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Surface Water Management Plan
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N.0 Surface Water Management Plan

N.1 Introduction

This Surface Water Management Plan (SWMP) addresses the control of surface water run-on and runoff at the US Ecology Idaho (USEI) hazardous waste treatment, storage and disposal facility near Grand View, Idaho, in accordance with IDAPA 16.01.05.008 (40 CFR Part 264).

This SWMP addresses the control of surface water during the following three phases of site development:

1. Existing Operating Conditions;
2. Future (Interim) Phase of Site Development; and,
3. Site Closure.

This SWMP evaluates the site hydrology, the design of the hydraulic structures and storage capacity of the on-site surface impoundments, based on current operating conditions, future site development and final site closure.

The USEI facility is located approximately 10 miles northwest of Grand View, Idaho in an arid portion of Owyhee County. USEI owns all of Section 19 (640 acres), and other property where the facility is located, totaling 1250 acres. During development of Cell 16 the perimeter fence was expanded to encompass approximately 328 acres. Drawing # PRMI-D01 shows the drainage areas that are currently managed within this plan. The impact of future facilities and other modifications to site drainage patterns are discussed herein.

The site is situated on a plateau approximately 1-mile-wide, which rises about 150 feet above the level of Castle Creek, located ½ mile west of the site. Garbutt Wash lies 1 mile to the southeast, and the Snake River lies 2 miles to the north. Maximum surface relief, across the site, is 110 feet, sloping from south (high) to north (low) at a mean elevation of approximately 2565 feet. As depicted in Drawing PRMI-D01, the general flow of surface water at USEI Site B and the surrounding topography is in a northeasterly direction ranging in elevation from 2635 to 2470. Groundwater is located at a depth of 150 to 250 feet (elevation 2360 to 2390) beneath the site. The groundwater flow direction in the aquifer is from the west to the east, under natural conditions.

N.1.a Definitions

For the purposes of the SWMP, the following definitions/descriptions for run-on and runoff were developed and used:

- Run-on - Surface water which, if left to flow according to natural drainage patterns, would flow from outside an active (potentially contaminated) area of the site to within an active area. Run-on Diversion Channels are provided to prevent this occurrence.

  Run-off - Surface water which does not, by natural/existing drainage patterns, have a tendency to cross the active/inactive site area line. Two kinds of runoff are possible:

  Clean Runoff: - Rainfall that falls onto an inactive/non-contaminated area and remains in that area until conveyed off-site (depicted on the surface water management plans as “contained non-contact runoff”).

  Potentially Contaminated Runoff: Rainfall that falls into an active or potentially contaminated site area and is intercepted by the active area drainage system for safe conveyance to the collection ponds (depicted on the surface water management plans as “contained contact runoff”).

As part of site development, a surface drainage system has been constructed to divert run-on away from the currently active waste handling and disposal areas. This system also intercepts and collects site runoff that has contacted active hazardous waste handling and disposal areas. The main elements of the system are diversion and interceptor channels, diversion berms, pipe culverts, storm drain inlets (catch basins), rock-lined aprons, sediment basin, and surface impoundments, including two(2) collection ponds (Nos. 1 and 3) and one (1) evaporation pond. Collection Pond No. 2 consists of a non-lined sediment basin, as described in Section N.2.c.(2). The constructed surface drainage system will be maintained to ensure proper functioning throughout the operating life of the facility. This plan addresses the essential aspects of the SWMP for current permitted operations and ultimate closure at the site. Approximately 212 acres of on-site and off-site drainage basin are included in the SWMP. This plan will be monitored and modified if required by either field conditions or operating conditions, to fulfill the requirements of IDAPA 16.01.05.008 (40 CFR §264.301).

The original aerial topography was obtained for the entire USEI site in 1995 in order to update delineation of the existing drainage facilities, which have already been constructed, and further to serve as the site base map for the surface drainage plans. Additional site surveying has been performed on numerous occasions to reflect new developments and changes in site topography. Drawing PRMI-D01 shows the topography with survey updates through 2009, along with the existing drainage facilities that have been constructed to date. Drawings PRMI-D02 and PRMI- D03 reflect future drainage plans during the interim and final site closure phases of development, respectively. Drawings PRMI-D01, 5, 6, 7 and D08 depict details of the surface water drainage structures, including channels, culverts, catch basins, dissipaters, and the surface water collection ponds.

N.1.b Design Basis

The design of all existing and proposed surface water conveyance channels, culverts, and flumes were evaluated using the 25-year, 24-hour storm, as required in 40 CFR §264.301. The capacity of the surface impoundments, including the collection ponds and the evaporation pond were evaluated to ensure that all collection ponds have sufficient capacity for the greater of the two following scenarios:

1. Runoff generated from the 25-year, 24-hour storm event with at least 2.8 feet of freeboard
2. Runoff generated from the 100-year, 24-hour storm event (no required freeboard).

The magnitudes of both storm events are defined in Technical Paper No. 40 (TP-40) Rainfall Frequency Atlas of the United States, published by the United States Weather Bureau for the Soil Conservation Service. The rainfall intensity for these storm events, are as follows:

- 1.75-inch rainfall intensity (25-year, 24-hour storm)
- 2.20-inch rainfall intensity (100-year, 24-hour storm)

The design basis for the hydrological calculations is from the USDA SCS Technical Release 55 (TR55), Urban Hydrology for Small Watersheds, dated June 1986. In general, the following design methodology was used to analyze the hydrological conditions for determination of surface water run-on and runoff:

1. Determine (delineate) the limits of the various drainage areas for both off-site and on-site contribution to surface water structures (run-on and runoff) based on review of site topographical mapping for “existing conditions” and proposed site development. Determine the acreage of each drainage area by planimetering the limits using AutoCAD;

2. Review soil map for USEI Site B (as taken from the regional Owyhee & Ada County, Idaho “Soil Survey” prepared by SCS, dated 1991) to determine native soil groups for estimation of surface water runoff & run-on curve numbers (CN’s);

3. Planimeter site plans using AutoCAD to determine various ground cover hydrological conditions (based on percent imperviousness) to determine weighted runoff curve numbers, based on hydrological soil group and land use description;

4. Estimate time of concentration (t_c) and travel time (t_t) for surface water run-on and run-off through the various drainage areas and sub-areas, which have been delineated. For determination of t_c and t_t, use the SCS "Segmental Approach" with flow path regimes identified for overland flow (i.e. sheet flow was limited to a length of 300 feet), shallow concentrated and channel flow; and,

5. Use TR55 computational methods based on the storm event, weighted runoff curve number, time of concentration and acreage of contributory drainage area to estimate the peak flow rate (cubic feet per second) for use in design of the hydraulic structures. Channels, hydraulic structures, and surface impoundments were evaluated using the 25–year, 24-hour precipitation event. Surface impoundments were also evaluated based upon the 100–year, 24-hour storm event.

Based on review of site hydrology with predominant hydrologic soil groups (i.e. Type B and C soils), the following runoff curve numbers (CN's) were chosen to be representative of site conditions for various land usages:

Land Use Description	**Soil Group B**	**Soil Group C**
Highly Impervious Areas		
· Paved roads, parking lots	98	98
· Dirt roads	82	87
· Gravel roads	85	89
Arid & Semi-Arid Rangeland		
· Vegetation; Poor condition	77	85
· Vegetation; Fair Condition	72	81
· Vegetation; Good Condition(Includes off-site Drainage Areas & on-site Landfill areas; uncapped and Closed areas)	68	79

A weighted CN is calculated for the unique make-up of land usage within each drainage area.

N.1.b.(1) Pond Freeboard

USEI operates the two collection ponds and the Evaporation Pond to maintain available capacity for the volume from the greater of either the 25-year, 24-hour storm event, plus 2.8 feet of freeboard, or a 100 year, 24-hour storm. The maximum potential wave height of all surface impoundments (i.e. Collection Ponds No. 1 and 3 and the Evaporation Pond) were evaluated using the US Army Corps of Engineers Shore Protection Manual (1984). Potential wave height is a function of wind speed, length of fetch, and the depth of water. Based upon a maximum wind velocity of 70 miles per hour, the maximum water depth and the unique dimensions of each surface impoundment, the maximum potential wave height for all of the impoundments was determined to be less than 2.8 feet. Therefore, the operating criteria for 2.8 feet of freeboard (associated with the 25-year, 24-hour storm event) is sufficient.

N.1.b.(2) Channels and Culverts

All of the surface water channels at the site are designed to have a triangular cross section with 3H:1V side slopes and a minimum depth of 2 feet. All channels provide a minimum freeboard depth of at least 1 foot. The channel flow capacities were evaluated using Manning's equation. The flow capacity and design flow rates for each channel are summarized on Drawing PRMI-D01. Channels with excessive

velocity are lined with riprap material as indicated on the drawing. Refer to Drawing PRMI-D05 for typical channel sections and details.

The flow capacity of each channel and culvert is compared with the design flow (associated with the 25-year, 24-hour storm event) for the existing, interim and final closure conditions. The respective runoff values and flow capacities are presented in the enclosed tables and are summarized on Drawings PRMI-D01, PRMI-D02, and PRIM-D03. Culvert outlet protection is specified for culverts with excessive tail water velocity.

N.1.b.(3) Disposal of Surface Runoff

Surface runoff collected from the active waste disposal/handling areas and the collection ponds may be disposed of in two ways. The primary management method will be solar evaporation of the runoff. The Grandview site experiences a typical evaporation rate of 53 inches per year. The other possible method of disposal is stabilization of the liquid by processing through the Stabilization Plant, with ultimate disposal in the landfill cells.

Liquid levels in the Collection Ponds and Evaporation Pond must be maintained below a safe operational level to ensure sufficient on-demand capacity for the 25-year and 100-year storm event. Foot markers have been welded on the HDPE liner of each Pond to readily denote levels for ease of inspection.

The safe operational levels for the existing conditions are different from interim conditions because of changes that occur in the size of drainage basins and the surface coverings. The safe operational level for each surface impoundment is presented in the following sections of this plan. Remedial action is required (i.e. transfer to another pond with excess capacity or stabilization treatment and disposal) when liquid levels are observed to exceed the stated depths.

N.2 Surface Drainage Plan – Existing Conditions

The current surface drainage plan is based upon the existing conditions at the site. This section of the plan should be updated to reflect substantial changes in site operations, as they occur. The current plan is based upon the following conditions:

- Disposal facilities Cell 5, Trench 4, Trench 10, and Trench 11 are covered and closed;
- Disposal facilities Cell 14, Cell 15 and Cell 16 are active; and
- All treatment and storage facilities, as shown on Drawing PRMI-D01, are active.

N.2.a Control of Surface Water

The current drainage areas at the site are shown on Drawing # PRMI-D01. The existing topography directs surface water away from the site along the northern, eastern, and southern perimeter of the site. An interceptor channel is used to divert surface water away from the facility along the western perimeter of the site. Based on existing aerial topography of the site and current phase of site development, the following drainage areas have been delineated for purposes of the SWMP. In addition, drainage areas that are self-contained within the evaporation pond and the active landfills are included. All drainage areas are summarized below:

DRAINAGE AREAS (ON & OFF-SITE) **Existing Conditions (Site Development as of November 2012)** **(Refer to Drawing PRMI-D01)**		
Drainage Area	**Acres**	**Designation**
1	49.1	Active waste handling area
2	49.4	Clean run-off area
3	19.2	Active waste handling area
Evaporation Pond #1 Contained Drainage	3.4	Active waste storage
Cell 14 Contained Drainage	18.8	Active waste storage
Cell 15 Contained Drainage	37.6	Active waste storage
Cell 16 Contained Drainage	73.9	Active Waste Storage
Total Drainage	**±251.4**	

Interceptor channels and berms have been constructed throughout the site to collect surface runoff from active waste handling and disposal areas. Where possible, clean surface runoff generated from closed landfill units is diverted off site. Clean runoff from portions of the Cell 5 and Trench 11 covers are currently diverted off-site. Interceptor channels have been constructed with gentle, bottom slopes to minimize erosion. The channels convey surface runoff to one of the two collection ponds. The surface water, collected in these ponds, is either evaporated in place or transferred to Evaporation Pond No. 1 for solar evaporation.

Diversion channels have been constructed with as gentle a bottom slope as permitted by the topography. To control channel velocities a stone lining is provided, where required, for additional protection against accelerated erosion. Run-on diversion channels and berms will be inspected weekly and after severe storm events, to detect and subsequently remedy any damage from precipitation. On-site personnel will maintain the channels, as described in Section 5.0 of this plan. Any maintenance or repair work needed, due to erosion or displacement of materials or channel blockage, will be performed as soon as practical after being noted during inspections.

The elements of the Run-on Diversion System and Runoff Interception and Collection System are described in the following sections and on the referenced drawings.

N.2.b Run-on Control – Existing Conditions

Run-on is diverted around the active areas of the site by a combination of diversion channels, low berms and perimeter run-on channels. See Drawing PRMI-D01 for surface run-on diversion locations.

Topography along the north and east sides of the site slope away from the facility. With few exceptions the topography along the south side of Cell 15 slopes away from the landfill towards the southeast. The potential for surface run-on along the south perimeter of the site is obviated by the Cell 15 perimeter berm and the existing soil stockpiles.

Run-on from Cell 16 is diverted by a low berm and diversion channel combination. The channel is directed through a sediment pond and eventually discharges into a natural ravine, located along the west side of Cell 5.

