: 5/17/2022
Project Name: **VOC Sampling KUC Wells**

Sample ID: **B5G2828 - Down Gradient (cont.)**

Matrix: **Water**
Lab ID: **22E0457-03**
Date Sampled: **5/5/22 10:40**
Sampled By: **Trevor Paulson**

	Result	Units	Minimum Reporting Limit	Method	Preparation Date/Time	Analysis Date/Time	Flag(s)
Volatile Organic Compounds (cont.)							
Chloroethane	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Chloroform	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Chloromethane	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
cis-1,2-Dichloroethene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
cis-1,3-Dichloropropene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Cyclohexanone	ND	ug/L	20.0	EPA 8260D /5030A	5/11/22	5/11/22	
Dibromochloromethane	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Dibromomethane	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Dichlorodifluoromethane	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Ethyl Acetate	ND	ug/L	10.0	EPA 8260D /5030A	5/11/22	5/11/22	
Ethylbenzene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Ethyl Ether	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Hexachlorobutadiene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	J-LOW
Isobutanol	ND	ug/L	10.0	EPA 8260D /5030A	5/11/22	5/11/22	
Isopropylbenzene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Methyl Ethyl Ketone	ND	ug/L	10.0	EPA 8260D /5030A	5/11/22	5/11/22	
Methyl Isobutyl Ketone	ND	ug/L	10.0	EPA 8260D /5030A	5/11/22	5/11/22	
Methylene Chloride	ND	ug/L	2.0	EPA 8260D /5030A	5/11/22	5/11/22	
Methyl-tert-butyl ether (MTBE)	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Naphthalene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
n-Butyl Alcohol	ND	ug/L	40.0	EPA 8260D /5030A	5/11/22	5/11/22	
n-Butylbenzene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Nitrobenzene	ND	ug/L	20.0	EPA 8260D /5030A	5/11/22	5/11/22	
n-Propyl Benzene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
p-Isopropyltoluene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
sec-Butyl Benzene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Styrene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
tert-Butylbenzene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Tetrachloroethene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Toluene	1.3	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
trans-1,2-Dichloroethene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
trans-1,3-Dichloropropene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Trichloroethene	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Trichlorofluoromethane	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Vinyl Chloride	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	
Xylenes, total	ND	ug/L	1.0	EPA 8260D /5030A	5/11/22	5/11/22	

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Certificate of Analysis

Trans-Jordan Cities	PO#:	
Esther Davis	Receipt:	**5/5/22 15:00 @ 2.7** °C
PO Box 95610	Date Reported:	5/17/2022
South Jordan, UT 84095	Project Name:	**VOC Sampling KUC Wells**

Report Footnotes

Abbreviations

ND = Not detected at the corresponding Minimum Reporting Limit (MRL).
1 mg/L = one milligram per liter or 1 mg/kg = one milligram per kilogram = 1 part per million.
1 ug/L = one microgram per liter or 1 ug/kg = one microgram per kilogram = 1 part per billion.
1 ng/L = one nanogram per liter or 1 ng/kg = one nanogram per kilogram = 1 part per trillion.

Flag Descriptions

J-LOW = Estimated low due to low recovery of LCS or CCV

22E0457

CHAIN OF CUSTODY - SAMPLE SUBMITTAL FORM

CHEMTECH-FORD LABORATORIES

Chemtech-Ford Laboratories
9632 South 500 West
Sandy, UT 84070
Phone: 801-262-7299
www.chemtechford.com

COMPANY: Trans-Jordan Cities (Landfill)
ADDRESS: 10473 S Bacchus Hwy P.O. Box 95610
CITY/STATE/ZIP: South Jordan UT 84095
PHONE #: 801-256-2823 (o) 801-560-5168 (m)
CONTACT: Esther Davis
EMAIL: edavis@transjordan.org
PROJECT: VOC sampling KUC wells
PO Number:
INVOICE EMAIL ADDRESS: edavis@transjordan.org

RUSH Due Date*:	QC Level

* Expedited turnaround subject to additional charge

QC levels definition:
QC1: none (default if blank)
QC2: Batch QC, random sample
QC3: 25% surcharge. Narrative plus Batch QC, your sample selected
QC4: 40% surcharge. Add raw data

Sample condition				Delivery Method			
✓	Custody Seal	✓	Correct Containers				
✓	Container Intact	✓	Sufficient Sample Volume				
✓	COC/Labels Agree		Headspace Present (VOC)		UPS		USPS
✓	Received on Ice		Temperature Blank		FedEx		Chemtech-Ford Courier
		✓	Received within Holding Time	X	Walk-in		Customer Courier

TESTS REQUESTED

Lab Use Only	LOCATION / IDENTIFICATION	DATE	TIME	MATRIX	Ground water VOC	E. Coli/Coliform (Absent/Present)	E. Coli/Coliform (Enumerated)	HPC
	1. ~~BSG 1201 - down gradient~~				X			
01	2. B2G1193 - down gradient	05/05/22	10:25		X			
02	3. ECG 1146- up gradient	05/05/22	10:05		X			
03	4. BSG2828 - Down Gradient	05/05/22	10:40		X			
	5.							
	6.							
	7.							
	8.							
	9.							
	10.							
				Bottle type	W(3)			
				Lot #	1132			

Sampled by: [print] Trevor Paulson
Sampled by: [signature] [signature]

ON ICE NOT ON ICE Temp (C°): 2.7

Special Instructions:

Samples received outside the EPA recommended temperature range of 0-6 C° may be rejected. W 1132

Relinquished by: [signature]	Date/Time	Received by: [signature]	Date/Time
Esther K Davis	05-05-22 15:00	[signature]	5/5/22 15:00
Relinquished by: [signature]	Date/Time	Received by: [signature]	Date/Time
Relinquished by: [signature]	Date/Time	Received by: [signature]	Date/Time

Payment Terms are net 30 days OAC. 1.5% interest charge per month (18% per annum). Client agress to pay collection costs and attorney's fees.

APPENDIX L – Storm Water Calculations

Trans-Jordan Landfill

Total Area 169 acres
Pond Volum 9.48 acre-ft

Design Storm			Antecedent Moisture Condition					
Frequency	Duration	Precip.	I - Dry		II - Normal		III - Wet	
(yr)	(hr)	(in)	Direct Runoff (in)	Volume (acre-ft)	Direct Runoff (in)	Volume (acre-ft)	Direct Runoff (in)	Volume (acre-ft)
25	24	2.2	0.036	0.51	0.292	4.12	0.945	13.30
100	24	2.68	0.12	1.66	0.51	7.12	1.32	18.64

Runoff Curve Number and Runoff

Project:	Trans Jordan Landfill	By:	JAH	Date:	9/6/2012
Location:	South Jordan, Utah	Checked:	BDM	Date:	9/6/2012
Condition:	Developed	Comments:	Total run-off from final cap (25 yr storm) partially vegetated		

1. Runoff Curve Number

Soil Name and Hydrologic Soil Group	Cover Description	CN Table 2-2	CN Table 2-3	CN Table 2-4	Area (acres)	CNxArea
B-sandy loam	New Seeding	77			69	5313
B-sandy loam	Previously Reclaimed - Vegetation Established	60			90	5400
	Paved Areas	98			5	490
A-Sandy and Well Draine	Native, vegetated	68			15	1020
						0
						0
						0
						0
						0
						0
						0
				TOTALS:	179	12223

CN Weighted: $\frac{\Sigma(\text{CNxArea})}{\Sigma(\text{Area})} = \frac{12223}{179} = 68.284916$ Use CN **69**

2. Runoff

		Storm #1 -Dry		Storm #2		Storm #3-Wet	
		ARI (Year)	Duration	ARI (Year)	Duration	ARI (Year)	Duration
		25	24-hr	25	24-hr	25	24-hr
Rainfall, P	in	2.2		2.2		2.2	
S	in	8.1818182		4.4927536		1.7647059	
I_a	in	1.6363636		0.8985507		0.3529412	
Runoff (Q)	in	0.0363258		0.2923215		0.9445871	

Runoff Curve Number and Runoff

Project:	Trans Jordan Landfill	By:	JAH	Date:	9/6/2012
Location:	South Jordan, Utah	Checked:	BDM	Date:	9/6/2012
Condition:	Developed	Comments:	Total run-off from final cap (100 yr storm) partially vegetated		

1. Runoff Curve Number

Soil Name and Hydrologic Soil Group	Cover Description	CN Table 2-2	CN Table 2-3	CN Table 2-4	Area (acres)	CNxArea
B-sandy loam	New Seeding	77			69	5313
B-sandy loam	Previously Reclaimed - Vegetation Established	60			90	5400
	Paved Areas	98			5	490
A-Sandy and Well Draine	Native, vegetated	68			15	1020
						0
						0
						0
						0
						0
						0
						0
				TOTALS:	**179**	**12223**

CN Weighted: $\frac{\Sigma(\text{CNxArea})}{\Sigma(\text{Area})} = \frac{12223}{179} = 68.284916$ **Use CN** → **69**

2. Runoff

		Storm #1 -Dry		Storm #2		Storm #3-Wet	
		ARI (Year)	Duration	ARI (Year)	Duration	ARI (Year)	Duration
		100	24-hr	100	24-hr	100	24-hr
Rainfall, P	in	2.68		2.68		2.68	
S	in	8.1818182		4.4927536		1.7647059	
I_a	in	1.6363636		0.8985507		0.3529412	
Runoff (Q)	in	0.1180621		0.5058111		1.3234394	

APPENDIX M – Landfill Life

TJ future capacity analysis Mar 2022

Index	Base Surface	Comparison Surface	Cut Cu yds	Fill Cu yds	Net cu yds
	Landfill flight 6abc 03212022	**Surface final Rev 5 more centered**	**28,384.00**	**8,601,028.00**	**8,572,644.00**

Cell 6 A B and C capacity cu yds	8,601,028.00	cu yds
Convert to tonnage	6,450,771.00	tonnage and cover
Subtract cover dirt	**4,838,078.25**	**waste tonnage available**
	420,000.00	tons per year taken in
	11.52	Years to full

Total Cell 6 ABC remaining capacity in tons as of 03.21.2022	**4,838,078.25**	**waste tonnage available**
	420,000.00	tons per year taken in
	11.52	**years to full**
	10.10	**years to full w 3% growth**

3% growth each year

	tonnage	year	year	
	420,000.00	2022	1	
	432,600.00	2023	2	
	445,578.00	2024	3	
	458,945.34	2025	4	
	472,713.70	2026	5	
	486,895.11	2027	6	
	501,501.96	2028	7	
	516,547.02	2029	8	
	532,043.43	2030	9	
4,814,829.31	548,004.74	2031	10	
5,379,274.19	564,444.88	2032	11	
	581,378.23	2033	12	
	5,960,652.42		23,248.94	
4,838,078.25	-1,122,574.17		10.1	years to full

APPENDIX N – Title V Operating Permit

Department of
Environmental Quality

L. Scott Baird
Executive Director

DIVISION OF AIR QUALITY
Bryce C. Bird
Director

State of Utah

GARY R. HERBERT
Governor

SPENCER J. COX
Lieutenant Governor

11977

DAQO-OP0119770007-20

July 21, 2020

ELECTRONIC MAIL

Mr. Jaren Scott
Executive Director
Trans-Jordan Landfill
P.O. Box 95610
South Jordan, UT 84095

Dear Mr. Scott

Re: Operating Permit Application for Trans-Jordan Cities - Trans-Jordan Landfill

The application for an Operating Permit for the above site was received on December 20, 2019. The application was classified as a Title V renewal application, in accordance with R307-415-7c.

Please review the enclosed copy of the permit thoroughly to assure that you and all affected staff members at your organization are aware of its requirements. If you have any questions regarding this permit, please contact me at (801) 536-4066 or by e-mail at shanks@utah.gov.

