WSPA

Catherine Reheis-Boyd
President

August 30, 2018

Clerk of the Board
California Air Resources Board
1001 I Street
Sacramento, California 95814

sent to: http://www.arb.ca.gov/lispub/comm/bclist.php

Re: WSPA Comments on Carbon Capture and Sequestration Element of the CARB Proposed 2nd 15-day Modifications to the Low Carbon Fuel Standard Regulation Amendments

Dear Clerk of the Board,

The Western States Petroleum Association (WSPA) appreciates this opportunity to provide comments to the California Air Resources Board (CARB) regarding Carbon Capture and Sequestration (CCS) element, of the CARB Proposed 2nd 15-day Modifications to the Low Carbon Fuel Standard (LCFS) Regulation Amendments. Specifically, the comments herein address Section 95490 (Provisions for Fuels Produced Using Carbon Capture and Sequestration) and Attachment B - Proposed Modifications to the Carbon Capture and Sequestration Protocol (CCSP) under the Low Carbon Fuel Standard. WSPA is a non-profit trade association representing companies that explore for, produce, refine, transport and market petroleum, petroleum products, natural gas and other energy supplies in California and four other western states. WSPA will be providing additional comments regarding other aspects of the proposed 2nd 15-day modifications in a separate comment letter.

General Comments

WSPA appreciates the progress that CARB staff has made on the CCSP, as presented in the 2nd 15-day Modifications. As we have stated in previous comment letters, the CCSP is an important guidance document by which successful projects could be permitted and constructed. WSPA urges CARB staff to continue the effort to further improve the flexibility to allow for technology improvements and data based review to reduce the prescriptiveness of this document.

The CCS protocol, however, does not address important questions as to how CARB will consider equivalence across jurisdictions. Rules established for CCS in other states, provinces and countries are different and may appear incompatible yet are no less effective for establishing permanent storage. WSPA recommends that the Protocol be amended to give the Executive Officer discretion to approve credit applications from out-of-state storage projects where local regulations may differ yet satisfy the same functional intent.

It appears that the definition of Area of Review (AoR) has been removed in favor of “storage complex”. However, there remain numerous references to the term “AoR” in the document. As there is a clear distinction between the storage complex (the 3-D space in the subsurface) and AoR (the 2-D projection onto the surface), the document does need further editing to add back the definition of AoR and also to ensure the consistent and accurate application of these terms.

Consistent with our previous comments, WSPA remains concerned with the continued emphasis on environmental baselines. In the December 15, 2017 WSPA comment letter, we expressed concern with the presumption of CO_2 leakage "equal to the detection limit of the equipment." Subsequently in the April 23, 2018 WSPA comment letter, we proposed: "if a default rate of leakage is to be assumed on the basis of detection limits, CARB should make a determination not necessarily on the basis of equipment, but by considering the leak detection 'methods' employed." The key question that remains unanswered is: how to agree on the precision of the leak detection method. WSPA requests that CARB address that question in the protocol.

In Appendix G (Determination of a CCS Project's Risk Rating for Determining its Contribution to the LCFS Buffer Account), a CCS project's "overall risk rating and contribution to the Buffer Account" is calculated in equation G.1 which includes an extra 5% buffer. As a result, this extra 5% raises the buffer from a minimum of 3% to 8%. However, the extra 5% buffer is not mentioned or justified elsewhere in the CCSP. Further, the equation as written does not reflect project risk as there is no meaning to 105% certainty of an event. WSPA requests that the CCSP be amended to include a description and justification of the extra 5% buffer with reference to equation G.1.

Specific Comments

Section B.3(c)(2)

The language in Section C.3(c)(2), Invalidation and Buffer Account, states: *"Sequestered CO_2 must remain within the storage complex for at least 100 years in order to be considered permanently sequestered and subsequently credited."* This language could be interpreted to mean that credits will not be issued before 100 years have passed. Another interpretation is that after 100 years, credits in the Buffer Account will be credited to the project proponent. WSPA requests that CARB clarify this language.