N.2.c Runoff Control – Existing Conditions

The surface-water runoff control system intercepts surface runoff from active waste treatment, handling, and disposal areas and past disposal areas and prevents it from leaving the site with a series of interceptor channels and berms, as shown on Drawing PRMI-D01. The limits of the active areas (existing) at the site include the following:

- All of the storage pads and waste treatment facilities, located near the center of the site (Drainage Area #3); and
- The haul routes utilized between the treatment facilities and the active disposal facilities in Cell 14, Cell 15 and Cell 16 (Drainage Areas #1 and #2).

The runoff control system consists of a series of sub-systems defined by the two (2) Collection Ponds, (Nos. 1 and 3) which have separate drainage areas. Surface runoff is conveyed to one of the collection ponds, as described in the following subsections.

N.2.c.(1) Collection Pond No. 1

Collection Pond No. 1 was constructed in the northwest corner of the site, adjacent to the western limit of Trench 11 and northern limit of Cell 5. The pond was excavated in native soils and has a double synthetic liner, with a leachate collection system (see Drawings PRMI-D06 and D07).

Collection Pond No. 1 is designated as a Non-discharging Collection/Containment Facility (Surface Impoundment Storage Code S04). The total lined-capacity of Pond 1 (i.e. to the limit of HDPE liner at pond rim elevation 2533) is 104,504 cubic feet. An additional measure of containment is provided by an earthen dike, which has been constructed (to elevation 2539±) between the side slopes for Trench 11 and Cell 5.

Runoff from the western side of Cell 5 is currently diverted off site towards natural drainages. Runoff from the eastern side of Cell 5 flows towards Pond 1. Runoff from the western portions of Trenches 10 and 11 also flows towards Pond 1. Runoff from the western half of Silo Complex No. 1 and 2 (closed), the Pad 4 processing area, Container Storage Area No. 1 and the northwest perimeter of Cell 14 flows towards Pond 1. Interceptor channels have been constructed to convey runoff from these areas towards Pond 1.

N.2.c.(2) Collection Pond No. 2 (Closed in October 2011)

The area that was previously Collection Pond No. 2 is located near the northeast corner of the site, adjacent to the eastern limit of Trench 10 and Trench 11. The area is currently used as a drainage collection basin for stormwater run-off from the site.

Run-off, from the eastern portions of Trenches 10 and 11, flows towards the Pond 2 area. Run-off from the eastern half of Trench 4, the employee parking area, the eastern portion of Cell 14 and the northern portion of Cell 15 also flows toward Pond 2. Interceptor channels have been constructed to convey runoff from these areas towards Pond 2.

N.2.c.(3) Collection Pond No. 3

Collection Pond No. 3 is located north of the stabilization facility, in the northern one-third of the site. The L-shaped pond was constructed principally by excavation into native soils and has a double synthetic lining of HDPE, with a leachate collection system. (see Drawings PRMI-D06 and D07). Pond 3 is designated as

a Non-discharging Collection/Containment Facility (Surface Impoundment Storage Code S04). The total lined-capacity of Pond 3 (i.e. to the limit of HDPE liner at pond rim elevation 2560) is 136,446 cubic feet.

The drainage area for Collection Pond No. 3 (i.e. Drainage Area 3) is generally defined by the southern edge of Trench 10, the western half of Trench 4, the eastern half of closed Silo Complex No. 1 and 2, all of closed Silo Complex No. 3, the Stabilization Facility, Containment Building, RCRA (Pad 7)/PCB Building, Pads 5 and 6, administrative buildings, and the northern edge of Cell 14. Runoff from these areas is intercepted and conveyed to Pond 3 via a series of concrete catch basin/inlets, culverts and channels.

N.2.c.(4) Evaporation Pond

Evaporation Pond No. 1 is located east of Trench 4 and the stabilization facility, as shown on Drawing PRMI-D01. The Evaporation Pond has a double, synthetic, membrane lining with a leachate collection system, as shown on Drawings PRMI –D06 and PRMI-D07. The Evaporation Pond is designated as a Non-discharging Collection/Containment Facility (Surface Impoundment Storage Code S04). The total lined-capacity of the Evaporation Pond (i.e. to the limit of HDPE liner at pond rim elevation 2569.6) is 841,383 cubic feet. An additional measure of containment is provided by an earthen dike, which has been constructed (to elevation 2572±) around the entire perimeter of the Evaporation Pond.

The Evaporation Pond receives run-off from the self-contained footprint, including the earthen embankment that surrounds the pond. The Evaporation Pond also receives leachate from the active landfill areas (Cell 14, Cell 15, Cell 16, and closed Cell 5).

N.2.c.(5) Cell 14, Cell 15 and Cell 16

Runoff within the active landfill units will be collected in areas within the lined cells. Waste will be placed and graded to facilitate drainage to these areas. Most water which contacts the active cell during a storm event will be collected by the leachate collection system. Any standing surface water (i.e. pooled water) within the cells will be transferred from within the cells to the leachate treatment facility, using the site vacuum truck or some other acceptable means.

The current development stage of Cell 14 has approximately 18.8 acres of cell contributing to contact run-off areas. The current development stage of Cell 15 has approximately 37.5 acres of cell contributing to contact run-off areas. The current development stage of Cell 16 has approximately 15.8 acres of cell contributing to contact run-off areas. Run-on is intercepted and the clean water is diverted around the west side of Cell 16 to be discharged in native ravines. Runoff generated along the east side of Cell 16 is exposed to haul roads, and subsequently is diverted to flow toward Pond 1. To accomplish this, a dike was constructed within an existent diversion channel, located off the northeast corner of Cell 16, to an elevation of ±2,640 feet. The diversion channel was re-graded in the vicinity of the dike to develop positive drainage towards Pond 1.

N.2.d Runoff Volumes – Existing Conditions

The surface runoff volume for each drainage area was calculated based upon the weighted CN values for each drainage area. Runoff volumes were calculated for the 25-year, 24-hour storm event and the 100-year, 24-hour storm event. Storage curves were developed (see Table 3 and Table 6) for each pond to model the corresponding capacity for each foot of contour elevation within the ponds. The Excess Storage Capacity for each for each pond was determined as the smaller of the two scenarios:

- Ultimate Storage Capacity – (25-yr Runoff + Volume of 2 ft Freeboard); or
- Ultimate Storage Capacity – (100-yr Runoff).

The storage capacity, runoff volumes, freeboard capacity, and excess capacity for each pond (under existing conditions) are provided in the following table.

Pond Capacities for Existing Conditions

Pond	Ultimate Storage Capacity (1) (ft^3)	25-yr, 24-hr Storm Runoff Volume (ft^3)	100-yr, 24-hr Storm Runoff Volume (ft^3)	Storage Volume for 2.0 ft of Freeboard (ft^3)	Excess Storage Capacity (ft^3)
Collection Pond 1	104,504	27,797	51,317	27,429	49,278
Collection Pond 3	136,446	40,358	62,513	39,330	56,759
Evap. Pond 1	841,383	52,184	77,895	183,302	605,897

Table Notes:
1. Ultimate storage capacities for each pond was obtained by computer modeling the primary geomembrane liner surface from as-built survey information, representing the storage volume from the base protective cover soils up to the elevation of the lined containment (i.e. pond rim elevation). Storage curves for existing pond conditions presented on Table 3.

N.2.e Safe Operational Levels – Existing Conditions

Based on the calculations performed for the worst-case runoff during the existing conditions, a maximum operating level for each pond was determined. To maintain adequate on-demand capacity for the 25-year and 100-year storm events, the ponds should be maintained, during existing conditions, at or below the maximum operational limits identified in the following table.

Safe Operational Limits for Existing Conditions

Pond	Limit Of Lined Containment Elevation (ft)	Max Operational Elevation (ft)	Corresponding Max Operational Depth (ft)
Collection Pond 1	2533.0	2528.0	9.0
Collection Pond 3	2560.0	2555.0	5.5
Evap. Pond 1	2569.6	2566.5	9.5

Table Notes:
1. Storage curves for interim pond conditions presented on Table 6.

N.3 Surface Drainage Plan – Interim Conditions

The interim surface drainage plan is based upon future conditions anticipated at the site. This plan describes the sequential development of the run-on/runoff control system of the site, as new facilities become operational and other facilities are closed through the interim phase of site development. This plan should be updated to reflect substantial modifications, as they are procured.

N.3 a Interim Features

The interim plan anticipates the following (future) activities at the site, prior to general site closure:

- Construction of Cell 16, Phase 2;
- Closure of Cell 14; and
- Closure of Cell 15.

The interim surface drainage plan is illustrated on Drawing PRMI-D02. A detailed description of the interim construction activities are provided in the following subsections.

N.3.a.(1) Construction of Cell 16, Phase 2

Cell 16 Phase 2 will be located along the west side of Cell 15. Construction of Cell 16 Phase 2 will require little modification to the existing drainage areas for the currently constructed portion of Cell 16.

N.3.a.(2) Closure of Cell 14

Upon closure of Cell 14 all clean runoff generated along the south and east sides of Cell 14 will discharge off-site. Runoff from the northeast quadrant of Cell 14 will flow towards Pond 2. Runoff from the western portions of Cell 14 will flow towards Pond 1, as shown on Drawing # PRMI-D02.

N.3.a.(3) Closure of Cell 15

Upon closure of Cell 15 all runoff generated around the perimeter of Cell 15 will discharge off-site, as shown on Drawing # PRMI-D02.

N.3.b Interim Drainage Areas

The interim drainage areas at the site are shown on Drawing # PRMI-D02. As the interim construction activities occur Drainage Area #1 will be expanded, and Drainage Area #2 will be reduced. Drainage from part of closed Cell 14 and all of closed Cell 15 will flow away from the facility as shown on Drawing PRMI-D02. The modified drainage areas for the interim condition will be as follows:

ON-SITE DRAINAGE AREAS		
Interim Conditions (Refer to Drawing PRMI-D02)		
Drainage Area	**Acres**	**Designation**
1	65.4	Active waste handling area
2	34.8	Clean run-off area
3	19.2	Active waste handling area
Evaporation Pond #1 Contained Drainage	3.4	Active waste storage
Cell 16 Contained Drainage	73.9	Active waste storage
Total Drainage	**±196.7**	

N.3.c Runoff Volumes – Existing Conditions

During the interim phase, the collection ponds will have adequate storage capacity to contain the 25-year and 100-year storm events, as previously required. The calculated runoff and storage quantities for the interim condition are summarized in the following table:

Pond Capacities for Interim Conditions

Pond	Ultimate Storage Capacity (ft^3)	25-yr, 24-hr Storm Runoff Volume (ft^3)	100-yr, 24-hr Storm Runoff Volume (ft^3)	Storage Volume for 2.0 ft of Freeboard (ft^3)	Excess Storage Capacity (ft^3)
Collection Pond 1	104,504	52,781	100,088	27,429	4,416
Collection Pond 3	136,446	40,358	62,513	39,330	56,759
Evap. Pond 1	841,383	88,194	133,909	183,302	569,888

N.3.d Safe Operational Levels – Interim Conditions

Based on the calculations performed for the worst-case runoff during the interim conditions, a maximum operating level for each pond was determined. The combined footprint of Cell 15 and Cell 16 are expected to yield approximately 88,000 and 134,000 cubic feet of leachate in response to the 25-year and 100-year storm events, respectively. These volumes of leachate, combined with the volumes of runoff generated within the self-contained footprint of the Evaporation Pond, represent the critical storage capacities for the Evaporation Pond.

To maintain adequate on-demand capacity for the 25-year and 100-year storm events, the ponds should be maintained, during interim conditions, at or below the maximum operational limits identified in the following table. Hence, it may be necessary to transfer water from the collection ponds and/or evaporation pond following a significant storm event to maintain adequate capacity.

Safe Operational Limits for Interim Conditions

Pond	Limit Of Lined Containment Elevation (ft)	Max Operational Elevation (ft)	Corresponding Max Operational Depth (ft)
Collection Pond 1	2533.0	2521.0	2.0
Collection Pond 3	2560.0	2555.0	5.5
Evap. Pond 1	2569.6	2566.0	9.0

N.4 Surface Drainage Plan – Closure Conditions

This section of the SWMP describes the disposition of the lined surface impoundments and modifications to the site grading during site closure, as shown on Drawing PRMI-D03. A brief description of the relevant SWMP closure activities for each of the units is provided in the following sections.

N.4.a Landfill Closure

Remaining active landfills will be closed in conjunction with general site closure. Cover soils will be graded to maintain positive drainage off the cover and away from the landfill unit. Refer to the respective closure drawings of each unit for specific elevation and grade requirements.

N.4.b Collection Pond No. 1 Closure

Collection Pond No. 1 will be clean-closed in accordance with the Closure Plan (Section I). Backfill material will be graded with a minimum 1% slope to shed surface runoff. Runoff will be directed in a northwesterly direction to discharge off-site.

N.4.c Collection Pond No. 2 Backfill

Collection Pond No. 2 will be backfilled and graded with a minimum 1 % slope to shed surface runoff. Runoff will be directed in an easterly direction to discharge off-site.

N.4.d Collection Pond No. 3 Closure

Collection Pond No. 3 will be clean-closed in accordance with the Closure Plan (Section I). Backfill material will be graded with a minimum 1 % slope to shed surface runoff. Runoff will be directed in a westerly direction to discharge off-site.

N.4.e Re-grading Areas for Overland Flow

During site closure, substantial re-grading (consisting of excavation and soil fill placement) will take place near the center of the site (i.e. portions of former Drainage Areas 1 and 3) to promote overland positive flow of surface water runoff to existing off-site drainage ditches.

The re-grading work will take place after removal of buildings and structures identified in the Closure Plan (Section I) and in conjunction with the clean-closure and re-grading work required for the former surface impoundments.

