

Wisconsin's Coal Combustion Residual Landfill Rules (WA-17-18)

Effective August 1, 2022

Overview

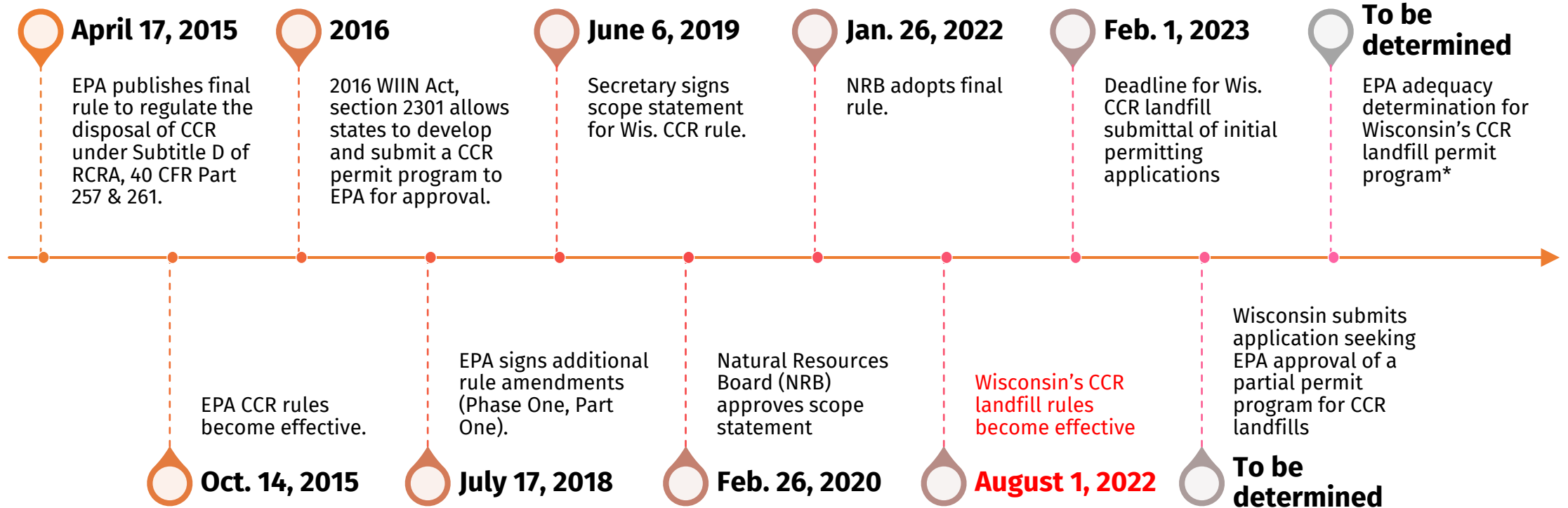
- Background
- Facilities and assignments
- Applicability
- Rule content
- Resources



Background

- In 2015, EPA published a rule regulating the disposal of CCR for CCR landfills and surface impoundments.
 - Rule was self-implementing.
 - Landfills in Wisconsin became regulated under both federal and state rules. (Wis. has regulated CCR landfills and beneficial use for years)
 - 2016 WINN Act gave EPA authority to create a permit program. Additional rules allowed state to seek approval of a state CCR permit program.
 - State regulations are required to be as least protective as the federal requirements.
- Wisconsin Utilities Association requested DNR seek a state permit program for CCR landfills and surface impoundments.
- Initial scope statement considered partial regulation of surface impoundments and full incorporation of CCR landfill requirements.
- Wisconsin only incorporated CCR landfill requirements under WA-17-18.

History and timeline



*Until Wisconsin receives EPA approval of its state permit program, CCR landfills will continue to be regulated under both the federal and state rules.

CCR landfill rule contacts

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(Contact for groundwater monitoring, corrective action, and beneficial use)

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(Contact for groundwater monitoring and corrective action)

Wisconsin's approach

- Rely on existing rules and processes, where as protective as
- Incorporate federal requirements as needed – chs. NR 500, 504 – 508, 512, 514, and 516
- Where federal requirements are less stringent, Wisconsin min. standards have not changed
- Establish fees to cover plan review – ch. NR 520

Broad rule revisions

- Updated or new definitions (e.g. groundwater, recognized engineering practices)
- NR 500.05 – general submittal requirements include modifications
- NR 500.08(4) – DNR cannot grant exemptions that conflict with federal Subtitle D.

