Ex. 44

From:	Dierich, Andrea
To:	Becker, PJ
Cc:	Williams, Deborah J; Paul.Eisenbrandt@illinois.gov
Subject:	Transmittal - U.S. EPA Notice of Violation _CWLP (ILD000665968)
Date:	Thursday, July 6, 2023 1:04:57 PM
Attachments:	ILD000665968_Dallman_NOVLDFCoverLtr_20230706.pdf ILD000665968_Dallman_AttachmentsNOVLDF_.pdf

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Dear Mr. Becker,

Please see the attached Notice of Violation letter that U.S. EPA is issuing City Water, Light and Power (CLWP) based on EPA's review of the information available to it, including but not limited to, information posted by CWLP to its publicly accessible internet site entitled CCR Rule Compliance Data and Information, ("federal CCR website") and information submitted by CWLP on July 5, 2022 and August 30, 2022.

Please respond to this email to acknowledge receipt of the attached items.

Sincerely,

Andrea Dierich
Physical Scientist

U.S. Environmental Protection Agency, Region 5
Enforcement and Compliance Assurance Division
Ph: 312-353-6134
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
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VIA EMAIL
DELIVERY RECEIPT REQUESTED

Patrick Becker
Environmental Health and Safety Manager
Regulatory Affairs
City Water, Light, and Power
801 E. Monroe, 4th Floor
Springfield, Illinois 62701
pj.becker@cwlp.com

Re: Notice of Violation
City Water, Light, and Power—Landfill Unit 2

Dear Mr. Becker:

The purpose of this letter is to inform City Water, Light, and Power (CWLP) that the United States Environmental Protection Agency, Region 5 (EPA) has determined that CWLP is in violation of the requirements of 40 C.F.R. Part 257, Subpart D.

CWLP, as the owner and operator of Coal Combustion Residual (CCR) landfill and surface impoundment units at its facility located at 3100 Stevenson Drive, Springfield, Illinois (Facility), is subject to the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. § 6907, et seq., and the regulations promulgated thereunder, 40 C.F.R. Part 257, Subpart D – Standards for the Disposal of CCR in Landfills and Surface Impoundments.

In prior correspondence CWLP has indicated that it believes that Unit 2 is not regulated under 40 C.F.R. Part 257 because it qualifies as a municipal solid waste landfill. EPA disagrees with that assessment. The term municipal solid waste landfill unit is defined in 40 C.F.R. § 257.2 as "a discrete area of land or an excavation that receives *household waste,* and that is not a land application unit, surface impoundments, injection well, or waste pile, as those terms are defined in this section." (emphasis added). 40 C.F.R. § 258.2 defines household waste as "any solid waste (including garbage, trash, and sanitary waste in septic tanks) derived from households (including single and multiple residences, hotels and motels, bunkhouses, ranger stations, crew quarters, campgrounds, picnic grounds, and day-use recreation areas)." The language of Section 257.50(i) was specifically chosen to ensure that the exemption only applies to the narrow subset of units that handle this type of waste, and intentionally does not apply to the larger universe of units that handle other types of solid waste, such as the waste in Unit 2.

Since it was first permitted on November 9, 1995 (see Permit No. 1995-253-LFM) Unit 2 was only allowed to dispose of flue gas desulfurization sludge, bottom ash, fly ash and lime sludge

within it. These waste streams are not household waste. Consequently, it is not a municipal solid waste landfill and therefore is not exempt pursuant to 40 C.F.R. § 257.50(i). It is subject to the requirements for landfills contained in the federal CCR regulations.

Based on the EPA's review of the information available to it, including but not limited to, information posted by CWLP to its publicly accessible internet site entitled *CCR Rule Compliance Data and Information,* ("federal CCR website"); information submitted by CWLP on July 5, 2022 and August 30, 2022 EPA has determined that CWLP has failed to comply with and is in violation of the requirements of 40 C.F.R. Part 257, Subpart D, as specifically alleged in Attachment 1-3 for Landfill Unit 2.

According to Section 3008(a) of RCRA, EPA may issue an order assessing a civil penalty for any past or current violation, requiring compliance immediately or within a specified time period, or both. Although this letter is not such an order or a request for information under Section 3007 of RCRA, 42 U.S.C. § 6927, we request that you submit a response in writing to us no later than 45 days after receipt of this letter documenting the actions, if any, which you have taken or plan to take to establish compliance with the requirements listed in Attachments 1, 2, and 3. You should submit your response to Andrea Dierich, at Dierich.andrea@epa.gov.

If you want to confer with us, you should contact Ms. Dierich within 10 calendar days after you receive this letter. Please be advised that this conference is not a settlement negotiation covered by Federal Rule of Evidence 408 and we may use any information you submit in support of an administrative, civil, or criminal action.

You should direct questions about this letter to Andrea Dierich. Questions from legal counsel can be directed to Rich Clarizio, in EPA Region 5's Office of Regional Counsel, at (312) 886-0559 or Clarizio.Richard@epa.gov.

Sincerely,

Michael D. Harris
Division Director
Enforcement and Compliance Assurance Division

cc: Paul Eisenbrandt, IEPA, (paul.eisenbrandt@illinois.gov)
Deborah Williams, CWLP (Deborah.williams@cwlp.com)

Attachment 1
CWLP – Landfill Unit 2
Location Restrictions
Violation of 40 C.F.R. §§ 257.60 to 257.64

Since October 17, 2018, CWLP failed to demonstrate compliance with 40 C.F.R. §§ 257.64(a) and (c). 40 C.F.R. § 257.64(a) prohibits an existing CCR landfill from being located in an unstable area. 40 C.F.R. § 257.64(c) provides that the owner or operator of an existing CCR landfill must obtain a certification by a qualified professional engineer (QPE) or approval from the Participating State Director or EPA demonstrating that it has met the requirements of 40 C.F.R. § 257.64(a). This demonstration must be placed in the owner's or operator's website pursuant to 40 C.F.R. § 257.107(e).

CWLP has not placed any documents on its Federal CCR website concerning the Location Restriction requirements, 40 C.F.R. §§ 257.60 to 64, for its existing CCR landfill (Unit 2).

There is a three-page document entitled *City Water, Light and Power CCR Surface Impoundment Location Restrictions* (October 2018) (SILR) on CWLP's Federal CCR Website. This document refers to a geotechnical analysis that was conducted for the landfill as part of the permitting process. *See* SILR page 3 ("Unstable Area"). No other information is provided. As it relates to CWLP's CCR Landfill, this document does not comply with the provisions of 40 C.F.R. §§ 257.60 to 64. Therefore, CWLP has failed to demonstrate compliance with 40 C.F.R. § 257.64(a).

Further, the SILR appears to have been generated by Andrews Engineering but does not contain a signature or a certification by a professional engineer. As such, this document also does not satisfy the certification requirements of 40 C.F.R. § 257.64(c).

CWLP – CCR Landfill Unit 2
Run-on and Run-off Controls for CCR Landfills
Violations of 40 C.F.R. § 257.81

CWLP failed to comply with 40 C.F.R. § 257.81(c)(4), which requires the owner or operator of an existing CCR landfill to prepare periodic run-on and run-off control system plans every five years. The date of completing the initial plan is the basis for establishing the deadline to complete the first subsequent plan.

CWLP completed its initial run-on and run-off control plan and posted the plan to its federal CCR website on or about October 13, 2016. The periodic run-on and run-off plan was required to be completed on October 13, 2021. The periodic run-on and run-off plan was also required to be posted on CWLP's federal CCR website according to 40 C.F.R. § 257.107(g). To date, no such report is posted in CWLP's CCR federal website. Therefore, CWLP failed to timely complete its periodic run-on and run-off control system plan, in violation of 40 C.F.R. § 257.81(c)(4).

Attachment 2
CWLP – Landfill Unit 2
Groundwater Monitoring Systems
Violations of 40 C.F.R. § 257.90 et seq.

I. Introduction

Executive Summary

This Attachment 2 lists potential violations of the federal CCR requirements for groundwater monitoring, corrective action and website posting at the City Water, Light and Power ("CWLP") Landfill Unit 2 (LDF Unit 2 or Unit 2). See, 40 C.F.R. §§ 257.90 – .98, .105 and .107. EPA reviewed the information CWLP posted on its federal CCR website and CWLP's July 5, 2022 and August 30, 2022, information request responses.

CWLP's existing groundwater monitoring program was not designed to meet the federal CCR groundwater monitoring and corrective action regulations. Consequently, there are large portions of required information that are not posted on its federal CCR website and do not exist independently. What is posted on CWLP's federal CCR website is of minimal value in terms of compliance with the federal groundwater monitoring and corrective action CCR requirements.

CWLP's Unit 2 is in violation of all the substantive requirements of 40 C.F.R. §§ 257.90 – 98 based on EPA's review of the documents posted on CWLP's federal CCR website. EPA's review of additional information submitted by CWLP on July 5, 2022 and August 30, 2022, does not change that assessment. In short, CWLP does not have an adequate groundwater monitoring system or sampling and analysis program that meets the requirements of 40 C.F.R. § 257,.90 nor has CWLP met its corrective action requirements, even though there are exceedances of the groundwater protection standards for arsenic and lead.

Solely for the purposes of illustration, the following are some of the major deficiencies:

- CWLP does not have a sampling and analysis program nor a groundwater detection or assessment program that meets the requirements of the federal CCR program;
- CWLP has not installed a groundwater monitoring system that accurately represents the quality of background groundwater and the quality of groundwater passing the waste boundary of the CCR unit such that all potential contaminant pathways are monitored;
- CWLP's ambient groundwater quality standards (AGQS) are not acceptable substitutes for properly calculated background values or the appropriate groundwater protection standards (GWPS);
- CWLP uses sampling data in their statistical methods that are unacceptable because they have practical quantitation limits (PQLs) that are at or above maximum concentration limits (MCLs);
- CWLP identifies statistically significant increases or levels when there is a progressive increasing trend over eight consecutive quarters where the concentrations exceed applicable AGQS or maximum allowable predicted concentration (MAPC) values, or if an organic constituent exceeds its preceding concentration;
- CWLP does not monitor all of the appendix III and IV constituents with the required

frequency;
- CWLP has not characterized the nature and extent of releases of appendix IV constituents since May of 2019;
- CWLP has not initiated nor completed an assessment of corrective measures for releases of appendix IV constituents;
- CWLP has not completed a final remedy report; and
- CWLP has failed to generate the required annual and semi-annual reports or post the required notifications and documents to its federal CCR website.

The potential violations identified below are not an exhaustive list of violations. Consequently, EPA reserves the right to add to the violations prior to EPA entering into a written agreement with CWLP to remedy the violations. To return to compliance, CWLP will have to develop for EPA review and approval, a written groundwater monitoring program that meets the requirements of the federal CCR regulations and develop for EPA's review and approval a written assessment of corrective measures (ACM), and a written final remedy report (FRR) that addresses releases of appendix IV constituents since at least May 2019. It will then have to implement the EPA-approved groundwater monitoring program, ACM and FRR.

CWLP Landfill Background

The City of Springfield, Office of Public Utilities ("City Waste, Light and Power" or "CWLP") owns and operates a 40-acre solid waste disposal facility, Flue Gas Desulfurization ("FGDS") Landfill site. This area was initially permitted by the Illinois EPA in 1981 for Environmental Site Developers, Inc. (ESD). The original site development identified three potential waste disposal units identified as Cells 1, 2, and 3. In June of 1988, the Illinois EPA granted permission to transfer ownership from ESD to CWLP. In 1993 the Illinois EPA granted permission to separate Cell 1 from Cells 2 and 3 as Cell 1 was being closed under Illinois EPA regulations. Cell 1 was officially designated as Unit 1 and Cells 2 and 3 were designated "Unit 2". Unit 2 has a permitted disposal area of approximately 22-acres. Currently, only 3.5-acres[1] of Unit 2 has been developed for operation[2]. EPA's review below is limited to Unit 2 and refers to the area regulated under the CCR rules at 40 C.F.R. §§ 257.50-107. Additionally, EPA assumed that there were no lateral expansions to Unit 2 as defined by 40 C.F.R. § 257.53.

CWLP's Unit 2, is permitted to dispose of flue gas desulfurization sludge, bottom ash, fly ash, and lime sludge related to the operation of CWLP's power generating station. Unit 2 was permitted in 1995 by the Illinois EPA and was constructed pursuant to 35 Illinois Administrative Code Part 811[3]. The permit (No. 1995-243-LFM) lays out construction specifications, groundwater monitoring systems, and statistical analysis for determining facility action.

[1] Exact dimensions and acreage of Unit 2 are needed due to discrepancy with Appendix C to the 2016 Closure Plan states that the Unit 2 cover area is 22.3 acres.
[2] (Andrews 2016c) CWLP Annual Inspection Report for Coal Combustion Residuals Landfill, January 2016. Prepared by Andrews Engineering, Inc.
[3] (Andrews 2017a) CWLP Groundwater Monitoring System Certification, October 2017. Prepared by Andrews Engineering, Inc.

CWLP provides four documents on its federal CCR website in relation to the Unit 2 groundwater monitoring system.

