INJECTION WELL PLUGGING PLAN
40 CFR §146.92(b)

Brown Pelican CO_2 Sequestration Project

1.0 Facility Information and Overview

Facility name: Brown Pelican CO_2 Sequestration Project
BRP CCS1, CCS2 and CCS3 Wells

Facility contact: Caroline Huet, Project Manager
[redacted]

Well location: Penwell, Texas
[redacted]

Oxy Low Carbon Ventures, LLC (OLCV) will conduct injection well plugging and abandonment (P&A) according to the procedures contained in this document.

The injection wells will be plugged and abandoned in accordance with the requirements of Environmental Protection Agency (EPA) document 40 CFR Subpart H – Criteria and Standards Applicable to Class VI Wells. The plugging procedure and materials will be designed to prevent

any unwanted fluid movement, resist the corrosive aspects of carbon dioxide (CO_2) with water mixtures, and protect any underground sources of drinking water (USDWs).

Plugging procedures for CO_2 Injection wells are presented in this document. Plugging plans for monitoring and water withdrawal wells are presented in Appendix A of this document.

2.0 CO_2 Injection Wells

2.1 Planned Tests or Measures to Determine Bottomhole Reservoir Pressure

2.2 Planned Mechanical Integrity Test(s)

OLCV will conduct a temperature log and potentially additional logs listed in Table 1 and a pressure test to verify mechanical integrity before plugging the injection well, as required by 40 CFR §146.92(a).

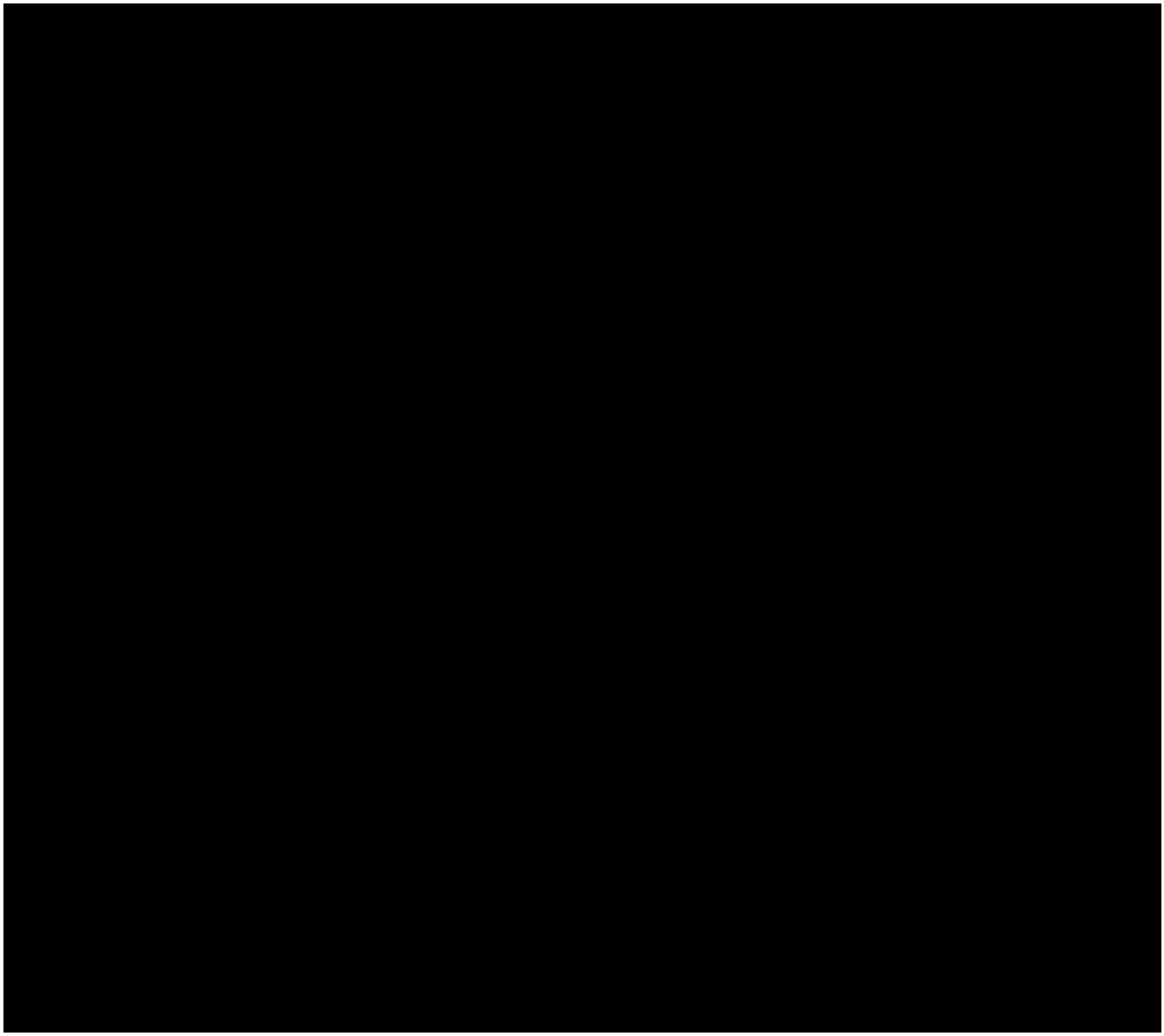
Table 1—Planned and Possible Mechanical Integrity Tests

Test Description	Location
Temperature log (External MIT)	Injection wells and monitoring wells
Pulsed neutron log (External MIT)	Injection wells and monitoring wells
Noise log (External MIT)	Injection wells and monitoring wells
Annular Pressure Test (Internal)	Injection wells and monitoring wells

The following tools are able to detect fluid movements behind the long string casing. Tools will be run on wireline. Quality assurance for the logs will be provided by the vendor at time of selection.