*also removed language from expedited exemptions – NR 514.09(1)(b)7.

Applicability of CCR requirements

Applies to:

- CCR generated from the combustion of coal at electric utilities and independent power producers
- Disposal or management on or after October 19, 2015.

Does not apply to:

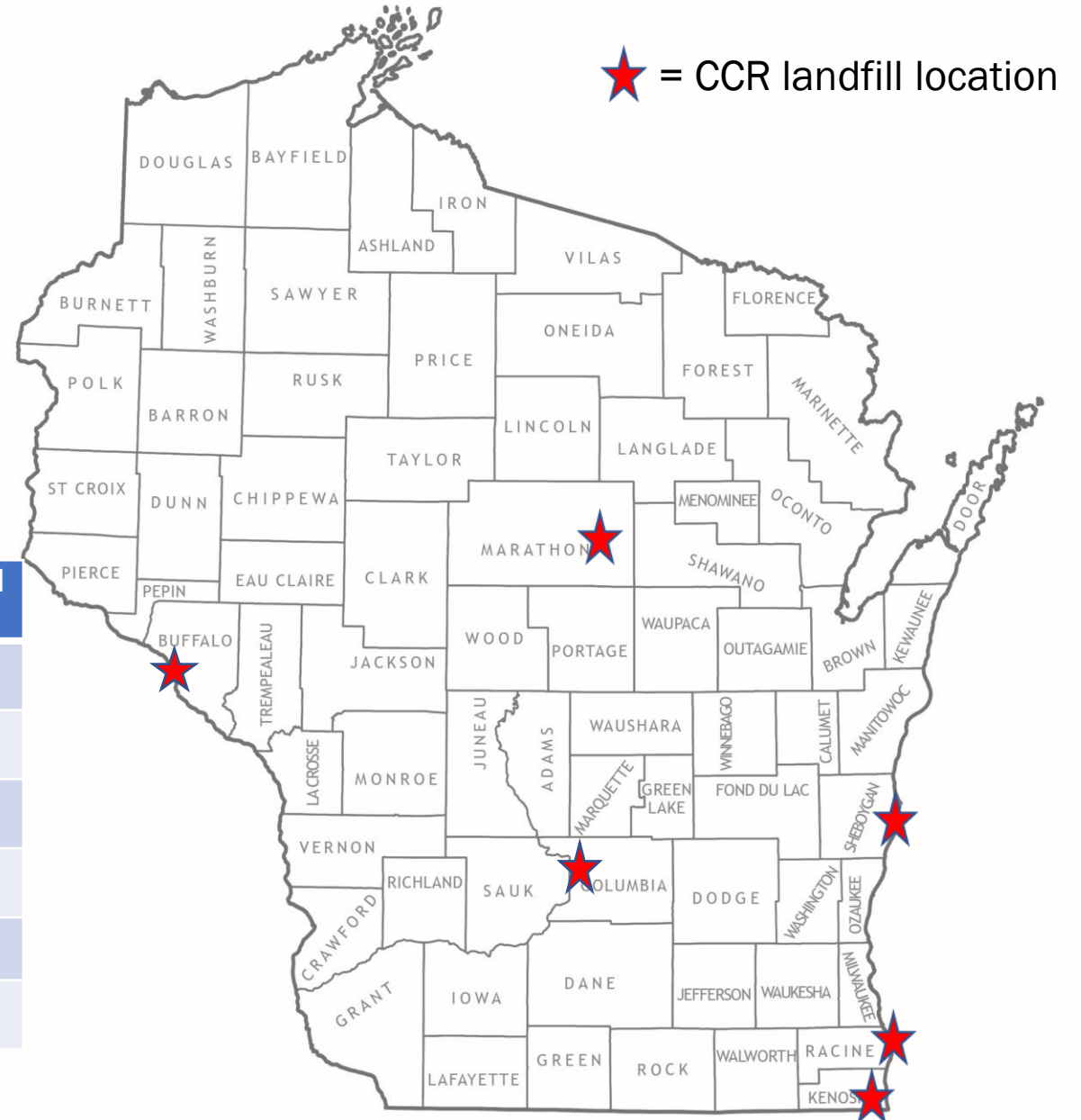
- Landfills that stopped receiving CCR prior to Oct. 19, 2015
- Utility that ceased operating before Oct. 19, 2015 (*challenged at fed. level)
- Non-coal ash (unless 50% or more coal combusted)
- CCR surface impoundments
- MSW landfills
- Beneficial use of CCR