- (Andrews, GWMS Cert.) Groundwater Monitoring System Certification. October 2017
- (Andrews, GWMS Stat.) Groundwater Statistical Method Certification. October 2017
- (Andrews, GW 2017) Annual Groundwater Monitoring and Corrective Action Report Year Ending December 31, 2017
- (Andrews, GW 2018) Annual Groundwater Monitoring and Corrective Action Report Year Ending December 31, 2018

These four reports provide insufficient information on the groundwater monitoring system in place for Unit 2. CWLP is required to provide detailed information on the groundwater monitoring system and the annual results of that monitoring. See, 40 C.F.R. § 257.90(e) and (f). The information required includes, but is not limited to, an identification of all background (or upgradient) and downgradient monitoring wells and the well identification numbers. This information is not on its federal CCR website and is not in its 2017 or 2018 Annual Report. Additionally, it has not posted any Annual Report on the federal CCR website since that time.

In its 2017 Groundwater System Certification CWLP indicated that information on its GWM Program could be found in its operating record. On August 3, 2022, EPA requested a copy of the GWM Program. CWLP directed EPA in its August 30, 2023, response to "Attachment 30 Groundwater and Leachate Monitoring Program, July 1995." See, CWLP Answer question 29. The document clearly states that the GMP Program is only a proposed monitoring system and that the drawings of well locations are only for illustrative purposes. See, AT30-1 and Figure AT-30-1.

Due to limited information provided on Unit 2 on CWLP's federal CCR website, EPA sent two 3007 information requests to CWLP. These information requests were dated.

- May 4, 2022 with a response date from CWLP on July 5, 2022
- August 3, 2022 with a response date from CWLP on August 30, 2022

EPA's review considers both the documents listed on CWLP's federal CCR website; information provided by CWLP in response to the information requests and other available information.

CWLP Groundwater Monitoring Network Background Information

As discussed more fully below, CWLP's existing groundwater monitoring (GWM) network was first proposed by CWLP and approved by IEPA as part of its permit for Unit 2 in 1995. It was not approved by IEPA under the federal CCR program and has not been approved by EPA. Over the years there have been modifications to the system proposed by CWLP and approved by IEPA. From the available information EPA could not discern any modifications that were completed to comply with the federal CCR regulations which were promulgated in 2015. The following information is obtained from documents not on the federal CCR website but from other identified sources.

Figure AT30-7[4] indicates a total of eleven wells that were proposed for the water quality monitoring network in 1995. Two wells (G-113 and G-114) were in existence before 1995. The proposed wells included four new wells along the northern boundary (G-116, G-117, G-118, and G-113), four new wells along the northeastern boundary (G-119, G-202, G-120, and G-121), and one new well along the western boundary (G-115). The eight new wells along the north and northern half of the eastern boundary are spaced on approximately 200-foot centers. This placing appears to correspond to the findings of a MAP model analysis, which evaluated both northern and northeastern flow directions and apparently indicated that wells should be placed along these boundaries at this density to achieve the desired monitoring efficiency (i.e., to adequately monitor groundwater).

EPA requested annual groundwater flow reports from IEPA for the years 2017 – 2021 (IEPA annual reports). The IEPA annual reports state that the permitted program contains eight groundwater monitoring wells and three assessment wells[5]. These reports list out the wells provided in Table 1 as part of the groundwater monitoring system for Unit 2[6]. However, R111 is not included in other documentation provided by CWLP to EPA as part of the groundwater monitoring system.

Table 1

Well #	Upgradient/Downgradient	Geologic Layer
G110	Upgradient	Basal Sand
G111	Upgradient	Basal Sand
G112	Upgradient	Basal Sand
G113	Upgradient	Creek Fill Material
G120	Upgradient	Creek Fill Material
G121	Downgradient	Creek Fill Material
G122	Downgradient	Creek Fill Material
R101	Upgradient	Lower Cohesive Deposit
AW-1	Downgradient	Lower Cohesive Deposit
AW-2	Downgradient	Lower Cohesive Deposit
AW-3/RW-3	Downgradient	Lower Cohesive Deposit

Modification 12 of the permit issued by IEPA (Unit 2 Landfill Permit 1995-243), along with every permit modification since 1996, lists the wells required by the permit on a table in Section VII. Table 2 is a modified version of the table included in the IEPA permit and subsequent modifications. The first column added to the table is from the September 28, 2016, IEPA approved permit modification. See, 2016 Closure and Post-Closure Plan, Appendix B, p. 16. The next three columns provide the well designations used by CWLP and IEPA. The fifth and sixth columns

[4] Proposed monitoring well network with details provided in Table AT30-1 (Patrick 1995b).

[5] Andrews Engineering. July 14, 2017. Annual Groundwater Flow Evaluation. Sent to IEPA.

[6] Andrews Engineering, Inc., April 2018. FGDS Development Landfill, Annual Report, Year Ending December 31, 2017. Page B-1

indicate the geologic unit and purpose of each well. The final column is added to the permit tables to indicate whether the well is currently in the groundwater monitoring program.

Table 2

Permit-Required Monitoring Well Network for Unit 2, FGDS Landfill

Wells Listed in 2016 C/PC Plan	Pre-1995 Applicant Designation	Post-1995 Applicant Designation	Illinois EPA Designation	Geologic Unit Monitored	Intended Purpose	In Current Network?
NL	G110	G110	G110	BS	Upgradient	Yes
NL	G111	G111	R111	BS	Upgradient	Yes
NL	G112	G112	G112	BS	Upgradient	Yes*
G114	G114	G113	G113	CF	Upgradient	Yes*
G115	G115	G120	G120	CF	Upgradient	Yes**
NL	R101	R101	R101	LCD	Upgradient	Yes
G113	G113	G124	G124	BS	ZOA	No
G116	G116	G121	G121	CF	ZOA	Yes
G117	G117	G122	G122	CF	ZOA	Yes
G118	G118	G123	G123	CF	ZOA	No
G119	G119	G126	G126	SS	ZOA	No
G120	G120	G128	G128	SS	ZOA	No
G121	G121	G129	G129	SS	ZOA	No
G201	G201	G125	G125	CF	Compliance	No
G202	G202	G127	G127	SS	Compliance	No
NL	AW-1	AW-1	AW-1	BS	Assessment	Yes
NL	AW-2	AW-2	AW-2	BS	Assessment	Yes
NL	AW-3	AW-3	AW-3	BS	Assessment	Yes

Notes:
NL = Not listed
BS = Basal sand
CF = Creek fill
LCD = Lower cohesive deposit
SS = Shallow sand
ZOA = Zone of Attenuation
* = Well is located spatially upgradient of Unit 2 and spatially downgradient of Unit 1 Landfill.
** = Well is located spatially upgradient of Unit 2 and spatially downgradient of the Dallman Ash Pond.

Most of the monitoring wells listed in the permit are not part of the existing network. Available information does support that seven of the required wells have been constructed. The seven wells include both compliance wells and five of seven zone of attenuation (ZOA) wells required by the permit. As will be discussed more fully below, EPA believes that only three wells may have the potential to monitor certain downgradient geologic strata. They are AW-2, G121, and G122. EPA

does not believe that CWLP's present groundwater monitoring system contains an acceptable upgradient well to measure background. Unless otherwise noted, EPA is examining compliance with the detection and assessment monitoring program using downgradient wells (AW-2, G121, G122).

Releases of appendix IV constituents since May 2019.

As indicated more fully below, CWLP failed to establish background as required by 40 C.F.R. § 257.95(h)(3). CWLP failed to have an adequate groundwater monitoring system, thus it was unable to establish appropriate and accurate background. In the absence of adequate background, the GWPS become the concentrations identified in 40 C.F.R. § 257.95(h)(1) and (2). Consequently, the GWPS for Unit 2 are the following concentration limits:

Table 3

Name	GWPS/MCL in mg/L
Antimony (total)	**.006**
Arsenic (total)	**.01**
Barium (total)	**2**
Beryllium (total)	**.004**
Cadmium (total)	**.005**
Chromium (total)	**.1**
Cobalt (total)*	**.006**
Fluoride	**4**
Lead (total)*	**.015**
Lithium*	**.04**
Mercury (total)	**.002**
Molybdenum*	**.1**
Radium-226 and -288	**5 pCi/L**
Selenium (total)	**.05**
Thallium	**.002**

*Concentrations set by 40 CFR 257.95(h)(2)

Even though CWLP's downgradient monitoring system is not sufficient, results for the existing monitoring wells have detected exceedances above the GWPS[7] since May 2019. Based on results reported in Attachment 7 to CWLP's response to the August 3, 2022 Information Request, EPA has identified statistically significant levels (SSL)[8] of arsenic and lead above the Table 3 GWPS[9], including the individual sampling results shown in Table 4 below.

[7] All references to GWPS within this document, unless noted otherwise, are the concentration limits provided in Table 3.

[8] EPA used CWLP's methodology for identifying SSI's and SSL's for its surface impoundments since CWLP has not justified use of a different methodology.

[9] In response to Question 4 of the August 3, 2022 Information Request, "Quarterly monitoring results are compared to established intrawell AGQSs and maximum allowable predicted concentrations (MAPCs)."

Table 4

Date	Well	Constituent	GWPS/MCL (mg/L)	Concentration (mg/L)
2019 – 2nd	AW-2	Arsenic	.01	0.0284
2019- 4th	AW-2	Arsenic	.01	0.0286
	AW-2	Lead	0.015	0.282
2020- 2nd	AW-2	Arsenic	.01	0.0274
	AW-2	Lead	.015	0.158
2021 – 2nd	AW-2	Arsenic	.01	0.0202
	AW-1	Lead	.015	0.164
2022 – 2nd	AW-2	Arsenic	.01	0.0226
	G121	Arsenic	.01	.0163

Based on the comparison between sampling results and the GWPS, arsenic and lead were detected at SSL[10]. CWLP was required to comply with the corrective action requirements since at least May of 2019. It has not.

II. Potential Violations

1. Groundwater Monitoring Network - Background/upgradient wells - 40 C.F.R. §§ 257 .90(b)(1) and 91(a)(1), (b) and (c).

A. Regulatory Summary

40 C.F.R. § 257.90(b)(1) requires an owner or operator to have a groundwater monitoring system that complies with 40 C.F.R. § 257.91 in place by October 17, 2017.

40 C.F.R. § 257.91(c) requires the owner or operator to have a groundwater monitoring system that meets the performance standards of subsection (a) and the site-specific information required by subsection (b). The system must include at a minimum one upgradient and three downgradient wells and such additional wells as are necessary to accurately represent the quality of background groundwater that has not been affected by leakage from the CCR unit and the quality of groundwater passing the waste boundary of the CCR unit.

40 C.F.R. § 257.91(a)(1) establishes the performance standard for CCR groundwater monitoring systems by requiring facilities to install a groundwater monitoring system that consists of a sufficient number of wells, installed at appropriate locations and depths. The installed groundwater monitoring system must yield groundwater samples from the uppermost aquifer that:

- accurately represent the quality of background groundwater that has not been affected by leakage from a CCR unit (40 C.F.R. § 257.91(a)(1)); and
- accurately represent the quality of groundwater passing the waste boundary of the CCR unit. The downgradient monitoring system must be installed at the waste boundary that ensures detection of groundwater contamination in the uppermost aquifer. All potential

[10] In Attachment 7, CWLP also recorded Arsenic at AW-2 in the second quarter of 2019 as an SSL based on their statistical analysis with the AGQS, which is greater than the MCL.

contaminant pathways must be monitored (40 C.F.R. § 257.91(a)(2)).

40 C.F.R. § 257.91(b) identifies the following technical information that should be considered:

- the number, spacing and depth of the monitoring system (40 C.F.R. § 257.91(b))
- aquifer thickness, groundwater flow rate and direction (40 C.F.R. § 257.91(b)(1)
- saturated and unsaturated geologic units and fill materials overlying the uppermost aquifer, materials comprising the uppermost aquifer, and materials comprising the confining unit defining the lower boundary of the uppermost aquifer, including, but not limited to, thicknesses, stratigraphy, lithology, hydraulic conductivities, porosities, and effective porosities. 40 C.F.R. § 257.91(b)(2).

B. Discussion

For a well to accurately represent the quality of background groundwater that has not been affected by leakage from Unit 2 ("Background Groundwater") CWLP must, *inter alia,* determine the groundwater flow direction to and around Unit 2.[11]

CWLP has several monitoring wells that are located spatially upgradient and were installed around and between Landfill Unit 1 and Landfill Unit 2. These wells were put in place to meet the regulatory requirements of Illinois EPA permit requirements for Permit No. 1995-243-LFM. At the time, in 1995, the monitoring system was designed for monitoring all of Landfill Unit 2[12].

CWLP completed two groundwater models at the time of the initial permit application in 1995 to characterize the site. The Groundwater Impact Assessment (GIA) (Patrick Engineering, Inc. [Patrick] 1995a) describes application of a model (the Monitoring Analysis Package [MAP] software developed by Golder Associates) designed to evaluate the lateral spacing and locations of the groundwater monitoring wells. Specifically, the Monitoring Efficiency Model (MEMO) and Plume Generation Model (PLUME) were used to evaluate potential contaminant plume width and overall monitoring well network efficiency.

