# San Francisco Bay Regional Water Quality Control Board

June 7, 2021



*Sent via electronic mail: No hardcopy to follow*

San Francisco Bay Conservation and Development Commission
Attn: Schuyler Olsson, Coastal Program Analyst (schuyler.olsson@bcdc.ca.gov)
375 Beale Street, Suite 510
San Francisco, California 94105

**Subject**: San Francisco Bay Regional Water Quality Control Board Comments on the *Draft Environmental Assessment of Cargill, Incorporated Solar Sea Salt System Maintenance and Operations Activities*
**SCH No. 2020080442**

Dear Mr. Olsson:

San Francisco Bay Regional Water Quality Control Board (Water Board) staff appreciates the opportunity to review the *Draft Environmental Assessment of Cargill, Incorporated Solar Sea Salt System Maintenance and Operations Activities* (Draft EA). The Draft EA evaluates the potential environmental impacts associated with implementing maintenance and operations activities at Cargill's solar salt ponds (Project).

**Project Summary**. The purpose of the Project is to continue existing maintenance and operational activities at Cargill's Solar Salt Systems in Newark/Fremont and Redwood City in a safe and environmentally protective manner over the next 10 years.

**Summary.** As is discussed below, the Draft EA lacks sufficient detail in the discussion of bittern storage in ponds at the Newark plant and in the discussion of the proposed vinyl sheet pile pilot study. We also continue to believe that the proposed vinyl sheet pile pilot study is not a routine maintenance activity and should not be included in the activities covered by the routine maintenance and operations permits.

**Comment 1. More information is needed on the storage of mixed sea salts (bittern) in ponds at Newark Plant 2 and the potential for accidental releases of stored bittern to negatively impact surface waters.**

**Section 2.5.1, *Salt-Making Process* (pages 2-11 through 2-12).**

Text in Section 2.5.1 describes the creation of mixed sea salts (bittern) as a by-product of the salt-making process.

> After the majority of the NaCl is precipitated, the remaining brine, which primarily contains salts that are more soluble than NaCl, is referred to as

> mixed sea salts [MSS], or historically "bittern."The MSS contain chloride, bromide, sulfate, sodium, potassium, and magnesium, as well as residual NaCl. These remaining MSS continue through the salt production process, where further NaCl may be recovered and additional commercial products used for road de-icing and dust suppressant are harvested. Excess MSS that has not been sold as an alternative salt product is stored in Ponds P2-12 and P2-13. Facing increasingly limited markets for these MSS-based products, Cargill has recently begun preparations to develop and seek entitlements for a separate project, the Enhanced Processing and Removal of Mixed Sea Salts project (the "MSS Project"). The MSS Project, if approved, would deploy innovative technology to achieve enhanced recovery of commercial product from the MSS. Residual salts would then be blended into the East Bay Dischargers Association (EBDA) wastewater conveyance system for ultimate discharged into the Bay, in compliance with EBDA's National Pollutant Discharge Elimination System (NPDES) permit. In addition to extracting additional salts from the inventory, this project would proactively address a potential long-term threat from SLR on the solar salt operations by reducing the volume and salinity of brines stored in ponds closest to the Bay. This potential project is considered in the cumulative impact analysis (Section 3.15). Consideration of the present Project that is the subject of this EA is not dependent on consideration of the MSS Project, which is currently in very preliminary stages of consideration.

The discussion of cumulative impacts in Section 3.15 includes the following text from Section 3.15.1.7, Hydrology and Water Quality:

> The MSS Project would address the potential mid-term risk of SLR such as the susceptibility of the MSS ponds to berm overtopping and potential failure during a 100-year storm surge.

