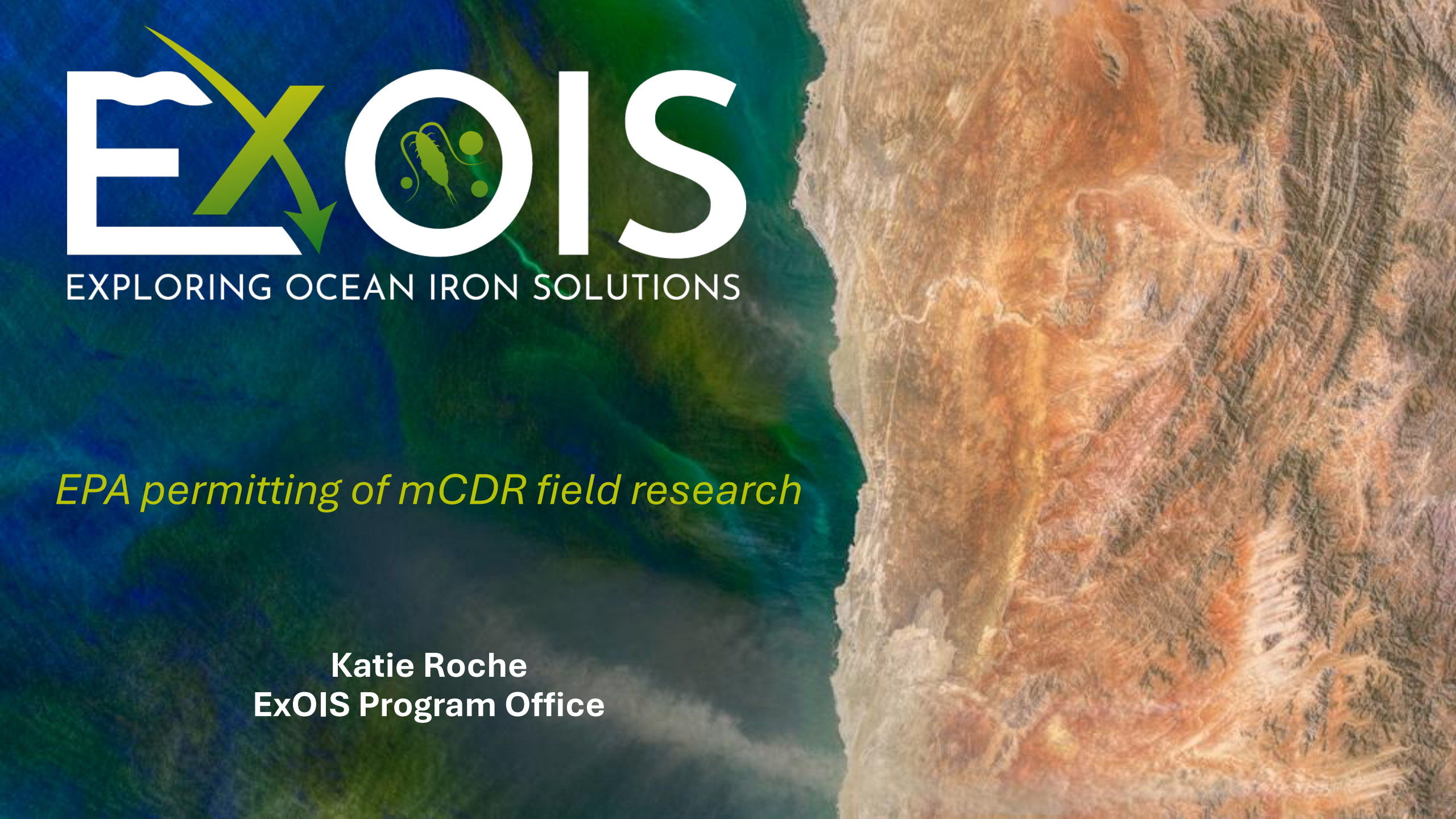

EPA permitting of mCDR field research

Katie Roche
ExOIS Program Office

U.S. EPA is responsible for “ocean dumping” permits

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EXPLORING OCEAN IRON SOLUTIONS

Marine Carbon Dioxide Removal Permitting

Proposed marine carbon dioxide removal (mCDR) activities—including field research trials—that involve the disposition of material into a body of water likely need a permit from the EPA or a state with delegated permitting authority. Below, learn more about mCDR and the permitting requirements for these activities.