The GIA analyses included a detailed characterization of six geologic units present at the landfill, including three principal permeable units (creek fill, shallow sand, and basal sand) and three lower-permeable units (upper and lower cohesive deposit and shale bedrock), modeling the flow paths through the geologic materials, and calculating MAPCs at the ZOA. The GIA provided the technical basis for a monitoring network composed of 18 wells that were written into the landfill permit. The resulting proposed monitoring well network was presented on Figure AT30-7 with details provided in Table AT30-1 in the Groundwater and Leachate Monitoring Programs (Patrick 1995b), which was Attachment 30 to the Application for Significant Modification to Permit

[11] Groundwater does not flow in straight lines. It flows from areas of higher hydraulic head (the relative higher elevation) to areas of lower hydraulic head (the relative lower elevation) and is expressed in terms of "elevations in feet above mean sea level" (ft msl). The direction and rate of groundwater flow are largely controlled by the porous nature of the materials, the slope of the water table, and the geometry and nature of the subsurface rock.

[12] Based on available information, CWLP has one active phase in Landfill Unit 2. This active phase is located in the northwestern corner of Landfill Unit 2. EPA is not aware of any lateral extensions outside of the active phase since 2015. For the purposes of this NOV, the CCR unit is the active phase of the Unit 2 landfill, but all modeling and groundwater monitoring design has been developed with respect to the entire unit.

(Andrews 1995b). See Table 2 above for specifics.

The Patrick Groundwater Monitoring Program (Patrick 1995b) proposed a monitoring network focused on two areas of concern where the GIA predicted the greatest potential for contaminant transport: (1) the creek fill materials and (2) the shallow sand unit. This was determined by the contaminant transport model, which ran two different cases to account for the range in expected conditions below the landfill. Case A was a four-layer model where the creek fill unit was the uppermost saturated, granular unit; and Case B was a five-layer model where the shallow sand was the uppermost saturated, granular unit. The highest groundwater concentration prediction factor (GCPF) for Case A was in the creek fill while the highest GCPF for Case B was in the shallow sand. While neither unit is considered an extensive aquifer, maps included with the GIA indicated both units extended from the center of Unit 2 Landfill to its downgradient edge (zone of attenuation).

Of the supported geologic units, three upgradient wells were screened in the basal sand (G110, R111, and G112), and no wells were screened in the shallow sand units. This is problematic on the downgradient side as well since only one downgradient well is screened within the basal sand[13] (AW-2) and none are screened in the shallow sand unit. This creates gaps in monitoring groundwater flow in, through and around Unit 2. Furthermore, the groundwater flow beneath these units is complex.

EPA is concerned that the existing system does not have an adequate upgradient monitoring well to establish background nor sufficient downgradient wells to detect releases from Unit 2. In sum, CWLP does not have an upgradient/background monitoring well that complies with 40 C.F.R. § 257.90(b)(1)(i), § 257.91(a)(1) and (c). As discussed in later regulatory sections, the lack of an adequate background monitoring well creates further compliance issues. See discussion under 40 C.F.R. § 257.93.

2. Groundwater Monitoring Network – Downgradient wells - 40 C.F.R. §§ 257.90(b)(1) and 91(a)(2), (b) and (c)

CWLP potentially has three wells that may partially detect downgradient groundwater flow passing the waste boundary of Unit 2. These wells, G121, G122 and AW-2, are all located on the northcentral to northeast corner of Unit 2 and G121 and G122 are screened in creek fill material while AW-2 is screened in the lower cohesive deposit. However, CWLP has not installed any wells in the northwest corner of the unit, which is an unmonitored waste boundary of Unit 2. Modification 12 of the permit issued by IEPA in 2016, along with every permit modification since 1996, lists the wells required by the permit. See Table 2 above.

Most of the monitoring wells listed on the permit are not part of the existing network. Available information does support that seven of the required wells have been constructed. The seven wells include both compliance wells and five of seven ZOA wells required by the permit.

[13] Boring logs indicate AW-2 is screened through a significant sandy layer in the lower portion of the screened interval. The upper portion of the screened interval is part of the lower cohesive deposit. CWLP has identified in its groundwater reports that AW-2 is an assessment well for the lower cohesive deposit.

The existing monitoring network does not meet the requirements of 40 C.F.R. § 257.91(a)(2) that requires all flow paths to be monitored. The ZOA and compliance monitoring wells have not been installed or incorporated into the monitoring network. They were to be located where the MAP software indicated potential flow paths along the northern and northern half of the eastern sides of the landfill. This included ZOA monitoring wells G113 (later renamed G124), G118 and G119 located on the north side of the landfill to be screened in basal sand, creek fill, and shallow sand, respectively; as well as ZOA wells G120 and G121 located on the northern half of the east side of the landfill were to be screened in the shallow sand. The two compliance wells G201 (north side, creek fill) and G202 (east side, shallow sand) were not installed or incorporated into the monitoring well network.

Currently, the monitoring well network lacks wells in the basal sand[14], shallow sand, or creek fill east of monitoring well G122 (along the north side of the landfill). CWLP failed to add additional wells identified in its permit (see Table 2) in the shallow sand on the east side of the landfill. Consequently, the current monitoring well network does not meet the performance standard in 40 C.F.R. § 257.91(a)(2) because the monitoring network has an insufficient number of wells, based on site-specific information, to monitor the groundwater quality passing the waste boundary of Unit 2. In sum, CWLP does not have downgradient monitoring well system that complies with 40 C.F.R. § 257.90(b)(1)(i) and § 257.91(a)(2).

3. Groundwater Sampling and Analysis Requirements - 40 C.F.R. §§ 257.93(d), (e), (g), (h), and (i).

A. Regulatory Summary

As discussed more fully below the owner or operator must have a sampling and analysis program that is based on:

- eight sample results representative of background groundwater quality for each constituent in compliance with § 257.94(b);
- collection of an appropriate number of samples when conducting detection and assessment monitoring in line with § 257.94(b)-(d) and .95(b)-(d);
- utilization of the lowest achievable PQLs for constituents per § 257.93(g)(5); and
- can determine if there is an SSIs and SSL per § 257.93(h).

To ensure that CCR units are not contaminating groundwater, 40 C.F.R. § 257.90(b)(ii) requires the owner or operator to develop the groundwater sampling and analysis program to include selection of the statistical procedures to be used for evaluating groundwater monitoring data as required by § 257.93.

40 C.F.R. § 257.93 establishes the sampling and analysis procedures to ensure accurate monitoring that is representative of groundwater quality at background and downgradient wells required by § 257.91. The sampling and analysis require:

[14] AW-2 is screened through a sandy geologic layer and the lower cohesive deposit layer but determined the well is a lower cohesive assessment well. CWLP has not differentiated the monitoring between the two geologic layers nor would it be able to differentiate the impacts in the different units.

- The owner or operator of the CCR unit must establish background groundwater quality in a hydraulically upgradient or background well(s) for each of the constituents required in the particular groundwater monitoring program that applies to the CCR unit as determined under §§ 257.94(a) or 257.95(a). Background groundwater quality may be established at wells that are not located hydraulically upgradient from the CCR unit if it meets the requirements of § 257.91(a)(1) (40 C.F.R. § 257.93(d)).
- The number of samples collected when conducting detection monitoring and assessment monitoring (for both downgradient and background wells) must be consistent with the statistical procedures chosen under 40 C.F.R. § 257.93(f) and the performance standards under 40 C.F.R. § 257.93(g). The sampling procedures shall be those specified under § 257 .94(b) through (d) for detection monitoring, § 257 .95(b) through (d) for assessment monitoring, and § 257.96(b) for corrective action (40 C.F.R. § 257.93(e)).
- Per 40 C.F.R. § 257.93(g) any statistical method chosen under 40 C.F.R. § 257.93(f) shall comply with the following performance standards, as appropriate, based on the statistical test method used:
    - If a tolerance interval or a prediction interval is used to evaluate groundwater monitoring data, the levels of confidence and, for tolerance intervals, the percentage of the population that the interval must contain, shall be such that this approach is at least as effective as any other approach in 40 C.F.R. § 257.93 for evaluating groundwater data. These parameters shall be determined after considering the number of samples in the background data base, the data distribution, and the range of the concentration values for each constituent of concern.
    - The statistical method must account for data below the limit of detection with one or more statistical procedures that shall at least as effective as any other approach in 40 C.F.R. § 257.93 for evaluating groundwater data. Any practical quantitation limit that is used in the statistical method shall be the lowest concentration level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions that are available to the facility.
- The owner or operator of the CCR unit must determine whether or not there is a statistically significant increase (SSI) over background values for each constituent required in the particular groundwater monitoring program that applies to the CCR unit, as determined under §§ 257 .94(a) or 257 .95(a) (40 C.F.R. § 257.93(h)).
- The owner or operator must measure "total recoverable metals" concentrations in measuring groundwater quality. Measurement of total recoverable metals captures both the particulate fraction and dissolved fraction of metals in natural waters. Groundwater samples shall not be field-filtered prior to analysis (40 C.F.R. § 257.93(i)).

B. Discussion

CWLP posted on its federal CCR website the Andrews, GWMS Statistical Certification dated October 2017 stating that the selected statistical method chosen was the prediction interval procedure. However, in the August 3, 2022, information request, CWLP was asked to provide information related to the statistical method selected to evaluate groundwater monitoring data. CWLP's response to question number 4[15] is provided below:

[15] CWLP Response to August 3, 2022, EPA Information Request. Question 4.

> "Groundwater monitoring data at the Unit 2 Landfill is evaluated in accordance with Illinois EPA permit conditions. Quarterly groundwater monitoring results are compared to established intrawell AGQSs and maximum allowable predicted concentrations (MAPCs). Pursuant to 35 Ill. Adm. Code Section 813.319(a)(4)(A), an observed increase has occurred if concentrations show a progressive increasing trend over eight consecutive quarters, concentrations exceed applicable AGQS or MAPC values, or if an organic constituent exceeds its preceding concentration.
>
> As discussed in the Answer to question 2 above, the GIA provided in Attachment 2a details the sampling events relied upon to establish background, the methods for determining the number of samples and the selected statistical methods. The statistical methods utilized for the establishment of backgrounds per Title 35 Ill. Adm. Code Section 811.320(e) are conformant to 40 C.F.R. § 257.93(g)."

Attachment AT29-C of the Groundwater Impact Assessment (GIA) provides tables with the sampling events relied upon to establish background, including the well identification, the dates of the sampling events, the constituents and the concentrations of the constituents detected." Lab reports and tables in Att. AT29-C contains data for background wells G110, G111 and G112 from the years 1994 and 1995. Relatedly, p. AT29-14 in the GIA within the July,1995 Permit Modification states that: "a summary of the basal sand unit background groundwater quality data for these inorganic parameters as well as the normality test results, probability plots and upper prediction limit calculations produced in GRITS/STAT are included in Appendix AT29-E." However, the statistical data pages in Appendix AT29-E indicate that only four samples from each of the background wells (G110, G111, G112) were used to build the upper prediction limits for Appx. III constituents rather than the minimum of eight samples from each well as required in § 257.94(b) and then referred to in § 257.93(d) and (e). The use of four samples to build prediction limits and utilizing data from 1994 and 1995 does not accurately establish background quality and is out of compliance with § 257.93(d) and (e). Additionally, not all constituents were included in the establishment of background, specifically, Lithium, Molybdenum, combined Radium- 226 and -228.

CWLP's statistical significance determination is also problematic. This is addressed in the IEPA annual groundwater monitoring reports: "As Required and where applicable, the quarterly groundwater results are compared to the previous eight consecutive quarters/events and the interwell AGQS/MAPC values."[16]

Additionally, per § 257.93(i) the owner must measure "total recoverable metals" concentrations in measuring groundwater quality. Although CWLP does measure total recoverable metals they only do so on an annual basis, which is not accounted for in their statistical method.

CWLP refers to their quarterly sampling, which only applies to their G1 List which measures dissolved metals. Of the appendix III constituents sampled only pH, Total Dissolved Solids

[16] April 2018. Andrews Engineering, Inc. FGDS Development Landfill – Annual Report, Year Ending December 31, 2017.

(TDSs), and total Boron are measured quarterly at all groundwater monitoring wells. Calcium, Chloride, Fluoride, and Sulfate are measured once a year at all wells except AW-3/RW-3 which is part of the Surface Impoundment monitoring system and is not downgradient of Unit 2.

In 2019 CWLP completed two sampling events (2nd quarter and 4th quarter), but in 2020, 2021, and 2022 it only completed one annual sampling event. CWLP failed to adequately sample for appendix III constituents within the detection monitoring program as described in § 257.94(b) and has not demonstrated compliance with § 257.93(h) as there is no method identified to determine SSIs or SSLs for each sampling event as designated in § 257.93(h)(1). In addition, the background values are not determined appropriately and are based off four sampling events instead of eight as required by the federal rules. In the current GWM program CWLP concludes that an SSI exists if a constituent exceeds an AGQS or displays an increasing trend over 8 consecutive events. Inadequately calculated AGQSs and infrequently collected samples result in noncompliance with GWM CCR requirements per 40 C.F.R. § 257.

In addition to the problems presented above, CWLP's sampling and analysis program is missing the following information:

- what the actual upper prediction limits are based on;
- details provided on information to indicate how data below the limit of detection is being evaluated.

Without this information and clarity, it is unclear if CWLP is meeting the requirements of 40 C.F.R. § 257.93(g)(4) and (5).

Consequently, CWLP failed to establish background groundwater quality for each constituent, collect the required number of samples and follow sampling procedures for detection monitoring and assessment monitoring. Therefore, CWLP failed to determine statistical significance for each constituent in the GWM program. Finally, the additional information provided by CWLP[17] does not demonstrate or justify that its statistical approach complies with the federal CCR required methods for evaluating groundwater data, nor did it justify the use of data below the detection limit, nor did it use the appropriate PQLs. In sum, CWLP failed to comply with 40 C.F.R. § 257.93(d), (e), (g)(4), (g)(5), (h), and (i).

