

Drilling Waste Inspections

September 2022

Alberta Energy Regulator
Manual 002: Drilling Waste Inspections

September 2022

Published by
Alberta Energy Regulator
Suite 1000, 250 – 5 Street SW
Calgary, Alberta
T2P 0R4

Telephone: 403-297-8311
Toll free: 1-855-297-8311
Email: inquiries@aer.ca
Website: www.aer.ca

Contents

Abbreviations	iii
Introduction.....	1
AER Safety and Conduct.....	1
Industry Compliance	1
How to Use this Manual.....	2
1 Notification and Approvals.....	3
1.1 AER Notification and Records	3
1.2 Landowner/Department Agency	3
1.3 AER Approval	3
2 Storage	3
2.1 General	3
2.2 Signs and Security.....	4
2.3 Spacing.....	4
2.4 <i>Directive 055</i>	4
2.5 Sump.....	5
2.6 Earthen-Bermed Systems.....	5
2.7 Reuse of Storage Systems	5
2.8 Hydrocarbons	5
2.9 Additional Storage for Pipeline Drilling Waste Only	5
3 Cement Returns.....	6
3.1 General	6
3.2 Aboveground Synthetically Lined Walled Storage System	6
3.3 Aboveground Portable Rigid Structure	6
3.4 Cement Pit.....	6
4 Sampling and Analysis	7
4.1 General	7
4.2 Drilling Waste Sampling.....	7
4.3 Pre-Disposal	7
4.4 Post-Disposal.....	8
5 Disposal	8
5.1 Spacing.....	8
5.2 Landspray & Landspray While Drilling.....	8
5.3 Disposal onto Forested Public Lands	9
5.4 Pump-off	10

5.5	Mix-Bury-Cover	10
5.6	Landspreading	10
5.7	Transfer to Waste Management Facilities	11
5.8	Remix	11
5.9	Pipeline Specific	11
6	Treatment	12
6.1	Drilling Waste Treatment	12
50	<i>Public Lands Act</i> – General	12
51	<i>Public Lands Act</i> – Water Management	12
52	<i>Public Lands Act</i> – Conservation and Reclamation	13
53	<i>Public Lands Act</i> – EAP Dispositions	13
59	<i>Public Lands Act</i> – Other	13
60	<i>EPEA</i> General	13
60.1	<i>EPEA</i> Releases	13
60.2	<i>EPEA</i> Waste Management	13
60.3	<i>EPEA</i> Storage	14
60.4	<i>EPEA</i> Emissions	14
60.5	<i>EPEA</i> Conservation and Reclamation	14
60.6	<i>EPEA</i> Other	14
70	<i>Water Act</i> Approval	15
70.1	Approval Conditions	15
72	<i>Water Act</i> Licence	15
72.1	Licence Conditions	15
74	<i>Water Act</i> Codes of Practice	16
74.2	Watercourse Crossings	16
99	Other	17

Abbreviations

AER	Alberta Energy Regulator
AWSS	aboveground synthetically lined walled storage systems
CAPP	Canadian Association of Petroleum Producers
<i>COP</i>	<i>Code of Practice</i>
DFPL	disposal onto forested public lands
<i>EPEA</i>	<i>Environmental Protection and Enhancement Act</i>
LOC	licence of occupation
LWD	landspray while drilling
MBC	mix-bury-cover
MGD	minimum-ground-disturbance
MSL	mineral surface lease
<i>OGCR</i>	<i>Oil and Gas Conservation Rules</i>
<i>PLA</i>	<i>Public Lands Act</i>
<i>PLAR</i>	<i>Public Lands Administration Regulation</i>
<i>RRR</i>	<i>Release Reporting Regulation</i>
ROW	right-of-way
<i>WA</i>	<i>Water Act</i>
<i>WCR</i>	<i>Waste Control Regulation</i>

Introduction

Manual 002: Drilling Waste Inspections is a resource document and tool for the Alberta Energy Regulator (AER) compliance staff and industry. Its purpose is to ensure that drilling waste operations are inspected in a consistent manner throughout Alberta.

AER Safety and Conduct

Safety is important to the AER. Compliance staff conduct their work in accordance with AER procedures and recognized standards of practice. Compliance staff will report unsafe operating conditions and practices to the licensee and to Alberta Workplace Health and Safety if necessary.

AER compliance staff may assess regulated activities at any time. Licensee personnel may be present during the AER compliance activities. During compliance activities, the licensee can provide site and operational information, and the AER may inform licensee representatives of AER requirements and processes. Compliance staff can also communicate any remedial or follow-up work that may be required.

Industry Compliance

Licensees may use *Manual 002* as a guide for their own compliance management systems; however, it is important to consider issues beyond the scope of this document. Efficient, safe, orderly, and environmentally responsible development of Alberta's energy resources is best achieved through the combined application of this manual with broader management and systems-based approaches.

Manual 002 identifies many noncompliance statements, but it is not an exhaustive inventory. Each noncompliance statement is accompanied by references to the relevant requirements from the energy resource enactments, specified enactments, and AER directives. Noncompliance statements are short statements that summarize what an inspector may look for and are not intended to include every aspect of the requirement. Accordingly, *Manual 002* should not be relied on in designing or implementing a compliance program, and the actual requirement should always be referred to in order to understand the full extent of the requirement. Industry is responsible for understanding and complying with all applicable regulatory requirements.

During compliance activities, AER staff may ask to access a licensee's operations or controlled areas, inspect a licensee's activities, and review all books, records, and documents that pertain to the drilling waste operations. A licensee who interferes with or fails to assist the AER in the exercise of this authority may be guilty of an offence under the [Oil and Gas Conservation Act](#), Part 15, section 96.

Compliance staff may use education, prevention, or enforcement when dealing with industry compliance issues.

How to Use this Manual

Each section contains related noncompliance statements and their relevant regulatory references. The effective identification of a noncompliance entails reviewing and understanding the referenced requirements to ensure the correct application of the associated noncompliance statement.

