ATTACHMENT VI-2

STORMWATER MANAGEMENT

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STORMWATER MANAGEMENT

Stormwater management at the Clean Harbors Grassy Mountain Facility (CHGM) provides for the control of surface water drainage~~,~~ resulting from precipitation falling on areas that are tributary to or from the landfill cells. Precipitation that falls on the site will do one of the following: infiltrate directly into the ground~~,~~; evaporate~~,~~; adhere directly to vegetation~~,~~; ~~or~~ run off into the drainage ways and be transported to collection ~~points or~~points, or run off directly into collection points. The stormwater management plan consists of facilities to control runoff inside and outside of the landfill cells. The control facilities outside of the cells will control runoff from precipitation ~~which~~ that falls outside ~~of~~ the landfill cells, whereas the control facilities inside ~~of~~ the cells will control runoff from precipitation ~~which~~ that falls inside ~~of~~ the landfill cells. These together make up the "runoff management system."

The control facilities inside the cells must be capable of collecting and controlling the runoff water volume resulting from a 25-year, twenty-four hour storm as required by Utah Administrative Code (UAC) R315-264-301(g), (h), and (i)~~8-14.2 of the Utah Hazardous Waste Management Rules~~. The system is designed to manage the volume of runoff that would be produced by a 100-year, ~~twenty-four hour~~twenty-four-hour storm event~~, thus meeting and exceeding the requirements of the rules.~~ by allowing ~~These requirements are met by maintaining~~ enough capacity in the open cells to contain the necessary amount of water. The design exceeds the requirements of R315-264 UAC.

Outside ~~of~~ the cells, the stormwater runoff from uncontaminated surfaces, which includ~~inges exterior~~ cell embankment surfaces and caps of closed cells, is managed via dikes, conveyance facilities (ditches, culverts, drain boxes, etc.), and ponds. The facility is relatively flat. The stormwater controls are designed to prevent ~~Allowing~~ stormwater ~~to~~ from ~~accumulate~~ accumulating around the toe of the cell berms and interfering with ~~would be a nuisance to~~ CHGM~~facility~~ operationions. ~~These controls are implemented to minimize the negative impact that the accumulation of stormwater would have on operations.~~

~~Currently, t~~The facility has ~~seven (7) identified~~ six stormwater run-off ponds and a seventh proposed pond that are designed to ~~provid~~provide~~d for~~ drainage from each RCRA, PCB, and Industrial Waste Landfill Cells, as well as~~,~~ the Bulk Solids Storage Units ~~Container Storage Areas~~ East and West. A series of ditches provides for containment of run-off from parking and sampling areas.

Figures 1a and 1b~~,~~ presents the rainfall frequency distribution for the Clive Area (~~. Figures 1a and 1b were developed from~~ U.S. Department of Commerce Weather Bureau Technical Paper No 40. (Jershfield, D.M)). As illustrated on Figure 1a, the rainfall depth for the 100-year, 24-hour precipitation event in the Clive area is approximately 2.5 inches. Based on ~~and as shown on figure~~ Figure 1b, estimated 25-year 24-hour rainfall is approximately 2.0 inches~~ for a 25-year, 24-hour precipitation event~~.

Figure 2 shows the design of the stormwater drainage ~~patterns~~ system. ~~that the runoff management system was designed to create in the area of Disposal Cells 8 – 13 and Surface Impoundment B.~~ The size of the stormwater containment ponds was based on the

assumed rainfall amounts and runoff generated from ~~assumptions as to the amount of precipitation that run off~~ the embankments and cell caps ~~which~~ that are tributary to the ponds ~~and the volume of rain produced by a 100 year, 24 hour precipitation event~~.