The EPA may issue special permits, research permits, emergency permits and general permits for the transportation and disposition of material into the ocean. For additional information about MPRSA permits, please visit our MPRSA Permits webpage.

https://www.epa.gov/marine-protection-permitting/marine-carbon-dioxide-removal-permitting

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Marine Protection, Research, and Sanctuaries Act (MPRSA)

For mCDR research involving disposition of materials in the ocean.

Examples: LOC-NESS (OAE) and ExOIS (OIF)

Clean Water Act (CWA)

For mCDR research involving discharge of effluent or pollutants into the ocean or internal waters

Example: Ebb Carbon (electrochemical water treatment)

EPA implements LC/LP through MPRSA

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London Convention and London Protocol: International Treaties to Prevent Marine Pollution

The Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter 1972, also called the London Convention, and the 1996 London Protocol are international treaties that provide an international standard and framework for countries to individually and collectively protect and preserve our oceans from pollution caused by the dumping of wastes and other matter into the ocean. Effective implementation of the London Convention and London Protocol helps preserve biological diversity and contributes to higher productivity of ocean resources and improved fisheries. Healthy coastal and ocean environments support tourism, recreation and commerce. Successful treaty implementation also promotes better waste management strategies to prioritize re-use and recycling and foster innovations to reduce waste generation and thus the need for waste disposal.

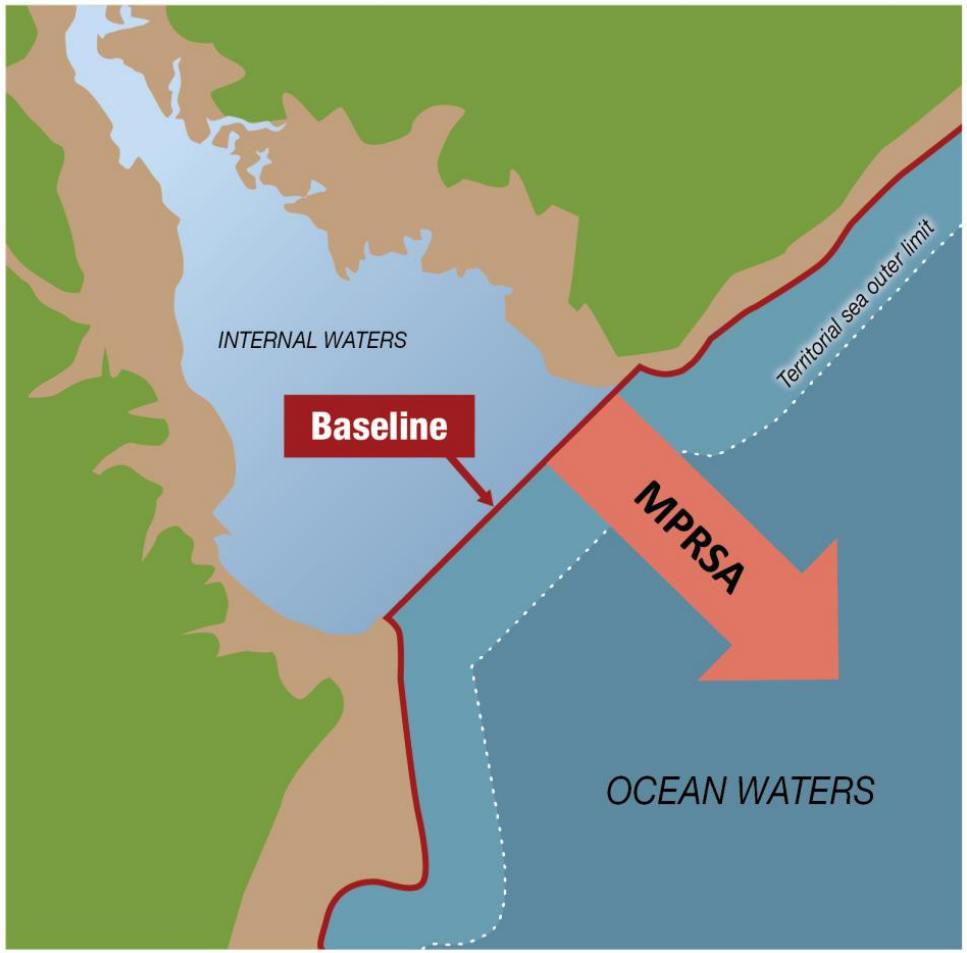
In the United States, the Marine Protection, Research and Sanctuaries Act (MPRSA) implements the requirements of the London Convention.