Sincerely,

Signed by Scott Hanks on July 21, 2020

Scott Hanks
Environmental Engineer
Operating Permit Section

cc:
Mr. Amit Nair
Kleinfelder
849 West Levoy Drive, Suite 200
Salt Lake City, UT 84123

State of Utah
GARY R. HERBERT
Governor
SPENCER J. COX
Lieutenant Governor

Department of
Environmental Quality
L. Scott Baird
Executive Director
DIVISION OF AIR QUALITY
Bryce C. Bird
Director

11977

Title V Operating Permit

PERMIT NUMBER: 3500535004
DATE OF PERMIT: July 21, 2020
Date of Last Revision: July 21, 2020

This Operating Permit is issued to, and applies to the following:

Name of Permittee:

Trans-Jordan Cities
10473 South Bacchus Highway (U-111)
P.O. Box 95610
South Jordan, UT 84095-0610

Permitted Location:

Trans-Jordan Landfill
10473 South Bacchus Highway (U-111)
South Jordan, UT 84009

UTM coordinates: 410,879 m Easting, 4,490,492 m Northing
SIC code: 4953 (Refuse Systems)

By:

Bryce C. Bird, Director

Prepared By:

Scott Hanks
shanks@utah.gov
801-536-4066

ENFORCEABLE DATES AND TIMELINES

The following dates or timeframes are referenced in
Section I: General Provisions of this permit.

Annual Certification Due:	April 15 and on that date of every calendar year that this permit is in force.
Renewal application due:	January 21, 2025
Permit expiration date:	July 21, 2025
Definition of "prompt":	written notification within 14 days.

ABSTRACT

Trans-Jordan Cities operates the Trans-Jordan Landfill, a municipal solid waste (MSW) landfill source located in Salt Lake County, Utah. The facility accepts municipal and commercial solid waste. Trans-Jordan Landfill is a major source of air pollution with respect to Carbon Monoxide (CO). Class I Sanitary Landfill with a 10.5 million Mg capacity. Opened in 1958, lateral expansion in 1997/98.

Trans-Jordan Landfill is subject to:

New Source Performance Standards (NSPS) under 40 CFR Part 60, Subparts A - General Provisions

New Source Performance Standards (NSPS) under 40 CFR Part 60, Subpart WWW - Standards of Performance for Municipal Solid Waste Landfills

New Source Performance Standards (NSPS) under 40 CFR Part 60, Subpart JJJJ - Standards of Performance for Stationary Spark Ignition Internal Combustion Engines

National Emission Standards for Hazardous Air Pollutants (NESHAP), Subpart A - General Provisions

National Emission Standards for Hazardous Air Pollutants (NESHAP), 40 CFR Part 61, Subpart A - General Provisions

National Emission Standards for Asbestos: Standards for Active Waste Disposal Sites, 40 CFR 61, Subpart M

OPERATING PERMIT HISTORY

Permit/Activity	Date Issued	Recorded Changes
Title V renewal application (Project #OPP0119770007)	07/21/2020	- Renewal of Title V Permit and revise Approval Order citations per issuance of DAQE-AN119770011-18 -Update Emission Unit(s) list in II.A. -Update opacity requirements per new AO. -Clarify Rule R307-307 road salting/sanding requirements. -Update 40 CFR Part 60, Subpart WWW requirements. -Update Rule R307-221 reporting requirements. -Clarify 40 CFR Part 60, Subpart JJJJ requirements for Landfill Gas Engines.
Title V renewal application (Project #OPP0119770005)	06/30/2015	Renewal of Title V Permit and Incorporation of requirements from 40 CFR Part 60, Subpart JJJJ.
Title V renewal application (Project #OPP0119770003)	02/17/2009	Renewal of Title V Permit and Incorporation of requirements from new AO (DAQE-AN0119770006-08) for installation of three landfill gas fueled engines.
Title V initial application (Project #OPP0119770001)	05/21/2002	Title V Permit Issued

Table of Contents

Issued under authority of Utah Code Ann. Section 19-2-104 and 19-2-109.1, and in accordance with Utah Administrative Code R307-415 Operating Permit Requirements.

All definitions, terms and abbreviations used in this permit conform to those used in Utah Administrative Code R307-101 and R307-415 (Rules), and 40 Code of Federal Regulations (CFR), except as otherwise defined in this permit. Unless noted otherwise, references cited in the permit conditions refer to the Rules.

Where a permit condition in Section I, General Provisions, partially recites or summarizes an applicable rule, the full text of the applicable portion of the rule shall govern interpretations of the requirements of the rule. In the case of a conflict between the Rules and the permit terms and conditions of Section II, Special Provisions, the permit terms and conditions of Section II shall govern except as noted in Provision I.M, Permit Shield.

SECTION I: GENERAL PROVISIONS

I.A Federal Enforcement.

All terms and conditions in this permit, including those provisions designed to limit the potential to emit, are enforceable by the EPA and citizens under the Clean Air Act of 1990 (CAA) except those terms and conditions that are specifically designated as "State Requirements". (R307-415-6b)

I.B Permitted Activity(ies).

Except as provided in R307-415-7b(1), the permittee may not operate except in compliance with this permit. (See also Provision I.E, Application Shield)

I.C Duty to Comply.

I.C.1 The permittee must comply with all conditions of the operating permit. Any permit noncompliance constitutes a violation of the Air Conservation Act and is grounds for any of the following: enforcement action; permit termination; revocation and reissuance; modification; or denial of a permit renewal application. (R307-415-6a(6)(a))

I.C.2 It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. (R307-415-6a(6)(b))

I.C.3 The permittee shall furnish to the Director, within a reasonable time, any information that the Director may request in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. Upon request, the permittee shall also furnish to the Director copies of records required to be kept by this permit or, for information claimed to be confidential, the permittee may furnish such records directly to the EPA along with a claim of confidentiality. (R307-415-6a(6)(e))

I.C.4 This permit may be modified, revoked, reopened, and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated noncompliance shall not stay any permit condition, except as provided under R307-415-7f(1) for minor permit modifications. (R307-415-6a(6)(c))

I.D Permit Expiration and Renewal.

I.D.1 This permit is issued for a fixed term of five years and expires on the date shown under "Enforceable Dates and Timelines" at the front of this permit. (R307-415-6a(2))

I.D.2 Application for renewal of this permit is due on or before the date shown under "Enforceable Dates and Timelines" at the front of this permit. An application may be submitted early for any reason. (R307-415-5a(1)(c))

I.D.3 An application for renewal submitted after the due date listed in I.D.2 above shall be accepted for processing, but shall not be considered a timely application and shall not relieve the permittee of any enforcement actions resulting from submitting a late application. (R307-415-5a(5))

I.D.4 Permit expiration terminates the permittee's right to operate unless a timely and complete renewal application is submitted consistent with R307-415-7b (see also Provision I.E, Application Shield) and R307-415-5a(1)(c) (see also Provision I.D.2). (R307-415-7c(2))

I.E **Application Shield.**

If the permittee submits a timely and complete application for renewal, the permittee's failure to have an operating permit will not be a violation of R307-415, until the Director takes final action on the permit renewal application. In such case, the terms and conditions of this permit shall remain in force until permit renewal or denial. This protection shall cease to apply if, subsequent to the completeness determination required pursuant to R307-415-7a(3), and as required by R307-415-5a(2), the applicant fails to submit by the deadline specified in writing by the Director any additional information identified as being needed to process the application. (R307-415-7b(2))

I.F **Severability.**

In the event of a challenge to any portion of this permit, or if any portion of this permit is held invalid, the remaining permit conditions remain valid and in force. (R307-415-6a(5))

I.G **Permit Fee.**

I.G.1 The permittee shall pay an annual emission fee to the Director consistent with R307-415-9. (R307-415-6a(7))

I.G.2 The emission fee shall be due on October 1 of each calendar year or 45 days after the source receives notice of the amount of the fee, whichever is later. (R307-415-9(4)(a))

I.H **No Property Rights.**

This permit does not convey any property rights of any sort, or any exclusive privilege. (R307-415-6a(6)(d))

I.I **Revision Exception.**

No permit revision shall be required, under any approved economic incentives, marketable permits, emissions trading and other similar programs or processes for changes that are provided for in this permit. (R307-415-6a(8))

I.J **Inspection and Entry.**

I.J.1 Upon presentation of credentials and other documents as may be required by law, the permittee shall allow the Director or an authorized representative to perform any of the following:

I.J.1.a Enter upon the permittee's premises where the source is located or emissions related activity is conducted, or where records are kept under the conditions of this permit. (R307-415-6c(2)(a))

I.J.1.b Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit. (R307-415-6c(2)(b))

I.J.1.c Inspect at reasonable times any facilities, equipment (including monitoring and air pollution control equipment), practice, or operation regulated or required under this permit. (R307-415-6c(2)(c))

I.J.1.d Sample or monitor at reasonable times substances or parameters for the purpose of assuring compliance with this permit or applicable requirements. (R307-415-6c(2)(d))

I.J.2 Any claims of confidentiality made on the information obtained during an inspection shall be made pursuant to Utah Code Ann. Section 19-1-306. (R307-415-6c(2)(e))

I.K **Certification.**

Any application form, report, or compliance certification submitted pursuant to this permit shall contain certification as to its truth, accuracy, and completeness, by a responsible official as defined in R307-415-3. This certification shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete. (R307-415-5d)

I.L **Compliance Certification.**

I.L.1 Permittee shall submit to the Director an annual compliance certification, certifying compliance with the terms and conditions contained in this permit, including emission limitations, standards, or work practices. This certification shall be submitted no later than the date shown under "Enforceable Dates and Timelines" at the front of this permit, and that date each year following until this permit expires. The certification shall include all the following (permittee may cross-reference this permit or previous reports): (R307-415-6c(5))

I.L.1.a The identification of each term or condition of this permit that is the basis of the certification;

I.L.1.b The identification of the methods or other means used by the permittee for determining the compliance status with each term and condition during the certification period. Such methods and other means shall include, at a minimum, the monitoring and related recordkeeping and reporting requirements in this permit. If necessary, the permittee also shall identify any other material information that must be included in the certification to comply with section 113(c)(2) of the Act, which prohibits knowingly making a false certification or omitting material information;

I.L.1.c The status of compliance with the terms and conditions of the permit for the period covered by the certification, including whether compliance during the period was continuous or intermittent. The certification shall be based on the method or means designated in Provision I.L.1.b. The certification shall identify each deviation and take it into account in the compliance certification. The certification shall also identify as possible exceptions to compliance any periods during which compliance is required and in which an excursion or exceedance as defined under 40 CFR Part 64 occurred; and

I.L.1.d Such other facts as the Director may require to determine the compliance status.

I.L.2 The permittee shall also submit all compliance certifications to the EPA, Region VIII, at the following address or to such other address as may be required by the Director: (R307-415-6c(5)(d))

Environmental Protection Agency, Region VIII
Office of Enforcement, Compliance and Environmental Justice
(mail code 8ENF)
1595 Wynkoop Street
Denver, CO 80202-1129

I.M **Permit Shield.**

I.M.1 Compliance with the provisions of this permit shall be deemed compliance with any applicable requirements as of the date of this permit, provided that:

I.M.1.a Such applicable requirements are included and are specifically identified in this permit, or (R307-415-6f(1)(a))

I.M.1.b Those requirements not applicable to the source are specifically identified and listed in this permit. (R307-415-6f(1)(b))

I.M.2 Nothing in this permit shall alter or affect any of the following:

I.M.2.a The emergency provisions of Utah Code Ann. Section 19-1-202 and Section 19-2-112, and the provisions of the CAA Section 303. (R307-415-6f(3)(a))

I.M.2.b The liability of the owner or operator of the source for any violation of applicable requirements under Utah Code Ann. Section 19-2-107(2)(g) and Section 19-2-110 prior to or at the time of issuance of this permit. (R307-415-6f(3)(b))

I.M.2.c The applicable requirements of the Acid Rain Program, consistent with the CAA Section 408(a). (R307-415-6f(3)(c))

I.M.2.d The ability of the Director to obtain information from the source under Utah Code Ann. Section 19-2-120, and the ability of the EPA to obtain information from the source under the CAA Section 114. (R307-415-6f(3)(d))

I.N **Emergency Provision.**

I.N.1 An "emergency" is any situation arising from sudden and reasonably unforeseeable events beyond the control of the source, including acts of God, which situation requires immediate corrective action to restore normal operation, and that causes the source to exceed a technology-based emission limitation under this permit, due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventive maintenance, careless or improper operation, or operator error. (R307-415-6g(1))

I.N.2 An emergency constitutes an affirmative defense to an action brought for noncompliance with such technology-based emission limitations if the affirmative defense is demonstrated through properly signed, contemporaneous operating logs, or other relevant evidence that:

I.N.2.a An emergency occurred and the permittee can identify the causes of the emergency. (R307-415-6g(3)(a))

I.N.2.b The permitted facility was at the time being properly operated. (R307-415-6g(3)(b))

I.N.2.c During the period of the emergency the permittee took all reasonable steps to minimize levels of emissions that exceeded the emission standards, or other requirements in this permit. (R307-415-6g(3)(c))

I.N.2.d The permittee submitted notice of the emergency to the Director within two working days of the time when emission limitations were exceeded due to the emergency. This notice must contain a description of the emergency, any steps taken to mitigate emissions, and corrective actions taken. This notice fulfills the requirement of Provision I.S.2.c below. (R307-415-6g(3)(d))

I.N.3 In any enforcement proceeding, the permittee seeking to establish the occurrence of an emergency has the burden of proof. (R307-415-6g(4))

I.N.4 This emergency provision is in addition to any emergency or upset provision contained in any other section of this permit. (R307-415-6g(5))

I.O **Operational Flexibility.**

Operational flexibility is governed by R307-415-7d(1).