Temperature logs are used to locate gas entries, detect casing leaks, and evaluate fluid movement behind casing. They are also used to detect lost-circulation zones and cement placement. Temperature logs are used as a basic diagnostic tool and are usually paired with other tools like acoustics or multi arms calipers if more in depth analysis is required.

Temperature instruments used today are based on elements with resistances that vary with temperature. The variable resistance element is connected with bridge circuitry or constant current circuit, so that a voltage response proportional to temperature is obtained. The voltage signal from temperature device is then usually converted to a frequency signal transmitted to the surface, where it is converted back to a voltage signal and recorded. The absolute accuracy of temperature logging instruments is not high (in the order of +- 5°F), but the resolution is good (0.05°F) or better, although this accuracy can be compromised by present day digitalization of the signal on the surface. The temperature instrument usually can be included in the string with other tools, such as radioactive tracer tools or spinners flowmeters. Temperature logs are run continuously, typically at cable speeds of 20 to 30 ft/min.



Pass/Fail Criteria

Well Plugging is considered pass when it meets the objective of minimizing the chance of leak of fluid to USDW.

Temperature Survey

The temperature log is one of the approved logs for detecting fluid movement outside pipe. A final differential temperature survey will be run during plugging operations and will provide a final temperature curve.

The temperature will be logged down from the surface to total depth in the well. Recommended line speed for the logging operations is [redacted]. In general, the procedure for wireline operations will be as follows:

1. Attach a temperature probe and casing collar locator (CCL) to the wireline.
2. Begin the temperature survey. The tools will be lowered into well at [redacted], recording temperature in wellbore. The temperature survey will be run to the deepest attainable depth in the wellbore.
3. Following completion of the survey, the wireline tools will be retrieved from the wellbore.
4. A successful temperature log will "PASS" if there are no observed, unexplained anomalies outside of the permitted injection zone.
5. If temperature anomalies are observed outside of the permitted zone, additional logging may be conducted to determine whether a loss of mechanical integrity or containment has occurred. Depending on the nature of the suspected movement, radioactive tracer, noise, oxygen activation, or other logs approved by the UIC Program Director may be required to further define the nature of the fluid movement or to diagnose a potential leak.

Pressure Test

After setting the initial plug across the well completion interval / perforation, an annular pressure test (APT) will be conducted to verify internal mechanical integrity. The APT is a short-term pressure test (30 minutes) where the well is shut in and the fluid in the annulus is pressurized to a predetermined pressure and is monitored for leak off. BRP will use a test pressure of 500 psi for the Mechanical Integrity Test. BRP will use a 5% decrease in pressure (test pressure x .05) from the stabilized test pressure during the duration of the test to determine if test is successful. If the annulus pressure decreases by ≥5%, the well will have failed the APT. If a well fails an APT, the test will be repeated. If the APT is again failed, the downhole equipment will be removed from the well and the source of the failure will be investigated. In general, the test procedure will be as follows:

1. Connect a high-resolution pressure transducer to the annulus casing valve and increase the annulus pressure to 500 psi and hold this pressure for 30 minutes.
2. At the conclusion of the 30-minute test the annulus pressure will be bled off to 0 psi and the pressure recording equipment will be removed from the casing valve.

Note: If a failure in the long string casing is identified, the operator will prepare a plan to repair the well before plugging and abandonment

2.3 Information on Plugs

OLCV will use the materials and methods noted in Table 2, Table 3 and Table 4 to plug the Injection wells. The volume and depth of the plug or plugs will depend on the final geology and downhole conditions of the well as assessed during construction.

The cement(s) formulated for plugging will be compatible with CO_2. Discussion about CO_2 resistant cement selection and additive is located in the Construction Plan – Appendix B. The

[redacted]

Table 2—Information on Cement Plugs for BRP CCS1

[redacted]

Table 3—Information on Cement Plugs for BRP CCS2

[redacted]

Table 4—Information on Cement Plugs for BRP CCS3

[redacted]

2.4 Plugging Schematics

The proposed plugging schematic for BRP CCS1 is shown in Figure 1, the proposed plugging schematic for BRP CCS2 is shown in Figure 2 and the plugging schematic for BRP CCS3 is shown in Figure 3. A sample EPA Plugging and Abandonment Plan form is found in Figure 4.