4. Groundwater Detection Monitoring Program - §§ 257.90(b)(iii) and (iv) and 257.94(a), (b), (c), (e)(1) and (3).

A. Regulatory Summary

As discussed more fully below CWLP failed to:

- conduct detection monitoring at all groundwater monitoring wells for all appendix III constituents semiannually (40 C.F.R. § 257.94(a));
- within 90 days of determining an SSI over background levels of an appendix III Constituent

[17] Additional information provided by CWLP was not found on its federal CCR website.

1) establish an assessment monitoring program in accordance with 40 C.F.R. § 257.95; or 2) complete a successful ASD (40 C.F.R. § 257.94(e)(1) & (2)) (40 C.F.R. § 257.94(e)(1) and (2));

- within 120 days of the SSI, prepare a notification that an assessment monitoring program had been established (40 C.F.R. § 257.94(e)(3)); and
- within 120 days of the SSI, post the notification that an assessment monitoring program had been established (40 C.F.R. § 257.94(e)(3)).

To ensure that CCR units are not contaminating groundwater, 40 C.F.R. § 257 .90(b)(iii) and (iv) require the owner or operator to:

- conduct detection monitoring consistent with the requirements of 40 C.F.R. § 257.94, at all background and downgradient groundwater monitoring wells;
- begin evaluating the groundwater monitoring data for SSIs over background levels for the appendix III constituents, as required by 40 C.F.R. § 257.94.

B. Discussion - 40 C.F.R. §§ 257.94(a) and (b).

In response to EPA's August 3, 2022, information request, CWLP provided "Attachment 7." Attachment 7 is a table of all sampling events from 2017 to the third quarter 2022, including sampling for dissolved metals and total metals as listed in Tables G1 and G2 from the 1995 FGDS landfill permit application. In addition to the sample results, CWLP was also asked to highlight instances of SSIs above background and SSLs above the GWPS.

Based on EPA's review of CWLP's response, EPA determined that CWLP did not sample the majority of appendix III and IV constituents on a semiannual basis, see Table 5.

Table 5[18]

Appendix III	**Appendix IV**
Calcium	Antimony
Chloride	Arsenic
Fluoride	Barium
Sulfate	Beryllium
	Cadmium
	Chromium
	Cobalt
	Fluoride
	Lead
	Lithium
	Mercury
	Molybdemum
	Radium -266 & 228

[18] Constituents listed in Table 5 have not been sampled semiannually at all wells within the GWM network, excluding the year 2019.

	Selenium
	Thallium

CWLP did not collect at least "one sample from each background and downgradient well." CWLP states in their response, "The aforementioned lists include all 40 C.F.R. Part § 257 appendix III parameters and all parameters contained in appendix IV except lithium, molybdenum, and radium 226/228. The subject parameters have been monitored on an annual basis (minimally) since 1995." The only appendix III constituent to be sampled semiannually is Boron. The only well to be sampled semiannually for all appendix III and IV constituents was AW-3/RW-3. CWLP failed to comply with 40 C.F.R. § 257.94(a) and (b) and thus violated 40 C.F.R. § 257.90(b)(1)(iv).

40 C.F.R. § 257.94(b) also lays out the establishment of background. The determination of background concentrations is discussed in the 1996 Application for Significant Modification of Permit (Andrews 1996) submitted to IEPA in July 1996. This modification updated the Applicable Groundwater Quality Standard (AGQS) for the FGDS Unit 2 Landfill. The previous attempt at establishing the AGQS (in the Groundwater Monitoring Program) was not approved by IEPA.

The 1996 modification established AGQS for the creek fill materials based on four quarters of data from one well (G-113). AGQS were not established for the shallow sand unit. AGQS were established for the basal sand unit, using four quarters of data from wells G-110, G-111, G-112 and G-120. While wells G-110 through G-113 were screened in the basal sand, well G-120 was screened in the creek fill rather than the basal sand. Only two of the five wells used to establish AGQS were upgradient of potential sources of contamination. Well G-120 is downgradient of the Dallman Ash Pond. Wells G-111 and G-112 are downgradient of the closed Unit 1 of the landfill.

Due to the inadequate number samples from unsupported upgradient wells, CWLP failed to comply with 40 C.F.R. § 257.90(b)(1)(iii) and § 257.94(a) and (b).

C. Discussion - 40 C.F.R. § 257.94(c)

This regulation requires the number of samples collected and analyzed for each background well and downgradient well during semiannual sampling events to be at least one sample from each background and downgradient well. 40 C.F.R. § 257.94(c) cites § 257.93(e) which references the requirements in § 257.94 (b). Not only must all wells within the GWM system be sampled but they also must sample for all appendix III and IV constituents. Reviewing data provided in Attachment 7, there are no apparent sampling events that meet this criteria. Again, CWLP failed to sample all GWM wells for Lithium, Molybdenum, and Radium 266 and 228. Consequently, CWLP has not complied with the requirements of 40 C.F.R. § 257.94(c).

D. Discussion - 40 C.F.R. § 257.94(e)(1) and (3)

CWLP indicates exceedances of the AGQS/SSIs in the 2nd Quarter sampling event of 2017 for boron and pH. Boron, the only appendix III constituent sampled each quarter at all wells, also

exceeded background in the 4th Quarter of 2017. As CWLP did not provide dates[19] for their monitoring events, and an initial detection monitoring event was required by October 17, 2017, CWLP should have initiated the assessment monitoring no later than April 2018. CWLP was required to post on its federal CCR website by May 2018 a notification stating that an assessment monitoring program had been established. It has not.

Since CWLP has a deficient GWM system and an inadequate detection monitoring program, its assessment monitoring program is similarly deficient. Additionally, CWLP responded to question 5 in its August 3, 2022 response that: "Sampling of appendix III and IV constituents per 40 C.F.R. § 257 is not conducted at the Unit 2 Landfill." CWLP failed to comply with § 257.94(e)(1) and (3) when it did not enter into assessment monitoring by the first quarter of 2018.

In summary, CWLP failed to sample all wells for all constituents at a semiannual frequency. It failed to appropriately analyze the results of each sampling events and identify SSIs triggering assessment monitoring.

Groundwater Assessment Monitoring Program - 40 C.F.R. § 257.95.

Violation Summary

As discussed more fully below, CWLP failed to:

- comply with 40 C.F.R. § 257.95(a), when it failed to initiate assessment monitoring in 2018 when boron exceeded CWLP's calculated background at downgradient well G122 for each quarter of sampling in 2017;
- comply with 40 C.F.R. § 257.95(b), when it failed to sample and analyze the groundwater for all appendix IV constituents within 90 days of triggering assessment monitoring;
- comply with 40 C.F.R. § 257.95(d)(1), (d)(2), (d)(3), and (h), when it did not complete a resample within 90 days of the initial assessment monitoring event, thus failing the timeframes for establishing GWPS;
- comply with 40 C.F.R. § 257.95(g) for arsenic exceedance at AW-2 in 2nd quarter of 2019;
- comply with 40 C.F.R. § 257.90€(6)(iii) and (iv), by not reporting within the beginning of the 2018 GWMCA report appendix III and IV constituents at SSIs and SSLs and the monitoring wells associated with those SSIs and SSLs.

5. Initial Assessment Monitoring Sampling Compliance Requirements - 40 C.F.R. § 257.95(a) and (b)

A. Regulatory Summary.

40 C.F.R. § 257.95(a) and (b) require that assessment monitoring is triggered whenever an SSI

[19] IEPA Annual Reports reference the schedule provided in under permit Condition VII.18 within the 1995 permit application. CWLP lists sampling for the 1st quarter to take place between January – February; 2nd quarter to take place between April and May; 3rd quarter to take place between July and August; and the 4th quarter to take place between October and November. CWLP provided no sampling, field data or logs with any of their reports.

over background levels has been detected for one or more appendix III constituents, and that within 90 days of triggering an assessment monitoring program, and annually thereafter, the owner or operator must sample and analyze the groundwater for all appendix IV constituents. The number of samples collected and analyzed for each well during each sampling event must be consistent with 40 C.F.R. § 257.93(e) and must account for any unique characteristics of the site, but there must be at least one sample from each well. See 40 C.F.R. § 257.95(b).

B. Discussion

During the 2nd and 4th quarters of 2017, CWLP had exceedances of boron over their calculated background[20], which based on CWLP's one to one comparison for its data analysis, resulted in a SSI for each sampling event in 2017. CWLP did not enter assessment monitoring as required in 40 C.F.R. § 257.95(a). It never posted an assessment monitoring notification as required in 40 C.F.R. § 257.94(e)(3). CWLP's failure to enter into assessment monitoring resulted in non-compliance with the following applicable requirements of 40 C.F.R. § 257.95:

- A CCR Facility must initiate an assessment monitoring program within 90 days of detection of an appendix III constituent, which includes annual monitoring for all appendix IV constituents and semi-annual sampling for all appendix III constituents and for the appendix IV constituents that are detected.
- After obtaining results from the initial sampling event, within 90 days and on a semiannual basis thereafter, resample all wells and conduct analyses for all parameters in appendix III and IV.
- Establish groundwater protection standards for all constituents detected in § 257.95(b) or (d) and include the associated information in the annual groundwater monitoring and corrective action reports.

An adequate assessment monitoring program requires an adequate GWM system. Since CWLP's GWM system is deficient its assessment monitoring program is similarly deficient.

As required by 40 C.F.R. § 257.95(a) and (b), CWLP was to initiate an assessment monitoring program and complete sampling and analysis of all appendix IV constituents at each well within the federally required GWMS. Although it sampled for all appendix IV constituents within the second quarter of 2018, it did not complete the sampling of each constituent at each well. Lithium, molybdenum, and radium 226 and 228 were not sampled at any well except at AW-3/RW-3 in the second quarter of 2018[21]. No other well in the system was sampled and analyzed for these four appendix IV constituents.

[20] Appendix III constituents are compared statistically to the background calculations derived from 40 C.F.R. § 257.94(b). Although EPA recognizes CWLP has failed to meet the requirements for calculating background per § 257.94(b), CWLP was still required to determine statistically significant increases over the background levels they calculated for compliance with the CCR regulations.

[21] In CWLP's August 30, 2022 response, CWLP confirms this in response to question five on page 6.

Additionally, there was not a second sampling event in 2018. CWLP completed two sampling events in 2019[22], but then reverted to one sampling event a year for 2020, 2021, and 2022.

6. Subsequent Assessment Monitoring Sampling Compliance Requirements - 40 C.F.R. §§ 257.95(d)(1), (d)(2), (d)(3), and § 257.95(h)

A. Regulatory Summary.

40 C.F.R. § 257.95(d) requires that after obtaining the results from the initial and subsequent sampling events required by 40 C.F.R. § 257.95(b), the owner or operator must conduct assessment monitoring as follows:

- Within 90 days of obtaining the results, and on at least a semiannual basis thereafter, comply with 40 C.F.R. § 257.95(d)(1) by:
  - resampling all wells that were installed pursuant to the requirements of 40 C.F.R. § 257.91;
  - conducting analyses for all appendix III constituents and for those appendix IV constituents detected in response to the sampling and analysis it performed pursuant to 40 C.F.R. § 257.95(b), and
  - recording their concentrations in the facility operating record.

  The number of samples collected and analyzed for each background well and downgradient well during subsequent semiannual sampling events must be consistent with 40 C.F.R. § 257.93(e) and must account for any unique characteristics of the site, but there must be at least one sample from each background and downgradient well.
- Comply with 40 C.F.R. § 257.95(d)(2) by establishing GWPS for all constituents detected pursuant to 40 C.F.R. § 257.95(b) or (d). Each GWPS must be established in accordance with paragraph 40 C.F.R. § 257.95(h); and
- Comply with 40 C.F.R. § 257.95(d)(3) by including in its annual GWMCA required by 40 C.F.R. § 257.90(e), the recorded concentrations required by 40 C.F.R. § 257.95(d)(1), identifying the background concentrations established under 40 C.F.R. § 257.94(b), and identifying each GWPS established under 40 C.F.R. § 257.95(d)(2). (40 C.F.R. § 257.95(d)(3)).

The Owner or Operator must establish GWPS to properly determine SSLs in subsequent assessment monitoring events. The owner or operator must determine the GWPS for detected constituents prior to the first assessment monitoring event.

40 C.F.R. § 257.95(h) requires the owner or operator to establish a GWPS for each appendix IV constituent detected in the groundwater. The GWPS shall be:

- For all constituents for which a maximum contaminant level ("MCL") has been established under 40 C.F.R. §§ 141.62 and 141.66, the MCL for that constituent (40 C.F.R. § 257.95(h)(1));
- Specified levels for the following constituents:
  (i) Cobalt 6 micrograms per liter (µg/l);

[22] CWLP reported samples for the second quarter of 2019 and the fourth quarter of 2019. Only the second quarter of 2020 and 2021 were reported to have sampling at all wells recorded as part of the groundwater monitoring system. See Attachment 7 from August 30, 2022, response by CWLP.