100-YEAR 24-HOUR RAINFALL (INCHES)

Site

PACIFIC OCEAN

ATLANTIC OCEAN

GULF OF MEXICO

LAKE SUPERIOR

LAKE MICHIGAN

LAKE ERIE

LAKE ONTARIO

ALBERS EQUAL AREA PROJECTION
STANDARD PARALLELS 29° AND 45°

	BY	DATE
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FIGURE 1a

100-YEAR 24-HOUR RAINFALL (INCHES)
CLEAN HARBORS GRASSY MOUNTAIN, LLC

SCALE: AS SHOWN

PROJECT: 1968

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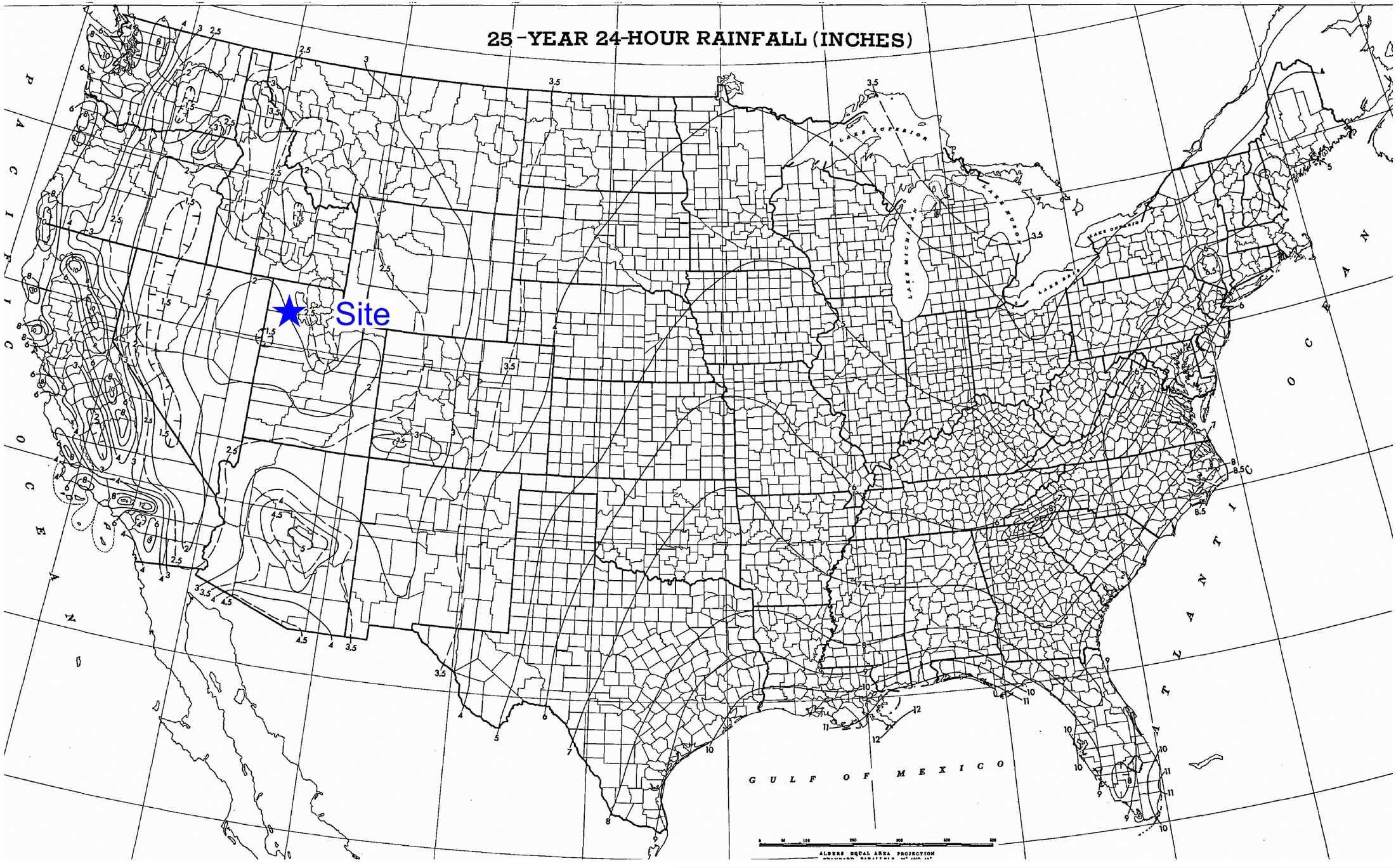