https://www.epa.gov/marine-protection-permitting/london-convention-and-london-protocol-international-treaties-prevent#climate%20change

As long as one of the following is true:

- US-flagged vessel is doing the dumping
- Material originated in the US
- Dumping vessel leaves from the US

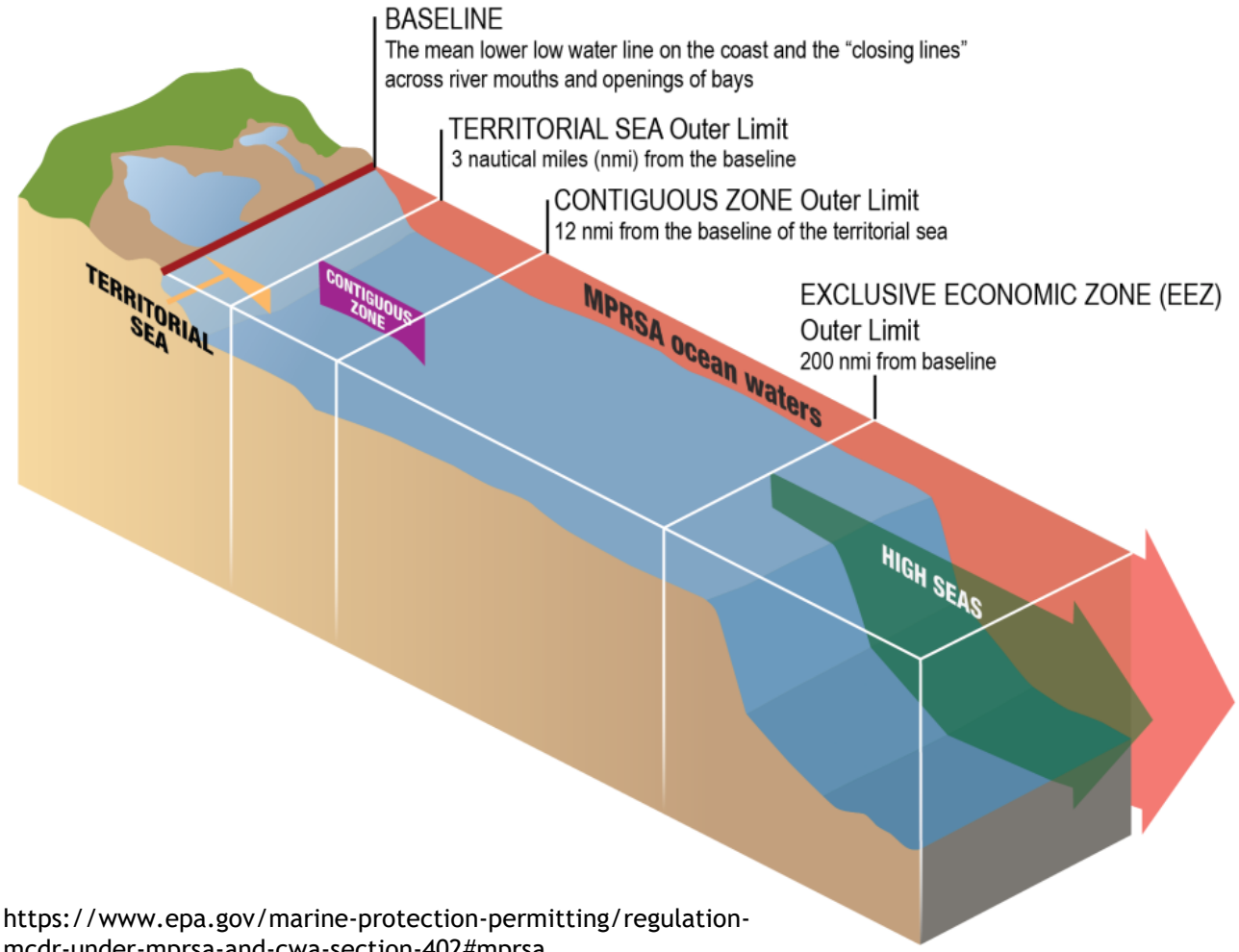
MPRSA covers high seas mCDR



The geographic jurisdiction of the Marine Protection, Research, and Sanctuaries Act (MPRSA) begins at the U.S. baseline from which the territorial sea is measured and extends seaward. The baseline consists of the closing lines across bays, harbors, and river mouths and the mean lower low water line (MLLW) along the coast.