As we have noted in prior comments provided to Cargill, bittern may have significant adverse effects on beneficial uses if it is discharged to waters of the State. The berms around existing salt ponds were not engineered to provide containment of potentially toxic substances and sea level rise is likely to compromise the containment provided by salt pond berms. While Cargill is working on the MSS Project, it should provide the resource agencies with a characterization of the current extent of bittern storage in earthen ponds and the rate at which bittern is accumulating. If the MSS Project is found to be infeasible, the EA should discuss alternate proposals for the removal of stored bittern from the salt pounds.

On May 8, 2013, the Water Board submitted a letter to Cargill that requested a technical report on the stockpiling of bittern in Ponds 10 and 13 in Newark (See Attachment), pursuant to Water Code Section 13267. This letter required the following information.

- When did Cargill begin stockpiling Bittern Salt at Pond 10 and at Pond 13 (Figures 1 and 2, Attachment A) at the Newark Plant?
- What is the chemical composition of the Bittern Salt located in Ponds 10 and 13?

- What is the total quantity of Bittern Salt (liquid and solid) that Cargill generates each year from salt harvesting at the Redwood City and Newark Plants? Since Cargill does not stockpile all of the Bittern Salt it generates, how much Bitten Salt generated each year is sold and how much is stockpiled (provide an annual accounting from 2005 to present)?
- Based on the above information, what are the projected accumulation rates of Bittern Salt in Pond 10 and in Pond 13 and when will these ponds reach capacity (i.e., Bittern Salt stockpiled to the height of the surrounding levees or available bittern ponds)? What is Cargill's plan if current storage for Bittern liquid and solid is at capacity?
- Bittern Salt is a byproduct of current salt-harvesting operations that is being stockpiled, at least in part, for a future potential use. Currently, there are neither the market conditions nor the identified uses for Bittern Salt to eliminate existing stockpiles. With this in mind, at what point (i.e., at what stockpile limit and/or timeframe) will Cargill consider an alternative management strategy to address the Bittern Salt stockpiles? What is Cargill's contingency plan to manage or dispose of Bittern Salt if the stockpiling continues? What is Cargill's plan if current storage for Bittern liquid and solid is at capacity?
- What are the best management practices Cargill is implementing at Ponds 10 and 13 to protect beneficial uses of waters of the State? Does Cargill have a waste management plan for byproducts from its salt harvesting operations, including Bittern Salt? Are there plans to develop or improve either, or both, of the above?

Cargill has not yet provided most of the information requested by the Water Board's May 8, 2013, letter. The proposed MSS Project provides a partial response to the information requested in the fifth bullet. If the MSS Project is determined to be feasible, please provide an estimate of the time necessary to reduce the quantity of bitterns stored in earthen salt ponds that are vulnerable to structural failure or overtopping by sea level rise. Cargill should also describe potential alternative means of disposing of the bitterns if the MSS Project proves infeasible. In addition, please provide the remaining storage capacity of Ponds P2-12 and P2-13 and the anticipated date when that capacity may be exhausted. If additional capacity for bitterns is needed, please identify the proposed locations for additional bittern storage and the proximity of tidal marshes and Bay waters to those potential storage locations.

**Comment 2. More information is needed to describe the proposed vinyl sheet pile pilot study.**

**Section 2.10.1.2, *Sea Level Rise Adaptation* (pages 2-32 through 2-34).**

Text on the bottom half of page 2-31 briefly discusses Cargill's intention to conduct a pilot study of the use of vinyl sheet piles to reinforce earthen berms. This discussion does not address any potential environmental impacts associated with the installation of vinyl sheet piles and lacks a sufficiently detailed discussion of the proposed pilot study.

Cargill should provide a more detailed description of the proposed pilot study. The pilot study should include the following components:

**The study should identify control and experimental segments of berms.**
The pilot study is intended to determine if vinyl sheet piling provides enhanced stabilization of salt pond berms. The study should select control and experimental reaches of berms. Control and experimental reaches should be sufficiently similar to support conclusions with respect to greater durability of berms reinforced with vinyl sheet piles. Control and experimental berms should have similar compositions, dimensions, and exposure to wave energy. A sufficient number of control and experimental locations should be selected to support generalization from the pilot study berms to other salt pond berms.

