Managing Leachate Seeps
Below Final Cover

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Leachate Seeps

- Many reasons for leachate seeps
- Operator manages leachate seeps while slope unclosed
- Various means and methods for management of leachate seeps
- Full closure and leachate seeps
- Partial closure and leachate seep
Leachate Seeps Below Geomembrane

Leachate Toe Drain System

(LTDS)
Location of LTDS

Leachate at Toe of Slope
Leachate Pool at Perimeter Berm

Removing Leachate by Vac Truck
Vac Truck

Exposing Anchor Trench
Excavating Overfill
Grading Slope

Graded Slope
Graded Slope

Graded Slope
LTDS Geocomposite Deployment

LTDS Geocomposite
LTDS Geocomposite

Anchor Trench Excavation
Anchor Trench for LTDS Geocomposite

Bottom of LTDS Geocomposite
Extension of LTDS Geocomposite

Extended LTDS Geocomposite on Slope
Anchor at High End of Seep

Connection Points to Cleanouts
Connection Point to Sump Riser

Connection Point to Sump Riser
Deployment of LTDS Geotextile

LTDS Pipe Placement
Vertical Pipe

LTDS Pipe Placement
Vertical Pipe

LTDS Pipe Connection to Cleanout Pipe
Connection of LTDS Pipe to Sump Riser
Connection of LTDS Pipe to Sump Riser

LTDS Gravel Placement
Forming Gravel around LTDS Pipe

LTDS Gravel Placement
LTDS Gravel Placement

Gravel at End of LTDS Pipe
Closing LTDS Burrito

Placement of Soil Above LTDS Burrito
Soil Above LTDS Burrito

LTDS at Completion
LTDS Pipe at Cell Construction Time

LTDS Drain Pipes
LTDS Drain Pipe into Leachate Sump
LTDS Drain Pipe into Leachate Sump

Sump and LTDS Drain Pipe
LTDS Drain Pipe at Leachate Sump

LTDS Drain Pipe into Leachate Corridor
Closed Burrito

Cover Geomembrane Welded to Bottom Geomembrane
Cover Geomembrane Welded to Bottom Geomembrane

Granular Bentonite Over Extrusion Weld
Granular Bentonite Over Extrusion Weld

GCL Strip Over Granular Bentonite
GCL Strip Over Granular Bentonite

GCL Strip Over Granular Bentonite
GCL Strip Over Granular Bentonite

Cover Soil Placement
Slope Final Condition

Slope Final Condition
Benefits of LTDS

- Collects and removes leachate below final cover geomembrane
- Eliminates ponding of leachate below final cover geomembrane at toe of slope
- Provides gas collection at toe of slope
- Connects to leachate collection sump, sump riser, or cleanouts
- Addresses aggressive leachate seeps on slope

Construction Recommendations

- Construct LTDS and drain pipes at time of cell development
- Set LTDS pipe invert below top of berm
- Leave no sand between LTDS geocomposite and LTDS geotextile
- Construct vertical pipes for future connection to gas system
- Do not use sacrificial geomembrane over LTDS, use geotextile to allow infiltration