NR 500.035 CCR landfill requirements. (1) The CCR landfill requirements included in chs. NR 500 to 538 apply to an owner or operator of a new or existing CCR landfill, including any lateral expansion of a new or existing CCR landfill that disposes or otherwise engages in solid waste management of CCR generated from the combustion of coal at electric utilities and independent power producers. An electric utility or independent power producer is in operation if it is generating electricity that is provided to electric power transmission systems or to electric power distribution systems on or after October 19, 2015. Unless otherwise provided in chs. NR 500 to 538, these requirements also apply to any disposal unit that is not a CCR surface impoundment located off-site of the electric utility or independent power producer. An off-site disposal facility is in operation if it is accepting or managing CCR on or after October 19, 2015. The CCR landfill requirements in chs. NR 500 to 538 also apply to any CCR disposal practice that does not meet the definition of a beneficial use of CCR.

CCR Landfills in Wisconsin – DNR Contacts

4 utility companies, 6 licensed landfill facilities

CCR Landfill Name	License #	DNR Engineer	DNR Hydrogeologist	DNR Regional Supervisor
Dairyland Power Coop-Belvidere Landfill	4126	Tony Peterson	To be determined	John Morris
Alliant - Columbia Energy Center	3025	Ann Bekta	Tyler Sullivan	Bridget Kelly
Alliant - Edgewater I-43 Landfill	2853	Jerry Demers	Mark Peters	Jim Delwiche
Wisconsin Public Service - Weston Disposal Site No. 3	3067	Sally Hronek	To be determined	Kristin Dufresne or John Morris
WEC-Caledonia Landfill	3232	Alicia Zewicki	Mark Peters	Jim Delwiche
WEC-Pleasant Prairie Power Plant Landfill	2786	Alicia Zewicki	Mark Peters	Jim Delwiche



[Link to DNR Staff Directory - Wisconsin DNR](#)

Key definitions – NR 500.03

- CCR landfill – a landfill that receives CCR
- CCR unit – CCR landfill, surface impoundment, lateral expansion or combination
- Existing CCR landfill – receives CCR before and after Oct. 19, 2015; commenced construction before Oct. 19, 2015
- Lateral expansion of a CCR landfill – horizontal expansion of existing CCR landfill after Oct. 19, 2015
- New CCR landfill – commences construction and first receives CCR after Oct. 19, 2015

*federal use of terms expansion differs from an expansion that triggers siting process in Wis.; federal use of terms landfill/unit similar to Wis. use of terms phase/module/cell

Example landfill layout



Ch. NR 504 – Design & construction criteria

- NR 504.12 (New section) – minimum design and construction criteria for CCR landfills; relies on existing rules + additional criteria
 - Run-on and run-off controls
 - Liner design (does not apply to existing CCR landfills – constructed before Oct. 19, 2015)
 - Wisconsin composite liner – 60 mil geomembrane/4-ft clay or 60 mil-geomembrane/GCL/soil barrier layer
 - Subbase no less than 5 feet above uppermost aquifer (key definition)
 - Final cover systems
 - Wisconsin composite cover – 60-mil geomembrane/2-ft clay or 60mil-geomembrane/GCL/soil barrier layer; 2.5 ft. drainage/rooting zone + 6 in. topsoil
- Alternative designs follow NR 504.10 + demonstration that alternative design meets federal requirements

Ch. NR 506 – Operational (& closure) criteria

- NR 506.083 - Closure requirements
 - procedures/deadlines for: notification, initiating and completing closure, deed notification
 - Standards for closure and closure by removal (waste exhumation)
- NR 506.084 - Long term care requirements
- NR 506.17 – Written operating record, public internet site, notifications
- NR 506.20 – Inspections and reporting
 - Structural and dust control insp., annual P.E. inspection, annual report
 - \$2,000 annual report fee



Ch. NR 512 – Feasibility

- Additional location and performance criteria
 - Unstable areas
 - Floodplains
 - No destruction or adverse modification of critical habitat of endangered or threatened species

*Feasibility report only pertinent if a landfill needs to go through the siting process