At this time, Figure 2-7 shows two proposed Trial Areas for placing vinyl sheet piles in berms around Pond P2-12. Trial Area 1 is located in a reach of berm that separates Pond P2-12 from a channel that runs between Pond P2-13. Trial Area 2 is located in a reach of berm that separates Pond P2-12 from a tidal marsh between Pond P2-12 and open Bay waters. Based on Figure 2-7, the marsh between the Pond P2-12 berm and open water is about 1,000 feet wide. Please explain the rationale for selecting these two Trial Areas and the rationale for only selecting two Trial Areas. The two Trial Areas do not appear to be especially vulnerable to wave action or overtopping by tides. Also, the pilot study does not appear to have selected control areas. Without control study areas, conclusions about the efficacy of vinyl sheet piles may be speculative.

**The study should determine how long sheet piles are to be left in place prior to testing ease of removal.**
The pilot study proposes to test the ease of removal of vinyl sheet piles. But the proposal does not specify when ease of removal will be tested. Please clarify how long sheet piles will be in place in a berm before an attempt is made to remove them. Will attempts to remove sheet piles be made at different intervals of time to determine if removal is more difficult after several years in place. For example will some sheet piles be removed after one year, while others are removed after three and five years.

**The study should identify the parameters that will be assessed to determine if the sheet piles are enhancing berm stability.**
The proposal doesn't describe in detail how the effect of the vinyl sheet piles will be assessed. Please explain if the study will assess changes in berm width and berm height of control and experimental berms. Will the berm surfaces be examined for evidence of rilling and sinkholes? How many times a year will such measurements be made? Will measurements be triggered by major storm events? For how many years will the performance of the vinyl sheet piles as berm strengthening measures be assessed?

Water Board staff have been asking for additional information about the proposed pilot study for over a year. Since the pilot study is still in development, it is not an actual maintenance and operations activity. The pilot study should be covered under separate permits specific to the pilot study.

Text on page 3-90 of the Draft EA describes the vinyl sheet piles as "a modernized imported material compared to Bay mud". It is more accurate to describe vinyl sheet

piles as an anthropogenic material that will be studied as a potential reinforcement of berms constructed from native Bay mud.

**Comment 3. Please provide more documentation on the prior use of re-useable fiberglass sheet piles during lock access / egress.**

**Section 2.10.2, *Lock Access / Egress* (pages 2-33 through 2-37)**

This section discusses the use of reusable fiberglass sheet piles in the creation of dredge locks for equipment access into ponds. Text in bullet 7 of Section 2.10.2 states that Cargill has used fiberglass sheet piles and vinyl sheet piles for several years. Water Board staff do not recall seeing the use of sheet piles for lock access discussed in the lists of proposed maintenance projects or the reports on completed maintenance projects. Please provide documentation establishing the history of the use of temporary sheet piles at lock sites. This documentation should describe the length of time these sheet piles are in place at lock access / egress sites and the size of these sheet piles relative to the size of the vinyl sheet piles proposed for use in the pilot study.

**Comment 4. The screening protocols for imported riprap and soil should be revised to prevent the unintentional importing of contaminated materials into the salt ponds.**

**Section 2.10.3, Stockpiles, Section 2.10.3.1, Riprap, and Section 2.10.3.2, *Soil* (page 2-41)**

This section and subsections discuss requirements for riprap and soil that is imported to the salt ponds for maintenance work on the berms. This section appears to be, in part, out-of-date and should be updated. Appendix C should also be updated to provide better guidance on the appropriate protocols to be used in assessing whether riprap or soil proposed for importation to the salt ponds are free of contaminants that may impair beneficial uses of waters of the State. Section 2.10.3.1 and Appendix C allow the importation of concrete debris for use as riprap in the salt ponds. The Water Board does not accept the use of concrete rubble as riprap. Concrete debris lacks the structural properties of rock riprap. In addition, as concrete rubble breaks down it can raise the pH of adjacent waters. Please revise Section 2.10.3.1 and Appendix C to prohibit the use of concrete debris as riprap in the salt ponds.