I.P **Off-permit Changes.**

Off-permit changes are governed by R307-415-7d(2).

I.Q **Administrative Permit Amendments.**

Administrative permit amendments are governed by R307-415-7e.

I.R **Permit Modifications.**

Permit modifications are governed by R307-415-7f.

I.S **Records and Reporting.**

I.S.1 Records.

I.S.1.a The records of all required monitoring data and support information shall be retained by the permittee for a period of at least five years from the date of the monitoring sample, measurement, report, or application. Support information includes all calibration and maintenance records, all original strip-charts or appropriate recordings for continuous monitoring instrumentation, and copies of all reports required by this permit. (R307-415-6a(3)(b)(ii))

I.S.1.b For all monitoring requirements described in Section II, Special Provisions, the source shall record the following information, where applicable: (R307-415-6a(3)(b)(i))

I.S.1.b.1 The date, place as defined in this permit, and time of sampling or measurement.

I.S.1.b.2 The date analyses were performed.

I.S.1.b.3 The company or entity that performed the analyses.

I.S.1.b.4 The analytical techniques or methods used.

I.S.1.b.5 The results of such analyses.

I.S.1.b.6 The operating conditions as existing at the time of sampling or measurement.

I.S.1.c Additional record keeping requirements, if any, are described in Section II, Special Provisions.

I.S.2 Reports.

I.S.2.a Monitoring reports shall be submitted to the Director every six months, or more frequently if specified in Section II. All instances of deviation from permit requirements shall be clearly identified in the reports. (R307-415-6a(3)(c)(i))

I.S.2.b All reports submitted pursuant to Provision I.S.2.a shall be certified by a responsible official in accordance with Provision I.K of this permit. (R307-415-6a(3)(c)(i)

I.S.2.c The Director shall be notified promptly of any deviations from permit requirements including those attributable to upset conditions as defined in this permit, the probable cause of such deviations, and any corrective actions or preventative measures taken. Prompt, as used in this condition, shall be defined as written notification within the number of days shown under "Enforceable Dates and Timelines" at the front of this permit. Deviations from permit requirements due to breakdowns shall be reported in accordance with the provisions of R307-107. (R307-415-6a(3)(c)(ii))

I.S.3 Notification Addresses.

I.S.3.a All reports, notifications, or other submissions required by this permit to be submitted to the Director are to be sent to the following address or to such other address as may be required by the Director:

Utah Division of Air Quality
P.O. Box 144820
Salt Lake City, UT 84114-4820
Phone: 801-536-4000

I.S.3.b All reports, notifications or other submissions required by this permit to be submitted to the EPA should be sent to one of the following addresses or to such other address as may be required by the Director:

For annual compliance certifications:

Environmental Protection Agency, Region VIII
Office of Enforcement, Compliance and Environmental Justice
(mail code 8ENF)
1595 Wynkoop Street
Denver, CO 80202-1129

For reports, notifications, or other correspondence related to permit modifications, applications, etc.:

Environmental Protection Agency, Region VIII
Office of Partnerships and Regulatory Assistance Air and Radiation Program
(mail code 8P-AR)
1595 Wynkoop Street
Denver, CO 80202-1129
Phone: 303-312-7015

I.T **Reopening for Cause.**

I.T.1 A permit shall be reopened and revised under any of the following circumstances:

I.T.1.a New applicable requirements become applicable to the permittee and there is a remaining permit term of three or more years. No such reopening is required if the effective date of the requirement is later than the date on which this permit is due to expire, unless the terms and conditions of this permit have been extended pursuant to R307-415-7c(3), application shield. (R307-415-7g(1)(a))

I.T.1.b The Director or EPA determines that this permit contains a material mistake or that inaccurate statements were made in establishing the emissions standards or other terms or conditions of this permit. (R307-415-7g(1)(c))

I.T.1.c EPA or the Director determines that this permit must be revised or revoked to assure compliance with applicable requirements. (R307-415-7g(1)(d))

I.T.1.d Additional applicable requirements are to become effective before the renewal date of this permit and are in conflict with existing permit conditions. (R307-415-7g(1)(e))

I.T.2 Additional requirements, including excess emissions requirements, become applicable to a Title IV affected source under the Acid Rain Program. Upon approval by EPA, excess emissions offset plans shall be deemed to be incorporated into this permit. (R307-415-7g(1)(b))

I.T.3 Proceedings to reopen and issue a permit shall follow the same procedures as apply to initial permit issuance and shall affect only those parts of this permit for which cause to reopen exists. (R307-415-7g(2))

I.U **Inventory Requirements.**

An emission inventory shall be submitted in accordance with the procedures of R307-150, Emission Inventories. (R307-150)

I.V Title IV and Other, More Stringent Requirements

Where an applicable requirement is more stringent than an applicable requirement of regulations promulgated under Title IV of the Act, Acid Deposition Control, both provisions shall be incorporated into this permit. (R307-415-6a(1)(b))

SECTION II: SPECIAL PROVISIONS

II.A **Emission Unit(s) Permitted to Discharge Air Contaminants.**
(R307-415-4(3)(a) and R307-415-4(4))

II.A.1 **Permitted Source (Source-wide)**

II.A.2 **Municipal Solid Waste Landfill**
Class I Sanitary Landfill with a 10.5 million Mg capacity. Opened in 1958, lateral expansion in 1997/98. NSPS WWW and NESHAP M applies to this unit.

II.A.3 **Landfill Gas Engine #1**
3250 Caterpillar Landfill Gas Only Fired Generator, Max Rating 2250 HP.
Manufactured April 22, 2014. Installed November 4, 2015.

II.A.4 **Landfill Gas Engine #2**
3250 Caterpillar Landfill Gas Only Fired Generator, Max Rating 2250 HP.
Manufactured September 12, 2007. Installed May 3, 2016.

II.A.5 **Landfill Gas Engine #3**
3250 Caterpillar Landfill Gas Only Fired Generator, Max Rating 2250 HP.
Manufactured September, 10 2007. Installed October 30, 2017.

II.A.6 **Landfill Gas Engines**
Three 3250 Caterpillar Landfill Gas Only Fired Generators, Max Rating 2250 HP. These include Landfill Gas Engine #1, Landfill Gas Engine #2, and Landfill Gas Engine #3 listed above.

II.A.7 **Landfill Gas Bypass Flare**
Flare burns gas collected from the landfill collection system, candle stick type flare.

II.A.8 **Gas Processing and Treatment Station**
Dewatering tanks, gas compressors, gas coolers. Powered by electricity.
No Unit Specific Applicable Requirements.

II.A.9 **Miscellaneous Other Equipment**
Two (2) portable light plants, three (3) small above ground storage tanks, hot water bath/steam unit, mobile horizontal waste grinder, small stand-by generator.
No Unit Specific Applicable Requirements.

II.B **Requirements and Limitations**

The following emission limitations, standards, and operational limitations apply to the permitted facility as indicated:

II.B.1 **Conditions on Permitted Source (Source-wide).**

II.B.1.a **Condition:**

Visible emissions caused by fugitive dust shall be controlled such that opacity does not exceed 10% at the property boundary, and 20% onsite. There is no exception during periods when wind speeds exceed 25 miles per hour. [Origin: DAQE-AN119770011-18]. [DAQE-AN119770011-18]

II.B.1.a.1 **Monitoring:**

In lieu of monitoring via visible emissions observations, adherence to the current fugitive dust control plan approved by the Director shall be maintained in order to demonstrate that appropriate measures are being implemented to control fugitive dust.

II.B.1.a.2 **Recordkeeping:**

A copy of the fugitive dust control plan shall be maintained onsite. Records of measure taken to control fugitive dust shall be maintained to demonstrate adherence to the most recently approved fugitive dust control plan. Records shall be maintained as described in Provision I.S.1 of this permit.

II.B.1.a.3 **Reporting:**

There are no reporting requirements for this provision except those specified in Section I of this permit.

II.B.1.b **Condition:**

Visible emissions shall be controlled such that opacity does not exceed 10% at the property boundary, and 20% onsite, unless otherwise specified in this permit. [Origin: DAQE-AN119770011-18]. [R307-401-8]

II.B.1.b.1 **Monitoring:**

A visual opacity survey of each affected emission unit shall be performed on a quarterly basis, by an individual trained on the observation procedures of 40 CFR 60, Appendix A, Method 9, or other EPA-approved testing method, as acceptable to the Director. If visible emissions other than condensed water vapor are observed from an emission unit, an opacity determination of that emission unit shall be performed by a certified observer within 24 hours of the initial survey. The opacity determination shall be performed in accordance with 40 CFR 60, Appendix A, Method 9, or other EPA-approved testing method, as acceptable to the Director, for point sources, and in accordance with 58 FR 61640 Method 203C for fugitive emission sources.

II.B.1.b.2 **Recordkeeping:**

The permittee shall record the date of each visual opacity survey and keep a list of the emission points checked during the visual opacity survey. The permittee shall also keep a log of the following information for each observed visual emission: date and time visual emissions observed, emission point location and description, time and date of opacity survey, and percent opacity. The records required by this provision and all data required by 40 CFR 60, Appendix A, Method 9, or other EPA-approved testing method, as acceptable to the Director shall be maintained in accordance with Provision I.S.1 of this permit.

II.B.1.b.3 **Reporting:**

There are no reporting requirements for this provision except those specified in Section I of this permit.

II.B.1.c **Condition:**

Sulfur content of any fuel oil combusted shall be no greater than 0.85 lb/MMBtu heat input. [Origin: R307-203]. [R307-203-1]

II.B.1.c.1 **Monitoring:**

For each delivery of oil, the permittee shall either:

(1) Determine the fuel sulfur content expressed as lb/MMBtu in accordance with the methods of the American Society for Testing Materials (ASTM) and Equation 1; or

(2) Inspect documentation provided by the vendor that has demonstrated compliance with (1) above, or indirectly demonstrates compliance with this provision.

Equation 1:

Fuel Sulfur Content, lb/MMBtu = [(Weight percent sulfur/100) x Density (lb/gal)] / [(gross heating value (Btu/gal)) x (1 MMBtu/1,000,000 Btu)].

II.B.1.c.2 **Recordkeeping:**

Results of monitoring shall be maintained as described in Provision I.S.1 of this permit.

II.B.1.c.3 **Reporting:**

There are no reporting requirements for this provision except those specified in Section I of this permit.

II.B.1.d **Condition:**

Any salt applied to roads by the permittee shall be at least 92% by weight sodium chloride (NaCl), magnesium chloride ($MgCl_2$), calcium chloride ($CaCl_2$), and/or potassium chloride (KCl). If the permittee applies an abrasive such as crushed slag or sand, or applies salt that is less than 92% by weight NaCl, $MgCl_2$, $CaCl_2$, and/or KCl to roads, the permittee shall either:

(a) Demonstrate to the Director that the material applied has no more PM_{10} or $PM_{2.5}$ emissions than salt which is at least 92% by weight NaCl, $MgCl_2$, $CaCl_2$, and/or KCl; or

(b) Vacuum sweep every arterial roadway (principal and minor) to which the material was applied within three days of the end of the storm for which the application was made.

[Origin: R307-307]. [R307-307-1]

II.B.1.d.1 **Monitoring:**

Records required for this permit condition will serve as monitoring.

II.B.1.d.2 **Recordkeeping:**

The following records shall be maintained as outlined in Provision I.S.1 of this permit:

(1) For Salt - The quantity applied, the percent by weight of insoluble solids in the salt, and the percentage of the material that is NaCl, $MgCl_2$, $CaCl_2$, or KCl.