Drawing No. PRMI-D03 depicts the location for the proposed re-graded areas of the site during closure and the location of the new culverts for off-site conveyance of surface water runoff; additionally, the culvert and channel schedules depicted on Drawing No. PRMI-D03 designate the drainage culverts and channels, which will be abandoned during site closure.

N.4.f Closure of the Evaporation Pond

Upon site closure, the Evaporation Pond will receive the balance of liquid retained in the two collection ponds prior to closure of those units. The Evaporation Pond will be clean-closed when evaporation of the remaining inventory of liquid is completed, in accordance with the Closure Plan (Section I). The remaining depression will be graded to drain by cutting a channel through the east embankment and regrading the floor to drain towards the east with a minimum 1 % slope. Runoff will be directed in an easterly direction to discharge off-site.

N.5 Construction Inspection and Maintenance

The Owner's representative (typical) will be present, as the various phases of the drainage system are constructed, to ensure that the system is built in accordance with the approved design and specifications. Levels will be used to check the slopes of the drainage channels as they are constructed. Special care will be taken to ensure that flow directional changes are rounded, and the rock lining is securely in place. The Owner's representative (typical) will be responsible for the inspection and approval of the work.

The drainage system will be inspected and maintained on a scheduled basis to ensure its integrity. The weekly landfill area inspection includes observing the run-on and runoff control systems for damage, deterioration, or drainage blockage. This inspection will also be made after major storm events. Specific items to be checked include:

- Areas of major change, in flow direction and/or elevation, will be examined for scour damage.
- The drainage channels will be examined for excessive sediment accumulation.
- Culverts and all drainage facilities will be inspected for blockages that could obstruct the water flow.

If a problem is detected during an inspection, the inspector will contact the Area Supervisor or the Site Manager. The problem will then be corrected in accordance with the site design and operation procedures. Scheduled maintenance, which will also be performed when necessary after storm events, includes:

- Repair or replacement of drainage channel riprap lining, as needed
- Removal of sediment buildup from the drainage channels, catch basins and flumes
- Removal of debris from culverts, especially around entrances and exits
- Checking the slopes of critical sections of the drainage channels and flumes, such as, at major changes in flow direction and/or elevation

Table N-1 Channel Schedule - Existing Conditions

Subarea	1-A	1-B	1-C	1-D	1-E	1-F	1-G	1-H	2-A	2-B	
Sheet Manning's, n	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	
Flow Length, L	300	400	100	250	250	250	300	150	260	100	ft
Land Slope, s	0.025	0.020	0.030	0.015	0.020	0.020	0.120	0.04	0.038	0.260	ft/ft
SheetTravel Time, Tt	0.38	0.52	0.15	0.40	0.36	0.36	0.20	0.18	0.29	0.06	hrs
Unit Peak Discharge, qu	263	223	430	255	271	271	364	386	304	671	csm/in
Subarea Size, Am	0.0088	0.0074	0.0065	0.0022	0.0051	0.0017	0.0042	0.0054	0.0061	0.0014	mi^2
Subarea Peak Discharge, qp	0.58	0.41	0.70	0.14	0.35	0.12	0.38	0.52	0.46	0.23	cfs
Channel Sideslope Angle, theta	18.43	18.43	18.43	18.43	18.43	18.43	18.43	18.43	18.43	18.43	deg
Channel Slope, s	0.027	0.016	0.032	0.028	0.024	0.024	0.025	0.074	0.017	0.015	ft/ft
Channel Manning's, n	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	
Channel Peak Discharge, qc	**2.67**	**1.57**	**0.70**	**0.14**	**0.35**	**0.12**	**0.38**	**0.52**	**4.56**	**4.10**	cfs
Flow Depth, d	0.268	0.260	0.279	0.155	0.226	0.151	0.231	0.213	0.268	0.212	ft
Cross Sectional Flow Area, A	0.215	0.202	0.233	0.073	0.153	0.068	0.161	0.136	0.216	0.135	ft^2
Flow Velocity, V	2.687	2.028	3.007	1.905	2.261	1.727	2.348	3.819	2.137	1.714	ft/s
Channel Length, L	530	490	640	250	1160	360	660	850	520	380	ft
Specified Channel Depth	2	2	2	2	2	2	2	2	3	3	ft
Channel Capacity	19.4	14.9	21.1	19.7	18.3	18.3	18.6	32.1	97.6	91.7	cfs
Channel Travel Time, Tt	0.055	0.067	0.059	0.036	0.142	0.058	0.078	0.062	0.068	0.062	hr
Subarea Tt	0.43	0.59	0.21	0.44	0.50	0.42	0.28	0.24	0.35	0.12	hr

Subarea	2-C	2-D	2-E	2-F	2-G	2-H	2-I	2-J	2-K	2-L	
Sheet Manning's, n	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	
Flow Length, L	240	100	600	160	150	150	150	150	150	400	ft
Land Slope, s	0.150	0.050	0.033	0.230	0.250	0.250	0.120	0.120	0.120	0.035	ft/ft
SheetTravel Time, Tt	0.16	0.12	0.59	0.09	0.09	0.09	0.12	0.12	0.12	0.42	hrs
Unit Peak Discharge, qu	417	478	209	539	563	563	484	484	484	250	csm/in
Subarea Size, Am	0.0029	0.0029	0.0096	0.0032	0.0024	0.0053	0.0012	0.0043	0.0063	0.0083	mi^2
Subarea Peak Discharge, qp	0.30	0.35	0.50	0.43	0.33	0.75	0.15	0.52	0.76	0.52	cfs
Channel Sideslope Angle, theta	18.43	18.43	18.43	18.43	18.43	18.43	18.43	18.43	18.43	18.43	deg
Channel Slope, s	0.022	0.021	0.012	0.033	0.019	0.021	0.018	0.039	0.013	0.006	ft/ft
Channel Manning's, n	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	
Channel Peak Discharge, qc	**0.65**	**0.35**	**3.21**	**0.43**	**2.28**	**0.75**	**1.95**	**1.80**	**1.28**	**0.52**	cfs
Flow Depth, d	0.218	0.233	0.296	0.231	0.233	0.309	0.173	0.239	0.340	0.342	ft
Cross Sectional Flow Area, A	0.143	0.163	0.262	0.160	0.163	0.286	0.090	0.172	0.347	0.350	ft^2
Flow Velocity, V	2.119	2.160	1.915	2.690	2.055	2.608	1.641	2.998	2.189	1.491	ft/s
Channel Length, L	530	490	550	600	560	1640	100	540	790	360	ft
Specified Channel Depth	2	2	3	2	2	2	2	2	2	2	ft
Channel Capacity	17.5	17.1	82.0	21.4	16.3	17.1	15.8	23.3	13.4	9.1	cfs
Channel Travel Time, Tt	0.069	0.063	0.080	0.062	0.076	0.175	0.017	0.050	0.100	0.067	hr
Subarea Tt	0.22	0.18	0.67	0.16	0.16	0.26	0.13	0.17	0.22	0.48	hr

Table N-1 Continued Channel Schedule - Existing Conditions

Subarea	2-M	2-N	2-O	2-P	3-A	3-B	3-C	3-D	3-E	3-F	
Sheet Manning's, n	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.08	0.11	
Flow Length, L	400	80	110	180	175	180	170	200	130	240	ft
Land Slope, s	0.020	0.050	0.250	0.030	0.024	0.004	0.029	0.020	0.010	0.024	ft/ft
SheetTravel Time, Tt	0.52	0.10	0.07	0.23	0.25	0.52	0.23	0.30	0.22	0.32	hrs
Unit Peak Discharge, qu	223	524	640	337	529	340	562	667	815	286	csm/in
Subarea Size, Am	0.0075	0.0030	0.0022	0.0034	0.0024	0.0018	0.0022	0.0055	0.0010	0.0042	mi^2
Subarea Peak Discharge, qp	0.42	0.39	0.35	0.28	0.74	0.35	0.72	4.61	1.06	0.69	cfs
Channel Sideslope Angle, theta	18.43	18.43	18.43	18.43	18.43	18.43	18.43	18.43	18.43	18.43	deg
Channel Slope, s	0.013	0.026	0.023	0.019	0.010	0.005	0.010	0.022	0.010	0.021	ft/ft
Channel Manning's, n	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	
Channel Peak Discharge, qc	**0.81**	**0.39**	**0.35**	**0.28**	**8.17**	**6.74**	**6.39**	**5.67**	**1.06**	**0.69**	cfs
Flow Depth, d	0.272	0.233	0.228	0.219	0.354	0.305	0.350	0.606	0.405	0.300	ft
Cross Sectional Flow Area, A	0.222	0.163	0.157	0.144	0.375	0.279	0.367	1.102	0.491	0.271	ft^2
Flow Velocity, V	1.884	2.407	2.232	1.973	1.970	1.262	1.955	4.185	2.155	2.560	ft/s
Channel Length, L	770	750	380	500	240	270	150	490	210	940	ft
Specified Channel Depth	2	2	2	2	2	2	2	2	2	2	ft
Channel Capacity	13.4	19.0	17.9	16.3	11.8	8.3	11.8	17.5	11.8	17.1	cfs
Channel Travel Time, Tt	0.114	0.087	0.047	0.070	0.034	0.059	0.021	0.033	0.027	0.102	hr
Subarea Tt	0.64	0.19	0.11	0.30	0.28	0.58	0.25	0.33	0.24	0.42	hr

Subarea	4-A	4-B	Native	
Sheet Manning's, n	0.11	0.11	0.11	
Flow Length, L	500	300	300	ft
Land Slope, s	0.040	0.040	0.025	ft/ft
SheetTravel Time, Tt	0.47	0.31	0.38	hrs
Unit Peak Discharge, qu	235	290	263	csm/in
Subarea Size, Am	0.0233	0.0116	0.0434	mi^2
Subarea Peak Discharge, qp	1.37	0.84	2.86	cfs
Channel Sideslope Angle, theta	18.43	18.43	18.43	deg
Channel Slope, s	0.026	0.032	0.028	ft/ft
Channel Manning's, n	0.023	0.023	0.023	
Channel Peak Discharge, qc	**1.37**	**5.06**	**2.86**	cfs
Flow Depth, d	0.372	0.298	0.484	ft
Cross Sectional Flow Area, A	0.416	0.266	0.703	ft^2
Flow Velocity, V	3.288	3.143	4.064	ft/s
Channel Length, L	1110	600	1650	ft
Specified Channel Depth	2	3	--	ft
Channel Capacity	19.0	133.9	--	cfs
Channel Travel Time, Tt	0.094	0.053	0.113	hr
Subarea Tt	0.57	0.37	0.49	hr

Table N-2 Culvert Schedule - Existing Conditions

Culvert ID	Culvert Diameter (in)	Culvert Material	Culvert Length (ft)	Culvert Slope (ft/ft)	Manning Coef. (n)	Design Flow (cfs)	Flow Capacity (cfs)	Flow Velocity (ft/s)
P-1	18	CMP	40	0.025	0.024	3	**6.4**	3.6
P-3	18	CMP	80	0.013	0.024	1	**5.3**	3.0
P-4	18	CMP	35	0.003	0.024	1	**2.1**	1.2
P-5	18	CMP	40	0.008	0.024	2	**3.5**	2.0
P-6	18	CMP	100	0.010	0.024	1	**4.8**	2.7
P-7	18	CPP	60	0.012	0.009	1	**12.6**	7.1
P-8	18	CMP	50	0.005	0.024	2	**3.0**	1.7
P-9	18	CMP	40	0.005	0.024	1	**2.8**	1.6
P-10	18	CMP	25	0.019	0.024	2	**4.8**	2.7
P-11	18	CMP	25	0.031	0.024	2	**6.2**	3.5
P13	18	CPP	40	0.050	0.009	3	**24.0**	13.6
P-14	18	CPP	160	0.025	0.009	3	**21.5**	12.2
P-15	18	CPP	135	0.050	0.009	1	**29.8**	16.8
P-16	24	CPP	75	0.010	0.009	3	**26.9**	8.6
P-17	18	CPP	60	0.010	0.009	4	**11.7**	6.6
P-18	24	CPP	80	0.039	0.009	5	**52.6**	16.8
P-19	18	CMP	20	0.057	0.024	1	**7.8**	4.4
P-20	18	CMP	80	0.028	0.024	1	**7.8**	4.4
P-21	18	CMP	40	0.013	0.024	1	**4.5**	2.6
P-22	18	CMP	20	0.007	0.024	1	**2.8**	1.6
P-23	18	CMP	10	0.008	0.024	1	**2.3**	1.3
P-24	18	CMP	75	0.012	0.024	1	**5.1**	2.9
P-25	18	CPP	95	0.029	0.009	3	**21.8**	12.3
P-26	18	CPP	115	0.008	0.009	3	**11.3**	6.4
P-27	24	CPP	60	0.010	0.009	6	**25.3**	8.1
P-28	18	CPP	50	0.013	0.009	7	**12.7**	7.2
P-29	24	CMP	60	0.010	0.024	7	**9.5**	3.0
P-30	18	CPP	20	0.189	0.009	9	**38.1**	21.6
P-31	18	CPP	30	0.097	0.009	1	**30.9**	17.5
P-32	18	CPP	35	0.008	0.009	1	**9.0**	5.1
P-33	18	CPP	55	0.008	0.009	2	**10.0**	5.7
P-34	18	CPP	50	0.008	0.009	3	**9.8**	5.5
P-35	18	CPP	175	0.007	0.009	6	**11.4**	6.5
P-36	18	CPP	45	0.078	0.009	2	**30.8**	17.4
P-37	18	CPP	70	0.020	0.009	1	**17.1**	9.7
P-38	18	CPP	80	0.032	0.009	1	**22.0**	12.5
P-39	18	CFPP	35	0.040	0.024	1	**7.8**	4.4
P-40	18	CFPP	235	0.042	0.024	3	**10.7**	6.1
P-41	18	CMP	60	0.015	0.024	2	**5.4**	3.1