MPRSA Ocean Waters

The Marine Protection, Research, and Sanctuaries Act (MPRSA) applies in "ocean waters." Ocean waters are waters of the open seas lying seaward of the baseline from which the territorial sea is measured and include the territorial seas, the contiguous zone, the U.S. exclusive economic zone, and the high seas.



https://www.epa.gov/marine-protection-permitting/regulation-mcdr-under-mprsa-and-cwa-section-402#mprsa

What goes into a permit application?

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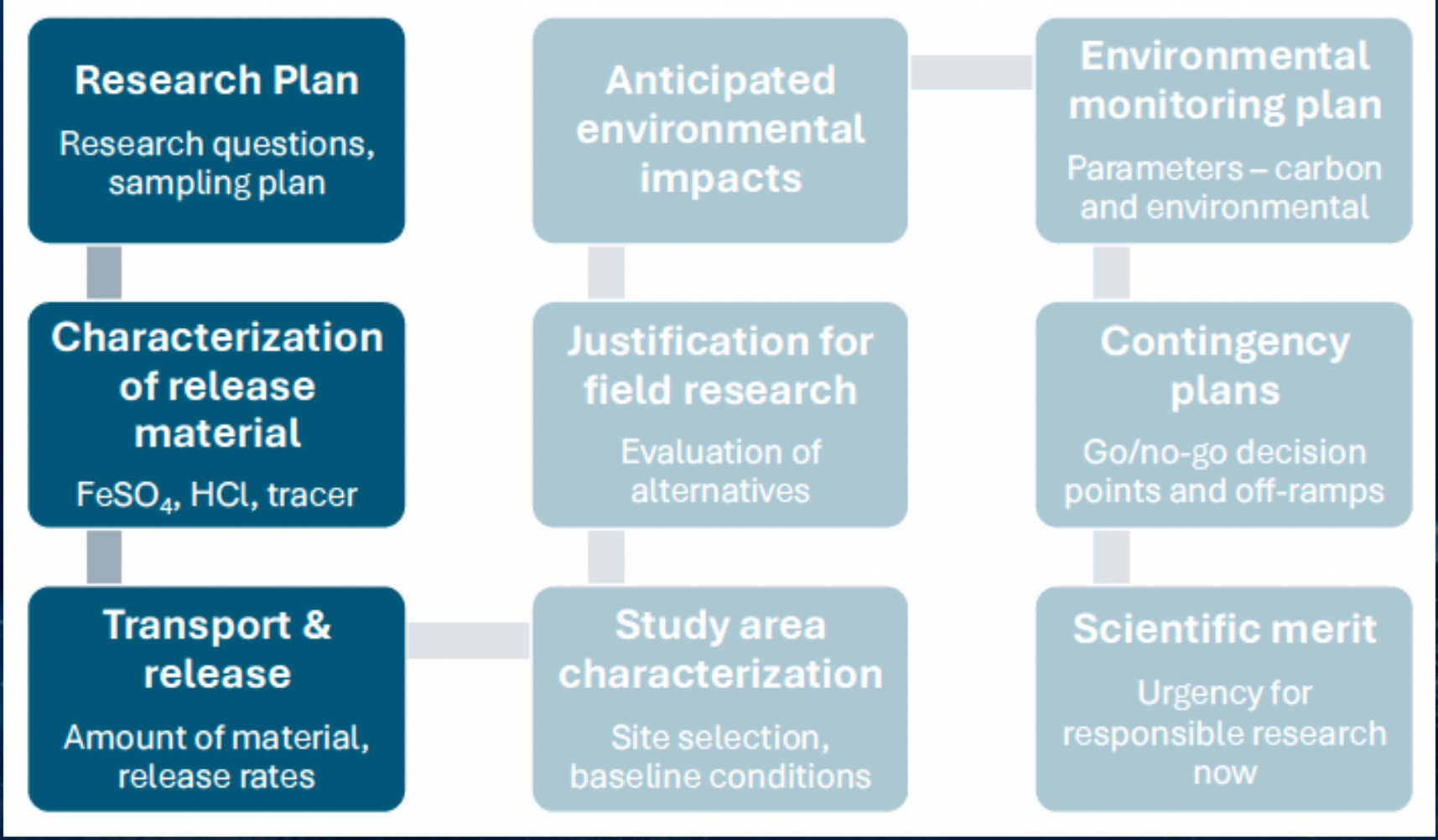