Ch. NR 514 – Plan of operation

- NR 514.07(10) – Plan of operation requirements
 - 10-year update
 - CCR fugitive dust control plan
 - Run-on/run-off control system plan
 - Written closure and long-term care plans

Ch. NR 514 – Initial permitting procedures

- NR 514.045 – applies to new and existing CCR landfills licensed or constructed prior to August 1, 2022
 - Plan of operation modification for initial permitting due Feb. 1, 2023
 - Demonstration landfill meets performance/location criteria, including additional criteria for unstable areas, floodplains and critical habitat
 - Plans required under NR 514.07(10)
 - Demonstration groundwater monitoring system complies with NR 507, including CCR wells
 - Updated sampling plan
 - 90 days completeness, public notice, 60-day public comment, and public meeting
 - Draft decision and written response to comments – posted for 30 days prior to final decision
 - Plan review fee is \$30,500

Ch. NR 514 – Additional public participation

- NR 514.04(7) – Discretionary pre-plan of operation public meeting
 - Draft plan of op submittal and 30 day posting – option for public meeting
- NR 514.04(8) – Discretionary pre-plan of operation modification public meeting
 - Plan mods affecting closure, liners, leachate systems, or groundwater monitoring reductions
 - Draft submittal and 30 day posting – option for public meeting

NR 516 (Construction) and NR 538 (Beneficial Use)

NR 516 and NR 538 apply but no Code changes

NR 538:

- Federal BU legitimacy criteria are included in existing language,
- Except tonnage restrictions on non-roadway fill uses (12,500 cy)
- BU of CCRs subject to all current NR 538 requirements and use restrictions
- Per federal rules, CCRs cannot be used as fill for mine reclamation (as noted in NR 538)
- Disposal not in accordance with NR 538 is subject to CCR landfill rules



Environmental Monitoring

New Code Citations That Apply Only to Monitoring at CCR Landfills

NR 507.15(3)

- Sets up a separate GW monitoring system that augments the existing NR 500 system
- Consist of 4 wells minimum, 1 up and 3 down gradient; semi-annual detection sampling
- Uppermost aquifer monitoring
- Subject to NR 140 GW quality standards: ESs, PALs, and ACLs
- Similar to “Subtitle D” wells at MSW sites
- Monitoring approved in PLOP; parameters in revised NR 507 Appendix

NR 508.06

- Response when there is an exceedance at a CCR well
- Assessment monitoring within 90 days of exceedance detect
- Within 60 days of assessment detect:
 - Install new well(s) downgradient.
 - Submit site investigation workplan (NR 716)
 - Site investigation within 90 days of DNR approval of workplan
 - Submit remedial actions options report (NR 722)
 - Remedial action 90 days after DNR approval

NR 507 Appendix Tables for Groundwater Monitoring

Table 1A

DETECTION GROUNDWATER MONITORING FOR CCR WELLS AT CCR LANDFILLS

Waste Type	Detection Parameters ¹	Monitoring Frequency
Coal combustion residuals	Alkalinity Boron Calcium Chloride Fluoride Field conductivity (at 25°C) Field pH Field temperature Groundwater elevation Hardness Total Dissolved Solids (TDS) Sulfate	Semi-annual

¹ Groundwater samples collected at CCR wells must be unfiltered.

Table 3

BASELINE AND ASSESSMENT GROUNDWATER MONITORING
PUBLIC HEALTH AND WELFARE PARAMETERS

All Wells	Additional Parameters for Subtitle D Wells	Additional Parameters for CCR Wells
Arsenic Barium Cadmium Chromium Copper Fluoride Lead Manganese Mercury Nitrate + Nitrite (as N) Selenium Silver Sulfate Zinc	Antimony Beryllium Cobalt Nickel Thallium Vanadium	Antimony Beryllium Cobalt Lithium Molybdenum Thallium Ra-226 and Ra-228, combined ¹

¹ The maximum contaminant level (MCL) for combined radium is 5 pCi/L under s. NR 809.50 (1)

(a).