Table N-3 Pond Capacities - Existing Conditions

Collection Pond 1

Given Pond Water Elevation (ft)	Pond Water Depth (ft)	Remaining Pond Capacity (ft^3)	25-Year Excess Capacity (ft^3)	100-Year Excess Capacity (ft^3)
2,519.0	0	104,504	49,278	53,187
2,520.0	1	102,306	47,080	50,989
2,521.0	2	99,550	44,324	48,234
2,522.0	3	96,174	40,948	44,857
2,523.0	4	92,113	36,887	40,796
2,524.0	5	87,305	32,079	35,988
2,525.0	6	81,687	26,461	30,370
2,526.0	7	75,195	19,969	23,879
2,527.0	8	67,767	12,541	16,451
2,528.0	9	59,340	4,114	8,023
2,529.0	10	49,849	(5,377)	(1,467)
2,530.0	11	39,233	(15,993)	(12,083)
2,531.0	12	27,429	(27,797)	(23,888)
2,532.0	13	14,372	(40,854)	(36,945)
2,533.0	14	-	(55,226)	(51,317)

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Table N-3 Continued Pond Capacities - Existing Conditions

	Given Pond Water Elevation (ft)	Pond Water Depth (ft)	Remaining Pond Capacity (ft^3)	25-Year Excess Capacity (ft^3)	100-Year Excess Capacity (ft^3)
Collection Pond 3	2,549.5	0	136,446	56,759	73,933
	2,551.0	1.5	126,186	46,499	63,673
	2,552.0	2.5	117,924	38,237	55,411
	2,553.0	3.5	108,424	28,737	45,912
	2,554.0	4.5	97,600	17,913	35,088
	2,555.0	5.5	85,365	5,678	22,852
	2,556.0	6.5	71,633	(8,055)	9,120
	2,557.0	7.5	56,316	(23,371)	(6,196)
	2,558.0	8.5	39,330	(40,358)	(23,183)
	2,559.0	9.5	20,586	(59,101)	(41,926)
	2,560.0	10.5	-	(79,687)	(62,513)
Evaporation Pond	2,557.0	0	841,383	605,897	763,488
	2,558.0	1	799,002	563,516	721,107
	2,559.0	2	752,953	517,467	675,058
	2,560.0	3	703,083	467,597	625,188
	2,561.0	4	649,241	413,755	571,346
	2,562.0	5	591,274	355,787	513,379
	2,563.0	6	529,029	293,543	451,134
	2,564.0	7	462,355	226,869	384,461
	2,565.0	8	391,100	155,614	313,205
	2,566.0	9	315,111	79,625	237,216
	2,567.0	10	234,236	(1,251)	156,341
	2,567.6	10.6	183,302	(52,184)	105,407
	2,568.0	11	148,322	(87,164)	70,427
	2,569.0	12	57,217	(178,269)	(20,677)
	2,569.6	12.6	-	(235,486)	(77,895)

Table N-4 Channel Schedule - Interim Conditions

Subarea	1-A	1-B	1-C	1-D	1-E	1-F	1-G	1-H	1-I	1-J	
Sheet Manning's, n	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	
Flow Length, L	300	400	300	250	400	400	300	150	300	300	ft
Land Slope, s	0.025	0.020	0.110	0.015	0.250	0.250	0.120	0.04	0.160	0.110	ft/ft
SheetTravel Time, Tt	0.38	0.52	0.21	0.40	0.19	0.19	0.20	0.18	0.18	0.21	hrs
Unit Peak Discharge, qu	263	223	357	255	376	376	364	386	386	357	csm/in
Subarea Size, Am	0.0088	0.0074	0.0047	0.0022	0.0160	0.0037	0.0042	0.0054	0.0164	0.0121	mi^2
Subarea Peak Discharge, qp	0.58	0.41	0.42	0.14	1.50	0.34	0.38	0.52	1.59	1.08	cfs
Channel Sideslope Angle, theta	18.43	18.43	18.43	18.43	18.43	18.43	18.43	18.43	18.43	18.43	deg
Channel Slope, s	0.027	0.016	0.032	0.028	0.024	0.024	0.025	0.074	0.030	0.031	ft/ft
Channel Manning's, n	0.023	0.023	0.023	0.023	0.041	0.023	0.023	0.023	0.023	0.023	
Channel Peak Discharge, qc	**5.82**	**4.73**	**2.82**	**0.14**	**1.50**	**0.34**	**0.38**	**0.52**	**1.59**	**2.06**	cfs
Flow Depth, d	0.268	0.260	0.230	0.155	0.486	0.225	0.231	0.213	0.383	0.330	ft
Cross Sectional Flow Area, A	0.215	0.202	0.158	0.073	0.710	0.152	0.161	0.136	0.440	0.326	ft^2
Flow Velocity, V	2.687	2.028	2.642	1.905	2.118	2.258	2.348	3.819	3.599	3.310	ft/s
Channel Length, L	530	490	670	250	1160	360	660	850	1260	650	ft
Specified Channel Depth	2	2	2	2	2	2	2	2	2	2	ft
Channel Capacity	19.4	14.9	21.1	19.7	10.2	18.3	18.6	32.1	20.4	20.8	cfs
Channel Travel Time, Tt	0.055	0.067	0.070	0.036	0.152	0.044	0.078	0.062	0.097	0.055	hr
Subarea Tt	0.43	0.59	0.28	0.44	0.34	0.23	0.28	0.24	0.28	0.26	hr

Subarea	2-A	2-B	2-C	2-D	2-E	2-F	2-G	2-H	2-I	2-J	
Sheet Manning's, n	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	
Flow Length, L	260	100	240	100	600	300	150	150	150	150	ft
Land Slope, s	0.038	0.260	0.150	0.050	0.033	0.230	0.250	0.250	0.120	0.120	ft/ft
SheetTravel Time, Tt	0.29	0.06	0.16	0.12	0.59	0.16	0.09	0.09	0.12	0.12	hrs
Unit Peak Discharge, qu	304	671	417	478	209	416	563	563	484	484	csm/in
Subarea Size, Am	0.0061	0.0014	0.0029	0.0029	0.0101	0.0039	0.0024	0.0053	0.0012	0.0043	mi^2
Subarea Peak Discharge, qp	0.46	0.23	0.30	0.35	0.53	0.41	0.33	0.75	0.15	0.52	cfs
Channel Sideslope Angle, theta	18.43	18.43	18.43	18.43	18.43	18.43	18.43	18.43	18.43	18.43	deg
Channel Slope, s	0.017	0.015	0.022	0.021	0.012	0.033	0.019	0.021	0.018	0.039	ft/ft
Channel Manning's, n	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	
Channel Peak Discharge, qc	**2.28**	**1.82**	**0.65**	**0.35**	**0.94**	**0.41**	**3.03**	**0.75**	**1.95**	**1.80**	cfs
Flow Depth, d	0.268	0.212	0.218	0.233	0.301	0.227	0.233	0.309	0.173	0.239	ft
Cross Sectional Flow Area, A	0.216	0.135	0.143	0.163	0.272	0.154	0.163	0.286	0.090	0.172	ft^2
Flow Velocity, V	2.137	1.714	2.119	2.160	1.939	2.661	2.055	2.608	1.641	2.998	ft/s
Channel Length, L	520	380	530	490	550	600	560	1640	100	540	ft
Specified Channel Depth	3	3	2	2	3	2	3	2	2	2	ft
Channel Capacity	97.6	91.7	17.5	17.1	82.0	21.4	103.2	17.1	15.8	23.3	cfs
Channel Travel Time, Tt	0.068	0.062	0.069	0.063	0.079	0.063	0.076	0.175	0.017	0.050	hr
Subarea Tt	0.35	0.12	0.22	0.18	0.67	0.22	0.16	0.26	0.13	0.17	hr

Table N-4 Continued Channel Schedule - Interim Conditions

Subarea	2-K	2-L	2-M	2-N	2-O	2-P	3-A	3-B	3-C	3-D	
Sheet Manning's, n	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	
Flow Length, L	150	400	400	80	110	180	175	180	170	200	ft
Land Slope, s	0.120	0.035	0.020	0.050	0.250	0.030	0.024	0.004	0.029	0.020	ft/ft
SheetTravel Time, Tt	0.12	0.42	0.52	0.10	0.07	0.23	0.25	0.52	0.23	0.30	hrs
Unit Peak Discharge, qu	484	250	223	524	640	337	529	340	562	667	csm/in
Subarea Size, Am	0.0063	0.0083	0.0075	0.0030	0.0022	0.0034	0.0024	0.0018	0.0022	0.0055	mi^2
Subarea Peak Discharge, qp	0.76	0.52	0.42	0.39	0.35	0.28	0.74	0.35	0.72	4.61	cfs
Channel Sideslope Angle, theta	18.43	18.43	18.43	18.43	18.43	18.43	18.43	18.43	18.43	18.43	deg
Channel Slope, s	0.013	0.006	0.013	0.026	0.023	0.019	0.010	0.005	0.010	0.022	ft/ft
Channel Manning's, n	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	
Channel Peak Discharge, qc	**1.28**	**0.52**	**0.81**	**0.39**	**0.35**	**0.28**	**8.17**	**6.74**	**6.39**	**5.67**	cfs
Flow Depth, d	0.340	0.342	0.272	0.233	0.228	0.219	0.354	0.305	0.350	0.606	ft
Cross Sectional Flow Area, A	0.347	0.350	0.222	0.163	0.157	0.144	0.375	0.279	0.367	1.102	ft^2
Flow Velocity, V	2.189	1.491	1.884	2.407	2.232	1.973	1.970	1.262	1.955	4.185	ft/s
Channel Length, L	790	360	770	750	380	500	240	270	150	490	ft
Specified Channel Depth	2	2	2	2	2	2	2	2	2	2	ft
Channel Capacity	13.4	9.1	13.4	19.0	17.9	16.3	11.8	8.3	11.8	17.5	cfs
Channel Travel Time, Tt	0.100	0.067	0.114	0.087	0.047	0.070	0.034	0.059	0.021	0.033	hr
Subarea Tt	0.22	0.48	0.64	0.19	0.11	0.30	0.28	0.58	0.25	0.33	hr

Subarea	3-E	3-F	
Sheet Manning's, n	0.08	0.11	
Flow Length, L	130	240	ft
Land Slope, s	0.010	0.024	ft/ft
SheetTravel Time, Tt	0.22	0.32	hrs
Unit Peak Discharge, qu	815	286	csm/in
Subarea Size, Am	0.0010	0.0042	mi^2
Subarea Peak Discharge, qp	1.06	0.69	cfs
Channel Sideslope Angle, theta	18.43	18.43	deg
Channel Slope, s	0.010	0.021	ft/ft
Channel Manning's, n	0.023	0.023	
Channel Peak Discharge, qc	**1.06**	**0.69**	cfs
Flow Depth, d	0.405	0.300	ft
Cross Sectional Flow Area, A	0.491	0.271	ft^2
Flow Velocity, V	2.155	2.560	ft/s
Channel Length, L	210	940	ft
Specified Channel Depth	2	2	ft
Channel Capacity	11.8	17.1	cfs
Channel Travel Time, Tt	0.027	0.102	hr
Subarea Tt	0.24	0.42	hr

Table N-5 Culvert Schedule - Interim Conditions

Culvert ID	Culvert Diameter (in)	Culvert Material	Culvert Length (ft)	Culvert Slope (ft/ft)	Manning Coef. (n)	Design Flow (cfs)	Flow Capacity (cfs)	Flow Velocity (ft/s)
P-1	18	CMP	40	0.025	0.024	3	**6.4**	3.6
P-2	18	CMP	90	0.005	0.024	1	**3.3**	1.9
P-3	18	CMP	80	0.013	0.024	1	**5.3**	3.0
P-4	18	CMP	35	0.003	0.024	1	**2.1**	1.2
P-5	18	CMP	40	0.008	0.024	2	**3.5**	2.0
P-6	18	CMP	100	0.010	0.024	1	**4.8**	2.7
P-7	18	CPP	60	0.012	0.009	1	**12.6**	7.1
P-8	18	CMP	50	0.005	0.024	2	**3.0**	1.7
P-9	18	CMP	30	0.010	0.024	1	**3.7**	2.1
P-10	18	CMP	25	0.019	0.024	2	**4.8**	2.7
P-11	18	CMP	25	0.031	0.024	2	**6.2**	3.5
P13	18	CPP	40	0.050	0.009	3	**24.0**	13.6
P-14	18	CPP	160	0.025	0.009	1	**21.5**	12.2
P-15	18	CPP	135	0.050	0.009	1	**29.8**	16.8
P-16	24	CPP	75	0.010	0.009	1	**26.9**	8.6
P-17	18	CPP	60	0.010	0.009	2	**11.7**	6.6
P-18	24	CPP	80	0.039	0.009	3	**52.6**	16.8
P-19	18	CMP	20	0.057	0.024	1	**7.8**	4.4
P-20	18	CMP	80	0.028	0.024	1	**7.8**	4.4
P-21	18	CMP	40	0.013	0.024	1	**4.5**	2.6
P-22	18	CMP	20	0.007	0.024	1	**2.8**	1.6
P-23	18	CMP	10	0.008	0.024	1	**2.3**	1.3
P-24	18	CMP	75	0.012	0.024	1	**5.1**	2.9
P-25	18	CPP	95	0.029	0.009	3	**21.8**	12.3
P-26	18	CPP	115	0.008	0.009	3	**11.3**	6.4
P-27	24	CPP	60	0.010	0.009	6	**25.3**	8.1
P-28	18	CPP	50	0.013	0.009	7	**12.7**	7.2
P-29	24	CMP	60	0.010	0.024	7	**9.5**	3.0
P-30	18	CPP	20	0.189	0.009	9	**38.1**	21.6
P-31	18	CPP	30	0.097	0.009	1	**30.9**	17.5
P-32	18	CPP	35	0.008	0.009	1	**9.0**	5.1
P-33	18	CPP	55	0.008	0.009	2	**10.0**	5.7
P-34	18	CPP	50	0.008	0.009	3	**9.8**	5.5
P-35	18	CPP	175	0.007	0.009	6	**11.4**	6.5
P-36	18	CPP	45	0.078	0.009	2	**30.8**	17.4
P-37	18	CPP	70	0.020	0.009	1	**17.1**	9.7
P-38	18	CPP	80	0.032	0.009	1	**22.0**	12.5
P-39	18	CFPP	35	0.040	0.024	1	**7.8**	4.4
P-40	18	CFPP	235	0.042	0.024	6	**10.7**	6.1