(ii) Lead 15 µg/l;
(iii) Lithium 40 µg/l; and
(iv) Molybdenum 100 µg/l (40 C.F.R. § 257.95(h)(2)); or

- For constituents for which the background level is higher than the levels identified under 40 C.F.R. § 257.95 (h)(1) and (h)(2), the background concentration determined for the CCR unit(s) (40 C.F.R. § 257.95(h)(3)).

40 C.F.R. § 257.95 (i) requires that the owner or operator of the CCR unit comply with the recordkeeping requirements specified in 40 C.F.R. § 257.105(h), the notification requirements specified in 40 C.F.R. § 257.106(h), and the Internet requirements specified in 40 C.F.R. § 257.107(h).

B. Discussion

EPA's August 3, 2022, information request included the following request: "Since October 17, 2017, identify each groundwater protection standard (GWPS) that you established and how it met the requirements of § 257.95." CWLP responded that they did not utilize MCLs and instead utilized AGQSs listed as listed in the permit. CWLP asserted that these limits "were statistically derived consistent with 40 C.F.R. § 257.95(h)(2) and (3)."

CWLP calculated the AGQS based on four quarters of 1994/1995 data at monitoring wells G110, G111 and G112 rather than the required eight independent samples from each downgradient monitoring well from more recent sampling events. As noted in Section I above, CWLP failed to establish background as allowed by § 257.95(h)(3). In the absence of an appropriate background concentration the GWPS are the concentrations presented in Table 3.

In summary, CWLP failed to resample within 90 days (April 2018) of the date of what should have been the initial assessment monitoring event. All wells and constituents were required to be resampled and analyzed for SSLs for all appendix IV constituents. As described earlier, CWLP did not sample for lithium, molybdenum, and combined radium -226 and -228. Additionally, CWLP failed to report recorded concentrations or identify background concentrations and GWPS in the annual groundwater monitoring and corrective action reports as required by 40 C.F.R. § 257.95(d)(3) for compliance with § 257.90(e).

7. Response to detection of Appendix VI constituents above a statistically significant level (SSL) - 40 C.F.R. §§ 257.95(g), (g)(1) – (5), 96 and 97.

A. Regulatory Summary

After analyzing the assessment monitoring samples under 40 C.F.R. § 257.95(b) and (d), the owner or operator must compare the appendix III and appendix IV constituent concentrations to the applicable background value/GWPS. The owner or operator must use statistical procedures specified in 40 C.F.R. § 257.93(g). Relevant to this analysis, the rules require that if assessment monitoring results are at an SSL concentration exceeding the GWPS at a downgradient well for any appendix IV constituent, the owner or operator must, *inter alia*:

- prepare a notification identifying the appendix IV constituents that have exceeded the GWPS ("SSL Notification") and place the notification in the facility's operating record within 30 days (40 C.F.R. § 257.95(g));
- characterize the nature and extent of the release (40 C.F.R. § 257.95(g)(1));
- complete and post an ACM (40 C.F.R. § 257.95(g)(3) and 96);
- conduct a public meeting to discuss the results of the ACM at least 30 days before it selects a remedy (40 C.F.R. § 257.96(e)); and
- select a remedy and complete and post a final remedy report (40 C.F.R. § 257.97(a)).

40 C.F.R. § 257.95(g)(1) requires that the proper characterization of the nature and extent of the release must be sufficient to support a complete and accurate assessment of the corrective measures necessary to effectively clean up all releases from the CCR unit pursuant to 40 C.F.R. § 257.96. Characterization of the release, at a minimum, must include the following measures:

- installing additional monitoring wells necessary to define the contaminant plume(s) (40 C.F.R. § 257.95(g)(1)(i));
- collecting data on the nature and estimated quantity of material released including specific information on appendix IV constituents and the levels at which they are present in the material released (40 C.F.R. § 257.95(g)(1)(ii));
- installing at least one additional monitoring well at the facility boundary in the direction of contaminant migration and sampling this well in accordance with 40 C.F.R. § 257.95(d)(1) (40 C.F.R. § 257.95(g)(1)(iii)); and
- sampling all wells in accordance with 40 C.F.R. § 257.95(d)(1) to characterize the nature and extent of the release (40 C.F.R. § 257.95(g)(1)(iv).

Within 90 days of detecting an SSL concentration of an appendix IV constituent, the owner or operator must initiate an ACM and provide notice of the initiation of an ACM. It must complete the ACM within an additional 90 days. It must complete the ACM in accordance with the requirements of 40 C.F.R. § 257.96.

B. Discussion

CWLP's sampling detection limits in many instances exceeded the PQLs for appendix III and/or IV constituents. Consequently, its sampling results most likely under-report instances where an appendix III or IV constituent is above the GWPS and the earliest date of an SSL. The analysis in this section is based on CWLP's sampling results which most likely have missed earlier instances where a constituent is at an SSL concentration above the GWPS. Additionally, because CWLP failed to have a complete downgradient monitoring system, it is possible that there may be more or earlier exceedances. Regardless, the existing downgradient monitoring system first detected SSLs above the GWPS in 2019 and those exceedances have continued to at least the second quarter of 2022Table 4 has been provided below again for reference.

Date	Well	Constituent	GWPS/MCL (mg/L)	Concentration (mg/L)
2019 – 2nd	AW-2	Arsenic	.01	0.0284
2019- 4th	AW-2	Arsenic	.01	0.0286
	AW-2	Lead	0.015	0.282
2020- 2nd	AW-2	Arsenic	.01	0.0274
	AW-2	Lead	.015	0.158
2021 – 2nd	AW-2	Arsenic	.01	0.0202
	AW-1	Lead	.015	0.164
2022 – 2nd	AW-2	Arsenic	.01	0.0226
	G121	Arsenic	.01	.0163

As a result of these exceedances CWLP was required to do the following:

- prepare an SSL notification identifying the appendix IV constituents that have exceeded the GWPS and place the notification in the facility's operating record within 30 days (40 C.F.R. § 257.95(g));
- characterize the nature, rate and extent of the release (40 C.F.R. § 257.95(g)(1));
- complete and post an ACM (40 C.F.R. § 257.95(g)(3) and 96)
- conduct a public meeting to discuss the results of the ACM at least 30 days before it selects a remedy (40 C.F.R. § 257.96(e)); and
- select a remedy and complete and post a final remedy report (40 C.F.R. § 257.97(a)).

CWLP has not posted any documents to its federal CCR website that satisfies these requirements. Similarly, it has not provided any documents with its August 30, 2022, information request response to indicate that it has complied with these requirements. Consequently, CWLP is in violation of these requirements.

8. Annual Groundwater Monitoring and Corrective Action Reports - 40 C.F.R. §§ 257 .90(e) (1), (3) – (6)(i) - (vi), and (f), and § 257.105(h)(1) and .107(d) and (h).

A. Regulatory Summary

CWLP was required to prepare an annual groundwater monitoring and corrective action report by no later than January 31, 2018, and annually thereafter and to post it on its federal CCR website (40 C.F.R. § 257.90(e) and (f)). It was required to include the following information in its reports:

(1) A map, aerial image, or diagram showing the CCR unit and all background (or upgradient) and downgradient monitoring wells, to include the well identification numbers, that are part of the groundwater monitoring program for the CCR unit;

(2) Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description of why those actions were taken;

(3) In addition to all the monitoring data obtained under §§ 257.90 through 257.98, a summary including the number of groundwater samples that were collected for analysis for

each background and downgradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs;

(4) A narrative discussion of any transition between monitoring programs (e.g., the date and circumstances for transitioning from detection monitoring to assessment monitoring in addition to identifying the constituent(s) detected at a statistically significant increase over background levels); and

(5) Other information required to be included in the annual report as specified in §§ 257.90 through 257.98.

(6) A section at the beginning of the annual report that provides an overview of the current status of groundwater monitoring and corrective action programs for the CCR unit. At a minimum, the summary must specify all of the following:

(i) At the start of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in § 257.94 or the assessment monitoring program in § 257.95;

(ii) At the end of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in § 257.94 or the assessment monitoring program in § 257.95;

(iii) If it was determined that there was a statistically significant increase over background for one or more constituents listed in appendix III to Part 257 pursuant to § 257.94(e)[23]:

(A) Identify those constituents listed in appendix III to Part 257 and the names of the monitoring wells associated with such an increase; and

(B) Provide the date when the assessment monitoring program was initiated for the CCR unit

(iv) If it was determined that there was a statistically significant level above the groundwater protection standard for one or more constituents listed in appendix IV to Part 257 pursuant to § 257.95(g) include all of the following:

(A) Identify those constituents listed in appendix IV to Part 257 and the names of the monitoring wells associated with such an increase;

(B) Provide the date when the assessment of corrective measures was initiated for the CCR unit;

(C) Provide the date when the public meeting was held for the assessment of corrective measures for the CCR unit; and

(D) Provide the date when the assessment of corrective measures was completed for the CCR unit.

(v) Whether a remedy was selected pursuant to § 257.97 during the current annual reporting period, and if so, the date of remedy selection; and

(vi) Whether remedial activities were initiated or are ongoing pursuant to § 257.98 during the current annual reporting period.

B. Discussion

CWLP posted on its federal CCR website one Annual Groundwater Monitoring and Corrective

[23] The Annual Report is not required to discuss items in 40 C.F.R §§ 257 .90(e)(6)(iii)(A) and {6)(iv) until after September 28, 2020.

Action Report for the Year Ending December 31, 2018. This report was one page in length and contained four paragraphs. The report specifically defers regulation of the GWM system to 35 Illinois Administrative Code, Part 811. This does not satisfy the requirements for the required content for the federal CCR annual report.

EPA requested CWLP to provide copies of annual reports it submitted to IEPA pursuant to its landfill permit so that EPA could evaluate whether those reports would provide the information required by the federal CCR regulations. CWLP provided copies of the Annual Reports it submitted to IEPA pursuant to its permit for Unit 2 (1995-243-LFM) for the years 2017- 2021. See, Attachments 4a – 4e to the August 30, 2022, CWLP 3007 response to EPA. Included in the Illinois Annual Report are dates of submittal of comprehensive monitoring data to the Illinois EPA, statistical summaries and analysis of trends, changes to the monitoring program, discussion of error analysis, detections limits and observed trends, and identification of new monitoring stations to be installed within the next year. EPA's review indicates that the Illinois Annual Reports would not satisfy the requirements for a federal CCR Annual Report. Presented below are some of the missing items:

- A map, or aerial image of the CCR unit and the well monitoring system as required by 40 C.F.R. § 257.90(e)(1)
- Whether samples that were taken were required by detection monitoring or assessment monitoring programs per 40 C.F.R. § 257.90(e)(3)
- A narrative discussion on any transition between monitoring programs, detection monitoring to assessment monitoring in addition to identifying the constituents detected at an SSI over background levels as required by 40 C.F.R. § 257.90(e)(4)
- Record concentrations required by § 257.95(d)(1), identify background concentrations established under § 257.94(b), and identify the groundwater protection standards in the annual groundwater monitoring and corrective action report required by § 257.90(e) as required by 40 C.F.R. § 257.90(e)(5) and .95(d)(3).
- A section at the beginning of the annual report that provides an overview of the status of groundwater monitoring and corrective action programs for the CCR Unit along with all sub-sections of § 257.90(e)(6) as required by 40 C.F.R. § 257.90(e)(6)

9. Inadequate Notices and Inadequate federal CCR website.

A. Regulatory Summary and Analysis

CWLP is required to maintain a publicly accessible internet site (CCR website) containing, at minimum, the following information. Unless a date is otherwise specified, the information must be posted to the federal CCR website within 30 days of it becoming available (i.e., its due date). See, 40 C.F.R § 257.105(h) and (i), .107(a), (d), (h) and (i).

By January 31, 2018 and each year annually thereafter, CWLP was required to have an annual groundwater monitoring and corrective action report as required by § 257.90(e). This report is required to be posted on its federal CCR website within 30 days of January 31, of each year (40 C.F.R. § 257.90(e), .105(h)(1), .107(d) and (h)(1). CWLP's federal CCR website does

not contain these reports or has documents that are so deficient that they do not satisfy the annual report requirements.

By October 17, 2017, CWLP was required to have a qualified professional engineer certify that its groundwater monitoring system was designed and constructed to meet the requirements of 40 C.F.R. § 257.91 and if the groundwater monitoring system includes the minimum number of monitoring wells specified in § 257.91(c)(1), then the certification must have documented the basis supporting this determination. This certification was required to be posted to its federal CCR within 30 days of October 17, 2017. *See* 40 C.F.R. § 257.90(b)(1)(i), 91(f), .105(h)(3) and .107(d) and (h)(2). CWLP's federal CCR website does contains this certification, but the certification is so deficient that it does not satisfy the certification requirements.

By October 17, 2017, CWLP was required to have a certification from a qualified professional engineer stating that it selected a statistical method in compliance with 40 C.F.R. § 257.93 that is appropriate for evaluating the groundwater monitoring data for the CCR management area. The certification must include a narrative description of the statistical method selected to evaluate the groundwater monitoring data. This certification was required to be posted to its federal CCR website within 30 days of October 17, 2017. 40 C.F.R. § 257.90(1)(ii), .93(f)(6), .105(h)(4), and .107(d), (h)(3). CWLP's federal CCR website does contain this certification, but the certification is so deficient that it does not satisfy the certification requirements.