(2) For Abrasives (such as sand or crushed slag) - The quantity applied and the percent by weight of fine material which passes the number 200 sieve in a standard gradation analysis.

II.B.1.d.3 **Reporting:**

There are no reporting requirements for this provision except those specified in Section I of this permit.

II.B.2 **Conditions on Municipal Solid Waste Landfill.**

II.B.2.a **Condition:**

The permittee shall comply with all applicable requirements in 40 CFR 60, Subpart WWW - New Source Performance Standards (NSPS) Standards of Performance for Municipal Solid Waste Landfills. The permittee shall comply with the applicable General Provisions in 40 CFR 60, Subpart A.

(a) The permittee shall calculate a nonmethane organic compounds (NMOC) emission rate for the landfill using the procedures specified in monitoring. The NMOC emission rate shall be recalculated annually, except as provided in paragraph (b)(1)(i) of reporting.

(1) If the calculated NMOC emission rate is less than 50 megagrams per year, the permittee shall:

(i) Submit an annual emission report to the Director, except as provided for in Section II.B.2.a.3 Reporting and paragraph (b)(1)(i) of reporting; and

(ii) Recalculate the NMOC emission rate annually using the procedures specified in (a) of monitoring until such time as the calculated NMOC emission rate is equal to or greater than 50 megagrams per year, or the landfill is closed.

(A) If the NMOC emission rate, upon recalculation required in paragraph (a)(1)(ii), is equal to or greater than 50 megagrams per year, the permittee shall install a collection and control system in compliance with 40 CFR 60.752(b)(2).

(B) If the landfill is permanently closed, a closure notification shall be submitted to the Director as provided for in (d) of reporting.

(2) If the calculated NMOC emission rate is equal to or greater than 50 megagrams per year, the permittee shall:

(i) Submit a collection and control system design plan prepared by a professional engineer to the Director within 1 year:

(A) The collection and control system as described in the plan shall meet the design requirements of paragraph 40 CFR 60.752(b)(2)(ii).

(B) The collection and control system design plan shall include any alternatives to the operational standards, test methods, procedures, compliance measures, monitoring, recordkeeping or reporting provisions of 40 CFR 60.753 through 60.758 proposed by the permittee.

(C) The collection and control system design plan shall either conform with specifications for active collection systems in 40 CFR 60.759 or include a demonstration to the Director's satisfaction of the sufficiency of the alternative provisions to 40 CFR 60.759.

(ii) The permittee shall install a collection and control system capable of meeting emissions standards in 40 CFR 60.750 within 30 months of the date when the landfill has an emission rate of NMOC of 50 megagrams per year or more.

(b) When the MSW landfill is closed, the permittee is no longer subject to the requirement to maintain an operating permit under 40 CFR 70 for the landfill if the landfill is not otherwise subject to the requirements of either 40 CFR 70 and if either of the following conditions are met:

(1) The landfill was never subject to the requirement for a control system under paragraph (a)(2); or

(2) The permittee meets the conditions for control system removal specified in 40 CFR 60.752(b)(2)(v).

[Origin: 40 CFR 60 Subpart WWW, R307-221]. [40 CFR 60.752(b), 40 CFR 60.752(d), R307-221]

II.B.2.a.1 **Monitoring:**

The permittee shall monitor the NMOC emission rate by using the equations in (a) and following the three-tier process outlined in (b), (c), and (d):

(a) The permittee shall calculate the NMOC emission rate using either the equation provided in paragraph (a)(1) or the equation provided in paragraph (a)(2). Both equations may be used if the actual year-to-year solid waste acceptance rate is known, as specified in paragraph (a)(1) for part of the life of the landfill and the actual year-to-year solid waste acceptance rate is unknown, as specified in paragraph (a)(2), for part of the life of the landfill. The values to be used in both equations are 0.02 per year for k, 170 cubic meters per megagram for L_O, and 4,000 parts per million by volume as hexane for the C_{NMOC}. For either (a)(1) or (a)(2) below, the mass of non-degradable solid waste may be subtracted from the total mass of solid waste in a particular section of the landfill when calculating the value for M_i if documentation of the nature and amount of such wastes is maintained.

(1) The following equation shall be used if the actual year-to-year solid waste acceptance rate is known.

$M_{NMOC} = \text{Sum } (2\, k\, L_o\, M_i\, (e^{-kt_i})(C_{NMOC})(3.6\text{x}10^{-9}))$ of i through n

Where:

M_{NMOC} = Total NMOC emission rate from the landfill, megagrams per year
k = methane generation rate constant, per year
L_o = methane generation potential, cubic meters per megagram solid waste
M_i = mass of solid waste in the ith section, megagrams
t_i = age of the ith section, years
C_{NMOC} = concentration of NMOC, parts per million by volume as hexane
$3.6 \text{ x } 10^{-9}$ = conversion factor

(2) The following equation shall be used if the actual year-to-year solid waste acceptance rate is unknown.

$M_{NMOC} = 2L_o\, R\, (e^{-kc} - e^{-kt})\, (C_{NMOC})\, (3.6\text{ x}10^{-9})$

M_{NMOC} = mass emission rate of NMOC, megagrams per year
L_o = methane generation potential, cubic meters per megagram solid waste
R = average annual acceptance rate, megagrams per year
k = methane generation rate constant, per year
t = age of landfill, years
C_{NMOC} = concentration of NMOC, parts per million by volume as hexane

c = time since closure, years; for active landfill c = 0 and $e^{-kc} = 1$
3.6×10^{-9} = conversion factor

(b) Tier 1. The permittee shall compare the calculated NMOC mass emission rate to the standard of 50 megagrams per year.

(1) If the NMOC emission rate calculated in (a) is less than 50 megagrams per year, then the permittee shall submit an emission rate report as provided in paragraph (b)(1) of reporting, and shall recalculate the NMOC mass emission rate annually as required under paragraph (a)(1) of this condition.

(2) If the calculated NMOC emission rate is equal to or greater than 50 megagrams per year, then the permittee shall either comply with paragraph (a)(2) of this condition, or determine a site-specific NMOC concentration and recalculate the NMOC emission rate using the procedures provided in (c).

(c) Tier 2. The permittee shall determine the site-specific NMOC concentration using the following sampling procedure.

The permittee shall install at least two sample probes per hectare of landfill surface that has retained waste for at least 2 years. If the landfill is larger than 25 hectares in area, only 50 samples are required. The sample probes should be located to avoid known areas of non-degradable solid waste.

The permittee shall collect and analyze one sample of landfill gas from each probe to determine the NMOC concentration using 40 CFR 60, Appendix A Method 25 or 25C. Method 18 of Appendix A may be used to analyze the samples collected by the Method 25 or 25C sampling procedure. Taking composite samples from different probes into a single canister is allowed; however, equal sample volumes must be taken from each probe. For each composite sample, the sampling rate, collection times, beginning and ending canister vacuums, or alternative volume measurements must be recorded to verify that composite volumes are equal. Composite sample volumes should not be less than one liter unless evidence can be provided to substantiate the accuracy of smaller volumes. Terminate compositing before the canister approaches ambient pressure where measurement accuracy diminishes.

If using Method 18, the permittee must identify all compounds in the sample and, as a minimum, test for those compounds published in the most recent Compilation of Air Pollutant Emission Factors (AP 42), minus carbon monoxide, hydrogen sulfide, and mercury. As a minimum, the instrument must be calibrated for each of the compounds on the list.

Convert the concentration of each Method 18 compound to C_{NMOC} as hexane by multiplying by the ratio of its carbon atoms divided by six. If more than the required number of samples are taken, all samples must be used in the analysis. The permittee must divide the NMOC concentration from 40 CFR 60 Appendix A Method 25 or 25C by six to convert from C_{NMOC} as carbon to C_{NMOC} as hexane.

If the landfill has an active or passive gas removal system in place, Method 25 or 25C samples may be collected from these systems instead of surface probes provided the removal system can be shown to provide sampling as representative as the two sampling probe per hectare requirement. For active collection systems, samples may be collected from the common header pipe before the gas moving or condensate removal equipment. For these systems, a minimum of three samples must be collected from the header pipe.

(1) The permittee shall recalculate the NMOC mass emission rate using the equations provided in (a)(1) or (a)(2) of this monitoring section, using the average NMOC concentration from the collected samples instead of the default value in the equations provided in (a).

(2) If the resulting mass emission rate calculated using the site-specific NMOC concentration is equal to or greater than 50 megagrams per year, then the permittee shall either comply with paragraph (a)(2) of this condition, or determine the site-specific methane generation rate constant and recalculate the NMOC emission rate using the site-specific methane generation rate using the procedure specified in (d).

(3) If the resulting NMOC mass emission rate is less than 50 megagrams per year, the permittee shall submit a periodic estimate of the emission rate report as provided in paragraph (b)(1) of reporting and retest the site-specific NMOC concentration every 5 years using the methods specified in monitoring.

(d) Tier 3. The site-specific methane generation rate constant shall be determined using the procedures provided in 40 CFR 60, Appendix A, Method 2E. The permittee shall estimate the NMOC mass emission rate using equations in (a) and using a site-specific methane generation rate constant k, and the site-specific NMOC concentration as determined in (c) instead of the default values provided in (a). The permittee shall compare the resulting NMOC mass emission rate to the standard of 50 megagrams per year.

(1) If the NMOC mass emission rate as calculated using the site-specific methane generation rate and concentration of NMOC is equal to or greater than 50 megagrams per year, the permittee shall comply with paragraph (a)(2) of this condition.

(2) If the NMOC mass emission rate is less than 50 megagrams per year, then the permittee shall submit a periodic emission rate report as provided in paragraph (b)(1) of reporting and shall recalculate the NMOC mass emission rate annually, as provided in paragraph (a)(1) of reporting using the equations in (a)(1) or (a)(2) and using the site-specific methane generation rate constant and NMOC concentration obtained in (c). The calculation of the methane generation rate constant is performed only once, and the value obtained from this test shall be used in all subsequent annual NMOC emission rate calculations.

II.B.2.a.2 **Recordkeeping:**

(a) Except as provided in paragraph (a)(2)(i)(B) of this condition when subject to (a) of this condition, the permittee shall keep for at least 5 years up to date, readily accessible, on-site records of the design capacity report which triggered (a) of this condition, the current amount of solid waste in place, and the year-by-year waste acceptance rate. Off-site records may be maintained if they are retrievable within 4 hours. Either paper copy or electronic formats are acceptable.

(b) Results of monitoring shall also be maintained in accordance with provision I.S.1 of this permit.

II.B.2.a.3 **Reporting:**

Except as provided in paragraph (a)(2)(i)(B) of this condition,

(a) An amended design capacity report shall be submitted to the Director providing notification of any increase in the design capacity of the landfill, whether the increase results from an increase in the permitted area or depth of the landfill, a change in the operating procedures, or any other means which results in an increase in the maximum design capacity of the landfill. The amended design capacity report shall be submitted within 90 days of the earliest of the following events:

(1) The issuance of an amended operating permit;
(2) Submittal of application for a solid waste permit under R315-310; or
(3) The change in operating procedures which will result in an increase in design capacity.

(b) The permittee shall submit an NMOC emission rate report to the Director initially and annually thereafter, except as provided for in paragraph (b)(1)(i). The Director may request such additional information as may be necessary to verify the reported NMOC emission rate.

(1) The NMOC emission rate report shall contain an annual or 5-year estimate of the NMOC emission rate calculated using the formula and procedures provided in monitoring.

(i) If the estimated NMOC emission rate as reported in the annual report to the Director is less than 50 megagrams per year in each of the next 5 consecutive years, the permittee may elect to submit an estimate of the NMOC emission rate for the next 5-year period in lieu of the annual report. This estimate shall include the current amount of solid waste-in-place and the estimated waste acceptance rate for each year of the 5 years for which an NMOC emission rate is estimated. All data and calculations upon which this estimate is based shall be provided to the Director. This estimate shall be revised at least once every 5 years. If the actual waste acceptance rate exceeds the estimated waste acceptance rate in any year reported in the 5-year estimate, a revised 5-year estimate shall be submitted to the Director. The revised estimate shall cover the 5-year period beginning with the year in which the actual waste acceptance rate exceeded the estimated waste acceptance rate.

(2) The NMOC emission rate report shall include all the data, calculations, sample reports and measurements used to estimate the annual or 5-year emissions.