Regardless of the type or scope of the compliance activities, AER staff may apply any section of *Manual 002* deemed relevant.

Noncompliance statements in the manual are structured as follows:

Manual #	Description
2.7.1.1	Reuse of an earthen-bermed storage system. [<i>Directive 050 6.6(77)</i>]

- The **Manual #** is the number used by the Field Inspection System (FIS) and the Digital Data Submission (DDS) system to identify inspection items in the database—this number does not relate to sections in acts, rules, or AER directives.
- The **Description** is the noncompliance statement and associated requirements or rules.

The historical risk ratings (high/low) have been removed from this edition of *Manual 002*. Before 2016, the AER predetermined risk ratings; however, under the *Integrated Compliance Assurance Framework* and *Manual 013: Compliance and Enforcement Program*, the AER no longer uses predetermined risk ratings. For more information, see [Compliance Assurance Program](#).

1 Notification and Approvals

1.1 AER Notification and Records

Manual #	Description
1.1.1.1	Required notification information not submitted through the AER Digital Data Submission system as required. [<i>Directive 050</i> 17.3(148), 17.3(149)]
1.1.2.1	Failure to notify the AER as required. [<i>Directive 050</i> 3.5(15), 6.6(79), 14(137), 16.2(143), 16.2(144), 17.3(149); <i>Directive 058</i> 4.1(33), 4.2.1(61),(63), 7.6.2(b), 7.2(81)(c)(vii)]
1.1.3.1	Detailed map of the disposal area not documented or retained as required. [<i>Directive 050</i> 17.1(145)(d)(iii)]
1.1.4.1	Failure to document or maintain information required in <i>Directive 050</i> for drilling waste generated from directional drilling activities. [<i>Directive 050</i> 13(133), 17.2(147)]
1.1.5.1	Failure to document or maintain information in well file as required. [<i>Directive 050</i> 13(133), 17.1(145)]
1.1.6.1	Drilling waste volumes accepted and managed in tailings pond not recorded. [<i>Directive 050</i> 15.3(140)]

1.2 Landowner/Department Agency

Manual #	Description
1.2.1.1	Failure to obtain a written consent or agreement from landowner or department agency where required. [<i>Directive 050</i> 1.5(1), 6.4(70), 16.1(142)(i)]
1.2.2.1	Failure to disclose, communicate, or provide information to landowner/department/agency as required. [<i>Directive 050</i> 1.5(2), 4.5(49)(b), 11.3.3(121)(h)]
1.2.3.1	Notification to landowners or residents within 1.5 km not conducted 30 days before beginning thermal treatment operations. [<i>Directive 058</i> 4.2.1(61)]
1.2.5.1	Mobile treatment unit does not have an approval or registration. [<i>Directive 058</i> 4.2]

1.3 AER Approval

Manual #	Description
1.3.1.1	Failure to obtain AER approval where required. [<i>Directive 050</i> 4.3(37)(b), 6.6(79), 7.2(82)(e), 15.1, 15.2(139)]
1.3.2.1	Failure to follow AER approval requirements. [OGCR 8.151(4)(c), 8.152; specific approval]

2 Storage

2.1 General

Manual #	Description
2.1.1.1	Drilling waste stored on the ground or in a storage system or manner not allowed. [<i>Directive 050</i> 6.0, 6.1(57); <i>Directive 055</i> 4.2.2(146)]
2.1.2.1	More than one licensee contributing drilling waste to a drilling waste storage system. [<i>Directive 050</i> 6.1(60)]
2.1.3.1	Failure to inspect storage system for additional materials prior to disposal or camp sewage or other oilfield wastes in the drilling waste storage system. [<i>Directive 050</i> 4.2(29), 6.1(56)]

2.1.4.1	Storage system does not prevent the entrance of surface run-on/run-off waters. [OGCR 8.151(2)(a); <i>Directive 050</i> 6.1(62)]
2.1.5.1	Failure to maintain a minimum freeboard of 0.5 metres. [<i>Directive 050</i> 6.1(63)]
2.1.6.1	Facility not maintained in a clean condition. [OGCR 8.150(4); <i>Directive 050</i> 6.1(58)]
2.1.7.1	Storage system not physically closed within required timeframe. [<i>Directive 050</i> 6.1(64)]
2.1.8.1	Pipeline and well drilling waste not stored or disposed of separately. [<i>Directive 050</i> 6.1(61)]
2.1.9.1	Remote site being used beyond five years without AER approval. [OGCR 8.152; <i>Directive 050</i> 6.4(73)]

2.2 Signs and Security

Manual #	Description
2.2.1.1	Remote storage site does not have signage at site entrance identifying location, licensee, linked well licence or pipeline licence and line number, or 24-hour emergency phone number. [<i>Directive 050</i> 6.4(71)]
2.2.2.1	Remote site with multiple sumps and contributing licences does not have signage for each sump indicating type of drilling waste or licence number of the first contributing well or pipeline for that sump. [<i>Directive 050</i> 6.4(71)]
2.2.3.1	Failure to ensure that a call to the licensee 24-hour emergency telephone number initiates immediate action. [<i>Directive 071</i> 2.1(3)]
2.2.4.1	Drilling waste storage system or remote site is not secured to prevent public or wildlife access. [<i>Directive 050</i> 6.1(59)]

2.3 Spacing

Manual #	Description
2.3.1.1	Exterior walls of drilling waste storage system within 100 metres of a water body. [OGCR 2.120(1)(b); <i>Directive 050</i> 6.7(80)(c)]
2.3.2.1	Exterior walls of drilling waste storage system within 50 metres of a water body, where the water body is upgradient or the landscape creates a physical barrier. [<i>Directive 050</i> 6.7(80)(d)]
2.3.3.1	Exterior walls of drilling waste storage system within 50 metres of an off-site water well. [<i>Directive 050</i> 6.7(80)(b)]
2.3.4.1	Exterior walls of drilling waste storage system within 20 metres of an on-site rig water well. [<i>Directive 050</i> 6.7(80)(a)]