CWLP was required to establish an assessment monitoring program within 90 days of detecting an SSI over background of any one or more of the appendix III constituents. The earliest known date that there was an SSI over background for an appendix III constituent was January 2018[24]. Consequently, by May 2018 CWLP was required to prepare a notification that an assessment monitoring program was established. This notification was required to be posted to its federal CCR website within 30 days of initiating an assessment monitoring program (April 2018). 40 C.F.R. § 257.94(e)(3), .105(h)(5) and .107(h)(4). CWLP's federal CCR website does not contain this notification.

CWLP was required to prepare a notification that one or more constituents in appendix IV to this part were detected at SSLs above the groundwater protection standard in any sampling event. The notification must include information identifying the constituents in appendix IV to Part 257 that have exceeded the groundwater protection standard. By July 2019[25] CWLP was required to prepare a notification one or more appendix IV constituents were found to be at SSLs. This notification is required to be posted to its federal CCR website within 30 days of detecting an SSL (August 2019). 40 C.F.R. § 257.95(g), .105(h)(8) and .107(d) and (h)(6). CWLP's federal CCR website does not contain this notification.

CWLP was required to initiate an ACM on October 2019. Consequently, it was required to prepare a notification stating that an ACM had been initiated. This notification is required to be posted to its federal CCR website within 30 days of the ACM (November 2019). 40 C.F.R. § 257.95(g)(5),

[24] EPA has opted to utilize October 2017 as the first detection monitoring event per the requirements to complete a detection sampling event by October 17, 2017 (§ 257.94(b)), despite the 2nd quarter sampling in 2017. Facilities had 90 days to complete analyses for SSIs from the detection monitoring event.

[25] CWLP exceeded the MCL of arsenic within the 2nd quarter sampling of 2019. Providing 90 days to complete the analysis from sampling event, CWLP had until July 2019 to detect and confirm the SSL.

.105(h)(9) and .107 (h)(9). CWLP's federal CCR website does not contain this notification.

CWLP was required to complete an assessment of corrective measures (CMA or ACM) by January 2020. It was required to be posted to CWLP's federal CCR website within 30 days of completion of the corrective measures assessment (February 2020). 40 C.F.R. § 257. 96(d), .105(h)(10) and .107 (d) and (h)(8). CWLP's federal CCR website does not contain an ACM.

CWLP was required to develop a semiannual report describing the progress in selecting and designing the remedy and to also develop a selection of remedy report as required by § 257.97(a). Based on the results of the ACM conducted under § 257.96 CWLP was required to, as soon as feasible, select a remedy and upon selection of the remedy prepare a final report describing the selected remedy and how it meets the standards specified in § 257.97(b). It was required to obtain a certification from a qualified professional engineer that the remedy selected meets the requirements of § 257.97. CWLP was required to complete the ACM by January 2020, select a remedy as soon as feasible after this date and complete a remedy report. Although the rules do not specify a time period for as soon as feasible, as of today's date it has been 41 months since CWLP was required to complete its CMS. There is no technical justification provided to explain why this is an acceptable time period and is not "as soon as feasible."

CWLP was also required to develop its first semiannual report with subsequent semi-annual reports required since then. *See* 40 C.F.R. § 257.97(a), .105(h)(12) and .107(d) and (h)(9). CWLP's federal CCR website does not contain the semi-annual reports or the final remedy report.

CWLP was required to have a written closure plan meeting the requirements of 40 C.F.R. 257.102(b) and a post-closure plan meeting the requirements of 40 C.F.R. § 257.104(b) by October 17, 2016. It was required to post the closure and post-closure plans on its federal CCR website. *See* 40 C.F.R. § 257.102(b), .104(b), .105(i)(4), .107(d) and .107(i)(4). CWLP posted on its federal CCR website a document entitled Closure and Post-Closure Plan. It was dated October 2016. As indicated in Attachment 3 to this notice of violation its Closure and Post-Closure Plan failed to comply with many of the requirements of 40 C.F.R. § 257.102(b) and .104(b). It was so deficient that it could not be considered a closure or post-closure plan as required by the regulations. Consequently, CWLP has failed to post on its federal CCR website a closure or post-closure plan that meets the requirements of 40 C.F.R. § 257.102(b) or .104(b).

Attachment 3
CWLP - Landfill Unit 2
Closure/Post-Closure Review
Violations of 40 C.F.R. § 257.101 et seq.

I. Introduction

A. Documents Reviewed.

EPA reviewed CWLP's *Closure/Post-closure Plan for CCR Unit 2 Landfill,* October 2016 (2016 Closure Plan or Closure Plan) which is posted on CWLP's federal CCR website. The Closure Plan consists of three documents:

- Appendix A: Closure, Post Closure Plan for Unit 2 Landfill Attachment 23 of the Application for Significant Modification to Permit (Andrews 1995a), dated September 1994 (1994 Closure Plan or Appendix A)
- Appendix B: Unit 2 Landfill Permit 1995-243-LFM, Modification No. 12, Log No. 2016-298 dated September 28, 2016 (2016 Permit Modification or Appendix B)
- Appendix C: Addendum to Closure, Post-Closure Plan, and Cost Estimates (Andrews 2016b).

EPA also reviewed the August 30, 2022, "CWLP Answers to Request for Information – Resource Conservation and Recovery Act (RCRA) Flue Gas Desulfurization (FGDS) Unit 2 Landfill" (CWLP Answers or Answers 2022). Relevant to this review, from CWLP's Answers, EPA reviewed:

- Landfill Permit Application 1995-243-LFM, June 30, 1995 (1995 Permit Application) and relevant attachments; and
- Landfill Permit, 1995-243-LFM, November 9, 1995 (1995 Permit).

EPA also reviewed the groundwater monitoring reports submitted to EPA on August 30, 2022, and included as appendices to the annual facility reports for the past 5 years (Andrews 2018, 2019, 2020, 2021, 2022). Information reviewed or relied upon by EPA is listed in Attachment 4.

The Closure Plan states that Appendix A and B meet all of the requirements of 40 C.F.R. § 257.102 except for maximum inventory and maximum final cover requirements which are presented in Appendix C. The Closure Plan makes a similar claim for the Post-Closure Plan except for information related to the facility contact and final use of the property which is covered in Appendix C. Appendix A is included with the 1995 Permit Application and is referenced in both the 1995 and 2016 Permits. It is included as Attachment 23 to the 1995 Permit Application. A detailed summary of the content of Appendix A, B and C is presented below.

B. Closure Overview.

CWLP proposes to close Unit 2 by leaving FGDS and CCR process wastes in place and placing a cap over the unit[1]. In Appendix A CWLP indicates that in 1994 it estimated that the final cover will consist of three feet of compacted clay and three feet of protective soil cover which will support vegetation. In 1994 it estimated that the area for the final cover would be approximately 2 acres. It also estimated that the final cover would be placed on the unit in 2017 or within 24.9 years after filling began. It also estimated that it would take approximately 60 days to install the cover. See, Appendix A. CWLP indicated in 1994 that leachate generated from Unit 2 would be collected, treated and directed to the Dallman surface impoundment with eventual discharge off-site pursuant to a NPDES Permit. See, Attachment 16 to Appendix A (not included with the 2016 Closure Plan but part of the 2022 Answers). The location of the discharge, any pre-discharge treatment and the NPDES permit discharge limits were not identified. There are variable estimates of the time for leachate collection from 30 to 100 years.

In 2016, CWLP estimated that area to be closed would be 22.3 acres. It stated that the cover would consist of three feet of low permeability soil with a maximum hydraulic conductivity of $1x10^{-8}$ cm/sec and not less than three feet for the final protective layer with the top six-inches capable of supporting vegetation. It did not change the estimated date for closure nor the time to install the cover. See, Appendix B.

On November 28, 2020, CWLP requested EPA to approve of an alternate date for closure of the Dallman surface impoundment. CWLP indicated that it would close the Dallman surface impoundment by October 2023 and cover it. The 2016 Closure Plan for Unit 2 has not been amended to address management of the leachate after October 2023, which is currently being sent to the Dallman surface impoundment.

C. Summary of Contents of Appendix A

Appendix A is dated September 1994. It is Attachment 23 of the June 30, 1995, *Significant Permit Modification Application resubmittal for landfill Unit 2* (1995 Permit Application). There are a total of 30 attachments to the 1995 Permit Application. Only Appendix A is included in the 2016 Closure Plan. The 1995 Permit Application and all of its attachments are part of CWLP's Answers.

Appendix A was prepared prior to actual operation and permitting of Unit 2. It provides information based on anticipated or estimated operations of the facility and investigations conducted in 1994. It presents two different closure situations: routine closure (i.e., closure at the end of the site's intended operating life) and premature closure (closure at a time during the permit term). Unless otherwise specified, this analysis focuses on the description of the routine closure scenario. There was little to no information provided on the wastes placed in Unit 2.

Appendix A states that it anticipates that Unit 2 will be closed in 2017 or within 24.9 years of initiation of placement of wastes in the unit. This has not been updated. It indicates that the area to be closed will be approximately 2 acres of an aboveground face at the east of the south cell with

[1] There is little information provided on the contents of Unit 1 and how it was closed.

an estimated waste depth of 33.9 feet. It also states that it anticipates that there will not be large areas that require repair and upgrading.

Appendix A discusses both the closure and post-closure activities involved with routine closure. The closure section is short, oftentimes consisting of only a single statement. For example, it states that the unit will require vegetative growth; that ditching has been designed to withstand the 100-year 24-hour rain event; that a cover will be placed in a similar manner to previously described; and that routine closure can be accomplished in 60 days. The closure discussion does state that the cover will consist of three feet of compacted clay (9,680 cubic yards) and three feet of soil capable of supporting vegetation (9,680 cubic yards). No other information is provided.

There are only two relevant attachments to Appendix A that are included as part of the 2016 Closure Plan: Appendix L (Schedule) and Appendix O (Final Site Contours). The schedule identifies the following work: equipment decontamination, grading for drainage control, low permeability layer, final protective layer, and vegetation. It provides a bar chart showing that each item will take approximately two weeks. Appendix O is a single map showing the proposed elevations of Unit 2 after completion. No information is provided on the cover or its placement in the 2016 Closure Plan. The map states that it is a general design concept that may be adjusted in the field. There is no design-specific information. There are no final design drawings which are then related to a schedule. No information on any filed adjustments are provided in the 2016 Closure Plan. Finally, map indicates that the 100-year flood plain elevation in Unit 2 is 545 feet based on a February 2, 1982, FEMA Map. No other information is provided.

D. Summary of Contents of Appendix B

Appendix B is the permit issued by IEPA to CWLP for Unit 2 on September 28, 2016. It is a modification of the permit issued on November 9, 1995, with Docket No. 1995-243-LFM (1995 Permit). Frequently, the 2016 Permit will refer to approvals or documents approved in the 1995 Permit or subsequently, without including the documents. Both the 1995 and the 2016 Permits incorporate by reference elements of the 1995 Permit Application, without including a copy of them. Consequently, a reader of the 2016 Closure Plan would have to work his or her way back through the permits to the original Permit Application, which is not included with the 2016 Permit Application. Some of the documents relevant to the assessment of the adequacy of the 2016 Closure Plan that were part of the 1995 Permit Application, include but are not limited to:

Attachment 13 – Report of Stability Analysis;

Attachment 16 – Leachate Management Plan;

Attachment 19 – NPDES Permit;

Attachment 20 – Stormwater Runoff Control Plan;

Attachment 22 – Construction Quality Assurance Program;

Attachment 27 – Maintenance Plan;

Attachment 28 – Hydrogeologic Investigation;

Attachment 29 – Groundwater Impact Assessment; and

Attachment 30 – Groundwater Monitoring Program.

None of these are included in the 2016 Closure Plan. Furthermore, unless specified, none of these plans have been updated since 1994. Additionally, Attachments 19 was not included with CWLP's Answers and consequently EPA was not able to review it.

Appendix B has four sections relevant to EPA's review: Surface Water Control (Section V), Leachate Management/Monitoring (Section VI), Groundwater Monitoring and Closure/Post-Closure Care (Section VII). None of them are a narrative description of what is required. They are permit conditions.

In some instances, Appendix B provides more information than what was provided in Appendix A. For example, it has more information on the testing and appropriate limits for the leachate and groundwater; it requires groundwater monitoring to continue for 30 years after closure; it states that the minimum post-closure period is 30 years; and that leachate management will continue for 100 years after it was first produced (no date of first production provided). However, in many instances it does not provide any more detail on information relevant to closure or post-closure care than what was provided in Appendix A. For example, it does not provide information on the treatment of or discharge limits for leachate; it states that the stormwater; groundwater, leachate and the closure will be pursuant to the 1995 Permit and subsequent modifications, but it does not include either the relevant portions of the 1995 permit nor the modifications. Many of the studies conducted in 1994 have not been updated to reflect changes to Unit 2 as it went from a conceptual drawing of approximately 2 acres to an operating landfill of 22.3 acres in 2016[2].

E. Summary of Contents of Appendix C

Appendix C provides an updated estimate of the acreage and maximum disposal capacity. It indicates that the acreage subject to closure has increased from 2 acres to 22.3 acres. It also indicates that the maximum disposal capacity is 1, 162,275 cubic yards. No further information is provided on how this change would impact relevant portions of the closure and post-closure plan such as the sequencing and timing of installation of the cover; the stability of the closed unit and the potential for sloughing of the cover; the impact of the increased size on the drainage structures and the vegetations; any increases in the amount of leachate that is generated and managed from that which was initial designed and estimated in 1994 to either 2016 or the present; or maintenance of the cover, the leachate or groundwater management systems. CWLP indicates that the final-end use of the closed landfill is a natural area with passive vegetation and native grasses. It will be an open space.