Table N-6 Pond Capacities - Interim Conditions

	Given Pond Water Elevation (ft)	Pond Water Depth (ft)	Remaining Pond Capacity (ft^3)	25-Year Excess Capacity (ft^3)	100-Year Excess Capacity (ft^3)
Collection Pond	2,519.0	0	104,504	26,689	9,493
	2,520.0	1	102,306	24,491	7,295
	2,521.0	2	99,550	21,736	4,539
	2,522.0	3	96,174	18,359	1,162
	2,523.0	4	92,113	14,298	(2,898)
	2,524.0	5	87,305	9,490	(7,706)
	2,525.0	6	81,687	3,872	(13,325)
	2,526.0	7	75,195	(2,620)	(19,816)
	2,527.0	8	67,767	(10,048)	(27,244)
	2,528.0	9	59,340	(18,475)	(35,672)
	2,529.0	10	49,849	(27,965)	(45,162)
	2,530.0	11	39,233	(38,581)	(55,778)
	2,531.0	12	27,429	(50,386)	(67,583)
	2,532.0	13	14,372	(63,443)	(80,640)
	2,533.0	14	-	(77,815)	(95,011)
Collection Pond	2,549.5	0	136,446	56,759	73,933
	2,551.0	1.5	126,186	46,499	63,673
	2,552.0	2.5	117,924	38,237	55,411
	2,553.0	3.5	108,424	28,737	45,912
	2,554.0	4.5	97,600	17,913	35,088
	2,555.0	5.5	85,365	5,678	22,852
	2,556.0	6.5	71,633	(8,055)	9,120
	2,557.0	7.5	56,316	(23,371)	(6,196)
	2,558.0	8.5	39,330	(40,358)	(23,183)
	2,559.0	9.5	20,586	(59,101)	(41,926)
	2,560.0	10.5	-	(79,687)	(62,513)

Table N-6 Continued Pond Capacities - Interim Conditions

Evaporation Pon

Given Pond Water Elevation (ft)	Pond Water Depth (ft)	Remaining Pond Capacity (ft^3)	25-Year Excess Capacity (ft^3)	100-Year Excess Capacity (ft^3)
2,557.0	0	841,383	569,888	707,474
2,558.0	1	799,002	527,507	665,093
2,559.0	2	752,953	481,457	619,044
2,560.0	3	703,083	431,588	569,174
2,561.0	4	649,241	377,745	515,332
2,562.0	5	591,274	319,778	457,364
2,563.0	6	529,029	257,534	395,120
2,564.0	7	462,355	190,860	328,446
2,565.0	8	391,100	119,605	257,191
2,566.0	9	315,111	43,616	181,202
2,567.0	10	234,236	(37,260)	100,326
2,567.6	10.6	183,302	(88,194)	49,392
2,568.0	11	148,322	(123,174)	14,413
2,569.0	12	57,217	(214,278)	(76,692)
2,569.6	12.6	-	(271,495)	(133,909)

Table N-7 Channel Schedule - Closure Conditions

Subarea	1-A	1-B	1-C	1-E	1-F	1-G	1-H	1-I	1-J	1-K	
Sheet Manning's, n	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	
Flow Length, L	300	300	300	300	300	300	300	300	300	300	ft
Land Slope, s	0.025	0.020	0.110	0.250	0.250	0.120	0.040	0.16	0.110	0.070	ft/ft
SheetTravel Time, Tt	0.38	0.41	0.21	0.15	0.15	0.20	0.31	0.18	0.21	0.25	hrs
Unit Peak Discharge, qu	263	251	357	423	423	364	290	386	357	325	csm/in
Subarea Size, Am	0.0143	0.0251	0.0179	0.0160	0.0037	0.0086	0.0054	0.0395	0.0273	0.0148	mi^2
Subarea Peak Discharge, qp	0.94	1.58	1.60	1.69	0.39	0.78	0.39	3.81	2.43	1.21	cfs
Channel Sideslope Angle, theta	18.43	18.43	18.43	18.43	18.43	18.43	18.43	18.43	18.43	18.43	deg
Channel Slope, s	0.027	0.016	0.032	0.024	0.024	0.025	0.074	0.030	0.031	0.005	ft/ft
Channel Manning's, n	0.023	0.023	0.023	0.041	0.023	0.023	0.023	0.023	0.023	0.023	
Channel Peak Discharge, qc	**5.38**	**3.66**	**5.24**	**1.69**	**0.39**	**0.78**	**0.39**	**9.05**	**3.64**	**1.21**	cfs
Flow Depth, d	0.322	0.430	0.380	0.509	0.235	0.304	0.191	0.532	0.447	0.484	ft
Cross Sectional Flow Area, A	0.310	0.555	0.433	0.776	0.166	0.278	0.110	0.849	0.600	0.703	ft^2
Flow Velocity, V	3.039	2.840	3.697	2.182	2.326	2.817	3.555	4.481	4.056	1.717	ft/s
Channel Length, L	530	490	670	1160	360	660	850	1260	650	280	ft
Specified Channel Depth	2	2	2	2	2	2	2	2	2	2	ft
Channel Capacity	19.4	14.9	21.1	10.2	18.3	18.6	32.1	20.4	20.8	8.3	cfs
Channel Travel Time, Tt	0.048	0.048	0.050	0.148	0.043	0.065	0.066	0.078	0.045	0.045	hr
Subarea Tt	0.43	0.46	0.26	0.30	0.19	0.27	0.38	0.26	0.25	0.30	hr

Subarea	2-A	2-B	2-C	2-D	2-E	2-G	2-H	2-I	2-J	2-K	
Sheet Manning's, n	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	
Flow Length, L	260	100	240	100	600	150	150	150	150	150	ft
Land Slope, s	0.038	0.260	0.150	0.050	0.033	0.250	0.250	0.120	0.120	0.120	ft/ft
SheetTravel Time, Tt	0.29	0.06	0.16	0.12	0.59	0.09	0.09	0.12	0.12	0.12	hrs
Unit Peak Discharge, qu	304	671	417	478	209	563	563	484	484	484	csm/in
Subarea Size, Am	0.0061	0.0065	0.0029	0.0029	0.0101	0.0029	0.0129	0.0039	0.0126	0.0126	mi^2
Subarea Peak Discharge, qp	0.46	1.08	0.30	0.35	0.53	0.40	1.82	0.48	1.52	1.52	cfs
Channel Sideslope Angle, theta	18.43	18.43	18.43	18.43	18.43	18.43	18.43	18.43	18.43	18.43	deg
Channel Slope, s	0.017	0.015	0.022	0.021	0.012	0.019	0.021	0.018	0.039	0.013	ft/ft
Channel Manning's, n	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	
Channel Peak Discharge, qc	**4.58**	**3.49**	**0.65**	**0.35**	**0.94**	**2.22**	**1.82**	**4.04**	**3.56**	**2.04**	cfs
Flow Depth, d	0.268	0.378	0.218	0.233	0.301	0.250	0.431	0.269	0.359	0.441	ft
Cross Sectional Flow Area, A	0.216	0.429	0.143	0.163	0.272	0.188	0.558	0.217	0.387	0.584	ft^2
Flow Velocity, V	2.137	2.524	2.119	2.160	1.939	2.155	3.259	2.201	3.929	2.603	ft/s
Channel Length, L	520	380	530	490	550	560	1640	100	540	790	ft
Specified Channel Depth	3	3	2	2	3	2	2	2	2	2	ft
Channel Capacity	97.6	91.7	17.5	17.1	82.0	16.3	17.1	15.8	23.3	13.4	cfs
Channel Travel Time, Tt	0.068	0.042	0.069	0.063	0.079	0.072	0.140	0.013	0.038	0.084	hr
Subarea Tt	0.35	0.10	0.22	0.18	0.67	0.16	0.23	0.13	0.15	0.20	hr

Table N-7 Continued Channel Schedule - Closure Conditions

Subarea	2-L	2-M	2-N	2-O	2-P	
Sheet Manning's, n	0.11	0.11	0.11	0.11	0.11	
Flow Length, L	400	400	80	110	180	ft
Land Slope, s	0.035	0.020	0.050	0.250	0.030	ft/ft
SheetTravel Time, Tt	0.42	0.52	0.10	0.07	0.23	hrs
Unit Peak Discharge, qu	250	223	524	640	337	csm/in
Subarea Size, Am	0.0083	0.0075	0.0030	0.0022	0.0034	mi^2
Subarea Peak Discharge, qp	0.52	0.42	0.39	0.35	0.28	cfs
Channel Sideslope Angle, theta	18.43	18.43	18.43	18.43	18.43	deg
Channel Slope, s	0.006	0.013	0.026	0.023	0.019	ft/ft
Channel Manning's, n	0.023	0.023	0.023	0.023	0.023	
Channel Peak Discharge, qc	**0.52**	**0.81**	**0.39**	**0.35**	**0.28**	cfs
Flow Depth, d	0.342	0.272	0.233	0.228	0.219	ft
Cross Sectional Flow Area, A	0.350	0.222	0.163	0.157	0.144	ft^2
Flow Velocity, V	1.491	1.884	2.407	2.232	1.973	ft/s
Channel Length, L	360	770	750	380	500	ft
Specified Channel Depth	2	2	2	2	2	ft
Channel Capacity	9.1	13.4	19.0	17.9	16.3	cfs
Channel Travel Time, Tt	0.067	0.114	0.087	0.047	0.070	hr
Subarea Tt	0.48	0.64	0.19	0.11	0.30	hr

Table N-8 Culvert Schedule - Closure Conditions

Culvert ID	Culvert Diameter (in)	Culvert Material	Culvert Length (ft)	Culvert Slope (ft/ft)	Manning Coef. (n)	Design Flow (cfs)	Flow Capacity (cfs)	Flow Velocity (ft/s)
P-5	18	CMP	40	0.008	0.024	2	**3.5**	2.0
P-7	18	CPP	60	0.012	0.009	4	**12.6**	7.1
P-10	18	CMP	25	0.019	0.024	2	**4.8**	2.7
P-11	18	CMP	25	0.031	0.024	3	**6.2**	3.5
P13	18	CPP	40	0.050	0.009	3	**24.0**	13.6
P-37	18	CPP	70	0.020	0.009	2	**17.1**	9.7
P-38	18	CPP	80	0.032	0.009	2	**22.0**	12.5
P-39	18	CFPP	35	0.040	0.024	1	**7.8**	4.4

DWG. NO. PRMI-D01
PROJ. NO. PRMI

LEGEND

- 5/8" IRON PIN W/ ALUMINUM CAP
- POWER POLE
- 2544.70 SPOT ELEVATION
- FENCE LINE
- PROPERTY BOUNDARY
- UNIMPROVED ROAD
- PAVED ROAD
- EXISTING TOPOGRAPHY
- (P3) CULVERT DESIGNATION
- LEACHATE PIPE W/SLEEVE
- CULVERT
- 3-1B DRAINAGE CHANNEL DESIGNATION
- DRAINAGE CHANNEL
- CARRIER PIPE
- POND WATER TRANSFER PIPE
- (34) FACILITY KEY NUMBER
- DRAINAGE AREA LIMIT
- RCRA UNIT BOUNDARY
- (D83,S04,T02) RCRA PROCESS CODE

FACILITY KEY AND PROCESS CODES

1 CONTAINER STORAGE PAD 4 (S01,T04)
2 COMPRESSOR/MCC BUILDING
3 STABILIZATION FACILITY OFFICE
4 STABILIZATION FACILITY (S01,T04)
5 PCB PROCESSING BUILDING
6 VEHICLE WASH FACILITY
7 FIREHOUSE
8 FIELD TECH/PPE BUILDING
9 STORAGE BUILDING
10 MAINTENANCE SHOP
11 DECONTAMINATION BUILDING
12 LAB OFFICES
13 RECEIVING OFFICE/LAB
14 PAD 4 OFFICE
15 FUEL STORAGE TANKS/FUELING STATION
16 CONTAINMENT BUILDING (S04,T01,T04)
17 PUMP HOUSE/WATER STORAGE TANKS
18 COMPRESSED GAS STORAGE AREA
19 ADMINISTRATION BUILDING
20 ADMINISTRATION/LUNCH ROOM
21 ADMINISTRATION BUILDING
22 RECORDS STORAGE BUILDING
23 REAGENT STORAGE
24 "UNASSIGNED"
25 SECURITY BUILDING
26 PROPANE TANK
27 SAMPLING PLATFORM
28 STAGING AREA
29 TRUCK SCALE
30 FLAG POLE
31 WEATHER STATION
32 DIESEL & PCB STORAGE TANK CONTAINMENT
33 UNDERGROUND CLEAN WATER TANK
34 EVACUATION GATES
35 RCRA STORAGE TANKS–4 UNITS (S02,T01)
36 CONTAINER STORAGE PAD 5 (S01,T04)
37 PAD 6–RCRA/PCB STORAGE BUILDING APRON
38 "UNASSIGNED"
39 STABILIZATION BUILDING (S06,T01,T04)
40 BAG HOUSE
41 HEPA FILTER HOUSE AND FAN
42 YARD TRUCK SCALE
43 CONTAINER STORAGE PAD 7 (S01,T04)
44 CONTAINMENT BUILDING TRUCK UNLOADING APRONS 1-2 AND 3 (S01)
45 CONTAINMENT BUILDING TRUCK UNLOADING RAMP
46 STABILIZATION BUILDING TRUCK UNLOADING APRONS 1 AND 2 (S01)
47 PROCESS PLANT PAD
48 LEACHATE TREATMENT SYSTEM
49 STABILIZATION FACILITY ADDITIVE SILOS
50 STABILIZATION BUILDING ADDITIVE SILOS
51 EVAPORATION POND LOADING/UNLOADING AREA
52 OFFICE TRAILER SANITARY TANK
53 LAB WASTE HOLDING TANK
54 CONTROL HOUSE
55 ET CAP TEST PAD