2.4 *Directive 055*

Manual #	Description
2.4.1.1	Aboveground storage tank not constructed, designed, or operated as required. [<i>Directive 055</i> 3.2.30, 3.2.36, 3.2.37]
2.4.2.1	Temporary storage of recycle/reuse drilling waste stored in single-walled aboveground tank not diked where required. [<i>Directive 055</i> 4.2.2]
2.4.3.1	Temporary storage of recycle/reuse drilling waste exceeds one year. [<i>Directive 055</i> 4.2.2(145), 4.2.2(149)]
2.4.4.1	Sump with synthetic liner that does not meet <i>Directive 055</i> requirements. [<i>Directive 050</i> 6.2(65); <i>Directive 055</i> 4.1]

2.5 Sump

Manual #	Description
2.5.1.1	Soil conservation practices not followed. [<i>Directive 050</i> 6.2(67), 6.5(74)(b)]
2.5.2.1	Sump site investigation not conducted as required or site does not have minimum clayey soil deposits. [<i>Directive 050</i> 6.2(65), 6.2(66)]
2.5.3.1	Sump contains hydraulic defects such as gravel lenses, silt lenses, sand lenses, cracks, fissures, or root channels. [OGCR 8.151(2)(b); <i>Directive 050</i> 6.2(65)]

2.6 Earthen-Bermed Systems

Manual #	Description
2.6.1.1	Berm does not meet requirements. [<i>Directive 050</i> 6.5(75)]
2.6.2.1	Earthen-bermed storage system not on well site or remote drilling waste storage site. [<i>Directive 050</i> 6.5(74)(b)]
2.6.3.1	Earthen-bermed storage system used to store waste other than nonhydrocarbon-based drilling waste solids intended for landspreading, mix-bury-cover, or managed at an approved waste management facility. [<i>Directive 050</i> 6.5(74)(a)]
2.6.4.1	Shallow subsoils assessment for not conducted as required or results did not confirm minimum limited permeability requirements. [<i>Directive 050</i> 6.5(75)]

2.7 Reuse of Storage Systems

Manual #	Description
2.7.1.1	Reuse of an earthen-bermed storage system. [<i>Directive 050</i> 6.6(77)]
2.7.2.1	Failure to verify integrity of drilling waste storage system prior to reuse. [<i>Directive 050</i> 2(5)(b), 6.6(78)]

2.8 Hydrocarbons

Manual #	Description
2.8.1.1	Hydrocarbon-based drilling fluids not stored in tank(s). [<i>Directive 050</i> 6.8(81)]
2.8.2.1	Hydrocarbon-based drilling solids in contact with the ground. [<i>Directive 055</i> 4.2.2(146); <i>Directive 050</i> 6.8(81)]

2.9 Additional Storage for Pipeline Drilling Waste Only

Manual #	Description
2.9.1.1	Failure to appropriately store drilling muds and wastes at the entry and exit points of the drilling activity. [<i>Directive 050</i> 6.3(68)]
2.9.2.1	Failure to remove the drilling waste from pits immediately upon completion of drilling or backfill/reclaim the pits. [<i>Directive 050</i> 6.3(69)]

3 Cement Returns

3.1 General

Manual #	Description
3.1.1.1	Failure to dispose of cement returns as outlined in <i>Directive 050</i> . [<i>Directive 050 7.2(82)</i>]
3.1.2.1	Cement returns sent to waste management facility not authorized to accept it. [<i>Directive 050 7.2(82)(d), 13(134)–(136)</i>]
3.1.3.1	Unhardened cement returns not removed for disposal as required or sampling of cement pit after removal not conducted as required. [<i>Directive 050 7.2(82)(c)(viii),(ix)</i>]

3.2 Aboveground Synthetically Lined Walled Storage System

Manual #	Description
3.2.1.1	AWSS capacity exceeds 50 m ³ . [<i>Directive 050 7.2(82)(a)(i)</i>]
3.2.2.1	AWSS is not engineered to withstand the hydraulic pressure of the stored contents at full capacity. [<i>Directive 050 7.2(82)(a)(iii)</i>]
3.2.3.1	AWSS liner does not meet requirements. [<i>Directive 050 7.2(82)(a)(ii),(iv),(v)</i>]
3.2.4.1	AWSS liner used for the storage of cement returns was reused. [<i>Directive 050 7.2(82)(a)(viii)</i>]
3.2.5.1	AWSS used to store cement returns for greater than one year. [<i>Directive 050 7.2(82)(a)(vi)</i>]
3.2.6.1	Hardened cement returns not broken into pieces 0.5 m ³ or less for disposal in pit(s) or landfill. [<i>Directive 050 7.2(82)(a)(vii)</i>]

3.3 Aboveground Portable Rigid Structure

Manual #	Description
3.3.1.1	Structure not able to withstand the hydraulic pressure of the stored contents at full capacity. [<i>Directive 050 7.2(82)(b)(i)</i>]
3.3.2.1	Storage duration in portable structure exceeds one year. [<i>Directive 050 7.2(82)(b)(ii)</i>]
3.3.3.1	Hardened cement returns not broken into pieces 0.5 m ³ or less for disposal in pit(s) or landfill. [<i>Directive 050 7.2(82)(b)(iii)</i>]