II. Potential Violations

The determination of CWLP's compliance with the closure and post-closure plan requirements is based on the 2016 Closure Plan that CWLP posted to its federal CCR website. EPA reviewed additional documents to determine if there were additional concerns that needed to be addressed so that CWLP can demonstrate that its closure and post-closure activities and the Closure Plan meet the requirements of 40 C.F.R. § 257.102 and .104.

1. Closure Plan Requirements – 40 C.F.R. § 257.102

[2] The structural stability study of the landfill is over 25 years old. It is unclear if this study is still valid or if it includes surcharge of the foundation layer and the cap soils.

A. Content of the Plan - 40 C.F.R. § 257.102(b)(1)

The owner or operator of a CCR unit must prepare a written closure plan that describes the steps necessary to close the CCR unit at any point during the active life of the CCR unit consistent with recognized and generally accepted good engineering practices. If CCR wastes will be left in the unit then the written closure plan must include, at a minimum, the following information:

> (i) A narrative description of how the CCR unit will be closed in accordance with 40 C.F.R. § 257.102.
> (iii) A description of the final cover system, designed in accordance with 40 C.F.R. § 257.102(d), and the methods and procedures to be used to install the final cover. The closure plan must also discuss how the final cover system will achieve the performance standards specified in 40 C.F.R. § 257.102(d).
> (iv) An estimate of the maximum inventory of CCR ever on-site over the active life of the CCR unit.
> (v) An estimate of the largest area of the CCR unit ever requiring a final cover as required by 40 C.F.R. § 257.102(d) at any time during the CCR unit's active life.
> (vi) A schedule for completing all activities necessary to satisfy the closure criteria in 40 C.F.R. § 257.102, including an estimate of the year in which all closure activities for the CCR unit will be completed. The schedule should provide sufficient information to describe the sequential steps that will be taken to close the CCR unit, including identification of major milestones such as coordinating with and obtaining necessary approvals and permits from other agencies, the dewatering and stabilization phases of CCR surface impoundment closure, or installation of the final cover system, and the estimated timeframes to complete each step or phase of CCR unit closure.

The closure plan must, at a minimum, provide information necessary to allow the public, the state and EPA with enough information to determine whether the facility's closure plan is reasonable and complies with the closure and post-closure requirements. See, June 21, 2010, Proposed Rule, 75 FR 35128, 35208. Central to the requirement is a written narrative description.

There is no narrative describing how the unit will be closed or how the cover will be designed to meet the requirements of 40 C.F.R. § 257.102(d). Appendix B is a permit, not a narrative description. There is no explanation of the inter-relationship, if any, between proposals in the 1995 Permit Application (Appendix A) and the 2016 Permit (Appendix B). The Closure Plan does not contain a detailed schedule for completing all steps necessary to close Unit 2. It includes only a portion of a 1995 Permit Application (Appendix A) and the 2016 Permit (Appendix B). These documents in turn rely upon documents that are referenced but not included with the Closure Plan, such as the stability analyses (Attachment 13), leachate related documents (Attachments 14-16), NPDES permit (Attachment 19), stormwater management (Attachment 20), CQA program (Attachment 22), and the Maintenance Plan (Attachment 27). As an example, the public would need access to Attachment 16 to the 1995 Permit Application, which is not included with the Closure Plan, to realize that in 1995, CWLP indicated that the leachate would be directed to the Dallman Ash Pond.

A critical element of a closure and post-closure plan is a demonstration of how the plans meet the substantive performance criteria for critical elements such as the cover, the leachate management and the stormwater and groundwater monitoring components. As indicated in subsequent sections of this analysis the 2016 Closure Plan fails to provide that demonstration. Instead, the Closure Plan relies primarily on sections of the 1995 Permit Application which include analyses conducted over 29 years ago before Unit 2 began operations.

The 2016 Closure Plan fails to address how changed conditions since 1994 when some of the analyses were done, or since 1995 (e.g., structural stability analyses) when the permit application was submitted and approved, may impact closure. For example, the acreage has increased from 2 acres to 22.3 without any corresponding discussion of the impact this may have on the cover design, the generation and/or collection of leachate, the migration of contaminants from the unit, the ability of the cover to not slough, or the impact on the schedule for completing the cover installation. It has not addressed existing groundwater monitoring data that indicates Appendix IV constituents have been found downgradient of Unit 2 above MCLs. It estimated that Unit 2 would close in approximately 2017. It has not closed.

The 2016 Closure Plan presents information in a difficult and at times contradictory manner. For example, Appendix A indicates that leachate management is estimated to be for 30 years, whereas Appendix B indicates that the leachate management system will operate for 100 years after closure. Similarly, Appendix A and B contain different lists for the monitoring of groundwater and leachate. The public would have to assume that the 2016 permit conditions of Appendix B have changed the earlier statements made in the 1995 permit application. This is not a written explanation of what the closure plan and post-closure plan require.

The information the 2016 Closure Plan provides is cursory and insufficient. For example, it does not have a schedule which provides sufficient information to describe the sequential steps that will be taken to close the CCR unit, including identification of major milestones such as coordinating with and obtaining necessary approvals and permits from other agencies, or installation of the final cover system, and the estimated timeframes to complete each step or phase of CCR unit closure.

In sum, the 2016 Closure Plan fails to include important information, contains apparently conflicting or dated information, and does not contain a narrative description of the plan. Additionally, as indicated in the section below, it fails to provide an analysis of how it meets critical elements of 40 C.F.R. §§ 257.102 and .104. It is not written such that the public, the state or EPA can determine if it is a reasonable closure plan that meets the requirements of 40 C.F.R. §§ 257.102 and .104. When re-written it must address the deficiencies below.

For the following subsections, the 2016 Closure Plan fails to address these requirements and is therefore deficient. EPA examined the documents available to it to independently evaluate if there are substantive concerns that need to be addressed, beyond merely providing a narrative. They are presented below and must be analyzed and discussed by CWLP with more than reference to exiting documents in a revised Closure/Post-Closure Plan.

B. Infiltration to and releases from the unit – 40 C.F.R. § 257.102(d)(1)(i).

The owner or operator of a CCR unit must ensure that, at a minimum, the CCR unit is closed in a manner that will control, minimize, or eliminate, to the maximum extent feasible, post-closure infiltration of liquids into the waste and releases of CCR, leachate, or contaminated run-off to the ground or surface waters or to the atmosphere.

a. Liner potentially in contact with groundwater.

Unit 2 was constructed with double liners and a leachate collection system. Attachment 21 to the CWLP Permit Application included a test liner report (Andrews 1995d) that assessed the characteristics of the compacted clay liner. In that 1995 report CWLP asserted that landfill leachate could have a volume of 37,856 cubic feet per year plus groundwater infiltration of 21,790 cubic feet per year for a total of 58,646 cubic feet per year. This equates to an average total leachate flow rate of 1,222 gallons per day (gpd). CWLP assumed that closure would reduce infiltration to 25,202 cubic feet per year (or 517 gpd). The HELP model calculations used to estimate these leachate flow rates were not included in the materials and therefore, have not been reviewed for accuracy or completeness (EPA 1994a and 1994b)[3]. They have not been updated to indicate any changes in the leachate generation.

While the landfill was constructed with a compacted liner and leachate collection system, the liner may be at or below the water table. CWLP Answers indicate that the base of the recompacted clay liner sits at, or below, the water table at an elevation 530 feet above mean sea level. The CWLP hydrogeologic investigation report (Patrick 1993), included as Attachment 6A to the CWLP Answers noted that "several isolated patches of shallow sand unit are present beneath a portion of Unit 2. The shallow sand unit is truncated by and interconnected with Creek fill" (Patrick 1993).

The top of the liner is coincident with the leachate collection system elevation (about 529 feet msl), which likely exerts some control over the potentiometric surface in the active portion of the landfill. There are no wells or piezometers within the 2-acre area, but the water level in the upgradient well is generally between 536 and 537 feet and downgradient wells are about 524-537 feet and downgradient wells are about 524 to 527 feet msl.

The shallow sand is shown on a cross-section (Figure AT29-4) as a thin layer that pinches out into creek fill. It is located approximately 10 feet below the base of the recompacted clay liner. The three wells that border the 2-acre active area (G120-122) are all screened in Creek fill according to the IEPA permit. These are all screened at elevations below the liner with elevated concentrations of boron routinely detected.

Leachate generation simulations included as Appendix C to the Application for Significant Permit Modification (Andrews 1995b) show that percolation through the liner is included in the total

[3] There is an attachment to the Groundwater Impact Assessment (Andrews 1995) with HELP model output. Attachment AT29-A indicates that the HELP model "was used to predict the estimated leachate level during the 100-year post-closure period." This level was used in conjunction with the average groundwater level (from potentiometric maps) and assumed properties of the recompacted clay liner to calculate the vertical seepage rate through the liner.

leachate estimates. A significant amount of leachate is being generated and CWLP's downgradient groundwater monitoring system is not adequate.

There is no analysis of the potential impact of groundwater on the integrity of the liner and therefore the potential for migration of contaminated leachate from the unit.

b. Leachate

The leachate collection and management system is an integral component of the design and operation of the landfill both during its operating life and during the post-closure period. When functioning properly, it collects both groundwater[4] and surface water infiltration into the landfill; reduces the potential for releases of contaminants from the landfill to downgradient groundwater; and assists in reducing the potential for impoundment of water inside the landfill. Without a leachate collection system, groundwater may infiltrate into the waste and contribute to releases to the groundwater. Consequently, the proper operation and maintenance of the leachate collection system is a necessary component to control, minimize, or eliminate, to the maximum extent feasible, post-closure impoundment of water and releases of CCR or leachate to the groundwater.

CWLP estimated significant amounts of leachate would be generated. It calculated that leachate would be generated at 37,856 cubic feet per year and groundwater infiltration at 21,790 cubic feet per year for a total flow into the subsurface of 59,646 cubic feet per year. The design of the system indicates that it may have a leachate head of 10.4 inches above baseline. Neither Appendix A nor B provide sufficient details regarding the means and methods of leachate collection, pumping, treatment, and discharge to determine if the system will operate correctly or will be appropriately maintained as part of closure/post-closure care. There should be a well-defined map of the leachate collection wells, their construction and pump rates.

Proper maintenance and repair of the leachate management system is important to ensure that it is controlling, minimizing, or eliminating the potential for impoundment of waters within Unit 2 or the migration of CCR or leachate to the groundwater. Neither Appendix A nor B contain sufficient information on inspections of the unit to determine if it will be maintained in an effective manner. Appendix A estimates the need to replace pumps and pipe cleaning every five years and quarterly inspection of the leachate collection and transfer system. Attachment 16 adds only minimal additional information indicating that the equipment will be inspected pursuant to the manufacturer's specifications with piping clean-out at least annually. There is no demonstration that this frequency is consistent with good engineering practices for proper maintenance of a leachate collection system during the post-closure care period. At a minimum, at least semi-annual inspections should be completed, and maintenance tasks should be performed as early as possible after an issue is identified. Additionally, the inspections should consider the chemistry, volume and frequency of leachate collected and pumped.

[4] The leachate collection system is at an elevation of 529' according to record drawings. Potentiometric surface maps from 2015-16 and 2019-20 consistently show a steep gradient across the 2-acre active portion of Unit 2, 10 feet over a 700-foot distance from G120-122 (0.014). The groundwater elevation at G120 generally is about 536-537' and ranges about 524 to 527' at G122. The leachate collection system is probably responsible for controlling groundwater in the 2-acre area. If the leachate collection system were decommissioned groundwater would likely rise into the waste.

There is insufficient information to determine whether the discharge will be properly handled. An integral part of the leachate management system is use of the Dallman surface impoundment. There is no information on the present discharge limits on the leachate collection system. The Dallman surface impoundment will be closed. What will CWLP do with the leachate after that?

Appendix A (1995 Permit Application) included provisions for pumping and treating landfill leachate and groundwater infiltration for up to 30 years or until the leachate meets groundwater protection standards[5]. However, Attachment 16 to the Permit Application indicates a 100-year time period. Appendix B indicates that CWLP will collect and dispose of leachate for 100 years after closure. This apparent inconsistent must be addressed.

Appendix A estimates that leachate will be tested quarterly for pH, TSS, TDS, Aluminum, Boron, Chlorine, Oil and Grease and Sulfate. Section VI of Appendix B appears to modify the leachate management and monitoring requirements requiring presenting a more extensive list of constituents to be monitored every eighteen months. What is required?

In summary the 2016 Closure Plan has insufficient information for CWLP to demonstrate that Unit 2 will be closed in a manner that will control, minimize, or eliminate, to the maximum extent feasible, post-closure infiltration of liquids or impoundment of waters into the unit or the release of CCR or leachate, to the ground water.

C. Future Impoundment of Water – 40 C.F.R. § 257.102(d)(1)(ii)

An owner or operator of a CCR unit CWLP must ensure that, at a minimum, the CCR unit is closed in a manner that will preclude the probability of future impoundment of water, sediment, or slurry. There is no discussion in the 2016 Closure evaluating CWLP's compliance with this requirement.