Section 2.10.3 describes the screening of riprap and soil proposed for use in the salt ponds.

> The following guidance from multiple agencies is utilized as applicable based on the source, type, and intended use location of imported fill:
>
> 1. The RWQCB soil chemistry threshold for reuse of soil in aquatic environments (RWQCB2006)
> 2. DTSC clean import fill material guidelines (DTSC 2001)
> 3. RWQCB Environmental Screening Levels (RWQCB 2019)
>
> Applicable criteria are determined prior to import of any material.

Material imported to the salt ponds should not pose an unacceptable level of risk to marine life in the salt ponds and the adjacent marshes and Bay waters. The reference cited as RWQCB 2006 provides screening levels appropriate to protect marine life in San Francisco Bay. The Environmental Screening Levels (ESLs) in RWQCB 2019 are used to expedite the identification and evaluation of potential environmental concerns at contaminated sites. The ESLs are based on exposure routes from a contaminated media to receptors (e.g. residents of housing, workers exposed during an 8-hour workday, etc.). ESLs are not available for marine species exposed to chemicals present in soil used in levees. Therefore the third bullet should be deleted.

To ensure that appropriate measures are being implemented to protect marine life, please provide examples of the screening measures that have been implemented to characterize riprap and soil imported for use in maintenance of the berms in the salt ponds in prior years.

Please update Section 2.10.3 to include a more detailed description of screening protocols that are used to ensure that soil placed in contact with Bay waters does not contain constituents at concentrations that may pose a risk to aquatic life in the Bay. In addition, Appendix C should be revised to include a requirement to document that riprap and soils have been screened against appropriate screening levels, using an appropriate density of sampling, appropriate analytical methods, and appropriate screening levels.

**Comment 5. The discussion of impacts does not include a discussion of potential impacts to marine life that would result from an accidental release of bitterns (MSS) from Pond 2-12 and Pond 2-13.**

**Section 3.4.4, *Impact Analysis***

The Draft EA acknowledges that bitterns are stored in Pond 2-12 and Pond 2-13. The Draft EA also acknowledges the potential for the accidental release of bitterns. Please revise Section 3.4.4 to assess the potential impacts to marine life associated with an accidental discharge of bitterns to Bay waters. The revision of Section 3.4.4 should discuss potential impacts associated with operating and maintaining some salt ponds as indefinite storage units for bitterns. Bitterns are highly saline and usually contain high concentrations of metals. This discussion should address potential impacts of metals and salt concentrations on groundwater quality beneath the salt ponds. The discussion of potential impacts to biological resources should also discuss impacts to wildlife habitat and wildlife if bitterns are discharged to waters of the State through breaches in the berms around the ponds in which bittern is stored.

The Draft EA should also be revised to include mitigation measures for the accidental release of bitterns to Bay waters and tidal marshes.

**Comment 6. The discussion of potential impacts associated with the use of vinyl sheet piles does not include ecotoxicity data for impacts to marine species.**

**Section 3.8.3.1, Impact HAZ-1: Transport, Use, or Disposal of Hazardous Materials (pages 3-108 and 3-109)**

Text in Section 3.8.3.1 discusses potential toxicity of materials used in the vinyl sheet pile pilot study.