EXISTING CHANNEL SCHEDULE*

CHANNEL DESIGNATION	PEAK DESIGN FLOW (CFS)	FLOW CAPACITY W/ FREEBOARD (CFS)	CHANNEL SLOPE (FT/FT)	CHANNEL DEPTH (FT)	SIDE SLOPE RATIO	CHANNEL LINING
1-A	2.7	19	0.027	2.0	3H:1V	NATIVE SOIL
1-B	1.6	15	0.016	2.0	3H:1V	NATIVE SOIL
1-C	1.0	21	0.032	2.0	3H:1V	NATIVE SOIL
1-D	1.0	20	0.028	2.0	3H:1V	NATIVE SOIL
1-E	1.0	10	0.024	2.0	3H:1V	NATIVE SOIL
1-F	1.0	18	0.024	2.0	3H:1V	NATIVE SOIL
1-G	1.0	18	0.025	2.0	3H:1V	NATIVE SOIL
1-H	1.0	32	0.074	2.0	3H:1V	RIP RAP**
2-A	4.6	99	0.017	3.0	3H:1V	NATIVE SOIL
2-B	4.1	91	0.015	3.0	3H:1V	NATIVE SOIL
2-C	1.0	17	0.022	2.0	3H:1V	NATIVE SOIL
2-D	1.0	17	0.021	2.0	3H:1V	NATIVE SOIL
2-E	3.2	81	0.012	3.0	3H:1V	NATIVE SOIL
2-F	1.0	21	0.033	2.0	3H:1V	NATIVE SOIL
2-G	2.3	16	0.019	2.0	3H:1V	NATIVE SOIL
2-H	1.0	17	0.021	2.0	3H:1V	NATIVE SOIL
2-I	2.0	16	0.018	2.0	3H:1V	NATIVE SOIL
2-J	1.8	23	0.039	2.0	3H:1V	NATIVE SOIL
2-K	1.3	13	0.013	2.0	3H:1V	NATIVE SOIL
2-L	1.0	9	0.006	2.0	3H:1V	NATIVE SOIL
2-M	1.0	13	0.013	2.0	3H:1V	NATIVE SOIL
2-N	1.0	19	0.026	2.0	3H:1V	NATIVE SOIL
2-O	1.0	18	0.023	2.0	3H:1V	NATIVE SOIL
2-P	1.0	16	0.019	2.0	3H:1V	NATIVE SOIL
3-1A	8.2	12	0.010	2.0	3H:1V	NATIVE SOIL
3-1B	6.7	8	0.005	2.0	3H:1V	NATIVE SOIL
3-1C	5.4	12	0.010	2.0	3H:1V	NATIVE SOIL
3-1D	5.7	18	0.022	2.0	3H:1V	NATIVE SOIL
3-1E	1.1	12	0.010	2.0	3H:1V	NATIVE SOIL
3-1F	1.0	17	0.021	2.0	3H:1V	NATIVE SOIL
4-A	1.4	19	0.026	2.0	3H:1V	NATIVE GRAVEL
4-B	5.1	134	0.032	3.0	3H:1V	NATIVE GRAVEL

*ALL CHANNELS MAINTAIN AT LEAST 1' FREEBOARD DURING THE 25 YEAR/24 HOUR STORM EVENT.
**RIP RAP MEAN ROCK SIZE (d50)=4 IN.

EXISTING CULVERT SCHEDULE

CULVERT DESIGNATION	CULVERT DIAMETER (IN.)	CULVERT MATERIAL	CULVERT LENGTH (FT)	CULVERT SLOPE (FT/FT)	PEAK DESIGN FLOW (CFS)	FLOW CAPACITY (CFS)	OUTLET VELOCITY (FT/S)	CULVERT OUTLET PROTECTION
P1	18	CMP	40	0.025	3	6.4	3.6	DROP INLET 1-A
P3	18	CMP	80	0.018	1	5.3	3.0	NONE
P4	18	CMP	35	0.003	1	2.1	1.2	NONE
P5	18	CMP	40	0.008	2	3.5	2.0	NONE
P6	18	CMP	100	0.010	1	4.8	2.7	NONE
P7	18	CPP	60	0.012	1	12.6	7.1	RIP RAP*
P8	18	CMP	50	0.005	2	3.0	1.7	NONE
P9	18	CMP	40	0.005	1	2.8	1.6	NONE
P10	18	CMP	25	0.019	2	4.8	2.7	NONE
P11	18	CMP	25	0.031	2	6.2	3.5	RIP RAP*
~~P12~~	~~18~~	~~CPP~~	~~40~~	~~0.050~~	~~3~~	~~24.0~~	~~13.6~~	~~RIP RAP*~~
P14	18	CPP	160	0.025	3	21.5	12.2	DROP INLET E1
P15	18	CPP	135	0.050	1	29.8	16.8	DROP INLET E1
P16	24	CPP	75	0.010	3	26.9	8.6	RIP RAP*
P17	18	CPP	60	0.010	4	11.7	6.6	RIP RAP*
P18	24	CPP	80	0.039	5	52.6	16.8	NONE
P19	18	CMP	80	0.057	1	7.8	4.4	NONE
P20	18	CMP	80	0.028	1	7.8	4.4	RIP RAP*
P21	18	CMP	40	0.013	1	4.5	2.6	NONE
P22	18	CMP	20	0.007	1	2.8	1.6	NONE
P23	18	CMP	10	0.008	1	2.3	1.3	NONE
P24	18	CMP	75	0.012	1	5.1	2.9	DROP INLET 1-2
P25	18	CPP	95	0.029	3	21.8	12.3	DROP INLET 1
P26	18	CPP	115	0.008	3	11.3	6.4	DROP INLET 2
P27	24	CPP	60	0.010	6	25.3	8.1	RIP RAP*
P28	18	CPP	50	0.013	7	12.7	7.2	RIP RAP*
P29	24	CMP	60	0.010	7	9.5	3.0	RIP RAP*
P30	18	CPP	20	0.189	9	38.1	21.6	UNNAMED POND 1 INLET
P31	18	CPP	30	0.097	1	30.9	17.5	DROP INLET 5
P32	18	CPP	35	0.008	1	9.0	5.1	DROP INLET 4
P33	18	CPP	55	0.008	2	10.0	5.7	DROP INLET 3
P34	18	CPP	50	0.008	3	9.8	5.5	DROP INLET 1
P35	18	CPP	175	0.007	6	11.4	6.5	RIP RAP*
P36	18	CPP	45	0.078	2	30.8	17.4	DROP INLET 1-1
P37	18	CPP	70	0.020	1	17.1	9.7	RIP RAP*
P38	18	CPP	80	0.032	1	22.0	12.5	RIP RAP*
P39	18	CPP	35	0.040	1	7.8	4.4	RIP RAP*
P40	18	CPP	235	0.042	3	10.7	10.7	RIP RAP*

*MEAN ROCK SIZE (d50)=4 IN.

DROP INLET SCHEDULE

DROP INLET DESIGNATION	INLET T.O. GRATE ELEV.	INLET CULVERT (INV. IN)	OUTLET CULVERT (INV. OUT)
A1	2578.22'	NONE	2575.57'
A2	2578.20'	2575.56'	2575.55'
1	2577.00'	2570.53'	2570.49'
1-1	2580.00'	2575.93'	2575.93'
1-2	2583.30'	2579.74'	2579.51'
2	2578.00'	2571.01'	2570.90'
3	2578.00'	2571.88'	2571.87'
4	2578.00'	2572.28'	2572.28'
5	2578.00'	2572.69'	2572.54'
6	2571.25'	2563.75'	2562.90'
7	2570.00'	NONE	2568.03'

GENERAL NOTES:

1. EXISTING SITE TOPOGRAPHY, PHYSICAL FEATURES AND DELINEATIONS OBTAINED FROM AERIAL PHOTOGRAPHY AND SURVEYED DATUM PROVIDED TO ENVIROSOURCE TECHNOLOGIES BY: J.J. HOWARD ENGINEERING–SURVEYING, 1675–A HILL ROAD, BOISE, IDAHO 83702. DATE OF ORIGINAL SURVEY – NOVEMBER 4, 1995.
2. ADDITIONALLY, AREAS OF THE SITE HAVE BEEN UPDATED AND INCORPORATED PERIODICALLY INTO THE EXISTING TOPOGRAPHY AS CONSTRUCTION PROGRESSES.
3. REFERENCE FIGURE 1, "OVERALL DRAINAGE AREAS PLAN" (INCLUDED IN THE SWMP) FOR TIME OF CONCENTRATION FLOW PATHS IN EACH DRAINAGE AREA.

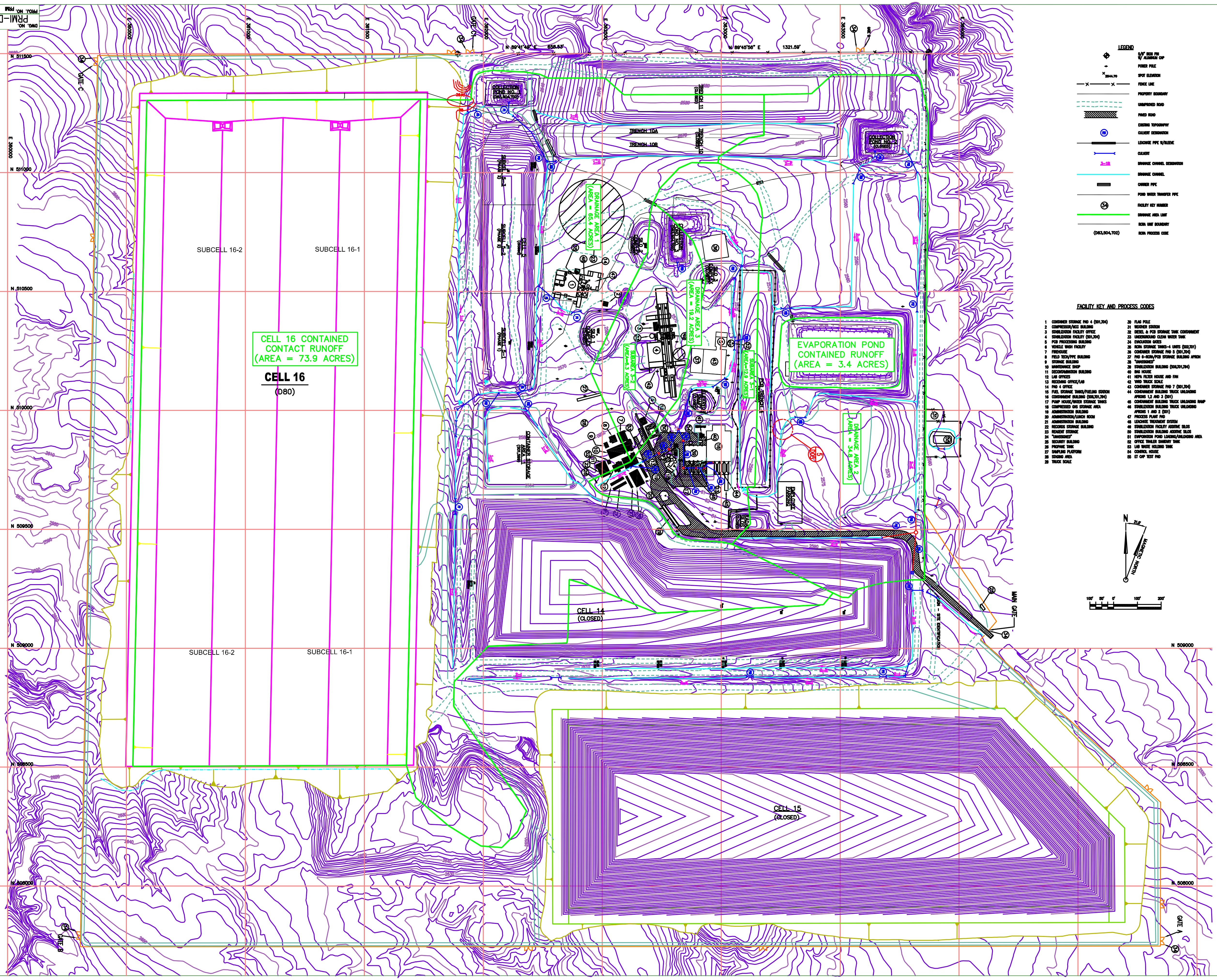
REV.	BY / DATE	CHK'D / DATE	DESCRIPTION	PROJ. ENGR / DATE	SUPV. ENGR / DATE
H	VJT 7/15		PART B PERMIT RENEWAL		
G	VJT 7/11		CELL 16		
F	VJT 1/09		CELL 15 MODIFICATIONS		
E	KJH 4/11/05		2003 PERMIT RENEWAL		JH 4/11/03
D	MK 4/11/01		ISSUED IN RESPONSE TO NOD LETTER DATED JUNE 30, 1999		MWS 4/12/01
C	MK 11/16/00		AS–BUILT. SUBMITTED WITH CQA REPORT AND CONSTRUCTION CERTIFICATION		MWS 4/12/01
B	MK 1/15/99		ISSUED FOR JANUARY 1999 CLASS 3 PERMIT MODIFICATION		
A	MK 7/28/98		ISSUED FOR PART B PERMIT RENEWAL APPLICATION		