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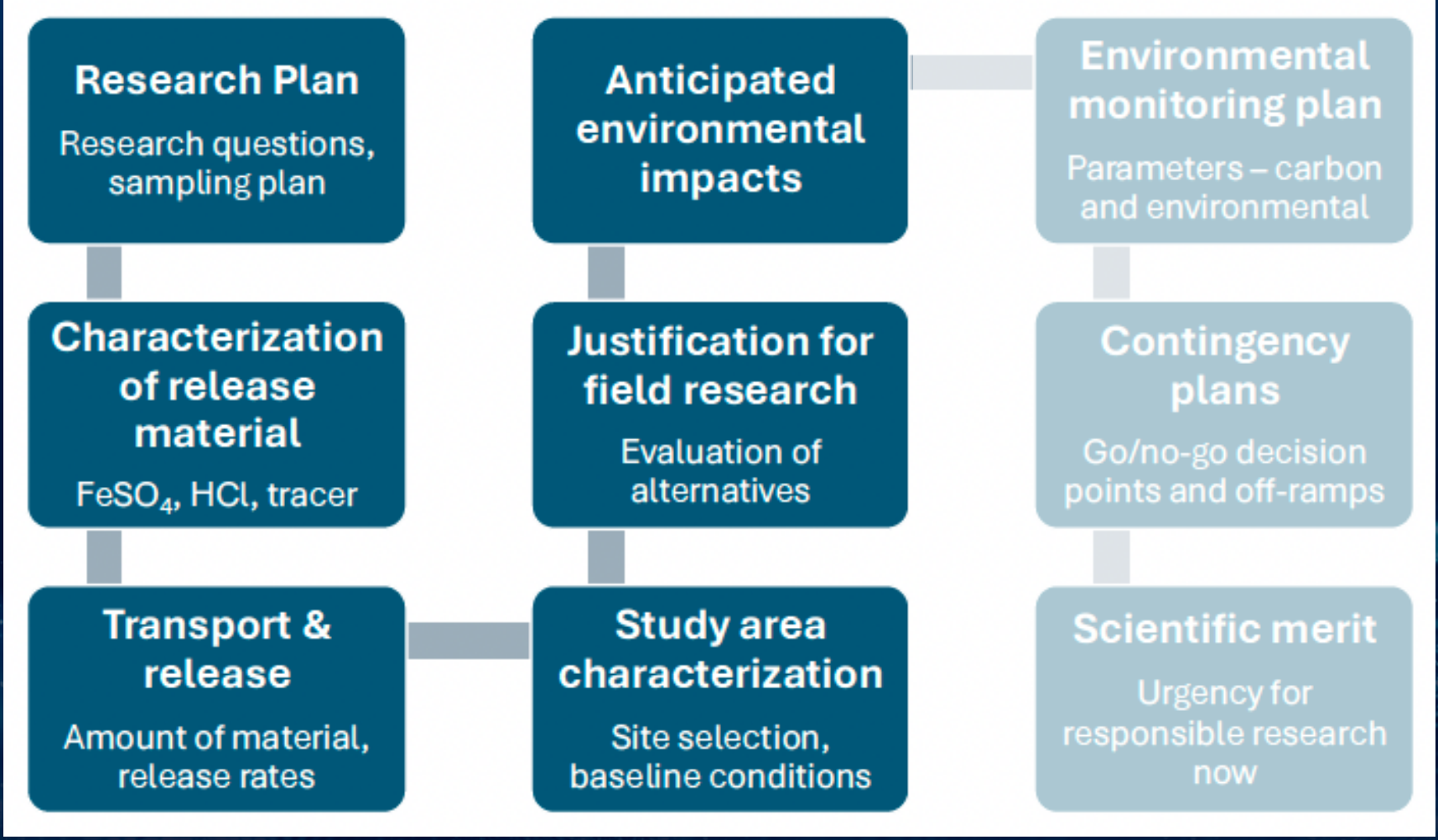