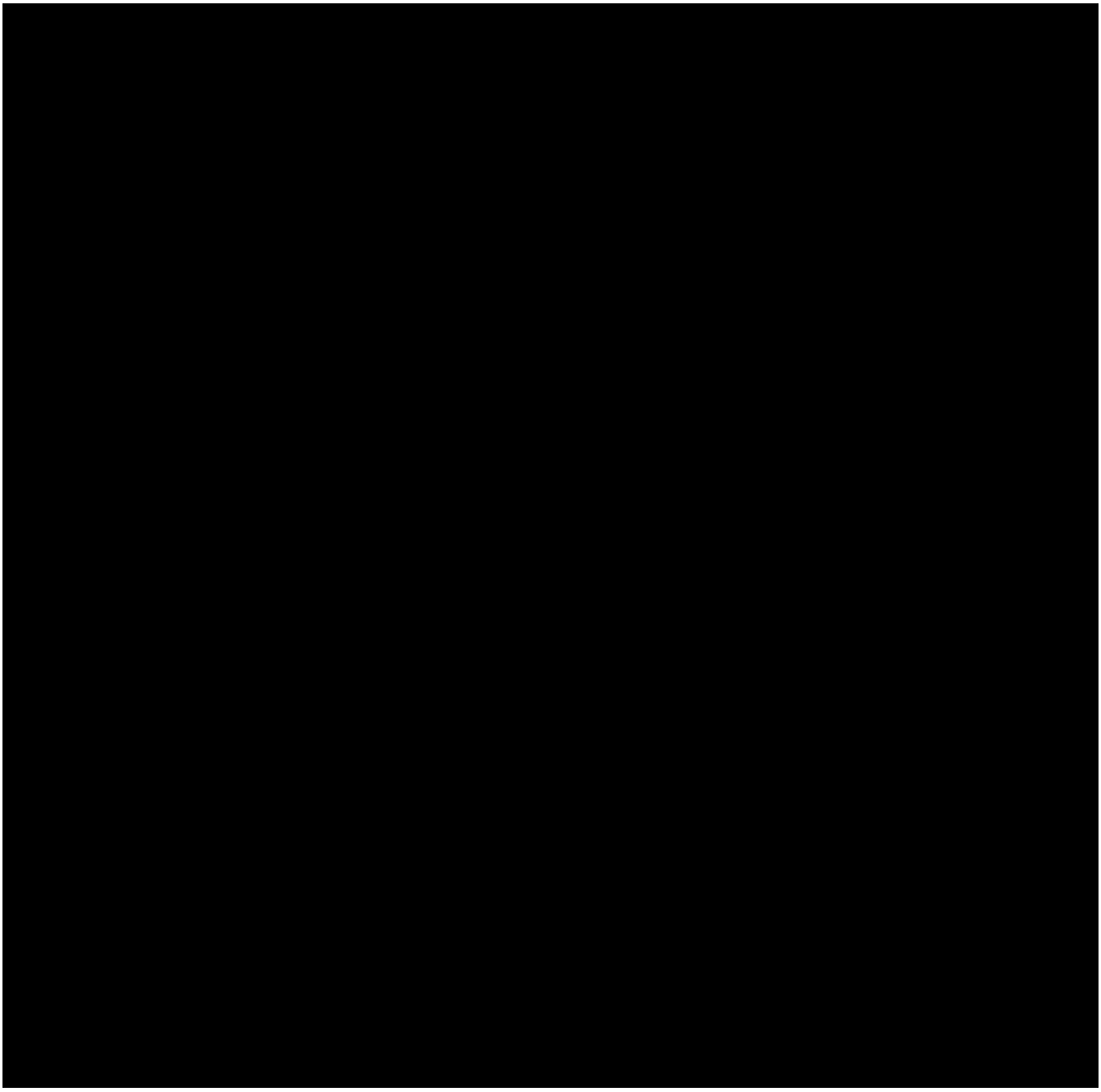


Figure 1—BRP CCS1 injection well plugging schematic

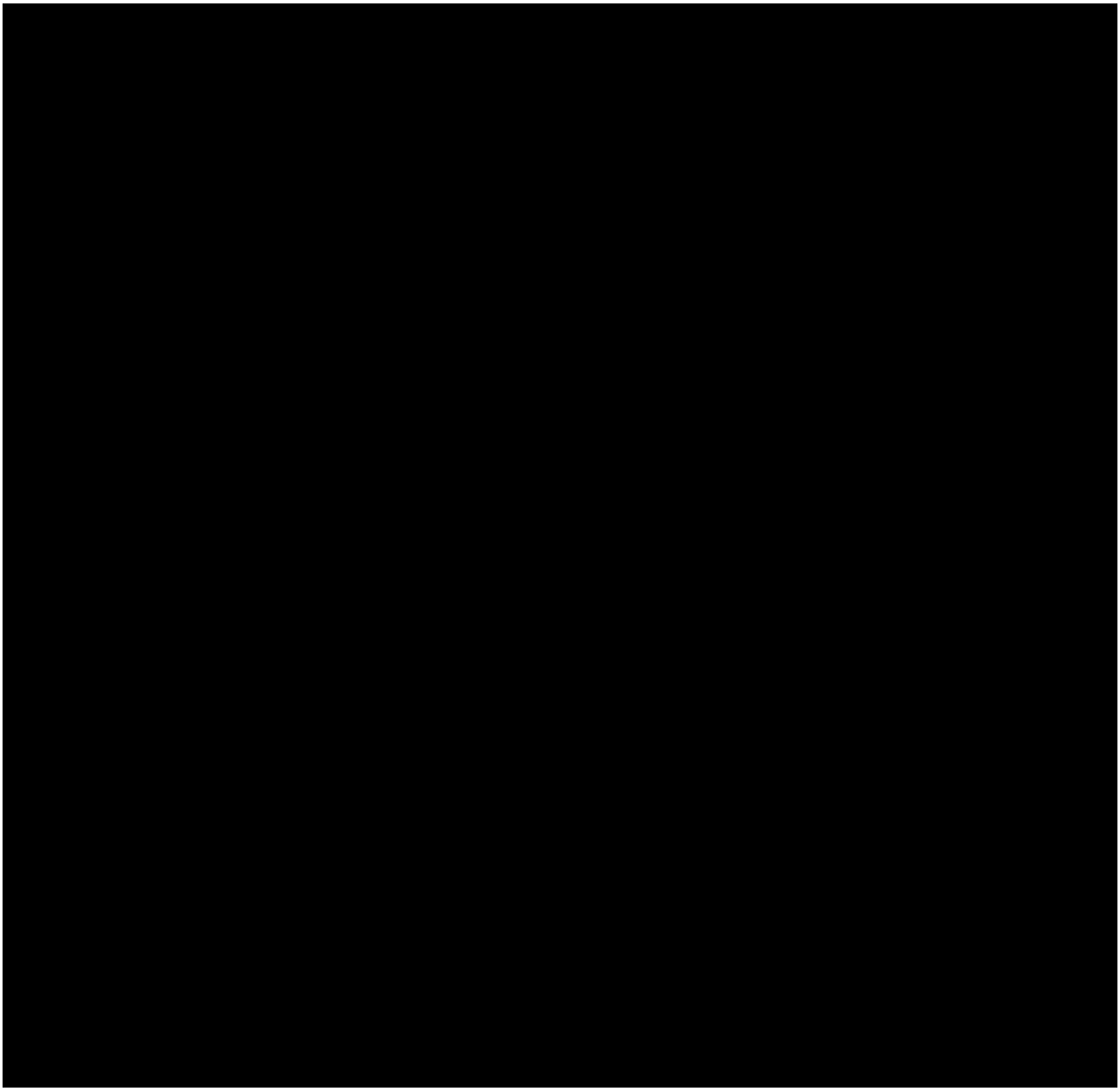


Figure 2—BRP CCS2 injection well plugging schematic

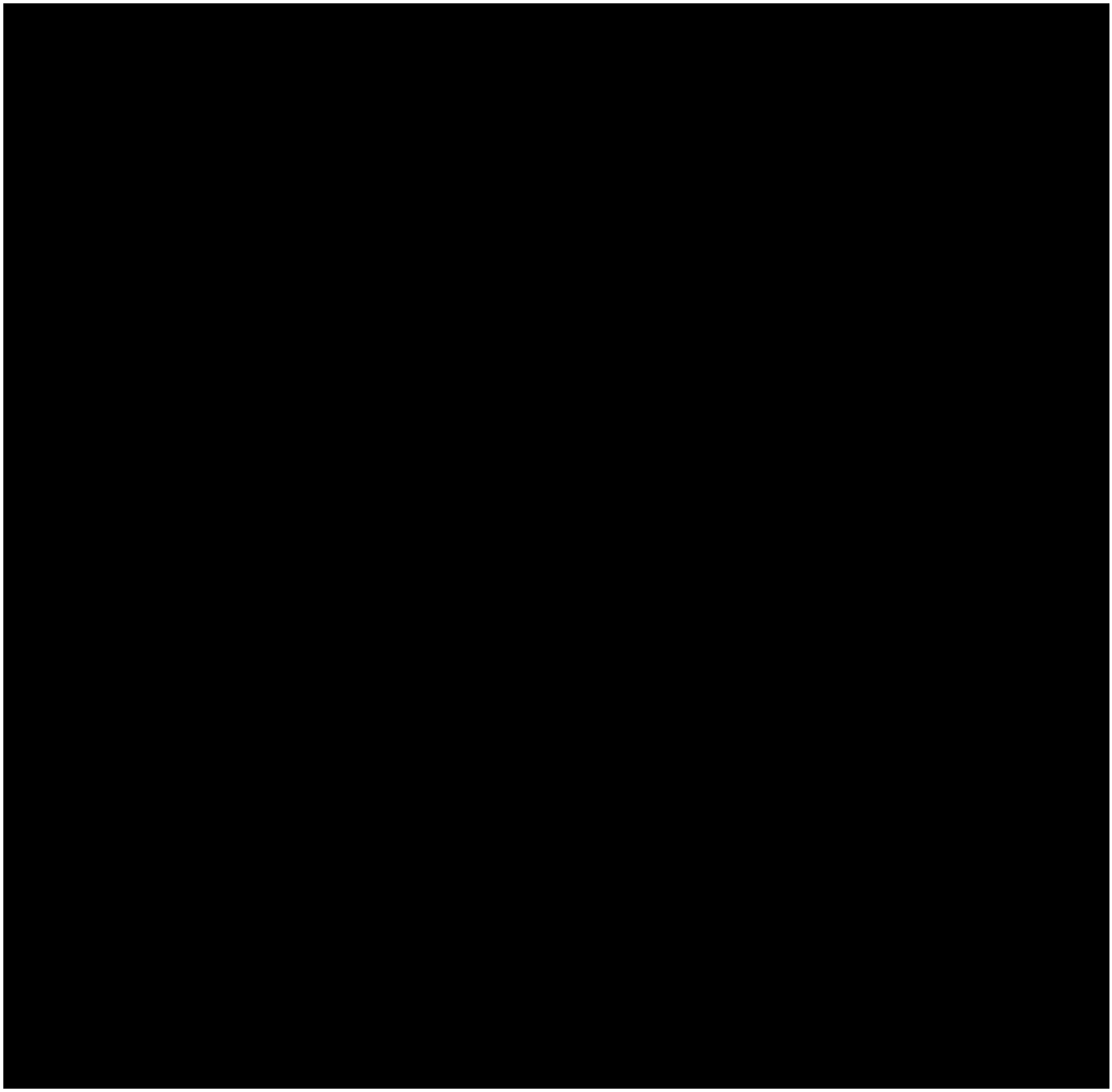
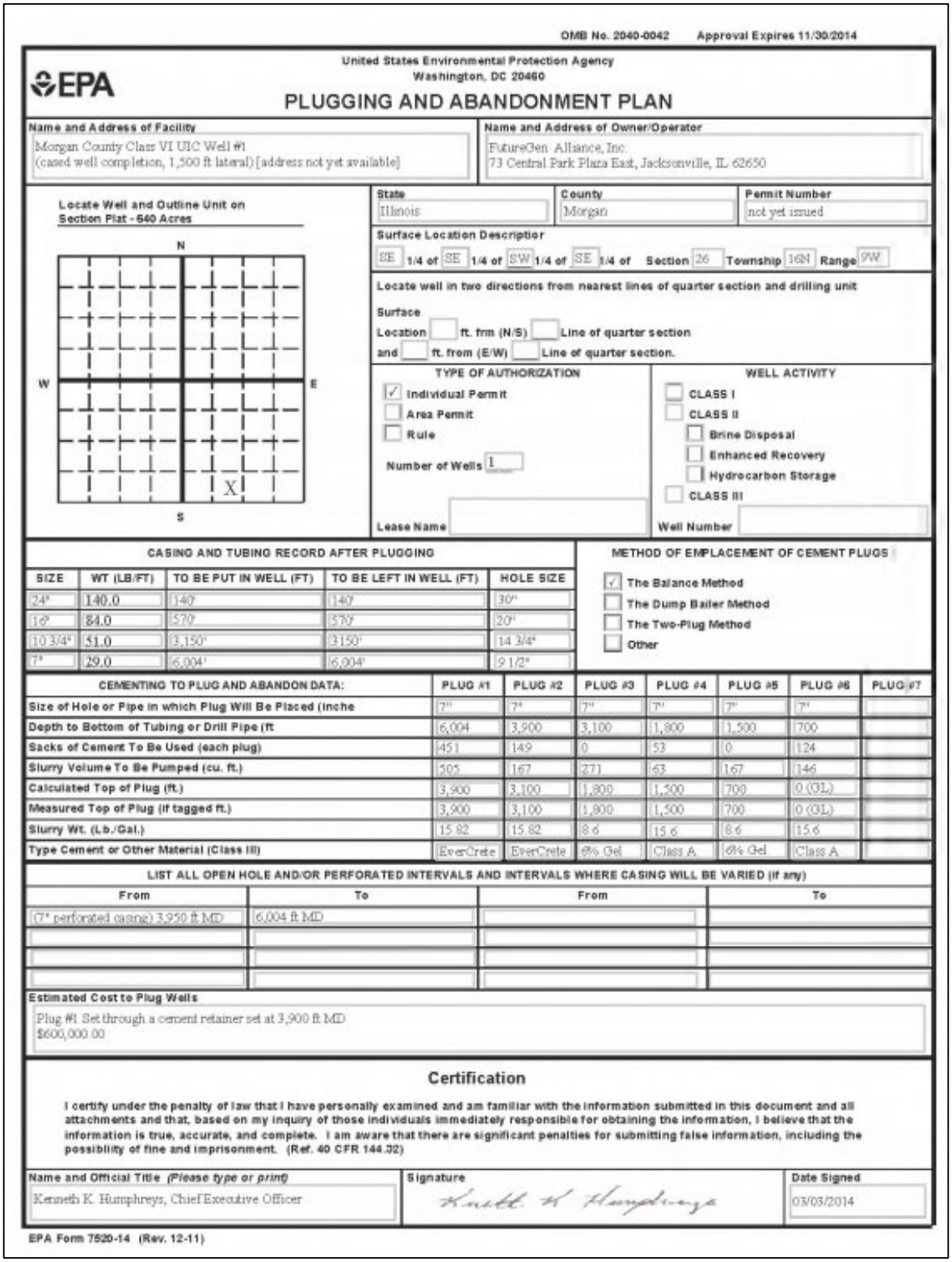


Figure 3—BRP CCS3 injection well plugging schematic



OMB No. 2040-0042 Approval Expires 11/30/2014

United States Environmental Protection Agency
Washington, DC 20460

EPA

PLUGGING AND ABANDONMENT PLAN

Name and Address of Facility
Morgan County Class VI UIC Well #1
(cased well completion, 1,500 ft lateral) [address not yet available]

Name and Address of Owner/Operator
FutureGen Alliance, Inc.
73 Central Park Plaza East, Jacksonville, IL 62650

Locate Well and Outline Unit on Section Plat - 640 Acres

N / W / E / S — X

State	County	Permit Number
Illinois	Morgan	not yet issued

Surface Location Description
SE 1/4 of SE 1/4 of SW 1/4 of SE 1/4 of Section 26 Township 16N Range 9W

Locate well in two directions from nearest lines of quarter section and drilling unit

Surface Location ____ ft. frm (N/S) ____ Line of quarter section
and ____ ft. from (E/W) ____ Line of quarter section.