US ecology

SITE B
GRAND VIEW, IDAHO
US EPA ID NO. IDD 073 114 654

TITLE:
FACILITY
SURFACE DRAINAGE PLAN
EXISTING CONDITIONS

DRAWN BY / DATE	SCALE:	FILE CODE	REV. NO.
MK 5/4/98		DWG. NO. PRMI–D01	H
CHECKED / DATE	ENGINEER / DATE		
PROJ. MGR. / DATE	APPROVED / DATE	PROJ. NO. PRMI	



LEGEND

- 5/8" IRON PIN W/ ALUMINUM CAP
- POWER POLE
- SPOT ELEVATION (2544.70)
- FENCE LINE
- PROPERTY BOUNDARY
- UNIMPROVED ROAD
- PAVED ROAD
- EXISTING TOPOGRAPHY
- CULVERT DESIGNATION
- LEACHATE PIPE W/SLEEVE
- CULVERT
- DRAINAGE CHANNEL DESIGNATION (3-1B)
- DRAINAGE CHANNEL
- CORNER PIPE
- POND WATER TRANSFER PIPE
- FACILITY KEY NUMBER (34)
- DRAINAGE AREA LIMIT
- RCRA UNIT BOUNDARY
- RCRA PROCESS CODE (D83,S04,T02)

FACILITY KEY AND PROCESS CODES

1 CONTAINER STORAGE PAD 4 (S01,T04)
2 COMPRESSOR/MCC BUILDING
3 STABILIZATION FACILITY OFFICE
4 STABILIZATION FACILITY (S01,T04)
5 PCB PROCESSING BUILDING
6 VEHICLE WASH FACILITY
7 FIREHOUSE
8 FIELD TECH/PPE BUILDING
9 STORAGE BUILDING
10 MAINTENANCE SHOP
11 DECONTAMINATION BUILDING
12 LAB OFFICES
13 RECEIVING OFFICE/LAB
14 PAD 4 OFFICE
15 FUEL STORAGE TANKS/FUELING STATION
16 CONTAINMENT BUILDING (S06,T01,T94)
17 PUMP HOUSE/WATER STORAGE TANKS
18 COMPRESSED GAS STORAGE AREA
19 ADMINISTRATION BUILDING
20 ADMINISTRATION/LUNCH ROOM
21 ADMINISTRATION BUILDING
22 RECORDS STORAGE BUILDING
23 REAGENT STORAGE
24 "UNASSIGNED"
25 SECURITY BUILDING
26 PROPANE TANK
27 SAMPLING PLATFORM
28 STAGING AREA
29 TRUCK SCALE
30 FLAG POLE
31 WEATHER STATION
32 DIESEL & PCB STORAGE TANK CONTAINMENT
33 UNDERGROUND CLEAN WATER TANK
34 EVACUATION GATES
35 RCRA STORAGE TANKS-4 UNITS (S02,T01)
36 CONTAINER STORAGE PAD 5 (S01,T04)
37 PAD 6-RCRA/PCB STORAGE BUILDING APRON
38 "UNASSIGNED"
39 STABILIZATION BUILDING (S06,T01,T94)
40 BAG HOUSE
41 HEPA FILTER HOUSE AND FAN
42 YARD TRUCK SCALE
43 CONTAINER STORAGE PAD 7 (S01,T04)
44 CONTAINMENT BUILDING TRUCK UNLOADING APRONS 1,2 AND 3 (S01)
45 CONTAINMENT BUILDING TRUCK UNLOADING RAMP
46 STABILIZATION BUILDING TRUCK UNLOADING APRONS 1 AND 2 (S01)
47 PROCESS PLANT PAD
48 LEACHATE TREATMENT SYSTEM
49 STABILIZATION FACILITY ADDITIVE SILOS
50 STABILIZATION BUILDING ADDITIVE SILOS
51 EVAPORATION POND LOADING/UNLOADING AREA
52 OFFICE TRAILER SANITARY TANK
53 LAB WASTE HOLDING TANK
54 CONTROL HOUSE
55 ET CAP TEST PAD

EXISTING CHANNEL SCHEDULE*

CHANNEL DESIGNATION	PEAK DESIGN FLOW (CFS)	FLOW CAPACITY W/1' FREEBOARD (CFS)	CHANNEL SLOPE (FT/FT)	CHANNEL DEPTH (FT)	SIDE SLOPE RATIO	CHANNEL LINING
1-A	2.7	19	0.027	2.0	3H:1V	NATIVE SOIL
1-B	1.6	15	0.016	2.0	3H:1V	NATIVE SOIL
1-C	1.0	21	0.032	2.0	3H:1V	NATIVE SOIL
1-D	1.0	20	0.028	2.0	3H:1V	NATIVE SOIL
1-E	1.0	10	0.024	2.0	3H:1V	NATIVE SOIL
1-F	1.0	18	0.024	2.0	3H:1V	NATIVE SOIL
1-G	1.0	18	0.025	2.0	3H:1V	NATIVE SOIL
1-H	1.0	32	0.074	2.0	3H:1V	RIP RAP**
2-A	4.6	99	0.017	3.0	3H:1V	NATIVE SOIL
2-B	4.1	91	0.015	3.0	3H:1V	NATIVE SOIL
2-C	1.0	17	0.022	2.0	3H:1V	NATIVE SOIL
2-D	1.0	17	0.021	2.0	3H:1V	NATIVE SOIL
2-E	3.2	81	0.012	3.0	3H:1V	NATIVE SOIL
2-F	1.0	21	0.033	2.0	3H:1V	NATIVE SOIL
2-G	2.3	16	0.019	2.0	3H:1V	NATIVE SOIL
2-H	1.0	17	0.021	2.0	3H:1V	NATIVE SOIL
2-I	2.0	16	0.018	2.0	3H:1V	NATIVE SOIL
2-J	1.8	23	0.039	2.0	3H:1V	NATIVE SOIL
2-K	1.3	13	0.013	2.0	3H:1V	NATIVE SOIL
2-L	1.0	9	0.006	2.0	3H:1V	NATIVE SOIL
2-M	1.0	13	0.013	2.0	3H:1V	NATIVE SOIL
2-N	1.0	19	0.026	2.0	3H:1V	NATIVE SOIL
2-O	1.0	18	0.023	2.0	3H:1V	NATIVE SOIL
2-P	1.0	16	0.019	2.0	3H:1V	NATIVE SOIL
3-1A	8.2	12	0.010	2.0	3H:1V	NATIVE SOIL
3-1B	6.7	8	0.005	2.0	3H:1V	NATIVE SOIL
3-1C	6.4	12	0.010	2.0	3H:1V	NATIVE SOIL
3-1D	5.7	18	0.022	2.0	3H:1V	NATIVE SOIL
3-1E	1.1	12	0.010	2.0	3H:1V	NATIVE SOIL
3-1F	1.0	17	0.021	2.0	3H:1V	NATIVE SOIL
4-A	1.4	19	0.026	2.0	3H:1V	NATIVE GRAVEL
4-B	5.1	134	0.032	3.0	3H:1V	NATIVE GRAVEL

*ALL CHANNELS MAINTAIN AT LEAST 1' FREEBOARD DURING THE 25 YEAR/24 HOUR STORM EVENT.
**RIP RAP MEAN ROCK SIZE (d50)=4 IN.

EXISTING CULVERT SCHEDULE

CULVERT DESIGNATION	CULVERT DIAMETER (IN.)	CULVERT MATERIAL	CULVERT LENGTH (FT)	CULVERT SLOPE (FT/FT)	PEAK DESIGN FLOW (CFS)	FLOW CAPACITY (CFS)	OUTLET VELOCITY (FT/S)	CULVERT OUTLET PROTECTION
P1	18	CMP	40	0.025	3	6.4	3.6	COLLECTION POND 1
P3	18	CMP	80	0.018	1	5.3	3.0	NONE
P4	18	CPP	35	0.003	1	2.1	1.2	NONE
P5	18	CMP	40	0.008	2	3.5	2.0	NONE
P6	18	CMP	100	0.010	1	4.8	2.7	NONE
P7	18	CPP	60	0.012	1	12.6	7.1	RIP RAP*
P8	18	CPP	80	0.012	2	3.0	1.7	NONE
P9	18	CPP	40	0.005	1	2.8	1.6	NONE
P10	18	CMP	25	0.019	2	4.8	2.7	NONE
P11	18	CMP	25	0.031	2	6.2	3.5	RIP RAP*
P13	18	CPP	40	0.020	3	24.0	13.6	RIP RAP*
P14	18	CPP	160	0.025	3	21.5	12.2	DROP INLET 6
P15	18	CPP	135	0.050	1	28.6	16.8	DROP INLET 6
P16	24	CPP	75	0.010	3	28.0	8.6	RIP RAP*
P17	18	CPP	60	0.010	4	11.7	6.6	RIP RAP*
P18	24	CPP	80	0.039	5	82.6	16.6	NONE
P19	18	CPP	20	0.057	1	7.8	4.4	NONE
P20	18	CMP	80	0.086	1	7.8	4.4	RIP RAP*
P21	18	CMP	40	0.013	1	4.5	2.6	NONE
P22	18	CMP	20	0.007	1	2.8	1.6	NONE
P23	18	CMP	10	0.006	1	2.3	1.3	NONE
P24	18	CMP	75	0.012	1	5.1	2.9	DROP INLET 1-2
P25	18	CPP	95	0.029	3	21.8	12.3	DROP INLET 1
P26	18	CPP	115	0.006	3	11.3	6.4	DROP INLET 2
P27	24	CPP	80	0.010	6	25.3	8.1	RIP RAP*
P28	24	CPP	80	0.013	7	12.7	7.2	RIP RAP*
P29	24	CMP	60	0.010	7	8.5	3.0	RIP RAP*
P30	18	CPP	20	0.189	9	38.1	21.6	COLLECTION POND
P31	18	CPP	30	0.007	1	30.9	17.5	DROP INLET 5
P32	18	CPP	35	0.006	1	9.0	5.1	DROP INLET 4
P33	18	CPP	55	0.008	2	10.0	5.7	DROP INLET 3
P34	18	CPP	50	0.008	3	9.8	5.5	DROP INLET 1
P35	18	CPP	175	0.007	6	11.4	6.5	RIP RAP*
P36	18	CPP	45	0.078	2	30.8	17.4	DROP INLET 1-1
P37	18	CPP	70	0.020	1	17.1	9.7	RIP RAP*
P38	18	CPP	80	0.032	1	22.0	12.5	RIP RAP*
P39	18	CPP	35	0.040	1	7.8	4.4	RIP RAP*
P40	18	CPP	235	0.042	3	10.7	10.7	RIP RAP*

*MEAN ROCK SIZE (d50)=4 IN.

DROP INLET SCHEDULE

DROP INLET DESIGNATION	INLET T.O. GRATE ELEV.	INLET CULVERT (INV. IN)	OUTLET CULVERT (INV. OUT)
A1	2578.22'	NONE	2575.57'
A2	2578.20'	2575.56'	2575.55'
1	2577.00'	2570.53'	2570.49'
1-1	2580.00'	2575.93'	2575.93'
1-2	2583.30'	2579.74'	2579.51'
2	2578.00'	2571.01'	2570.90'
3	2578.00'	2571.86'	2571.87'
4	2578.00'	2572.26'	2572.26'
5	2578.00'	2572.69'	2572.54'
6	2571.25'	2563.75'	2562.90'
7	2570.00'	NONE	2568.03'

GENERAL NOTES:

1. EXISTING SITE TOPOGRAPHY, PHYSICAL FEATURES AND DELINEATIONS OBTAINED FROM AERIAL PHOTOGRAPHY AND SURVEYED DATUM PROVIDED TO ENVIROSOURCE TECHNOLOGIES BY: J.J. HOWARD ENGINEERING-SURVEYING; 1675-A HILL ROAD; BOISE, IDAHO 83702. DATE OF ORIGINAL SURVEY - NOVEMBER 4, 1995.
2. ADDITIONALLY, AREAS OF THE SITE HAVE BEEN UPDATED AND INCORPORATED PERIODICALLY INTO THE EXISTING TOPOGRAPHY AS CONSTRUCTION PROGRESSES.
3. REFERENCE FIGURE 1, "OVERALL DRAINAGE AREAS PLAN" (INCLUDED IN THE SWMP) FOR TIME OF CONCENTRATION FLOW PATHS IN EACH DRAINAGE AREA.