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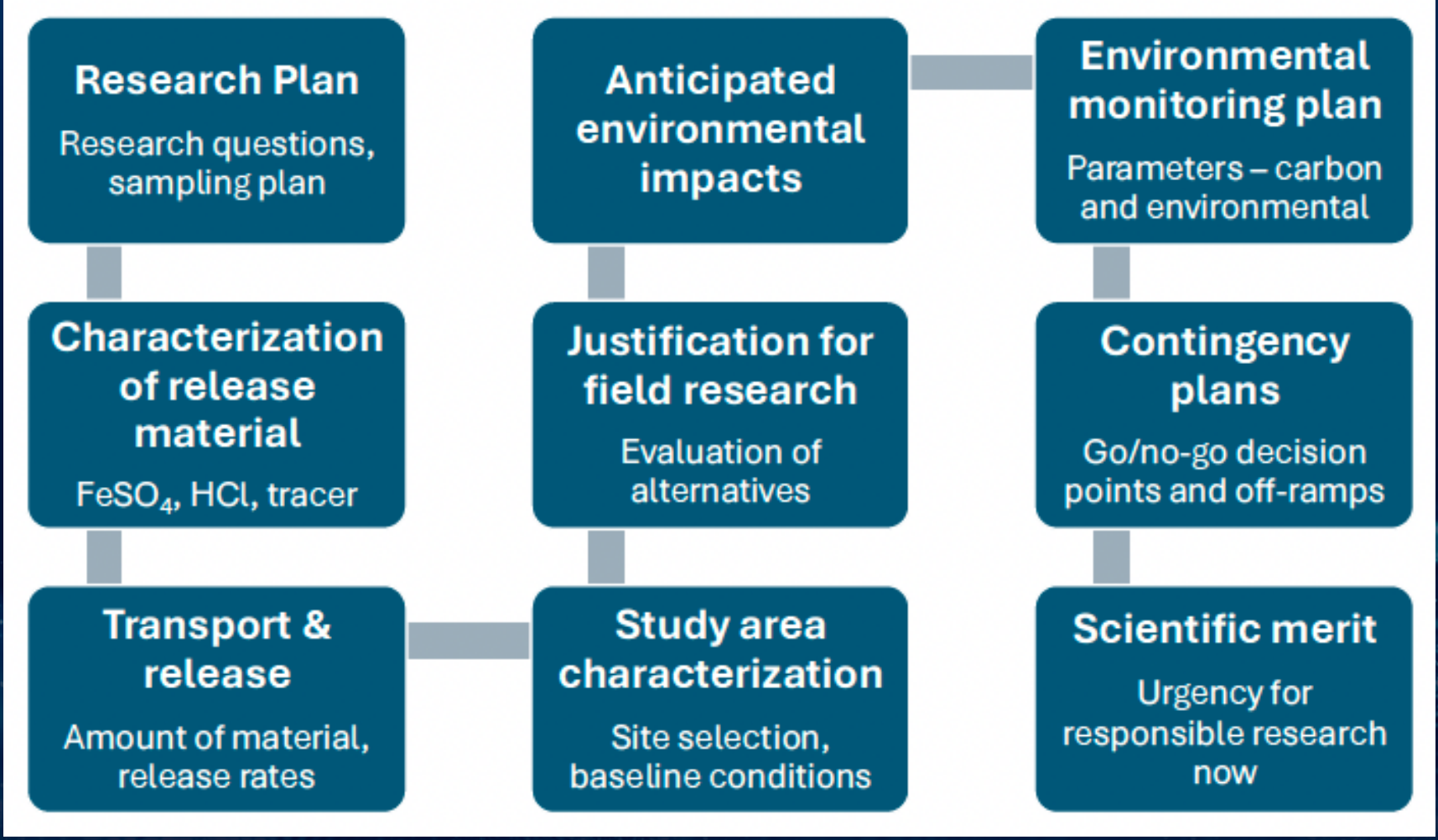

EPA permitting process

EPA permitting process

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Initiation meeting with applicant and EPA