NR 507 Appendix Table for Leachate Monitoring

Table 4

DETECTION LEACHATE MONITORING FOR ALL LANDFILLS^{1,2}

Municipal Solid Waste and Municipal Solid Waste Combustor Residue	Paper Mill Sludge	Fly or Bottom Ash	Foundry Waste
The volume of the leachate removed shall be recorded at least monthly and reported to the department semi-annually.			
Semi-Annual Monitoring Parameters			
BOD ₅ Field conductivity (at 25°C) Field pH Alkalinity Cadmium Chloride COD Hardness Iron Lead Manganese Mercury Ammonia nitrogen Total Kjeldahl nitrogen Sodium Sulfate Total suspended solids VOC scan ³ Other parameters specified by waste type in this table if accepted at the landfill	BOD ₅ Field conductivity (at 25°C) Field pH Alkalinity Cadmium Chloride COD Hardness Iron Lead Manganese Mercury Ammonia nitrogen Total Kjeldahl nitrogen Sodium Sulfate Total suspended solids VOC scan ³	BOD ₅ Field conductivity (at 25°C) Field pH Alkalinity Boron Cadmium Chloride COD Hardness Iron Lead Manganese Mercury Selenium Total suspended solids Additional Parameters for CCR Landfills Antimony Beryllium Cobalt Fluoride Lithium Molybdenum Ra ²²⁶ and Ra ²²⁸ combined Sulfate Thallium	BOD ₅ Field conductivity (at 25°C) Field pH Alkalinity Cadmium Chloride COD Fluoride Hardness Iron Lead Manganese Mercury Sodium Sulfate Total suspended solids VOC scan ³
Annual Monitoring Parameters			
Semivolatile organic compound scan ⁴	Semivolatile organic compound scan ⁴	Semivolatile organic compound scan ⁴	Semivolatile organic compound scan ⁴

CCR Well Sampling and NR 507 Appendix Tables

- Leachate monitoring in Table 4 was modified to add parameters for CCR landfills to match groundwater monitoring parameters
- All CCR well samples must be collected unfiltered (totals); low flow
- No water quality standards for radium-226/228 combined under NR 140, but an MCL of 5 pCi/L under NR 809.50(1)(a)
- Lithium is sampled, but has no NR 140 standards; to be treated as an indicator parameter and a PAL established per NR 140.20(2)
- DMZ for CCR landfills is 0 feet (at waste boundary)

Affected CCR Disposal Sites and Groundwater Monitoring History

Site Name	County	WDNR Lic#	CCR Unit Types	NR 507 monitoring wells (active as of Jan. 2021)	Initial Start Date for GW Monitoring	Existing Federal CCR Wells (as of January 2021)
Dairyland Power Coop-Belvidere Landfill	Buffalo	4126	Existing CCR Landfill	19	1995-Present	3 upgradient, 4 downgradient
Alliant-Columbia Energy Center	Columbia	3025	Existing/New CCR Landfill	24	1984-Present	2 upgradient, 6 downgradient
Alliant-Edgewater I-43 Landfill	Sheboygan	2853	Existing CCR Landfill	35	1978-Present	2 upgradient, 3 downgradient
WEC-Weston Disposal Site #3	Marathon	3067	Existing CCR Landfill	29	1984-Present	1 upgradient, 4 downgradient
WEC-Caledonia Landfill	Racine	3232	Existing CCR Landfill	26	1980-Present	2 upgradient, 5 downgradient
WEC-Pleasant Prairie Landfill	Kenosha	2786	Existing CCR Landfill	43	1993-Present	2 upgradient, 7 downgradient

*Groundwater monitoring well information estimated based on DNR GEMS database review – January 2021

CCR Landfill Monitoring Implementation

- New CCR rules only affect 6 recently active CCR landfills; does not affect older, closed sites or impoundments
- All active CCR landfills already have CCR wells that are being monitored; should not need any additional monitoring wells
- Existing CCR wells should have enough sampling data (8 rounds) to establish a baseline for each well
- CCR landfills will be submitting a PLOP by February 1, 2023
- Hydros will be responsible for reviewing data submitted for CCR wells, granting exemptions and setting ACLs as needed, approving groundwater monitoring network for “uppermost aquifer”
- ACLs and other conditions for NR 500 wells will not change

Additional resources

[List of Publicly Accessible Internet Sites Hosting Compliance Data and Information Required by the Disposal of Coal Combustion Residuals Rule | US EPA](#)

DNR webpages (under development)

DNR completeness checklists (under development)

Next steps

- Continue training and outreach
- Development of resources
- EPA application for state permit program

CONNECT WITH US

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