3.4 Cement Pit

Manual #	Description
3.4.1.1	Pit(s) area for cement returns exceeds 100 m ² (not part of oil sands development) or 900 m ² (if part of oil sands development on public lands). [<i>Directive 050 7.2(82)(c)(ii)</i>]
3.4.2.1	Temporary storage pit exceeds 900 m ² , combined area of all pits exceeds 2700 m ² or final cement returns disposal area must not exceed 900 m ² . [<i>Directive 050 7.2(81)(c)(iii)</i>]
3.4.3.1	Pit(s) for cement returns constructed in the water table or interfering with subsurface water flow. [<i>Directive 050 7.2(82)(c)(i),(vi)</i>]
3.4.4.1	Pit(s) for cement returns does not have measures to prevent public or wildlife from entering it. [<i>Directive 050 7.2(82)(c)(iv)</i>]

3.4.5.1	Hardened cement returns not broken into pieces 0.5 m ³ or less for disposal in pit(s) or landfill. [Directive 050 7.2(82)(c)]
3.4.6.1	Pit(s) for cement returns not covered with at least 1 metre of clean fill. [Directive 050 7.2(82)(c)]

4 Sampling and Analysis

4.1 General

Manual #	Description
4.1.1.1	Failure to follow sample collection criteria for assessing pre- or post-disposal soil conditions. [Directive 050 3.5(13), 9.2(95), 10.2(102), 12.2(125)]
4.1.2.1	Field screening test methods not limited to assessments outlined in Directive 050. [Directive 050 3.5(14)(a), 5(51), 5(52)]
4.1.3.1	Failure to ensure field screening program is supported by an ongoing quality assurance/quality control program. [Directive 050 4.4(46), 5(54), 5(55)]

4.2 Drilling Waste Sampling

Manual #	Description
4.2.1.1	Failure to ensure drilling waste pH is between 6 and 10.5. [Directive 050 8.3(90)(a), 11.3.1(112)(a), 11.3.2(116)(a), 12.3(127)]
4.2.2.1	Failure to ensure clear liquids pH is between 6 and 8.5. [Directive 050 9.3(97)(a)]
4.2.3.1	Drilling waste is not resampled or reanalyzed to determine the applicability of disposal option. [Directive 050 4.2(28), 4.2(30), 4.3(38),(39)]
4.2.4.1	Failure to follow sample collection criteria for assessing drilling waste as per Directive 050 requirements. [Directive 050 4.2(18)–(24),(26),(27),(31), 11.3.1(110)]
4.2.5.1	Failure to sample and analyze the drilling waste for pH, EC, SAR, Na, or N, as required. [Directive 050 4.3(32), 8.3(86), 9.3(97), 10.3(104), 11.3.1(111), 11.3.2(115), 12.3(126)]
4.2.6.1	Failure to test drilling waste or additives for metals, hydrocarbons, toxicity, or salinity as required. [Directive 050 4.3(33)–(36),(37)(a),(38),(40),(42), 8.3(91), 9.3(97), 10.3(104), 11.3.1(111), 11.3.2(116), 12.3(126)]
4.2.7.1	Failure to develop, test, or use a generic mud system as required. [Directive 050 4.4, 4.4(43),(46)]
4.2.8.1	Failure to ensure mud system passed appropriate testing for the disposal option as required in Directive 050. [Directive 050 4.4(44), 11.3.1(111),(112)]
4.2.9.1	Failure to re-evaluate disposal method knowing changes to the drilling mud/waste system had occurred or sampling identified exceedance. [Directive 050 4.4(45),(48)]

4.3 Pre-Disposal

Manual #	Description
4.3.1.1	Sampling for receiving soil not representative or appropriate. [Directive 050 3.2(7), 3.5(12), 10.2(103)]
4.3.2.1	Failure to analyze receiving soil sample to verify that electrical conductivity and sodium adsorption ratio values are within the initial criteria specified in Directive 050. [Directive 050 3.2(7)]
4.3.3.1	Receiving soil exceeds initial limiting criteria outlined in Directive 050. [Directive 050 3.2(7)]
4.3.4.1	Failure to adequately determine background soil conditions for remix. [Directive 050 16.1(142)(c)]

4.4 Post-Disposal

Manual #	Description
4.4.1.1	Failure to conduct post-disposal sampling as required. [<i>Directive 050</i> 3.5(14), 4.4(47), 8.4(94), 9.4(100), 10.2(102), 10.4(108), 11.4.1(122), 11.4.2(123), 12.4(131)]
4.4.2.1	Failure to ensure drilling waste disposal does not exceed the endpoints specified in <i>Directive 050</i> . [<i>Directive 050</i> 3.1(6), 3.2(8), 3.3(9), table 2, 3.4(11), table 5, 3.5(14), 4.4(47), 10.3(104)]

5 Disposal

5.1 Spacing

Manual #	Description
5.1.1.1	Disposal conducted within 100 metres of a water body. [<i>Directive 050</i> 3.6(16)(c)]
5.1.2.1	Disposal conducted within 50 metres of a water body where the water body is upgradient or the landscape creates a physical barrier. [<i>Directive 050</i> 3.6(16)(d)]
5.1.3.1	Disposal is conducted within 10 metres of a road ditch or property line. [<i>Directive 050</i> 3.6(16)(a)]
5.1.4.1	Disposal conducted within 50 metres of a water well. [<i>Directive 050</i> 3.6(16)(b)]
5.1.5.1	Landspray or MBC within 10 metres of a rig water well. [<i>Directive 050</i> 3.6(17)]