TYPE OF AUTHORIZATION
- [x] Individual Permit
- [ ] Area Permit
- [ ] Rule

Number of Wells 1

Lease Name

WELL ACTIVITY
- [ ] CLASS I
- [ ] CLASS II
  - [ ] Brine Disposal
  - [ ] Enhanced Recovery
  - [ ] Hydrocarbon Storage
- [ ] CLASS III

Well Number

CASING AND TUBING RECORD AFTER PLUGGING

SIZE	WT (LB/FT)	TO BE PUT IN WELL (FT)	TO BE LEFT IN WELL (FT)	HOLE SIZE
24"	140.0	140'	140'	30"
16"	84.0	570'	570'	20"
10 3/4"	51.0	3,150'	3150'	14 3/4"
7"	29.0	6,004'	6,004'	9 1/2"

METHOD OF EMPLACEMENT OF CEMENT PLUGS
- [x] The Balance Method
- [ ] The Dump Bailer Method
- [ ] The Two-Plug Method
- [ ] Other

CEMENTING TO PLUG AND ABANDON DATA:	PLUG #1	PLUG #2	PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #7
Size of Hole or Pipe in which Plug Will Be Placed (inche	7"	7"	7"	7"	7"	7"	
Depth to Bottom of Tubing or Drill Pipe (ft	6,004	3,900	3,100	1,800	1,500	700	
Sacks of Cement To Be Used (each plug)	451	149	0	53	0	124	
Slurry Volume To Be Pumped (cu. ft.)	505	167	271	63	167	146	
Calculated Top of Plug (ft.)	3,900	3,100	1,800	1,500	700	0 (GL)	
Measured Top of Plug (if tagged ft.)	3,900	3,100	1,800	1,500	700	0 (GL)	
Slurry Wt. (Lb./Gal.)	15.82	15.82	8.6	15.6	8.6	15.6	
Type Cement or Other Material (Class III)	EverCrete	EverCrete	6% Gel	Class A	6% Gel	Class A	

LIST ALL OPEN HOLE AND/OR PERFORATED INTERVALS AND INTERVALS WHERE CASING WILL BE VARIED (if any)

From	To	From	To
(7" perforated casing) 3,950 ft MD	6,004 ft MD		

Estimated Cost to Plug Wells
Plug #1 Set through a cement retainer set at 3,900 ft MD
$600,000.00

Certification

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

Name and Official Title (Please type or print)	Signature	Date Signed
Kenneth K. Humphreys, Chief Executive Officer	Kenneth K. Humphreys	03/03/2014

EPA Form 7520-14 (Rev. 12-11)