(c) Each permittee subject to the provisions of paragraph (a)(2)(i) of this condition shall submit a collection and control system design plan to the Director within 1 year of the first report required under (b) in which the emission rate equals or exceeds 50 megagrams per year, except as follows:

(1) If the permittee elects to recalculate the NMOC emission rate after Tier 2 NMOC sampling and analysis as provided in (c) of monitoring and the resulting rate is less than 50 megagrams per year, annual periodic reporting shall be resumed, using the Tier 2 determined site-specific NMOC concentration, until the calculated emission rate is equal to or greater than 50 megagrams per year or the landfill is closed. The revised NMOC emission rate report, with the recalculated emission rate based on NMOC sampling and analysis, shall be submitted within 180 days of the first calculated exceedance of 50 megagrams per year.

(2) If the permittee elects to recalculate the NMOC emission rate after determining a site-specific methane generation rate constant (k), as provided in Tier 3 in (d) of monitoring, and the resulting NMOC emission rate is less than 50 Mg/yr, annual periodic reporting shall be resumed. The resulting site-specific methane generation rate constant (k) shall be used in the emission rate calculation until such time as the emissions rate calculation

results in an exceedance. The revised NMOC emission rate report based on the provisions of (d) of monitoring and the resulting site-specific methane generation rate constant (k) shall be submitted to the Director within 1 year of the first calculated emission rate exceeding 50 megagrams per year.

(d) Each permittee of a landfill shall submit a closure report to the Director within 30 days of waste acceptance cessation. The Director may request additional information as may be necessary to verify that permanent closure has taken place in accordance with the requirements of 40 CFR 258.60. If a closure report has been submitted to the Director, no additional wastes may be placed into the landfill without filing a notification of modification as described under 40 CFR 60.7(a)(4).

(e) The permittee shall notify the Director of the awarding of contracts for the construction of the collection and control system or the order to purchase components for the system. This notification shall be submitted within 18 months after reporting an NMOC emission equal to or greater than 50 megagrams per year as described under R307-221-5(4).

(f) The permittee shall notify the Director of the initiation of construction or installation of the collection and control system. This notification shall be submitted to the Director within 22 months after reporting an NMOC emission equal to or greater than 50 megagrams per year as described under R307-221-5(5).

(g) The permittee shall also comply with the reporting requirements of Section I of this permit.

II.B.2.b **Condition:**

The permittee shall comply with all applicable requirements in 40 CFR 61, Subpart M - National Emission Standards for Asbestos. The permittee shall comply with the applicable General Provisions in 40 CFR 61 Subpart A - General Provisions. [Origin: 40 CFR 61 Subpart M]. [40 CFR 61.140 - 61.157]

The permittee shall meet one of the following requirements for all asbestos disposal operations at the landfill:

(a) There shall be no visible emissions to the outside air from any active waste disposal site where asbestos-containing waste material has been deposited,

(b) At the end of each operating day, or at least once every 24-hour period while the site is in continuous operation, the asbestos-containing waste material that has been deposited at the site during the operating day or previous 24-hour period shall:

(1) Be covered with at least 15 centimeters (6 inches) of compacted non-asbestos-containing material, or

(2) Be covered with a resinous or petroleum-based dust suppression agent that effectively binds dust and controls wind erosion. Such an agent shall be used in the manner and frequency recommended for the particular dust by the dust suppression agent manufacturer to achieve and maintain dust control. Other equally effective dust suppression agents may be used upon prior approval by the Director. For purposes of this paragraph, any used, spent, or other waste oil is not considered a dust suppression agent.

(c) Use an alternative emissions control method that has received prior written approval by the U.S. Environmental Protection Agency (USEPA) according to the procedures described in 40 CFR 61.149(c)(2). [Origin: 40 CFR 61.154]. [40 CFR 61.154]

II.B.2.b.1 **Monitoring:**

If the permittee chooses to comply with the no visible emissions provisions of this condition, a visual opacity observation of each active asbestos disposal site shall be performed on a daily basis in accordance with 58 FR 61640 Method 203C.

If the permittee chooses to comply with the daily cover provisions of this condition, a visual inspection of the site(s) where asbestos containing waste material is deposited shall be conducted on the day of deposit to ensure that asbestos has been covered in accordance to (b)(1) above. Intermittent visual inspections at least once per week will be performed in order to verify integrity of cover material, and compliance with this condition.

II.B.2.b.2 **Recordkeeping:**

If the permittee chooses to comply with the no visible emissions provisions of this condition, a log of the visual opacity observations shall be maintained as described in Provision S.1 in Section I of this permit. All data required by 40 CFR 60, Appendix A, Method 9 or 58 FR 61640, Method 203C shall also be maintained as described in Provision S.1 in Section I of this permit.

If the permittee chooses to comply with the daily cover provisions of this condition, results of the day of deposit and subsequent weekly visual inspections shall be recorded in a log and maintained as described in Provision S.1 in Section I of this permit.

II.B.2.b.3 **Reporting:**

There are no reporting requirements for this provision except those specified in Section I of this permit.

II.B.2.c **Condition:**

Unless a natural barrier adequately deters access by the general public, the permittee shall comply with one of the following:

(a) The fencing and warning sign requirements of 40 CFR 61.154(b), or

(b) At the end of each operating day, or at least once every 24-hour period while the site is in continuous operation, the asbestos-containing waste material that has been deposited at the site during the operating day or previous 24-hour period shall be covered with at least 15 centimeters (6 inches) of compacted non-asbestos-containing material. [Origin: 40 CFR 61.154]. [40 CFR 61.154]

II.B.2.c.1 **Monitoring:**

If the permittee chooses to comply with the fencing and warning sign provisions of this condition, a visual inspection of the property line including all entrances to the site and/or sections of the site where asbestos containing waste material is deposited shall be conducted quarterly to verify compliance with the fencing and warning sign requirements of 40 CFR 61.154(b).

If the permittee chooses to comply with the daily cover provisions of this condition, a visual inspection of the site(s) where asbestos containing waste material is deposited shall be conducted the day of deposit, and weekly thereafter to verify compliance with this condition.

II.B.2.c.2 **Recordkeeping:**

Results of all inspections shall be recorded in a log and maintained as described in Provision S.1 in Section I of this permit.

II.B.2.c.3 **Reporting:**

There are no reporting requirements for this provision except those specified in Section I of this permit.

II.B.2.d **Condition:**

The permittee shall maintain waste shipment records of all asbestos-containing waste material received. In addition to routine shipment-tracking information, the waste shipment records shall document instances of improperly enclosed or uncovered waste, or any asbestos-containing waste material not sealed in leak-tight containers. [Origin: 40 CFR 61.154]. [40 CFR 61.154(e)]

II.B.2.d.1 **Monitoring:**

Records required for this permit condition will serve as monitoring.

II.B.2.d.2 **Recordkeeping:**

For all asbestos-containing waste material received, the permittee shall maintain waste shipment records, using a form similar to that shown in 40 CFR 61.149, Figure 4, and include the following information:

(i) The name, address, and telephone number of the waste generator. Waste generator is defined as any owner or operator of a source covered by 40 CFR 61, Subpart M whose act or process produces asbestos-containing waste material.

(ii) The name, address, and telephone number of the transporter(s).

(iii) The quantity of the asbestos-containing waste material in cubic meters (cubic yards).

(iv) The presence of any improperly enclosed or uncovered waste, or any asbestos-containing waste material not sealed in leak-tight containers.

(v) The date of the receipt.

All Records shall be maintained as described in Provisions I.S.1 of this permit.

II.B.2.d.3 **Reporting:**

As soon as possible and no longer than 30 days after receipt of the asbestos-containing waste material, the permittee shall send a copy of the signed waste shipment record to the waste generator. The permittee shall report in writing to the Director, by the following working day, the presence of a significant amount (either nine (9) or more drums/barrels (35 gallon each) or of seventeen (17) or more plastic bags) of improperly enclosed or uncovered waste and submit a copy of the waste shipment record along with the report.

Upon discovering a discrepancy between the quantity of waste designated on the waste shipment records and the quantity actually received, the permittee shall attempt to reconcile the discrepancy with the waste generator. If the discrepancy is not resolved within 15 days after receiving the waste, the permittee shall immediately submit a written report to the Director describing the discrepancy and attempts to reconcile it, and submit a copy of the waste shipment record along with the report. The permittee shall retain a copy of all records and reports required by this condition for at least 5 years. All reports shall be in accordance with Provision I.S.2 of this permit.

II.B.2.e **Condition:**

The permittee shall maintain, until closure, records of the location, depth and area, and quantity in cubic meters (cubic yards) of asbestos-containing waste material within the disposal site on a map or diagram of the disposal area. [40 CFR 61.154]. [40 CFR 61.154(f)]

II.B.2.e.1 **Monitoring:**

Records required for this permit condition will serve as monitoring.

II.B.2.e.2 **Recordkeeping:**

Maintain, records of the location, depth and area, and quantity in cubic meters (cubic yards) of asbestos-containing waste material within the disposal site on a map or diagram of the disposal area. All Records shall be maintained as described in Provisions I.S.1 of this permit.

II.B.2.e.3 **Reporting:**

Notify the Director in writing at least 45 days prior to excavating or otherwise disturbing any asbestos-containing waste material that has been deposited at a waste disposal site and is covered. If the excavation will begin on a date other than the one contained in the original notice, notice of the new start date must be provided to the Director at least 10 working days before excavation begins and in no event shall excavation begin earlier than the date specified in the original notification. Include the following information in the notice:

(1) Scheduled starting and completion dates.

(2) Reason for disturbing the waste.

(3) Procedures to be used to control emissions during the excavation, storage, transport, and ultimate disposal of the excavated asbestos-containing waste material. If deemed necessary, the Director may require changes in the emission control procedures to be used.

(4) Location of any temporary storage site and the final disposal site.

All reports shall be in accordance with Provision I.S.2 of this permit.

II.B.2.f **Condition:**

Upon closure of an asbestos-containing waste disposal site, the permittee shall submit a copy of records of asbestos waste disposal locations and quantities and shall:

(a) Comply with one of the following:

(1) Either discharge no visible emissions to the outside air from an inactive asbestos-containing waste disposal site; or

(2) Cover the asbestos-containing waste material with at least 15 centimeters (6 inches) of compacted non-asbestos containing material, and grow and maintain a cover of vegetation on the area adequate to prevent exposure of the asbestos-containing waste material. In desert areas where vegetation would be difficult to maintain, at least 8 additional centimeters (3 inches) of well-graded, non-asbestos crushed rock may be placed on top of the final cover instead of vegetation and maintained to prevent emissions; or

(3) Cover the asbestos-containing waste material with at least 60 centimeters (2 feet) of compacted non-asbestos-containing material, and maintain it to prevent exposure of the asbestos-containing waste; or

(4) For inactive waste disposal sites for asbestos tailings, a resinous or petroleum-based dust suppression agent that effectively binds dust to control surface air emissions may be used instead of the methods in paragraphs (a) (1), (2), and (3) of this section. Use the agent in the manner and frequency recommended for the particular asbestos tailings by the manufacturer of the dust suppression agent to achieve and maintain dust control. Obtain prior written approval of USEPA to use other equally effective dust suppression agents. For purposes of this paragraph, any used, spent, or other waste oil is not considered a dust suppression agent.

(b) Unless a natural barrier adequately deters access by the general public, install and maintain warning signs and fencing as follows, or comply with paragraph (a)(2) or (a)(3) of this condition:

(1) Display warning signs at all entrances and at intervals of 100 m (328 ft) or less along the property line of the site or along the perimeter of the sections of the site where asbestos-containing waste material was deposited. The warning signs must:

(i) Be posted in such a manner and location that a person can easily read the legend; and

(ii) Conform to the requirements for 51 cm x 36 cm (20" x 14") upright format signs specified in 29 CFR 1910.145(d)(4) and this paragraph; and

(iii) Display the following legend in the lower panel with letter sizes and styles of a visibility at least equal to those specified in this paragraph.

Legend	Notation
Asbestos Waste Disposal Site	2.5 cm (1 inch) Sans Serif, Gothic or Block
Do Not Create Dust	1.9 cm (3/4 inch) Sans Serif, Gothic or Block
Breathing Asbestos is Hazardous to Your Health	14 Point Gothic

Spacing between any two lines must be at least equal to the height of the upper of the two lines.