REV.	BY / DATE	CHK'D / DATE	DESCRIPTION	PROJ. ENGR. / DATE	SUPV. ENGR. / DATE
B	WT 7/16		PART B PERMIT RENEWAL		
A	WT 7/11		CELL 16		

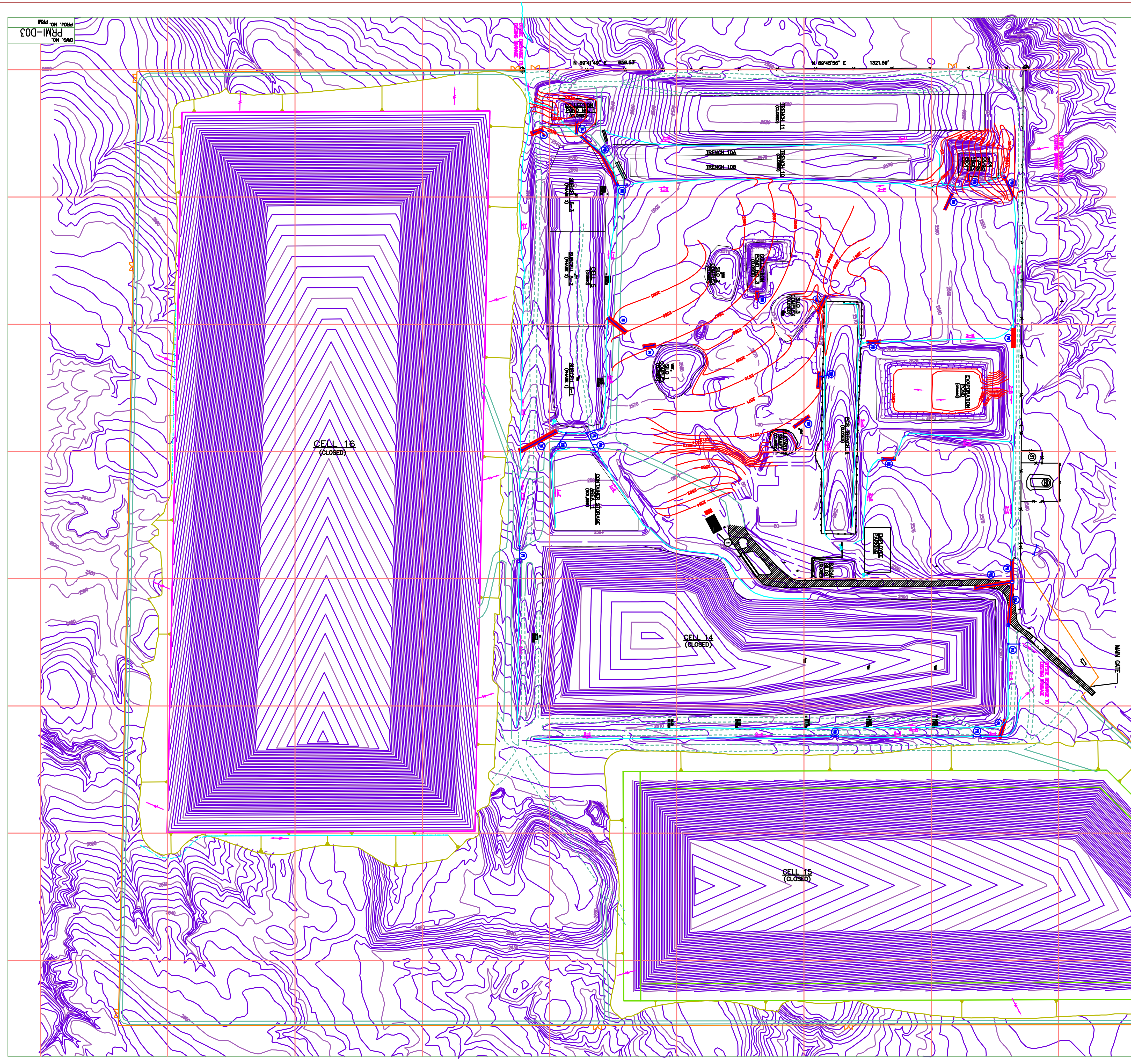
US ecology

SITE B
GRAND VIEW, IDAHO
US EPA ID NO. IDD 073 114 654

TITLE: FACILITY SURFACE DRAINAGE PLAN INTERIM CONDITIONS

DRAWN BY: WT DATE: 7/1/11 SCALE:
CHECKED DATE ENGINEER DATE
PROJ. MGR. DATE APPROVED DATE
FILE CODE
DWG. NO. PRMI-D02
PROJ. NO. PRMI
REV. NO. B

DWG. NO. PRMI-D02
PROJ. NO. PRMI

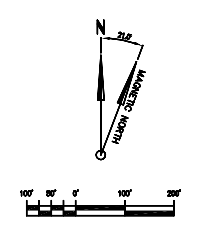


LEGEND

- 5/8" IRON PIN W/ ALUMINUM CAP
- POWER POLE
- FENCE LINE
- PROPERTY BOUNDARY
- UNIMPROVED ROAD
- PAVED ROAD
- EXISTING TOPOGRAPHY
- CULVERT DESIGNATION
- CULVERT
- DRAINAGE CHANNEL DESIGNATION
- DRAINAGE CHANNEL
- FACILITY KEY NUMBER
- RCRA UNIT BOUNDARY

FACILITY KEY

1 ADMINISTRATION BUILDING



FINAL CHANNEL SCHEDULE*

CHANNEL DESIGNATION	PEAK DESIGN FLOW (CFS)	FLOW CAPACITY W/1' FREEBOARD (CFS)	CHANNEL SLOPE (FT/FT)	CHANNEL DEPTH (FT)	SIDE SLOPE RATIO	CHANNEL LINING
1-A	5.4	19	0.027	2.0	3H:1V	NATIVE SOIL
1-B	3.7	15	0.016	2.0	3H:1V	NATIVE SOIL
1-C	5.3	21	0.032	2.0	3H:1V	NATIVE SOIL
1-D	1.0	20	0.028	2.0	3H:1V	NATIVE SOIL
1-E	1.7	10	0.024	2.0	3H:1V	NATIVE SOIL
1-F	1.0	18	0.024	2.0	3H:1V	NATIVE SOIL
1-G	1.0	18	0.025	2.0	3H:1V	NATIVE SOIL
1-H	1.0	32	0.074	2.0	3H:1V	RIP RAP**
1-I	9.1	20	0.030	2.0	3H:1V	NATIVE GRAVEL
1-J	3.7	20	0.031	2.0	3H:1V	NATIVE GRAVEL
1-K	1.2	8	0.005	2.0	3H:1V	NATIVE SOIL
2-A	4.6	99	0.017	3.0	3H:1V	NATIVE SOIL
2-B	3.5	91	0.015	3.0	3H:1V	NATIVE SOIL
2-C	1.0	17	0.022	2.0	3H:1V	NATIVE SOIL
2-D	1.0	17	0.021	2.0	3H:1V	NATIVE SOIL
2-E	1.0	81	0.012	3.0	3H:1V	NATIVE SOIL
2-F	1.0	21	0.033	2.0	3H:1V	NATIVE SOIL
2-G	2.3	16	0.019	2.0	3H:1V	NATIVE SOIL
2-H	1.8	17	0.021	2.0	3H:1V	NATIVE SOIL
2-I	3.5	16	0.018	2.0	3H:1V	NATIVE SOIL
2-J	3.0	23	0.039	2.0	3H:1V	NATIVE SOIL
2-K	1.5	13	0.013	2.0	3H:1V	NATIVE SOIL
2-M	1.0	13	0.013	2.0	3H:1V	NATIVE SOIL
2-N	1.0	19	0.026	2.0	3H:1V	NATIVE SOIL
2-O	1.0	18	0.023	2.0	3H:1V	NATIVE SOIL
2-P	1.0	16	0.019	2.0	3H:1V	NATIVE SOIL
3-1A	8.2	12	0.010	2.0	3H:1V	NATIVE SOIL
3-1B	6.7	8	0.005	2.0	3H:1V	NATIVE SOIL
3-1C	6.4	12	0.010	2.0	3H:1V	NATIVE SOIL
3-1D	5.7	18	0.022	2.0	3H:1V	NATIVE SOIL
3-1E	1.1	12	0.010	2.0	3H:1V	NATIVE SOIL
3-1F	1.0	17	0.021	2.0	3H:1V	NATIVE SOIL

*ALL CHANNELS MAINTAIN AT LEAST 1' FREEBOARD DURING THE 25 YEAR/24 HOUR STORM EVENT.
**RIP RAP MEAN ROCK SIZE (d50)=4 IN.

FINAL CULVERT SCHEDULE

CULVERT DESIGNATION	CULVERT DIAMETER (IN.)	CULVERT MATERIAL	CULVERT LENGTH (FT)	CULVERT SLOPE (FT/FT)	PEAK DESIGN FLOW (CFS)	FLOW CAPACITY (CFS)	OUTLET VELOCITY (FT/S)	CULVERT OUTLET PROTECTION
P1	18	CMP	40	0.025	3	6.4	3.6	COLLECTION POND 1 LINER
P2	18	CMP	80	0.005	2	3.3	1.9	NONE
P3	18	CMP	80	0.010	1	5.3	3.0	NONE
P4	18	CMP	55	0.003	1	2.1	1.2	NONE
P5	18	CMP	40	0.008	2	3.5	2.0	NONE
P6	18	CMP	100	0.010	1	4.8	2.7	NONE
P7	18	CPP	60	0.012	4	12.6	7.1	RIP RAP*
P8	18	CMP	30	0.006	2	3.0	1.7	NONE
P9	18	CMP	30	0.007	2	3.7	2.1	NONE
P10	18	CMP	25	0.019	2	4.8	2.7	NONE
P11	18	CMP	25	0.031	3	6.2	3.5	RIP RAP*
P13	18	CPP	40	0.080	3	24.0	13.6	RIP RAP*
P14	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
P15	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
P16	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
P17	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
P18	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
P19	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
P20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
P21	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
P22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
P23	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
P24	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
P25	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
P26	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
P27	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
P28	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
P29	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
P30	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
P31	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
P32	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
P33	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
P34	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
P35	18	CPP	175	0.007	6	11.4	6.5	[illegible]
P36	18	CPP	45	0.078	2	30.8	17.4	[illegible]
P37	18	CPP	70	0.020	2	17.1	9.7	RIP RAP*
P38	18	CPP	80	0.032	2	22.0	12.5	RIP RAP*
P39	18	CPP	35	0.040	1	7.8	4.4	RIP RAP*
P40	18	CPP	235	0.042	6	16.7	6.1	RIP RAP*
P41	18	CMP	85	0.030	5	8.1	4.6	RIP RAP*

*MEAN ROCK SIZE (d50)=4 IN.

DROP INLET SCHEDULE

DROP INLET DESIGNATION	INLET T.O. GRATE ELEV.	INLET CULVERT (INV. IN)	INLET CULVERT (INV. OUT)
A1	2576.22'	N/A	2575.57'
A2	2576.20'	2575.55'	2575.55'
1	2577.00'	2570.53'	2570.40'
1-1	2580.00'	2575.93'	2575.83'
1-2	2583.30'	2570.74'	2570.51'
2	2576.00'	2571.01'	2570.90'
3	2576.00'	2571.93'	2571.87'
4	2576.00'	2572.26'	2572.26'
5	2576.00'	2572.60'	2572.54'
6	2571.25'	2563.75'	2562.90'
7	2570.00'	NONE	2560.03'

GENERAL NOTES:

1. EXISTING SITE TOPOGRAPHY, PHYSICAL FEATURES AND DELINEATIONS OBTAINED FROM AERIAL PHOTOGRAPHY AND SURVEYED DATUM PROVIDED TO ENVIROSOURCE TECHNOLOGIES BY: J.J. HOWARD ENGINEERING-SURVEYING; 1676-A HILL ROAD; BOISE, IDAHO 83702. DATE OF ORIGINAL SURVEY – NOVEMBER 4, 1996.
2. ADDITIONALLY, AREAS OF THE SITE HAVE BEEN UPDATED AND INCORPORATED PERIODICALLY INTO THE EXISTING TOPOGRAPHY AS CONSTRUCTION PROGRESSES.
3. REFERENCE FIGURE 1, "OVERALL DRAINAGE AREAS PLAN" (INCLUDED IN THE SWMP) FOR TIME OF CONCENTRATION FLOW PATHS IN EACH DRAINAGE AREA.
4. REFERENCE INDIVIDUAL LANDFILL UNIT DRAWING SETS FOR FINAL GRADING AND COVER

REV.	BY	DATE	CHK'D	DATE	DESCRIPTION	PROJ ENGR DATE	SUPV ENGR DATE
H	WT	7/18			PART B PERMIT RENEWAL		
G	WT	7/11			CELL 16		
F	WT	1/09			CELL 15 MODIFICATIONS		
E	BB	4/7/03			2003 PERMIT RENEWAL		JB 4/8/03
D	BK	4/9/01			ISSUED IN RESPONSE TO NOD LETTER DATED JUNE 30, 1999		BB 4/9/01
C	BK	1/19/00			AS-BUILT, SUBMITTED WITH COA REPORT AND CONSTRUCTION CERTIFICATION		BB 4/9/01
B	BK	1/14/99			ISSUED FOR JANUARY 1999 CLASS 3 PERMIT MODIFICATION		
A	BK	7/8/98			ISSUED FOR PART B PERMIT RENEWAL APPLICATION		

US ecology

SITE B
GRAND VIEW, IDAHO
US EPA ID NO. IDD 073 114 654

TITLE: FACILITY SURFACE DRAINAGE PLAN FINAL AT CLOSURE

DRAWN BY: MK	DATE 5/4/98	SCALE:	FILE CODE	REV. NO.
CHECKED	DATE	ENGINEER DATE	DWG. NO. PRMI-D03	H
PROJ. MGR. DATE		APPROVED DATE	PROJ. NO. PRM	