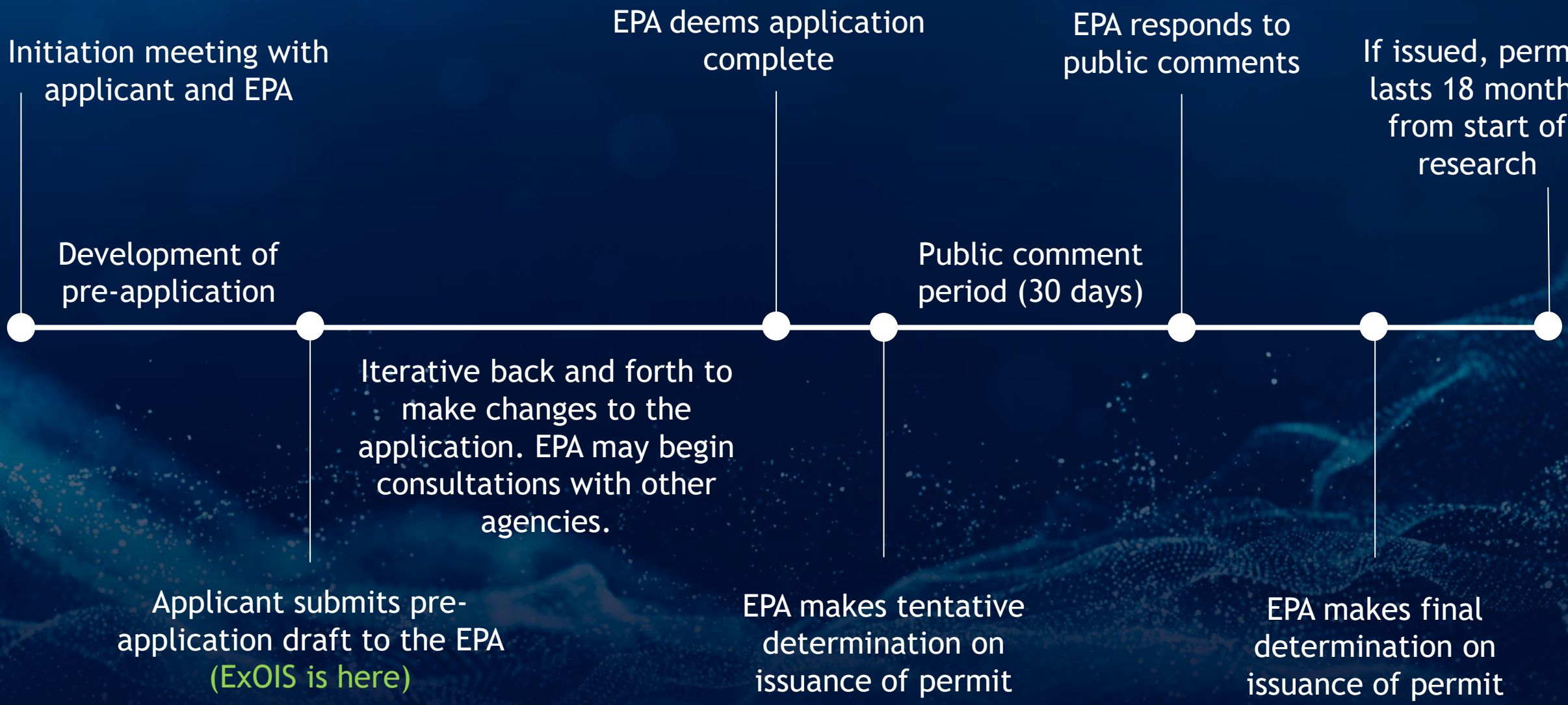
Development of pre-application

Applicant submits pre-application draft to the EPA (ExOIS is here)

Iterative back and forth to make changes to the application. EPA may begin consultations with other agencies.

EPA permitting process

EPA permitting process



Scientific merit & co-benefits

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Bottom line: Knowledge to be gained outweighs the potential for environmental harm

Research is needed to assess if OIF should be pursued as an mCDR technique, together with emissions reductions

This work could remove 10,000-100,000 tonnes of CO_2 per experiment. Data is needed to understand environmental impacts and inform models for scaling.

Our plans are a work in progress. Read our paper in *Dialogues on Climate Change* and contact us with feedback or concerns