(2) Fence the perimeter of the site in a manner adequate to deter access by the general public.

(3) When requesting a determination on whether a natural barrier adequately deters public access, supply information enabling the Director to determine whether a fence or a natural barrier adequately deters access by the general public.

(c) In lieu of complying with the requirements of paragraph (a) or (b) of this condition, the permittee may use an alternative control method that has received prior approval of the USEPA. [Origin: 40 CFR 61.151]. [40 CFR 61.154(g)]

II.B.2.f.1 **Monitoring:**

A visual inspection of each closed site where asbestos containing waste material is deposited shall be conducted quarterly to verify compliance with all the requirements of 40 CFR 61.151.

II.B.2.f.2 **Recordkeeping:**

Results of all inspections shall be recorded in a log and maintained as described in Provision S.1 in Section I of this permit.

II.B.2.f.3 **Reporting:**

(a) Notify the Director in writing at least 45 days prior to excavating or otherwise disturbing any asbestos-containing waste material that has been deposited at a waste disposal site and is covered. If the excavation will begin on a date other than the one contained in the original notice, notice of the new start date must be provided to the Director at least 10 working days before excavation begins and in no event shall excavation begin earlier than the date specified in the original notification. Include the following information in the notice:

(1) Scheduled starting and completion dates.

(2) Reason for disturbing the waste.

(3) Procedures to be used to control emissions during the excavation, storage, transport, and ultimate disposal of the excavated asbestos-containing waste material. If deemed necessary, the Director may require changes in the emission control procedures to be used.

(4) Location of any temporary storage site and the final disposal site.

(b) Within 60 days of a site becoming inactive and after the effective date of this subpart, record, in accordance with State law, a notation on the deed to the facility property and on any other instrument that would normally be examined during a title search; this notation will in perpetuity notify any potential purchaser of the property that:

(1) The land has been used for the disposal of asbestos-containing waste material;

(2) The survey plot and record of the location and quantity of asbestos-containing waste disposed of within the disposal site required in 40 CFR 61.154(f) have been filed with the USEPA; and

(3) The site is subject to 40 CFR 61, Subpart M.

II.B.3 **Conditions on Landfill Gas Engines.**

II.B.3.a **Condition:**

Emissions of NO_x shall be no greater than 1.97 lb/hr. [Origin: DAQE-AN119770011-18]. [R307-401-8]

II.B.3.a.1 **Monitoring:**

Stack testing shall be performed as specified here:

(a) Frequency. The source shall be tested every 8760 hours of operation or three years based on the date of the last stack test. (40 CFR Part 60, Subpart JJJJ 60.4243(b)(2)(ii))

(b) Notification. At least 30 days before the test, the source shall notify the Director of the date, time, and place of testing and provide a copy of the test protocol. The source shall attend a pretest conference if determined necessary by the Director.

(c) The emission sample point shall be designed to conform to the requirements of 40 CFR 60, Appendix A, Method 1. In addition, Occupational Safety and Health Administration (OSHA) approved access shall be provided to the test location.

(d) Methods to be used:

(1) To determine stack volumetric flow rate - 40 CFR 60, Appendix A, Method 2.

(2) To test for NO_x emissions - 40 CFR 60, Appendix A, Method 7, 7A, 7B, 7C, 7D, or 7E.

(e) Calculations. To determine mass emission rates (g/kW-hr) the pollutant concentration as determined by the appropriate methods above shall be multiplied by the volumetric flow rate, divided by the engine's power output during the test and multiplied by any necessary conversion factors.

(f) Production Rate During Testing. The production rate during all compliance testing shall be no less than 90% of the maximum production achieved in the previous three (3) years.

II.B.3.a.2 **Recordkeeping:**

Results of monitoring shall be maintained in accordance with Provision I.S.1 of this permit.

II.B.3.a.3 **Reporting:**

The results of stack testing shall be submitted to the Director within 60 days of completion of the testing. Reports shall clearly identify results as compared to permit limits and indicate compliance status. There are no additional reporting requirements for this provision except those specified in Section I of this permit.

II.B.3.b **Condition:**

(1) For each affected emission unit, the permittee shall comply with all applicable requirements in 40 CFR 60, Subpart JJJJ - Standards for Stationary Spark Ignition Internal Combustion Engines. (40 CFR 60.4230(a))

(2) Each affected emission unit shall comply with the emission standards specified in 40 CFR 60.4233(e) Table 1, emission limit of 5.0 g/HP-hr for carbon monoxide (CO), and emission limit of 1.0 g/HP-hr for volatile organic compounds (VOC). (40 CFR 60.4233(e))

(3) The permittee shall operate and maintain affected emission units that achieve the emission standards as required in this condition over the entire life of the engine. (40 CFR 60.4234)

[Origin: 40 CFR 60 Subpart JJJJ]. [40 CFR 60.4230(a)(4)(i), 40 CFR 60.4233(e), 40 CFR 60.4234, 40 CFR 60 Subpart JJJJ Table 1]

II.B.3.b.1 **Monitoring:**

For each affected non-certified emission unit, the permittee shall demonstrate compliance as follows.

(a) Keep a maintenance plan and records of conducted maintenance and shall, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. (40 CFR 60.4243(b)(2)(ii))

(b) Conduct a performance test to demonstrate initial compliance with the emission standards according to the requirements specified in 40 CFR 60.4244. The test shall be conducted within 1 year of engine startup. Subsequent performance testing shall be conducted every 8,760 hours or 3 years, whichever comes first, thereafter to demonstrate compliance. (40 CFR 60.4243(b)(2)(ii))

(c) Conduct performance tests in accordance with all applicable procedures in 40 CFR 60.4244(a) through (g). (40 CFR 60.4244)

(d) The permittee shall certify, in the annual compliance statement required in Section I of this permit, its compliance status with the applicable requirements of 40 CFR 60, Subpart JJJJ.

II.B. 3.b.2 **Recordkeeping:**

For each affected emission unit, the permittee shall keep records of the information in paragraphs (a) through (c) of this section.

(a) All notifications submitted to comply with this condition and all documentation supporting any notification.

(b) Maintenance conducted on each affected emission unit.

(c) If the affected emission unit is not a certified engine, documentation that the engine meets the emission standards.

(40 CFR 60.4245(a))

II.B. 3.b.3 **Reporting:**

The permittee shall submit the following notifications and reports.

(a) For affected emission units greater than or equal to 500 HP that have not been certified by an engine manufacturer to meet the emission standards in 40 CFR 60.4231, the permittee shall submit an initial notification as required in 40 CFR 60.7(a)(1). The notification shall include the information in paragraphs (a)(1) through (5) of this section.

(1) Name and address of the permittee;

(2) The address of the affected emission unit;

(3) Engine information including make, model, engine family, serial number, model year, maximum engine power, and engine displacement;

(4) Emission control equipment; and

(5) Fuel used.

(40 CFR 60.4245(c))

(b) For affected emission units that are subject to performance testing, the permittee shall submit a copy of each performance test as conducted in 40 CFR 60.4244 within 60 days after the test has been completed. Reports shall be submitted in accordance with 40 CFR 60.4245(d) and Section I of this permit.

II.B.4 **Conditions on Landfill Gas Bypass Flare.**

II.B.4.a **Condition:**

The landfill gas flare shall only be operated for control of landfill gas emissions and only during periods when one or more of the landfill gas generator engines are offline. During the periods that the generators are offline, all potential emissions of landfill gas shall be routed through the landfill gas flare for control prior to being released to the atmosphere. [Origin: DAQE-AN119770011-18]. [40 CFR 60.18, 40 CFR 60 Subpart A]

II.B.4.a.1 **Monitoring:**

Records shall serve as monitoring.

II.B.4.a.2 **Recordkeeping:**

Records shall be kept for all times when the landfill gas flare is in operation. Records shall include date and time.

II.B.4.a.3 **Reporting:**

There are no additional reporting requirements other than those found in section 1 of this permit.

II.B.4.b **Condition:**

The flare shall be operated per the general provisions of 40 CFR 60.18(c) through (f). The flare shall be operated with no visible emissions, except for periods not to exceed a total of 5 minutes during any 2 consecutive hours. The flare shall be operated with a flame present at all times. [Origin: DAQE-AN119770011-18]. [R307-401-8]

II.B.4.b.1 **Monitoring:**

A determination of flare visible emissions shall be conducted monthly. The observer must understand the variables that affect the plume and factors that affect selection of the observation location as described in Method 22 section 2.3. A thermocouple or any other equivalent device shall be used to monitor the presence of a pilot flame in the flare.

II.B.4.b.2 **Recordkeeping:**

Results of monitoring shall be maintained in accordance with Provision I.S.1 of this permit.

II.B.4.b.3 **Reporting:**

There are no reporting requirements for this provision except those specified in Section I of this permit.

II.C **Emissions Trading**
(R307-415-6a(10))

Not applicable to this source.

II.D **Alternative Operating Scenarios.**
(R307-415-6a(9))

Not applicable to this source.

SECTION III: PERMIT SHIELD

III.A **A permit shield was not granted for any specific requirements.**

SECTION IV: ACID RAIN PROVISIONS

IV.A **This source is not subject to Title IV. This section is not applicable.**

REVIEWER COMMENTS

This operating permit incorporates all applicable requirements contained in the following documents:

Incorporates	DAQE-AN119770011-18 dated May 17, 2018

1. Comment on an item originating in 40 CFR 64 regarding Permitted Source (Source-wide)
   Compliance Assurance Monitoring Applicability: CAM applicability has been evaluated. There are no CAM requirements in this permit. [Last updated May 4, 2020]

2. Comment on an item originating in 2004 Title V permit regarding Permitted Source (Source-wide)
   Salting and Sanding Condition: The 2004 condition implied that the Landfill roads are exempt from the 92% minimum sodium chloride when applying salt to roads (R307-307-4). However, the rule states "any salt applied to roads in Salt Lake, Davis, or Utah Counties must be at least 92% sodium chloride (R307-307-4). The permittee may demonstrate to the Director that the material applied has no more PM_{10} emissions than the 92% sodium chloride (R307-307-5(1)(a)) OR they may vacuum sweep arterial roadways as outlined in R307-307-5(1)(b)." There was an error in reading the rule for an exclusion of salting requirements if a road was not an "arterial roadway." The salting requirements of R307-307-5 and R307-307-5(1)(a) still must be upheld. [Last updated July 12, 2020]

3. Comment on an item originating in DAQE-AN119770011-18 regarding Landfill Gas Engines
   Stack installation parameters: Condition II.B.4.a of DAQE-AN119770011-18 requires that the stacks shall vent vertically and be no less than 36 feet as measured from the base of the stack. These are installation requirements and have been met and verified by inspection. They are not being carried forward into the operating permit. [Last updated May 7, 2020]

4. Comment on an item originating in 40 CFR 60.154 regarding Municipal Solid Waste Landfill
   Definition of Significant Amount for asbestos shipments received: A significant amount of waste is hereby defined as one cubic meter of asbestos-containing waste material. Based on EPA standard conversion factors for typical asbestos-waste containers, one cubic meter of material is approximately equal to 9.8 drums or barrels (35 gallon each) or 17.4 plastic bags. [Last updated December 26, 2019]

5. Comment on an item originating in DAQE-AN119770011-18 regarding Municipal Solid Waste Landfill
   Landfill gas generators and WWW applicability: Trans-Jordan Landfill is voluntarily installing landfill gas generators. NSPS subpart WWW is applicable but they are not required to install or operate a gas collection and control system until the NMOC levels have reached 50 Mg/yr. [Last updated May 7, 2020]

6. Comment on an item originating in DAQE-AN119770011-18 regarding Municipal Solid Waste Landfill
   Fugitive dust: The requirement to minimize fugitive dust in condition II.B.1.a of this permit originates in DAQE-AN119770011-18. Although the Environmental Protection Agency (EPA) approved Utah's R307-309 fugitive dust control rule which became effective on November 1, 2019, DAQE-AN119770011-18 is as stringent and is cited as the authority for the condition. [Last updated July 12, 2020]

7. Comment on an item originating in Operating Permit regarding Municipal Solid Waste Landfill
   To remove a piece of equipment: The cold cleaning unit has been removed from the site. Since it was not listed in the approval order so it has been removed from the operating permit without an approval change. [Last updated May 6, 2020]