5.2 Landspray & Landspray While Drilling

Manual #	Description
5.2.1.1	Disposal on a slope greater than 5 per cent during summer operations (unfrozen ground) or greater than 3 per cent during winter operations (frozen and snow covered). [<i>Directive 050</i> 11.2(109)]
5.2.2.1	Drilling waste spray rate exceeded 40 m ³ /ha during summer operations. [<i>Directive 050</i> 11.3.3(121)(b)]
5.2.3.1	Drilling waste spray rate exceeded 20 m ³ /ha during winter operations. [<i>Directive 050</i> 11.3.3(121)(c)]
5.2.4.1	Failure to determine maximum spray rate as required or calculated spray rate exceeded. [<i>Directive 050</i> 11.3.1(111), 11.3.1(112)(c), 11.3.2(115)]
5.2.5.1	Drilling waste disposal when rate is required to be less than 10 m ³ /ha. [<i>Directive 050</i> 11.3.3(121)(a)]
5.2.6.1	Failure to determine spray rates using the calculations for no soil incorporation where required. [<i>Directive 050</i> 11.3(112)(c), 11.3(113), 11.3.2(116)(f)]
5.2.7.1	Solids application rate exceeded 6 tonne/ha when sprayed onto vegetated land, disposal smothered/stressed the vegetation, or uneven application resulted in coating vegetation. [<i>Directive 050</i> 11.3.3(121)(g)]
5.2.8.1	Sodium application rate exceeded 250 kg/m ³ or nitrogen application rate exceeded. [<i>Directive 050</i> 11.3.3(121)(f)]
5.2.9.1	Landspray or LWD results in clumping or pooling of waste on the land, migrated off the disposal area, or causes land erosion. [<i>Directive 050</i> 11.3.3(121)(e)]
5.2.10.1	Using landspray or LWD disposal for drilling waste with hydrocarbons. [<i>Directive 050</i> 11.3.2(114), 11.3.2(116)(c)]

5.2.11.1	Using landspray to dispose of cement or separated solids and cuttings. [<i>Directive 050</i> 11.3.3(119),(120)]
5.2.12.1	Failure to prepare snow covered surface area during winter operations. [<i>Directive 050</i> 11.3.3(121)(d)]
5.2.13.1	Failure to incorporate drilling waste into the receiving soil to a maximum depth of 15 cm within 60 days of disposal. [<i>Directive 050</i> 11.3.1(113)]
5.2.14.1	Using LWD to dispose of drilling waste not suited for this disposal option. [<i>Directive 050</i> 11.3.2(116)]
5.2.15.1	Failure to separate and handle drilling wastes from different sections of the well as required in <i>Directive 050</i> . [<i>Directive 050</i> 11.3.2(117)]
5.2.16.1	Failure to ensure LWD disposal operations occur within 48 hours of rig release. [<i>Directive 050</i> 11.3.2(118)]
5.2.17.1	Failure to retest drilling waste when LWD operations are being conducted between 48 hours and 96 hours after rig release. [<i>Directive 050</i> 11.3.2(118)]

5.3 Disposal onto Forested Public Lands

Manual #	Description
5.3.1.1	Disposal on a slope greater than 5 per cent. [<i>Directive 050</i> 8.2(85)(b)]
5.3.2.1	Drilling waste spread rate exceeded 80 m ³ /ha. [<i>Directive 050</i> 8.3(92)(b)]
5.3.3.1	Drilling waste disposal when rate is required to be less than 10 m ³ /ha. [<i>Directive 050</i> 8.3(92)(a)]
5.3.4.1	Drilling waste analysis results not used to calculate spread rate, or exceeding the calculated spread rates that will prevent the receiving soil from exceeding endpoints. [<i>Directive 050</i> 8.3(86)]
5.3.5.1	Solids application rate exceeded 6 tonne/ha when sprayed onto vegetated land, disposal smothered/stressed the vegetation, or uneven application resulted in coating vegetation. [<i>Directive 050</i> 8.3(92)(e)]
5.3.6.1	The sodium application rate exceeds 250 kg/ha and/or the nitrogen application rate exceeded. [<i>Directive 050</i> 8.3(92)(d)]
5.3.7.1	DFPL results in clumping or pooling of waste on the land, migrated off the disposal area, or causes land erosion. [<i>Directive 050</i> 8.2(85)(c), 8.3(92)(c)]
5.3.8.1	Using DFPL disposal for drilling waste with hydrocarbons. [<i>Directive 050</i> 8.3(89), 8.3(90)(c)]
5.3.9.1	Vegetative indicators (e.g., tamarack) indicate unsuitable soil conditions for DFPL, such as muskeg or mineral soil horizon greater than 30 cm. [<i>Directive 050</i> 8.2(85)(d)]
5.3.10.1	Drilling waste disposal is conducted in ditches. [<i>Directive 050</i> 8.2(84)]
5.3.11.1	Failure to clearly mark all stop and start points of the spray area prior to or during disposal. [<i>Directive 050</i> 8.3(93)]
5.3.12.1	Failure to conduct DFPL on lands where AER has issued an MSL or LOC. [<i>Directive 050</i> 8.2(83), 8.2(85)(a)]
5.3.13.1	Using DFPL to dispose of drilling waste not suited for this disposal option. [<i>Directive 050</i> 8.3(87),(88),(90)]
5.3.14.1	Failure to follow requirements for MGD disposal [<i>Directive 050</i> 8.2(84)]
5.3.15.1	Proceeding with DFPL without storing, sampling, and testing drilling waste where required. [<i>Directive 050</i> 8.3(91)]

5.4 Pump-off

Manual #	Description
5.4.1.1	Pump-off results in pooling, erosion, or migration of the drilling waste. [Directive 050 9.3(99)]
5.4.2.1	Pump-off disposal method used when water-based drilling waste does not qualify as a clear liquid meeting criteria in Directive 050. [Directive 050 9.3(96),(97)]
5.4.3.1	Actual application rate of 1000 m ³ /ha exceeded. [Directive 050 9.3(98)]
5.4.4.1	The sodium application rate exceeds 250 kg/ha and/or the nitrogen application rate exceeded. [Directive 050 9.3(97)(d)]