As indicated in section 2.b above there is potential for impoundment of water and leachate due to the placement of the liner; the potential closure of the Dallman surface impoundment and the questions related to the operation and maintenance of the leachate management system. EPA also examined the potential for impoundment of water based on surface water infiltration through the cover. CWLP increased the acreage subject to a cover from 2 acres to 22.3 acres. The Closure Plan does not evaluate the impact of this large area on run-on or run-off of surface waters and associated drainage devices. The only information available is from Attachment 20 to the 1995 Permit Application, Stormwater Runoff Control Plan. It was developed in 1994 and has not been updated to reflect changed conditions such as the increased acreage. The document at that time indicated that Unit 2 had a slope of 5:1 and that this ensured that rainfall sheet flow would flow off the surface and retard infiltration into the cover during *operation* of the landfill. There is no indication if this slope has changed over the years. Section VIII of Appendix B requires Unit 2 to be constructed with low permeability cover to reduce infiltration. However, the design in the current closure/post-closure care plans does not demonstrate whether the closure measures could manage the run-on and run-off from a significant precipitation event such as the 1,000-year storm

[5] It is unclear when or if, CWLP anticipates the groundwater protection standards will be met or the support for this estimation.

event. There is insufficient detail to determine if the proposed closure would sufficiently manage run-on and run-off from a significant precipitation event.

Finally, the 1995 Permit Application indicates that stormwater will be discharged from the landfill to the Dallman surface impoundment and then discharged pursuant to a NPDES permit. Runoff flowing north from the proposed Dallman cap and the drainage and runoff flowing south from the proposed Unit 2 cap will have to be managed via armored drainage ditches for 1,000-year storm events.

D. Sloughing of the Final Cover - 40 C.F.R. § 257.102(d)(1)(iii).

The owner or operator of a CCR unit must ensure that, at a minimum, the CCR unit is closed in a manner that will include measures that provide for major slope stability to prevent the sloughing or movement of the final cover system during the closure and post-closure care period." There is no discussion in the 2016 Closure Plan regarding CWLP's compliance with this requirement.

CWLP proposed closing the landfill by placing 43,450 cubic yards (CY) of compacted clay as a cap with an additional 43,560 CY of soil over the clay to vegetate the cap. CWLP asserted that the cap would have a permeability of 1 x 10^{-8} centimeters per second (cm/sec) (Andrews 1995a). The structural stability of the landfill was assessed in 1994 by TSC (TSC 1994). This evaluation found that the landfill met the structural stability criteria for slope failures of (1) 1.5 Static Factor of Safety and (2) 1.3 Factor of Safety for Seismic Stability. The evaluation was based on geotechnical borings collected at the landfill in 1979, 1987, and 1989 (TSC 1994).

The 1994 structural stability study was conducted in 1994 and has not been updated to consider changes in the unit since then such as waste elevations or the proposed cap. An updated geotechnical study based on newly collected geotechnical boring data should be done. The geotechnical study should include slope failure and seismic stability analysis that accounts for the final waste elevations, cap subgrade soils, and the final cap materials.

E. Final Cover Design - 40 C.F.R. § 257.102(d)(3)(i).

If a CCR unit is closed by leaving CCR in place, the owner or operator must install a final cover system that is designed to minimize infiltration and erosion. The system must meet the following requirements contained in 40 C.F.R. § 257.102(d)(3)(i)(A)-(D):

> The permeability of the final cover system must be less than or equal to the permeability of any bottom-liner system or natural subsoils present or a permeability no greater than 1 × 10−5 centimeters per second (cm/s), whichever is less;
>
> The infiltration of liquids through the closed CCR unit must be minimized using an infiltration layer that contains a minimum of 18 inches of earthen material;
>
> The erosion of the final cover system must be minimized using an erosion layer that contains a minimum of 6 inches of earthen material that can sustain native plant growth; and
>
> The disruption of the integrity of the final cover system must be minimized through a design that accommodates settling and subsidence.

Appendix B states that the final cover will consist of a compacted clay layer and a protective soil layer. Condition II.6 of Appendix B states that the final cover will consist or 3 feet of low permeable soils with a maximum hydraulic conductivity of 1 x 10^{-8} cm/sec. The top six inches shall support vegetation. It also states that CWLP will place 43,560 cy of low-permeability compacted clay as a cap, followed by 43,560 cy of soil on top of the clay, followed by a vegetation layer.

The 2016 Closure Plan does not contain cap design information. Appendix A and B refer to documents included in the 1995 Permit Application which were not included in the 2016 Closure Plan. There are design-related documents included with the 1995 Permit Application. Although these plans may have been appropriate in 1994 there is no update to these plans to accommodate changes in site conditions since then. For example, how would the cover design change to accommodate the increased acreage from 2.0 to 22.3 acres. Additionally, the integrity of the landfill berms have not been assessed since 1994. There is only one generalized, barely legible final grading plan sheet included as Sheet B1-4 in Appendix O "Final Site Conditions" of the Closure/Post-Closure Plan (Andrews 1995a).

F. Minimize the need for further Maintenance - 40 C.F.R. § 257.102(d)(1)(iv).

The owner or operator of a CCR unit must ensure that, at a minimum, the CCR unit is closed in a manner that will minimize the need for further maintenance of the CCR unit. There is no discussion in the 2016 Closure evaluating CWLP's compliance with this requirement.

As discussed above the 2016 Closure Plan fails to address how it will minimize, control, or eliminate to the maximum extent possible the post-closure infiltration of liquids or the release of leachate or CCR or the impoundment of waters. It fails to adequately address the post-closure monitoring for the cover, the leachate, stormwater, and groundwater monitoring systems. These are important elements related to the evaluation of the plans ability to minimize the need for further maintenance.

2. Post-Closure Pan – 40 C.F.R. § 257.104

A. Content of the Plan – 40 C.F.R. § 257.104(d)(1)

The owner or operator must have a written post-closure plan that, at a minimum includes,

(i) A description of the monitoring and maintenance activities required in paragraph § 257.104 (b) for the CCR unit, and the frequency at which these activities will be performed; and

(ii) The name, address, telephone number, and email address of the person or office to contact about the facility during the post-closure care period; and

(iii) A description of the planned uses of the property during the post-closure period. Post-closure use of the property shall not disturb the integrity of the final cover, liner(s), or any other component of the containment system, or the function of the monitoring systems unless necessary to comply with the requirements in this subpart.

CWLP's Post-Closure Plan is part of the 2016 Closure Plan and is contained within Appendix A, B and C.

The post-closure section of Appendix A contains a description of the following tasks: inspections, cover, vegetation, water (groundwater) management and leachate management.

Section VIII of Appendix B is entitled Closure/Post-Closure Care and consists of permit conditions, not a narrative. It states that inspection shall be pursuant to the approved post-closure plan. No plan is attached. It states that the length of the minimum post-closure care-period shall be 30 years. This requires the public to search other sections of Appendix B to see what if, anything, is required during the post-closure care period for the surface water, groundwater, cover and leachate management requirements. In these sections there is a similar reference to programs or documents approved in another document (Permit No. 1995-243-LFM) without a copy of the other document or a summary of the relevant requirements. As stated previously the 1995 Permit relies on the 1995 Permit Application. It contains information on the testing and appropriate limits for the leachate and groundwater; it requires groundwater monitoring to continue for 30 years after closure; it states that the minimum post-closure period is 30 years; and that leachate management will continue for 100 years after it was first produced (no date of first production provided). However, it does not provide information on the treatment of or discharge limits for the leachate; it states that the stormwater; groundwater, leachate and the closure will be pursuant to the 1995 permit and modifications, but it does not include either the relevant portions of the 1995 permit nor the modifications.

Appendix C provides the contact information required by § 257.104(d)(1)(ii). It also provides a two- sentence description of the planned use of the property. CWLP states that the area will be an open space native area with passive vegetation and natural grasses that will not interfere with the final cover, liner, or monitoring systems. There is no indication of whether site access will be restricted or if vehicles or other machinery will be allowed onto the property.

B. Post-Closure Care – 40 C.F.R. § 257.104(b)

According to 40 C.F.R. § 257.104(b), following closure the owner or operator must conduct post-closure care for the CCR unit, which must consist of at least the following:

> (1) Maintaining the integrity and effectiveness of the final cover system, including making repairs to the final cover as necessary to correct the effects of settlement, subsidence, erosion, or other events, and preventing run-on and run-off from eroding or otherwise damaging the final cover; and
>
> (2) If the CCR unit is subject to the design criteria under § 257.70, maintaining the integrity and effectiveness of the leachate collection and removal system and operating the leachate collection and removal system in accordance with the requirements of § 257.70; and
>
> (3) Maintaining the groundwater monitoring system and monitoring the groundwater in accordance with the requirements of §§ 257.90 through 257.98.

Post-closure care requirements are particularly important for CCR units because the time to peak concentrations for selenium and arsenic, two of the more problematic constituents contained in CCR wastes, is particularly long, and therefore the peak concentrations in groundwater may not

occur during the active life of the unit. During post-closure care, the owner or operator of the disposal unit is required to maintain the integrity and effectiveness of any final cover, maintain and operate the leachate collection and removal system in accordance with the leachate collection and removal system requirements described above, maintain the groundwater monitoring system and monitor the groundwater in accordance with the groundwater monitoring requirements described above, and place the maintenance plan in the operating record and on the company's Internet site. *See* June 21, 2010 Proposed Rule, 75 FR 35128-01, 114-117.

EPA did not evaluate CWLP's leachate management system pursuant to 40 C.F.R. § 257.104(b)(2) since it does not apply to existing units and EPA does not have enough information to confirm that there has not been a lateral expansion of Unit 2. EPA, however, believes that CWLP must discuss the post-closure maintenance of the leachate management system since it is an integral part of the operation of the landfill and is necessary to prevent the impoundment of water and leachate within the unit and the release of leachate to the groundwater.

C. Final Cover Maintenance - 40 C.F.R. § 257.104(b)(1).

Following closure of a CCR unit, the owner or operator must conduct post-closure care for the CCR unit, which must consist of maintaining the integrity and effectiveness of the final cover system, including making repairs to the final cover as necessary to correct the effects of settlement, subsidence, erosion, or other events, and preventing run-on and run-off from eroding or otherwise damaging the final cover.

Appendix A contains a section related to post-closure care. It requires only quarterly visual inspection of the cover system for the first five years and then a reduction to annual inspection for another ten years. It states that CWLP will fill all rills, gullies, and crevices six inches or deeper; recontour of areas that are susceptible to erosion; repair of all eroded and scoured drainage channels; replace lining material; fill and recontour all holes and depressions created by settling; and revegetation of all reworked surfaces, and areas with failed or eroded vegetation in excess of 100 square feet cumulatively. This visual inspection is limited to a total of 15 years. Appendix C indicates that the landfill will be a natural area with passive vegetation and native grasses and will serve as an open space. There is no indication if there will be any legal restrictions imposed on the property. There is no indication of any engineered structures (e.g., fencing) that will be used to control access.

The cover is an integral component of reducing the migration of contaminants to the groundwater. The inspection and maintenance specified in the 2016 Closure/Post-Closure plan is insufficient to ensure proper maintenance of the integrity and effectiveness of the cover system during the post-closure care period. There is no comprehensive list of the components of the cover system that need to be inspected or maintained. There is no indication of or commitment to inspecting and or repairing the cover system in response to major events (e.g., major rainstorms) that may impact the cover system. There is no indication of legal or engineering controls that will be placed on the property and what may be needed to maintain them. There is no indication of how CWLP will ensure that access to the cover area will be limited. There is no indication of the qualifications of the inspector or his/her training for inspecting the site or ability to detect structural weaknesses and other conditions that are disrupting or have the potential to disrupt the operation of the cover system. At a minimum, the inspections should be conducted at least semi-annually to ensure the

proper maintenance of the cover system and should address the comments identified in the subsection. It should also include a visual inspection to identify signs of distress or malfunction of cover system; any changes in the geometry of the cover system since the previous inspection; and any other change(s) which may have affected the stability or operation of the cover system since the previous annual inspection. There should be an inspection report and documentation detailing corrective measures that were taken.

D. Post-Closure Groundwater Monitoring - 40 C.F.R. § 257.104(b)(3)

Following closure of the CCR unit, the owner or operator must conduct post-closure care for the CCR unit, which must consist of maintaining the groundwater monitoring system and monitoring the groundwater in accordance with the requirements of 40 C.F.R. §§ 257.90 through 257.98. 40 C.F.R. § 257.104(c)(1) and (2) state that the owner or operator must conduct post-closure ground water monitoring for a minimum of 30 years. However, if the unit is operating under assessment monitoring, the groundwater monitoring is required to be extended until the unit returns to detection monitoring.

There is no discussion in the 2016 Closure Plan evaluating CWLP's compliance with this requirement. As indicated in other sections, the groundwater monitoring system does not meet the requirements of 40 C.F.R. §§ 257.90 through 257.98. Consequently, the Closure Plan would have to correct and address these deficiencies in order to meet the requirements of 40 C.F.R. §257.104(b)(3). Additionally, Appendices A and B indicate only that the groundwater monitoring system shall continue for thirty years after closure. See, Appendix A, pp. 12 and 15 and Appendix B, Section VII.10. They do not provide for extending it if the unit is operating under assessment monitoring.

Attachment 4
CWLP - Landfill Unit 2
List of References

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