8. Comment on an item originating in 40 CFR 60 Subpart Cf regarding Municipal Solid Waste Landfill
   Requirements Originating in 40 CFR 60 Subpart Cf: On March 9, 2020 EPA issued a finding titled *Notice of Finding of Failure to Submit State Plans for the Municipal Solid Waste Landfills Emission Guidelines*. Publication of this notice triggers an obligation for EPA to promulgate a final federal plan within 2 years (by March 1, 2022). The federal plan would apply to any of the states listed in the finding that do not submit approvable state plans before the promulgation of the federal plan. The requirements originating in 40 CFR 60 Subpart Cf will need to be addressed upon promulgation of an approved state plan or upon promulgation of the federal plan. [Last updated May 5, 2020]

9. Comment on an item originating in Operating Permit regarding Landfill Gas Engines
   Landfill Gas Engines listed separately in Emission Units list: The landfill gas engines (Landfill Gas Engine #1, Landfill Gas Engine #2, and Landfill Gas Engine #3) are now listed separately in the Emission Units list but are also grouped under Landfill Gas Engines. This enables the engines and their information to be listed separately, but since the requirements for each engine are the same they can be listed together under II.B.3 Conditions on Landfill Gas Engines. [Last updated May 4, 2020]

APPENDIX O – Closure & Post Closure Costs

Trans Jordan Landfill
Closure and Post Closure Estimate

Closure Cost Estimate (2022 Dollars)
Cell 6A&B Areas
Maximum area to require final cover

	UNIT	UNIT COST	QUANTITY	TOTAL
FINAL COVER				
GCL	FT^2	0.59	522,720	310,465
HDPE	FT^2	0.54	522,720	283,232
DRAIN NET	FT^2	0.57	522,720	299,572
1.0' SELECT MATERIAL	FT^2	0.13	522,720	65,361
2.0' SITE SOILS	FT^2	0.18	522,720	92,595
0.5' SITE SOILS (VEGETATIVE LAYER)	FT^2	0.10	522,720	53,923
GAS COLLECTION SYSTEM	L.S.	298,826	1	298,826
DRAINAGE SYSTEM	L.S.	34,480	1	34,480
REVEGETATION	ACRES	3,160	12	37,925
SUBTOTAL				**1,476,377**
ENGINEERING AND QA (10% OF TOTAL)				147,638
CONTINGENCY (20% OF TOTAL)				295,275
CLOSURE COSTS				**$ 1,919,290**

POST CLOSURE MAINTENANCE COSTS ESTIMATE (2022 DOLLARS)

	UNIT	UNIT COST	QUANTITY	TOTAL
LEACHATE MANAGEMENT				
TREATMENT	1	24,065	1	24,065
MONITORING	1	12,032	1	12,032
ENVIRONMENTAL MONITORING				
GROUND WATER	1	8,881	1	8,881
LANDFILL GAS SYSTEM	1	6,015	1	6,015
LANDFILL GAS SYSTEM OPERATION	1	6,015	1	6,015
DRAINAGE SYSTEM	1	18,335	1	18,335
INSPECTION	1	12,605	1	12,605
SUBTOTAL				87,949
ENGINEERING AND QA (10% OF TOTAL)				8,795
CONTINGENCY (20% OF TOTAL)				17,590
ANNUAL POST CLOSURE MAINTENANCE COSTS				**114,334**
30 YEAR POST CLOSURE MAINTENANCE COSTS				**$ 3,430,008**
				$ 5,349,298

Trans-Jordan Landfill
Closure and Postclosure Care Cost Liability

As of 2/1/2022

1000 ton/day and 310 days per year — 1300 #/cu. yd. — INFLATION RATE IS 1.042

(1)	(2)	(3)	(4) 3+4p (p = previous line)	(5)	(6)	(7) 5+6	(8) 4/2*7	(9) 8-8prior yr	(10)
YEAR[1]	TOTAL WASTE CAPACITY IN TONS	WASTE CAPACITY USED IN TONS (At 1% for Future growth)	CUMULATIVE WASTE CAPACITY USED IN TONS	Cell 6 CLOSURE ESTIMATED TOTAL COST (Now Using BEA Future Inflation)	POST CLOSURE ESTIMATED TOTAL COST (Now Using BEA Future Inflation)	TOTAL ESTIMATED CURRENT CLOSURE AND POSTCLOSURE CARE COSTS	TOTAL ACCRUED LIABILITY	TOTAL ADDITIONAL LIABILITY	YEAR
1999	14,750,000	280,372	4,400,932	507,000	2,340,000	2,847,000	849,454	849,454	1999
2000	14,750,000	279,877	4,680,809	522,210	2,410,200	2,932,410	930,580	81,125	2000
2001	15,300,000	305,813	4,986,622	537,876	2,482,506	3,020,382	984,412	53,832	2001
2002	16,000,000	296,988	5,283,610	623,700	2,730,000	3,353,700	1,107,478	123,066	2002
2003	16,000,000	304,902	5,588,512	642,411	2,811,900	3,454,311	1,206,529	99,051	2003
2004	16,000,000	302,835	5,891,348	661,683	2,896,257	3,557,940	1,310,066	103,538	2004
2005	16,000,000	312,697	6,204,045	663,000	3,003,000	3,666,000	1,421,502	111,435	2005
2006	16,000,000	400,464	6,604,508	683,000	3,100,000	3,783,000	1,561,553	140,052	2006
2007	16,000,000	348,815	6,953,323	702,000	3,198,000	3,900,000	1,694,873	133,319	2007
2008	16,000,000	319,226	7,272,549	716,889	3,265,830	3,982,719	1,810,282	115,410	2008
2009	16,000,000	281,513	7,554,062	732,095	3,335,098	4,067,192	1,920,239	109,957	2009
2010	16,000,000	284,677	7,838,740	1,603,538	2,827,500	4,431,038	2,170,860	250,620	2010
2011	16,000,000	284,286	8,123,026	1,597,875	2,827,500	4,425,375	2,246,715	75,855	2011
2012	16,000,000	282,382	8,405,408	1,626,109	2,877,462	4,503,571	2,365,897	119,182	2012
2013	16,000,000	294,898	8,700,306	1,654,843	2,928,307	4,583,149	2,492,175	126,278	2013
2014	16,000,000	275,223	8,975,529	1,658,566	2,993,250	4,651,816	2,609,532	117,357	2014
2015	16,000,000	277,976	9,253,505	1,681,786	3,035,156	4,716,941	2,728,015	118,483	2015
2016	16,000,000	339,030	9,592,535	1,703,649	3,065,507	4,769,156	2,859,269	131,254	2016
2017	16,000,000	352,533	9,945,068	1,734,315	3,120,686	4,855,001	3,017,707	158,439	2017
2018	16,000,000	374,550	10,319,618	1,775,748	3,195,239	4,970,987	3,206,168	188,461	2018
2019	16,000,000	394,112	10,713,730	1,807,711	3,252,754	5,060,465	3,388,528	182,360	2019
2020	16,000,000	407,852	11,121,582	1,856,597	3,291,787	5,148,384	3,578,636	190,107	2020
2021	16,000,000	408,261	11,529,843	1,919,290	3,430,008	5,349,298	3,854,785	276,150	2021
2022	16,000,000	412,344	11,942,187	1,938,483	3,464,308	5,402,791	4,032,571	177,786	2022
2023	16,000,000	416,467	12,358,654	1,957,868	3,498,951	5,456,819	4,214,933	182,362	2023
2024	16,000,000	420,632	12,779,285	1,977,446	3,533,941	5,511,387	4,401,974	187,041	2024
2025	16,000,000	424,838	13,204,123	1,997,221	3,569,280	5,566,501	4,593,798	191,824	2025
2026	16,000,000	429,086	13,633,210	2,017,193	3,604,973	5,622,166	4,790,510	196,713	2026
2027	16,000,000	433,377	14,066,587	2,037,365	3,641,023	5,678,388	4,992,221	201,710	2027
2028	16,000,000	437,711	14,504,298	2,057,739	3,677,433	5,735,171	5,199,040	206,819	2028
2029	16,000,000	442,088	14,946,386	2,078,316	3,714,207	5,792,523	5,411,081	212,041	2029
2030	16,000,000	446,509	15,392,895	2,099,099	3,751,349	5,850,448	5,628,459	217,378	2030
2031	16,000,000	450,974	15,843,869	2,120,090	3,788,863	5,908,953	5,851,292	222,834	2031
2032	16,000,000	455,484	16,299,353	2,141,291	3,826,751	5,968,042	6,079,702	228,410	2032
2033	16,000,000	460,039	16,759,392	2,162,704	3,865,019	6,027,723	6,313,811	234,109	2033
2034	16,000,000	464,639	17,224,031	2,184,331	3,903,669	6,088,000	6,553,744	239,933	2034
2035	16,000,000	469,285	17,693,317	2,206,174	3,942,706	6,148,880	6,799,630	245,886	2035

Column 1 Based on Calendar year
Column 2 revised in 2001 to reflect deepening and additional space to the south and updated in 2002 using current capping plan
Column 3 revised in 2006 to reflect actual landfilled values (recycled material was removed from totals) - Future Inflation at 1%
Columns 5 & 6 updated in 2015 using 2015 Dollars. 2015 forward uses the BEA Inflation factor of 1.014 (note for 2017 the BEA was 1.013).

Tonnage for 2006 included the Daybreak transfer from an abandoned "dump"

APPENDIX P – Financial Assurance

WEALTH &
FIDUCIARY
SERVICES

P.O. Box 30880
Salt Lake City, UT 84130-0880

0000223 05 SP 1.960 **SNGLP T3 1 5554 84095-061010 -C01-P00223-I

Trans-Jordan Cities
Attn: Jordan Hensley
P. O. Box 95610
South Jordan UT 84095-0610

5554-01-00-0000223-0001-0003945

WEALTH &
FIDUCIARY
SERVICES

Account Statement

This Statement Covers
January 1, 2022 Through March 31, 2022

Trans-Jordan Cities
Attn: Jordan Hensley
P. O. Box 95610
South Jordan, UT 84095-0610

Trans-Jordan Cities Trust

Your Wealth Management Team:

Debbie Gibson 713-232-1095

Debbie Gibson 713-232-1095

Confidential and Privileged Information

AmegyBank of Texas
THE COMMERCE BANK OF OREGON
National Bank OF ARIZONA
VECTRA BANK COLORADO
CB TRUST CALIFORNIA BANK TRUST
THE COMMERCE BANK OF WASHINGTON
NEVADA STATE BANK
ZIONS BANK

Consolidated Accounts Transaction Activities Summary

WEALTH & FIDUCIARY SERVICES

January 01, 2022 through March 31, 2022

Market Value : $5,288,447.39

		Beginning Account Value		Investment Income		Deposits		Disbursements		Expenses	
Account Number	*Account Name*	*Current Period ($)*	*YTD ($)*	*Current Period ($)*	*YTD ($)*	*Current Period ($)*	*YTD ($)*	*Current Period ($)*	*YTD ($)*	*Current Period ($)*	*YTD ($)*
8521000	Trans-Jordan Cities Trust	5,380,229.76	5,380,229.76	9,794.01	9,794.01	0.00	0.00	0.00	0.00	0.00	0.00
Total		**$5,380,229.76**	**$5,380,229.76**	**$9,794.01**	**$9,794.01**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**

		Transfers		WFS Fees		Change In Portfolio Value		Ending Account Value		Change In Account Value	
Account Number	*Account Name*	*Current Period ($)*	*YTD ($)*	*Current Period ($)*	*YTD ($)*	*Current Period ($)*	*YTD ($)*	*Current Period ($)*	*YTD ($)*	*Current Period ($)*	*YTD ($)*
8521000	Trans-Jordan Cities Trust	0.00	0.00	0.00	0.00	-101,576.38	-101,576.38	5,288,447.39	5,288,447.39	-91,782.37	-91,782.37
Total		**$0.00**	**$0.00**	**$0.00**	**$0.00**	**-$101,576.38**	**-$101,576.38**	**$5,288,447.39**	**$5,288,447.39**	**-$91,782.37**	**-$91,782.37**

Note: Market values include accrued income

Accounts Activity Summary

WEALTH & FIDUCIARY SERVICES

January 01, 2022 through March 31, 2022

8521000 ***Trans-Jordan Cities Trust***

Market Value : $5,288,447.39

Account Activity

Description	*Current Period ($)*	*YTD ($)*
Beginning Account Value	**5,380,229.76**	**5,380,229.76**
Investment Income	9,794.01	9,794.01
Deposits	0.00	0.00
Disbursements	0.00	0.00
Expenses	0.00	0.00
Transfers	0.00	0.00
WFS Fees *	0.00	0.00
Net Activity	**9,794.01**	**9,794.01**
Change in Portfolio Value	**-101,576.38**	**-101,576.38**
Ending Account Value	**$5,288,447.39**	**$5,288,447.39**
Change in Account Value	**-$91,782.37**	**-$91,782.37**

Realized Net Gain/Loss Summary

Description	*Current Period ($)*	*YTD ($)*
Short Term	0.00	0.00
Long Term	0.00	0.00

Investment Income

Description	*Current Period ($)*	*YTD ($)*
Dividends	5.93	5.93
Interest - Taxable	9,788.08	9,788.08
Interest - Tax Exempt	0.00	0.00
Other Income	0.00	0.00
Net Accrued Interest Bot/Sld	0.00	0.00
Total Investment Income	**$9,794.01**	**$9,794.01**

*Wealth & Fiduciary Services (WFS) Fees

Note: Market values include accrued income

Tax Disclaimer: The amounts shown throughout this statement should not be used in the preparation of tax documents. Detail specifying taxable nature of income will be provided with year-end tax documentation. Please consult your tax advisor.