5.5 Mix-Bury-Cover

Manual #	Description
5.5.1.1	Failure to conduct MBC on the well site, pipeline ROW, or remote drilling waste storage site. [Directive 050 10.2(101)]
5.5.2.1	MBC disposal not conducted within deeper subsoils. [Directive 050 10.2(101)]
5.5.3.1	Failure to mix at a ratio of at least three parts subsoil to one part waste. [Directive 050 10.3(105)]
5.5.4.1	Conducting MBC operations when predictive/calculated mix ratio exceeds seven parts subsoil to one part waste. [Directive 050 10.3(105)(b)]
5.5.5.1	Failure to use predictive lab mixes to determine the soil/waste mix ratio where required. [Directive 050 10.3(104), 10.3(105)(a)]
5.5.6.1	Failure to cover subsoil/waste mixture with a minimum of 1 metre of clean fill that meets Tier 1 Soil and Groundwater Remediation Guidelines for the applicable soil rating category and depth. [Directive 050 10.3(107)]
5.5.7.1	Hydrocarbon-based mud system that has not undergone biodegradation being managed by MBC. [Directive 050 2.0(3)]
5.5.8.1	MBC on an area of the site previously used for drilling waste disposal or site with multiple disposals exceeds five years. [Directive 050 2.0(5)(b)]

5.6 Landspreading

Manual #	Description
5.6.1.1	Landspreading not conducted within shallow soils with a maximum depth profile of 1 metre. [Directive 050 12.2(124)]
5.6.2.1	Failure to conduct landspread on the well site, pipeline ROW, or remote drilling waste storage site. [Directive 050 12.2(124)]
5.6.3.1	Waste application rate exceeds 1000 m ³ /ha or waste exceeds thickness of 10 cm. [Directive 050 12.3(129)]
5.6.4.1	The sodium application rate or the nitrogen application rate exceeds maximum allowable outlined in Directive 050. [Directive 050 12.3(130)]
5.6.5.1	Failure to mix subsoil and drilling waste at a ratio of at least three parts subsoil to one part drilling waste. [Directive 050 12.3(128)]
5.6.6.1	Landspreading conducted when predicted lab or calculated mix ratios exceed seven parts soil to one part waste. [Directive 050 12.3(128)(b)]
5.6.7.1	Failure to use predictive lab mixes to determine the soil/waste mix ratio where required. [Directive 050 12.3(126), 12.3(128)(a)]

5.6.8.1	Landspreading drilling waste from hydrocarbon-based mud systems that have not undergone biodegradation. [<i>Directive 050 2.0(3)</i>]
5.6.9.1	Landspread on an area of the site previously used for drilling waste disposal or site with multiple disposals exceeds five years. [<i>Directive 050 2.0(5)(b)</i>]

5.7 Transfer to Waste Management Facilities

Manual #	Description
5.7.1.1	Waste sent to site not authorized to accept it or prohibited for drilling waste disposal. [OGCR 8.150(2)(b)(c); <i>Directive 058 7.5(125), 10.3(197); Directive 050 13(134),(135),(136)</i>]
5.7.2.1	Waste characterization not completed or not adequate to classify the waste. [OGCR 8.150(2)(a); <i>Directive 058 2(3), Waste Control Regulation</i>]
5.7.3.1	Oilfield wastes not characterized/classified prior to adding amendments, mixing, or diluting. [OGCR 8.150(2)(a); <i>Directive 058 2(5),(6); Directive 050 13(132)</i>]
5.7.4.1	Waste tracking system not in place or tracking system does not maintain accurate and complete documentation and records. [OGCR 8.150(2)(d); <i>Directive 058 3.3(19),(20)</i>]
5.7.5.1	Oilfield waste was not properly identified (waste code). [OGCR 8.150(2)(d); <i>Directive 058 3(9), appendix 2</i>]
5.7.6.1	Shipping document not used during transportation of waste. [<i>Directive 058 3(7)</i>]
5.7.7.1	Shipping document does not include adequate information, including the waste code, the waste source, and the waste generator's contact information. [<i>Directive 058 3(9), 3.1(12)</i>]
5.7.8.1	Disposal of drilling waste into a registered landfill operating under Alberta Public Health permit. [<i>Directive 050 13(134)</i>]

5.8 Remix

Manual #	Description
5.8.1.1	Failure to conduct remix on a licensed well site or associated remote drilling waste storage site on which an original drilling waste disposal occurred. [<i>Directive 050 16.1(142)(a)</i>]
5.8.2.1	Mix ratio for remix exceeds 3 parts subsoil to 1 part drilling waste. [<i>Directive 050 16.1(142)(e)</i>]
5.8.3.1	Failure to use predictive lab mixes to determine the mix ratio or mix exceeds soil endpoints. [<i>Directive 050 16.1(142)(d)</i>]
5.8.4.1	Remix not conducted at soil horizon/depth as required in <i>Directive 050</i> . [<i>Directive 050 16.1(142)(f)</i>]

5.9 Pipeline Specific

Manual #	Description
5.9.1.1	Mix-bury-cover or landspreading disposal method used on an area of a pipeline ROW that does not have a disturbed surface. [<i>Directive 050 10.1, 12.1</i>]
5.9.2.1	Disposing of drilling wastes, on a pipeline ROW, generated from activities other than the construction of that pipeline ROW. [<i>Directive 050 2(4)</i>]

6 Treatment

6.1 Drilling Waste Treatment

Manual #	Description
6.1.1.1	Oilfield waste biodegradation not conducted according to requirements. [<i>Directive 058</i> 4.1(29)–(32), 4.1.1(36)–(47), 4.1.2(49)–(56)]
6.1.2.1	Treatment not concluded/closed within 5 years or unsuccessfully treated waste not removed within five years. [<i>Directive 058</i> 4.1(28), 4.1.1(35), 4.1.2(54),(56), 7.4(122)]
6.1.3.1	Mobile thermal treatment unit not operating according to requirements. [<i>Directive 058</i> 4.2; specific permit, licence, application, or approval]