Section C.2.5(b)(2)

Section C.2.5(b)(2) states that the baseline strategy must be consistent with the risk assessment and modeling. Section C.2.5(c)(1) states *"The frequency and spatial distribution of baseline data collection must be designed according to a timeline and schedule set forth in the application for Sequestration Site Certification utilizing [sic] no less than one year prior to the initiation of injection."* Thus, Section C.2.5(c)(1) adds the word "utilizing" when the word "starting" would seem to be more appropriate. As written, it is not clear if one year of data is required or if the testing program must start at least one year before injection begins. WSPA requests clarification on this point.

In Section C.2.5(b)(2)(28), WSPA suggests that the definition of "Completion interval" be revised to replace "channels" with "pathways for flow" to reflect the possible use of sand screens, slotted liners or even open hole completions, none of which imply existence of channels.

Section C.3.1(c)(5)

Section C.3.1(c)(5) now includes "(e.g., corrosion-resistant)". This example does not provide a useful amplification of the requirement to use materials compatible with the CO_2 stream and

formation fluids. WSPA requests that CARB consider supplementing examples or delete the current example.

Section C.4.3.1.3(d)

In section C.4.3.1.3(d), the following monitoring language has been added:

> *"(d) During injection, pressure in the annular space directly above the packer must be maintained at a pressure ~~least 100 to 200 psi~~ higher than the tubing pressure."*

As written, the annular pressure is at or slightly above pressure as the injection stream, making it challenging to monitor for packer leaks. Further, keeping the casing continuously under pressure is problematic due to thermal expansion when switching from gas to liquid as would occur under water alternating gas EOR.
WSPA suggests the following performance-based language:

> *"(d) During injection, pressure in the annular space directly above the packer must be maintained at a pressure high enough to maintain a safety factor below the packer differential pressure rating. The owner or operator will propose a working annulus pressure range to the Executive Officer for approval. This annulus pressure range will take into account factors such as: tubular and equipment pressure ratings, thermal effects, variations in injection pressures, shut-in periods, and start-up procedures following initial well startup period."*

Section C.5.2(b)(3)(E)(2)

WSPA interprets the mapping of the three-dimensional (3-D) extent of the free-phase CO_2 plume under C.5.2(b)(3)(E)(2) to apply only to the period up to determination of plume stability. Continued use of best-practice methods including 3-D seismic would be both unnecessary and potentially disruptive to enjoyment of activity on the surface.

Sections C.5.2(b)(3)(G)(1) and 5.2(b)(3)(G)(2)

In Sections C.5.2(b)(3)(G)(1) and C.5.2(b)(3)(G)(2), new language has been presented regarding Post-injection Site Care (PISC).
Specifically, leak detection strategy is described as follows:

1. *"In the near surface strategically located near plugged and abandoned wells, using ground-based methods. Aerial technologies with a likelihood of detecting leakage from wells in the near-surface equivalent to that of ground-based methods may be used, pending approval of the Executive Officer;"*

2. *"At areas of concern determined by the risk assessment (following subsection C.2.2) to be potential pathways for the preferential migration of CO_2 or brine to surface, during the post-injection site care and monitoring period at a frequency based on monitoring and verification data collected during injection and using methods approved by the Executive Officer, at a minimum of once every five years;"*

WSPA is supportive of this approach but is concerned that implementation duration of this strategy has not been addressed.

WSPA recommends that the following be added to Section C.5.2(b)(3)(G)(2):

2. *"At areas of concern determined by the risk assessment (following subsection C.2.2) to be potential pathways for the preferential migration of CO_2 or brine to surface, during the post-injection site care and monitoring period at a frequency based on monitoring and verification data collected during injection and using methods approved by the Executive Officer, at a minimum of once every five years for up to 100 years following cessation of injection;"*

This additional language will provide a CCS Project Operator the opportunity to request from the Executive Officer approval to discontinue aerial monitoring pursuant to clear demonstration over a period less than 100 years of leakage risk.

Section C.5.2(b)(3)(F)

In Section 5.2(b)(3)(F), it appears to switch from demonstration of plume stability to "determined by CARB". Given the lack of a clear technical definition of plume stability, WSPA requests that CARB to rely upon the professional judgement of a 3rd party verifier to make this determination.

WSPA looks forward to CARB's responses to our comments. If you have any questions, please contact me at this office, or Tom Umenhofer of my staff at (805) 701-9142 or via email at tom@wspa.org.

Sincerely,

cc: Tom Umenhofer - WSPA