Accounts Cash Summary

WEALTH & FIDUCIARY SERVICES

January 01, 2022 through March 31, 2022

8521000 ***Trans-Jordan Cities Trust***

Market Value : $5,288,447.39

Cash Summary

	Current Period			YTD Since 01/01/2022		
	Income Cash ($)	*Principal Cash ($)*	*Total ($)*	*Income Cash ($)*	*Principal Cash ($)*	*Total ($)*
Beginning Value	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Investment Income	0.00	9,794.01	9,794.01	0.00	9,794.01	9,794.01
Deposits	0.00	0.00	0.00	0.00	0.00	0.00
Disbursements	0.00	0.00	0.00	0.00	0.00	0.00
Expenses	0.00	0.00	0.00	0.00	0.00	0.00
Purchases	0.00	-439,687.50	-439,687.50	0.00	-439,687.50	-439,687.50
Sales and Maturities	0.00	0.00	0.00	0.00	0.00	0.00
Other Transactions	0.00	0.00	0.00	0.00	0.00	0.00
Transfers	0.00	0.00	0.00	0.00	0.00	0.00
WFS Fees	0.00	0.00	0.00	0.00	0.00	0.00
Net Automated Money Market Transactions	0.00	429,893.49	429,893.49	0.00	429,893.49	429,893.49
Ending Value	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Note: Market values include accrued income

Account Portfolio Composition & Characteristics

WEALTH & FIDUCIARY SERVICES

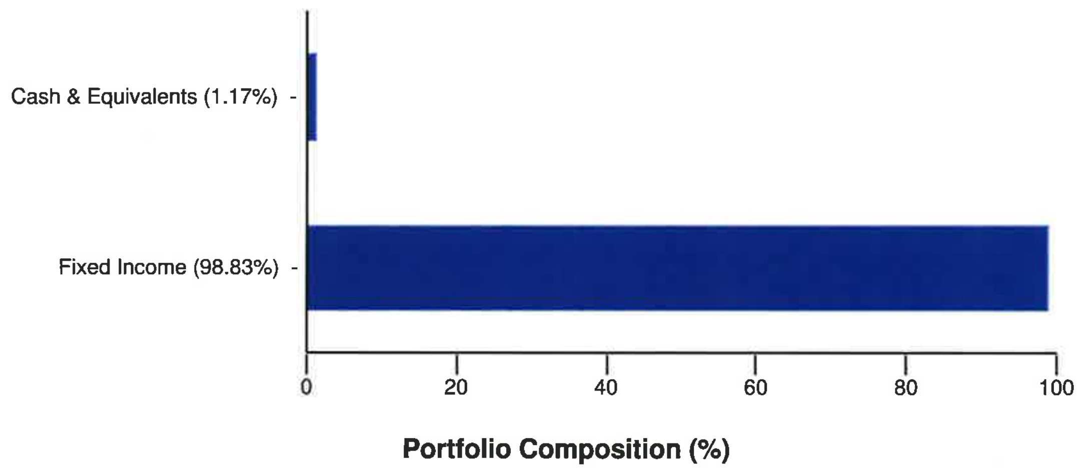
January 01, 2022 through March 31, 2022

8521000 ***Trans-Jordan Cities Trust***

Market Value : $5,288,447.39

Portfolio Composition

Description	*Market Value($)*	*Tax Cost($)*
Cash & Equivalents	61,873.58	61,869.62
Fixed Income	5,226,573.81	5,308,106.53
Total Assets	**$5,288,447.39**	**$5,369,976.15**



Note: Market values include accrued income

Account Holdings

WEALTH & FIDUCIARY SERVICES

January 01, 2022 through March 31, 2022

8521000 ***Trans-Jordan Cities Trust***

Cash & Equivalents

Quantity (#)	Description	CUSIP	Tax Cost ($)	Market Value ($) Price ($)	Accrued Income ($)	Acct %	Unrealized Gain/Loss ($)
Money Market Funds - Taxable							
61,869.62	Federated Treasury Obligations Instl	60934N500	61,869.62	61,869.62 1.00	3.96	1.17	0.00
	Total - Money Market Funds - Taxable		**61,869.62**	**61,869.62**	**3.96**	**1.17**	**0.00**
Total - Cash & Equivalents			**$61,869.62**	**$61,869.62**	**$3.96**	**1.17**	**$0.00**

Fixed Income

Quantity (#)	Description			CUSIP	Tax Cost ($)	Market Value ($) Price ($)	Accrued Income ($)	Acct %	Unrealized Gain/Loss ($)
Government Agency Securities									
120,000	Federal Farm Cr Bks	0.00440000	11/04/24	3133EMFP2	120,000.00	114,041.92 95.03	215.33	2.16	-5,958.08
250,000	Federal Farm Cr Bks	0.00440000	08/12/24	3133EL3R3	250,000.00	238,603.53 95.44	147.49	4.52	-11,396.47
250,000	Federal Home Loan Banks	0.00800000	07/21/25	3130AN4Z0	250,000.00	236,106.44 94.44	385.47	4.48	-13,893.56
250,000	Federal Home Loan Banks	0.00500000	08/28/24	3130ANNS5	250,000.00	239,998.29 96.00	104.75	4.55	-10,001.71
250,000	Federal Natl Mtg Assn	0.00650000	08/14/25	3136G4C43	249,887.49	235,327.36 94.13	208.80	4.46	-14,560.13

Account Holdings

WEALTH & FIDUCIARY SERVICES

January 01, 2022 through March 31, 2022

8521000 ***Trans-Jordan Cities Trust***

Quantity (#)	Description			CUSIP	Tax Cost ($)	Market Value ($) / Price ($)	Accrued Income ($)	Acct %	Unrealized Gain/Loss ($)
	Total - Government Agency Securities				**1,119,887.49**	**1,064,077.54**	**1,061.84**	**20.17**	**-55,809.95**
Marketable CDs									
244,000	Axos Bank San Diego CA	0.01600000	03/27/23	05465DAG3	244,165.42	244,756.40 100.31	53.48	4.64	590.98
95,000	BMW Bk North Amer Salt Lake	0.01850000	10/11/22	05580ASU9	94,951.44	95,489.63 100.52	823.38	1.81	538.19
100,000	Capital One Bank (USA)	0.01450000	04/03/23	14042TDB0	99,925.62	100,143.00 100.14	719.04	1.90	217.38
245,000	Eaglebank Bethesda MD	0.01650000	03/06/23	27002YEV4	245,000.00	246,004.75 100.41	276.88	4.66	1,004.75
45,000	Goldman Sachs Bk USA	0.02350000	06/26/23	38149MBW2	44,991.35	45,470.16 101.04	275.24	0.86	478.81
200,000	Goldman Sachs Bk USA	0.00800000	08/18/25	38149MYF4	200,000.00	188,585.20 94.29	179.73	3.57	-11,414.80
240,000	Lakeland Bank Nfld NJ	0.00400000	06/12/23	511640BH6	239,818.89	236,963.28 98.73	291.95	4.49	-2,855.61
240,000	Live Oak Bkg Co NC	0.01750000	05/26/23	538036GT5	239,848.60	240,889.20 100.37	345.21	4.57	1,040.60
245,000	Marlin Business Bk Salt Lake	0.02550000	11/09/22	57116ASG4	244,918.47	247,447.06 101.00	376.56	4.70	2,528.59

Account Holdings

WEALTH & FIDUCIARY SERVICES

January 01, 2022 through March 31, 2022

8521000 ***Trans-Jordan Cities Trust***

Quantity (#)	*Description*			*CUSIP*	*Tax Cost ($)*	*Market Value ($) Price ($)*	*Accrued Income ($)*	*Acct %*	*Unrealized Gain/Loss ($)*
145,000	Morgan Stanley Bk NA	0.01850000	11/29/22	61690UPM6	144,927.38	145,886.97 100.61	896.62	2.77	959.59
245,000	Morgan Stanley Pvt Bk	0.02550000	05/02/22	61760AZT9	244,939.73	245,456.19 100.19	2,550.35	4.65	516.46
45,000	New York Community Bank	0.00650000	09/10/24	649447VM8	44,943.56	43,224.08 96.05	16.83	0.82	-1,719.48
200,000	New York Community Bank	0.00350000	12/11/23	649447UK3	200,000.00	194,915.20 97.46	210.96	3.69	-5,084.80
150,000	Pinnacle Bank Nashville TN	0.00900000	05/09/22	72345SKS9	149,961.95	150,072.90 100.05	532.60	2.84	110.95
240,000	Raymond James Bk Natl Assn	0.01800000	11/27/23	75472RAM3	239,754.88	239,823.36 99.93	1,479.45	4.55	68.48
200,000	Sallie Mae Bk Murray UT	0.02250000	06/27/22	7954503Q6	199,950.18	200,877.80 100.44	1,171.23	3.81	927.62
220,000	Texas Exchange Bk Crowley	0.00500000	02/26/25	88241TKE9	220,000.00	207,620.38 94.37	15.07	3.94	-12,379.62
25,000	Wells Fargo Bank NA	0.01900000	10/18/22	949763M52	25,190.03	25,139.73 100.56	16.92	0.48	-50.30
210,000	Wells Fargo Natl Bk West	0.01800000	12/13/22	949495AA3	210,000.00	211,269.03 100.60	186.41	4.00	1,269.03

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Account Holdings

WEALTH & FIDUCIARY SERVICES

January 01, 2022 through March 31, 2022

8521000 ***Trans-Jordan Cities Trust***

Quantity (#)	Description			CUSIP	Tax Cost ($)	Market Value ($) Price ($)	Accrued Income ($)	Acct %	Unrealized Gain/Loss ($)
240,000	West Town Bank and Trust	0.00400000	10/30/24	956310AY2	240,000.00	228,205.92 95.09	397.15	4.33	-11,794.08
150,000	Wex Bank Midvale UT	0.01400000	04/08/22	92937CJY5	150,000.00	150,031.50 100.02	995.34	2.84	31.50
			Total - Marketable CDs		**3,723,287.50**	**3,688,271.74**	**11,810.40**	**69.92**	**-35,015.76**
U.S. Obligations									
190,000	Federal Home Loan Banks	0.02150000	03/14/25	3130AR4V0	190,000.00	188,395.75 99.16	182.57	3.57	-1,604.25
250,000	Federal Home Loan Banks		12/10/24	3130AR2L4	249,687.50	247,546.19 99.02	0.00	4.69	-2,141.31
			Total - U.S. Obligations		**439,687.50**	**435,941.94**	**182.57**	**8.26**	**-3,745.56**
U.S. Treasury Notes & Bonds									
25,000	U S Treasury Notes	0.02125000	06/30/22	912828XG0	25,244.04	25,095.70 100.38	132.08	0.48	-148.34
			Total - U.S. Treasury Notes & Bonds		**25,244.04**	**25,095.70**	**132.08**	**0.48**	**-148.34**
Total - Fixed Income					**$5,308,106.53**	**$5,213,386.92**	**$13,186.89**	**98.83**	**-$94,719.61**
Total Account Value					**$5,369,976.15**	**$5,275,256.54**	**$13,190.85**	**100.00**	**-$94,719.61**