50 Public Lands Act – General

Manual #	Description
50.1.1.1	Unauthorized use – No approval or disposition associated with disturbance or use of public land. [<i>PLA</i> 20(1), 47(1)(a)]
50.1.2.1	Weeds not actively being managed. [<i>PLA</i> 63(b); <i>PLAR</i> 173(1); approval]
50.1.4.1	Compaction and/or admixing of soil profile occurring on site due to rutting. [<i>PLA</i> 54(e); <i>PLAR</i> 173(1); approval]
50.1.5.1	Prohibited species identified in approval used for revegetation. [<i>PLAR</i> 173(1); approval]
50.1.6.1	Operating within restricted time period identified in approval. [<i>PLAR</i> 173(1)]
50.1.8.1	Access control requirements outlined in approval not met. [<i>PLAR</i> 173(1)]
50.1.9.1	Unauthorized use (purpose) – Disposition being used for purpose other than for which it was approved. [<i>PLA</i> 20(1)(e); <i>PLAR</i> 173(1); approval]
50.1.11.1	Cuts / fills not recontoured to a stable slope. [<i>PLAR</i> 173(1); approval]
50.1.12.1	Erosion on site not being controlled. [<i>PLA</i> 54(1)(f); <i>PLAR</i> 173(1); approval]
50.1.13.1	Timber not salvaged as per approval. [<i>PLAR</i> 173(1); approval]
50.1.14.1	Brush/debris disposal not completed as required by approval. [<i>PLAR</i> 173(1)]
50.1.15.1	Waste material, debris, refuse, or garbage accumulating on site. [<i>PLA</i> 54(1)(a); <i>PLAR</i> 21(1)(h)]

51 Public Lands Act – Water Management

Manual #	Description
51.1.1.1	Deleterious material deposited into, or onto the ice of, a water body or watercourse. [<i>PLA</i> 54(1)(e), <i>PLAR</i> 173(1); approval]
51.1.2.1	Unsatisfactory crossing of a permanent or fish-bearing watercourse. [<i>PLA</i> 54(1)(e)(f); <i>PLAR</i> 21(1)(j); approval]
51.1.3.1	Unsatisfactory crossing of an ephemeral or intermittent watercourse, wetland, cross-drain, or other non-fish-bearing water body. [<i>PLA</i> 54(1)(e),(f), <i>PLAR</i> 173(1); approval]
51.1.4.1	Crossing type not as per approval. [<i>PLAR</i> 173(1)]

51.1.5.1	Operation or infrastructure on disposition interfering with natural drainage other than what has been approved. [PLA 54(1)(d)–(f)]
51.1.6.1	Disturbance to bed and shore of water bodies other than what is approved through approval. [PLA 53(a), 54(e)]

52 Public Lands Act – Conservation and Reclamation

Manual #	Description
52.1.1.1	Proper soil conservation techniques not being used [PLA 63(d); PLAR 21(f), 173(1); approval]
52.1.2.1	Interim reclamation not implemented on disposition within required timeframe. [Approval]

53 Public Lands Act – EAP Dispositions

Manual #	Description
53.1.1.1	Regulator not notified of entry within 72 hours. [PLAR 173(1)]
53.1.4.1	Class of road built is greater than maximum outlined in approval. [PLAR 173(1)]
53.1.5.1	Required wildlife survey not completed. [PLAR 173(1); approval]
53.1.6.1	Wildlife signage not installed as required. [PLAR 173(1); approval]
53.1.7.1	100 m wildlife sweep not conducted appropriately prior to construction. [PLAR 173(1); approval]

59 Public Lands Act – Other

Manual #	Description
59.1.1.1	Other contravention of approval condition. [PLAR 173(1)]
59.1.2.1	Other contravention of act or regulation.

60 EPEA General

60.1 EPEA Releases

Manual #	Description
60.1.1.1	Failure to report a release as required. [EPEA 110(1),(2)]
60.1.2.1	Release notifications requirements not met. [EPEA 111(1); RRR 4]
60.1.3.1	Failure to take remedial action. [EPEA 112]

60.2 EPEA Waste Management

Manual #	Description
60.2.1.1	Waste not in appropriate container. [EPEA 176, 178]
60.2.2.1	Waste not disposed at approved waste management facility. [EPEA 176; WCR 13, 23]
60.2.3.1	Hazardous waste not disposed of in accordance with requirements. [EPEA 192]
60.2.4.1	Generation, storage, handling, transport, or acceptance of hazardous waste without personal identification number. [EPEA 188]

60.2.5.1	Hazardous waste handling not in accordance with manifesting requirements. [EPEA 191]
60.2.6.1	Hazardous waste manifest requirements not met. [WCR 7]
60.2.7.1	Hazardous waste mixed, diluted, or divided to avoid regulatory requirements. [WCR 16]
60.2.8.1	Hazardous waste or hazardous recyclable not characterized and/or classified. [WCR 3.1]
60.2.9.1	Hazardous recyclables sent to facility not authorized to accept it. [EPEA 169]
60.2.10.1	Hazardous recyclables not accompanied with recycle docket. [EPEA 169]
60.2.11.1	Hazardous recyclable recycle docket requirements not met. [WCR 19]

60.3 EPEA Storage

Manual #	Description
60.3.1.1	Hazardous substance not stored in a manner to prevent contact with plants, animals, food, or drink. [EPEA 155]
60.3.2.1	Hazardous waste not stored as per requirement. [WCR 11 (1),(2)]
60.3.3.1	Hazardous waste stored without adequate labelling in accordance with requirements. [WCR 11(1)(d)]
60.3.4.1	Hazardous recyclable not stored as per requirements. [WCR 18(1),(2)]
60.3.5.1	Hazardous recyclable stored without adequate labelling in accordance with requirements. [WCR 18(1)(d)]

60.4 EPEA Emissions

Manual #	Description
60.4.1.1	Visible emission impairing visibility on a highway or on a developed property. [SRR 5]

60.5 EPEA Conservation and Reclamation

Manual #	Description
60.5.1.1	Specified land not conserved in accordance with requirements. [CRR 3(2); EPEA 137]

60.6 EPEA Other

Manual #	Description
60.6.1.1	Noncompliant with other EPEA item. (Specified in comments.)