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FIGURE 1b

25-YEAR 24-HOUR RAINFALL (INCHES)
CLEAN HARBORS GRASSY MOUNTAIN, LLC

SCALE: AS SHOWN

PROJECT: 1968

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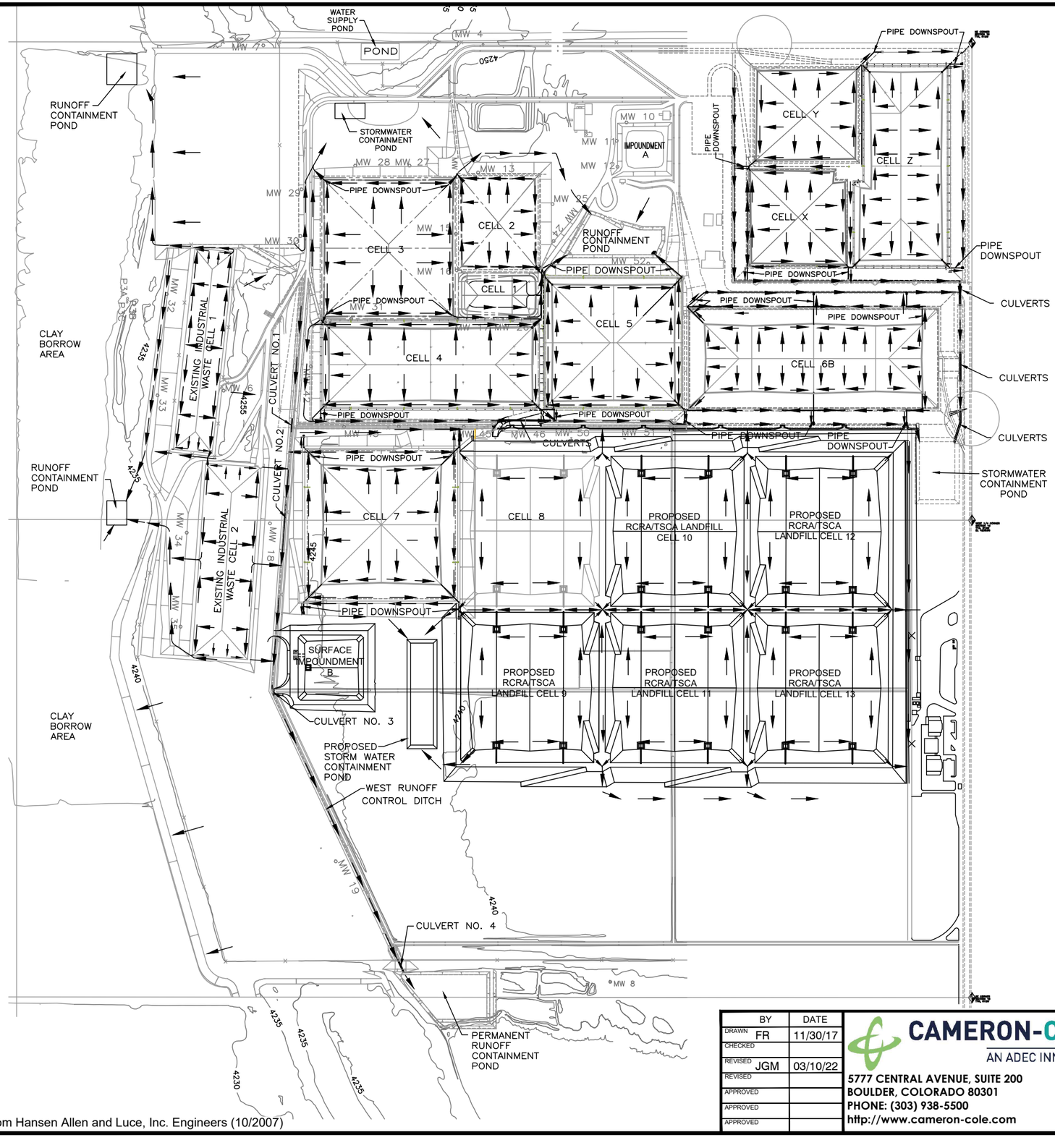

Note: Modified from Hansen Allen and Luce, Inc. Engineers (10/2007)

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FIGURE 2

STORMWATER DRAINAGE PATTERNS AFTER CLOSURE OF ALL LANDFILL CELLS
CLEAN HARBORS GRASSY MOUNTAIN, LLC

SCALE: AS SHOWN | PROJECT: 1968

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