> The proposed SLR study would install vinyl sheets to strengthen the berms. The vinyl sheets would be installed with a sealant (De Neef Swellseal) between the sheets to seal the sheet pile knuckles per the manufacturer's instructions. The sealant, which cures and swells in the presence of moisture and water, is solvent-free and is applied with a caulking gun. During installation, a 3/8 inch bead of sealant would be applied to the vinyl sheets driven into the berm, allowing for any excess material to be pushed out the top of the sheet pile and easily wiped off and disposed of if need be (Cargill 2019). . . The Safety Data Sheet (SDS) for Swellseal for Sheet Piles indicates that it has low to very low hazard ratings. and that the primary active ingredient in the sealant is a volatile compound called toluene diisocyanate (TDI) (it has several other chemical and trade names). Based on an SDS produced by a different manufacturer, TDI is only present at the very low concentration of < 0.1percent wt/wt and as a volatile product it would be expected to dissipate upon exposure to air (EOA 2019). TDI therefore represents less than 0.1 percent (one part per thousand) by weight of the total weight of the marketed product. In addition, TDI reacts with water to form stable, insoluble polyureas, which are inert solids. The reactivity of TDI with water greatly limits its mobility, and even an accidental spill would be localized and have only transient impacts (EOA 2019). According to a memo from EOA to Cargill (EOA 2019), a Dow Product Safety Assessment for TDI provided some aquatic toxicity testing results which indicated that there would need to be 10 – 100 milligrams per liter (mg/L) of the actual 100 percent TDI active ingredient present to exert the toxicity reported. This is likely several orders of magnitude greater than the amount of TDI that could be released from a vinyl sheet pile seam sealed with Swellsea (EOA 2019). Because the amount of TDI present in the sealant is very low and any TDI that might be released would turn into a predominantly insoluble stable polyurea with limited mobility in soil (particularly in the very low permeability Bay mud contained in the Cargill salt pond berms), EOA concluded that the risk to the environment from use of the sealant in the vinyl sheet pilestudy is low. This impact would be less than significant.

This discussion doesn't state if the toxicity data in the SDS was for human toxicity or for toxicity to marine life in saline waters. Please provide full copies of the SDS so that they can be reviewed for relevance to potential toxicity to marine species present in the marine waters and tidal marshes adjacent to the salt ponds. Also, the text acknowledges that the SDS referenced in the Draft EA was not for the actual product proposed for use in the pilot study. Please provide aquatic toxicity data relevant to

marine species for the actual sealant that will be used in the pilot study. The text states that, “a Dow Product Safety Assessment for TDI provided some aquatic toxicity testing results”. However, the text does not clarify if the aquatic toxicity data were for freshwater species or marine species. Please provide aquatic toxicity data for impacts to marine species for TDI. These data should identify the marine species used in the toxicity assessment.

**Comment 7. The Draft EA does not include mitigation measures for the accidental release of stored bitterns.**

*Section 3.8.3.2, Impact HAZ-2: Potential for Upset and Accident Conditions Involving the Release ofHazardous Materials*

Please revise Section 3.8.3.2 to include appropriate mitigation measures for the accidental release of stored bitterns to open Bay waters and tidal marshes. .

**Comment 8. The Draft EA does not include a discussion of potential impacts to surface water quality associated with accidental releases of bitterns.**

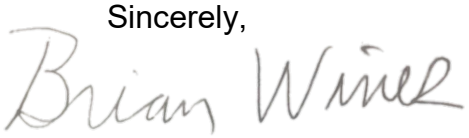
**Section 3.9.3.1, *Impact HYD-1: Effects on Surface Water Quality***

Please revise this impact discussion to include potential impacts to surface water quality associated with accidental discharges of bitterns stored in salt ponds if berms around bittern storage ponds fail.

**Conclusion.** We encourage the Project proponent to expand the discussion of bittern storage and the discussion of the proposed pilot study of the effectiveness of adding vinyl chloride sheet piles to existing earthen berms.

If you have any questions, please contact me at (510) 622-5680, or via e-mail at brian.wines@waterboards.ca.gov.

Sincerely,



Brian Wines
Water Resources Control Engineer
South and East Bay Watershed Section

cc: State Clearinghouse (state.clearinghouse@opr.ca.gov)
BCDC, Michael Ng (michael.ng@bcdc.ca.gov>)