Figure 4—Sample EPA Plugging and Abandonment Plan form

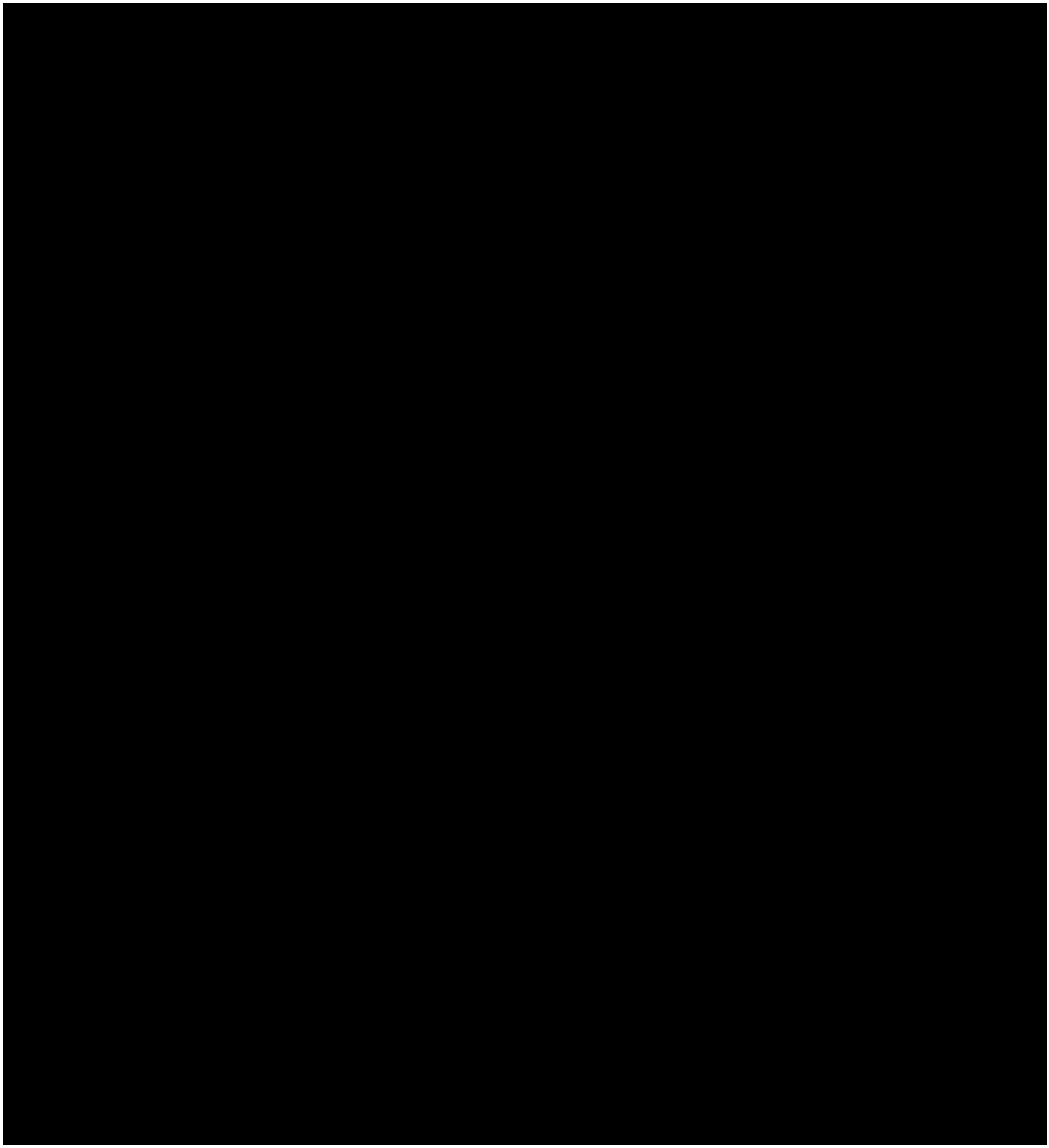
3.0 Narrative Description of Plugging Procedures

3.1 Notifications, Permits, and Inspections

In compliance with 40 CFR §146.92(c), OLCV will notify the regulatory agency at least 60 days before plugging the well and provide an updated Injection Well Plugging Plan, if applicable.