70 Water Act Approval

70.1 Approval Conditions

Manual #	Description
70.1.1.1	No <i>Water Act</i> approval obtained for activity. [WA 36]
70.1.2.1	Approval/plans/reports not retained, posted, produced as required. [See specific approval; WA 39, 142(1)(e)]
70.1.3.1	Contravention reporting/written report not submitted as required by approval. [See specific approval; WA 142(1)(e)]
70.1.4.1	Works conducted does not meet the approval activity description. [See specific approval; WA 142(1)(e)]
70.1.5.1	The activity is not undertaken as described in the approval plan(s)/report(s). [See specific approval; WA 142(1)(e)]
70.1.6.1	The activity is not undertaken as described in the approval particulars. [See specific approval; WA 142(1)(e)]
70.1.7.1	The activity is not undertaken to meet the siltation and erosion control requirements. [See specific approval; WA 142(1)(e)]
70.1.8.1	The activity does not meet the wetland compensation requirements as described in the approval. [See specific approval; WA 142(1)(e)]
70.1.9.1	Certificate of completion not completed as described in the approval. [See specific approval; WA 142(1)(e)]
70.1.10.1	Other (unique condition/clause described in the approval that is not identified above). [See specific approval; WA 142(1)(e)]
70.1.11.1	Construction timing/methods or plans/reports/manuals/safety review submissions not completed as required in the approval. [See specific approval; WA 142(1)(e)]
70.1.12.1	Monitoring methodology or reporting do not meet requirements as required in the approval. [See specific approval; WA 142(1)(e)]

72 Water Act Licence

72.1 Licence Conditions

Manual #	Description
72.1.1.1	No <i>Water Act</i> licence obtained for diversion. [WA 49(1)]
72.1.2.1	Contravention reporting / written reports not completed as described in the licence. [Licence condition; WA 142(1)(e)]
72.1.3.1	Deposit of a substance that has or may have the potential to adversely affect the source water. [Licence condition; WA 142(1)(e)]
72.1.4.1	Diverted water from location other than point of diversion described in the licence. [Licence condition; WA 142(1)(e)]
72.1.5.1	Diverted water from source other than source of water described in the licence. [Licence condition; WA 142(1)(e)]
72.1.6.1	Point of use not as described in the licence. [Licence condition; WA 142(1)(e)]
72.1.7.1	Diverting water for purpose other than described in the licence. [Licence condition; WMR 11; WA 142(1)(e)]

72.1.8.1	The works used to divert the water not as described in the licence. [Licence condition; WA 142(1)(e)]
72.1.9.1	Exceeded diversion limit/rate described in the licence. [Licence condition; WA 142(1)(e)]
72.1.10.1	Screen on pump intake not as described in the licence. [Licence condition; WA 142(1)(e)]
72.1.11.1	Pump intake position in the production well(s) not as described in the licence. [Licence condition; WA 142(1)(e)]
72.1.12.1	Measuring diversion source water and calibration requirements not completed as described in the licence. [Licence condition; WA 142(1)(e)]
72.1.13.1	Monitoring frequencies not completed as described in the licence. [Licence condition; WA 142(1)(e)]
72.1.14.1	In-stream objectives not met as described in the licence. [Licence condition; WA 142(1)(e)]
72.1.15.1	Recording and reporting requirements not met as described in the licence [Licence condition; WA 142(1)(e)]
72.1.16.1	Water use reporting requirements not completed as described in the licence. [Licence condition]
72.1.17.1	Licensee did not investigate all written complaints as described in the licence. [Licence condition; WA 142(1)(e)]
72.1.18.1	Licensee did not conduct/complete water sampling as described in the licence. [Licence condition; WA 142(1)(e)]
72.1.19.1	Licensee did not abandon/reclaim wells/holes related to the diversion as described in the licence. [Licence condition; WA 142(1)(e)]
72.1.20.1	Other (unique condition/clause described in the licence that is not identified above). [Licence condition; WA 142(1)(e)]

74 Water Act Codes of Practice

74.2 Watercourse Crossings

Manual #	Description
74.2.1.1	No <i>Water Act</i> Code of Practice obtained for activity. [WMR Part 1(3)]
74.2.2.1	Watercourse crossing activity requirements not met. [COP 2; WMR Part 1(3)]
74.2.3.1	Notice of activity requirements not met. [COP 3, 4; WMR Part 1(3)]
74.2.4.1	Emergency works requirements not met. [COP 6; WMR Part 1(3)]
74.2.5.1	Watercourse crossing work plans not prepared/followed/changed as required. [COP 7, Sch. 2; WMR Part 1(3)]
74.2.6.1	Class of water body not classified as per the requirements. [COP 8; WMR Part 1(3)]
74.2.7.1	Watercourse crossing types or replacements (except temporary crossings) requirements not met. [COP 9, 11, Sch. 2 and 3; WMR Part 1(3)]
74.2.8.1	Temporary crossings not constructed in accordance with applicable parts of Schedules 2 and 3 and the written specifications and recommendations of a qualified aquatic environment specialist. [COP 10, Sch. 2 and 3; WMR Part 1(3)]
74.2.9.1	Restricted activity periods not adhered to. [COP 9, 11; WMR Part 1(3)]
74.2.10.1	Certification of works requirements not met. [COP 12; WMR Part 1(3)]

74.2.11.1	Reporting requirements not met. [<i>COP 13; WMR Part 1(3)</i>]
74.2.12.1	Records not created, compiled, and retained as required. [<i>COP 14; WMR Part 1(3)</i>]
74.2.13.1	Compliance monitoring (over crossing lifespan) not completed in accordance with the prepared plan. [<i>COP 7, 15; WA 142(1)(e); WMR Part 1(3)</i>]

99 Other

Manual #	Description
99.1.1	Other requirements
99.1.2	Other requirements