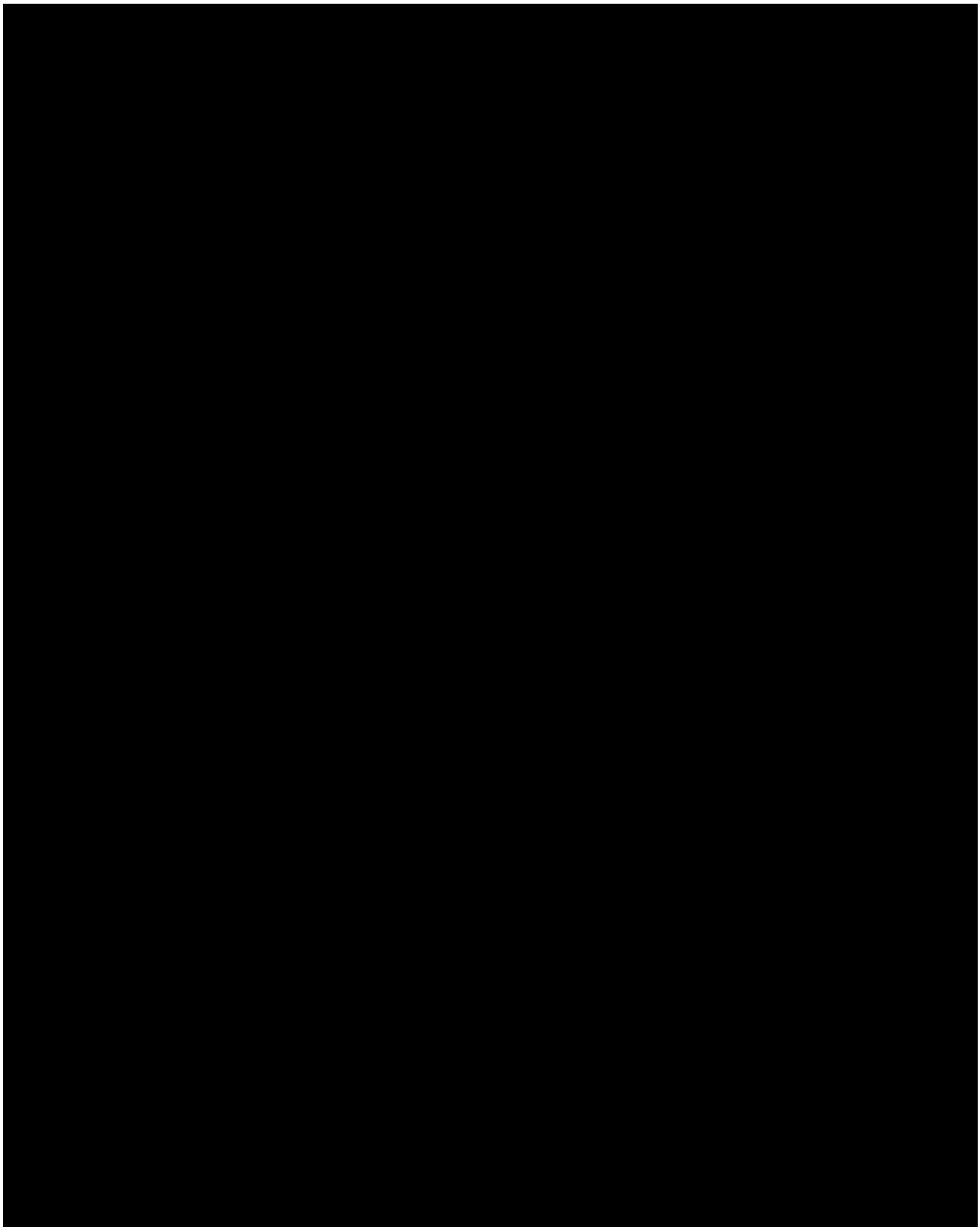
3.2 Plugging Procedures for BRP CCS1

[redacted]



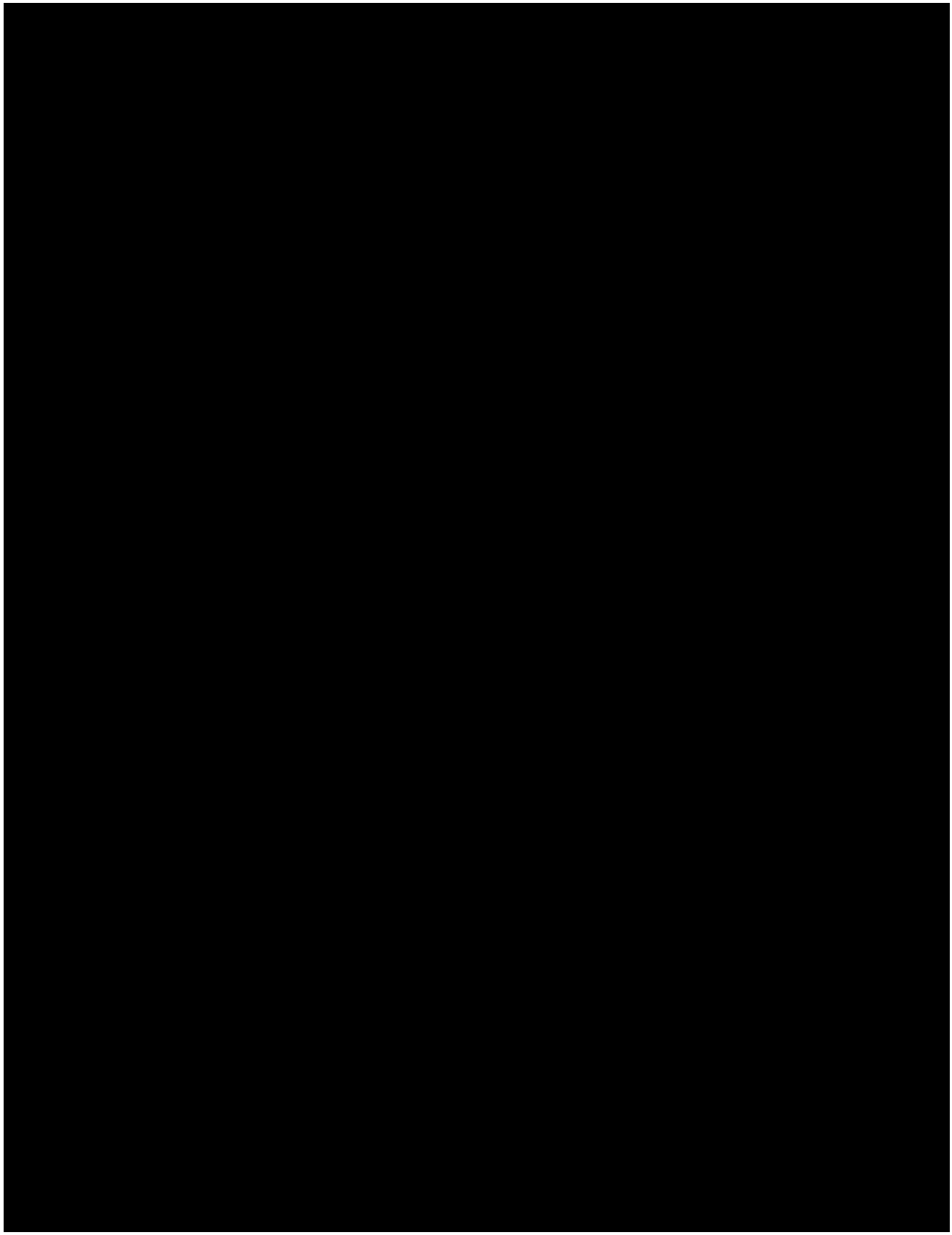
The procedures described above are subject to modification during execution as necessary to ensure a successful plugging operation. Any significant modifications due to unforeseen circumstances will be described in the plugging report.

3.3 Plugging Procedures for BRP CCS2



The procedures described above are subject to modification during execution as necessary to ensure a successful plugging operation. Any significant modifications due to unforeseen circumstances will be described in the plugging report.

3.4 Plugging Procedures for BRP CCS3



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