

VEGETATION METRICS - EIA L2 METRIC RATING DEFINITIONS

VEG1. Native Plant Species Cover (Relative): Choose lowest rating—for strata OR for overall.

Rating	v1. <i>BY STRATA Tree or Shrub/Herb</i> : ALL WETLANDS	v2. <i>OVERALL</i> : ALL WETLANDS
A	>99% relative cover of native vascular plant species in either the tree stratum or shrub/herb stratum	>99% relative cover of native vascular plant species across strata.
B	95-99% relative cover of native vascular plant species in either the tree stratum or shrub/herb stratum	95-99% relative cover of native vascular plant species across strata.
C	85-94% relative cover of native vascular plant species in either the tree stratum or shrub/herb stratum	85-94% relative cover of native vascular plant species across strata.
C-	60-84% relative cover of native plant species in either the tree stratum or shrub/herb stratum.	60-84% relative cover of native plant species across strata
D	<60% relative cover of native vascular plant species cover in either the tree stratum or shrub/herb stratum.	<60% relative cover of native vascular plant species cover across strata

VEG2. Invasive Nonnative Plant Species Cover

Rating	<i>Invasive Nonnative Plant Species Cover</i> : ALL WETLANDS
A	Invasive nonnative plant species absent or is very low (<1% absolute cover).
B	Invasive nonnative plant species in any stratum present but sporadic (1-3 % cover).
C	Invasive nonnative plant species in any stratum somewhat abundant (4-10% cover).
C-	Invasive nonnative plant species in any stratum very abundant (10-30% cover).
D	Invasive nonnative plant species in any stratum very abundant (>30% cover).

VEG3. Native Plant Species Composition

Rating	<i>Native Plant Species Composition</i> : ALL WETLANDS
A	<ul style="list-style-type: none"> o Typical range of native diagnostic species present; AND o Native species sensitive to anthropogenic degradation (native decreaseers) all present, AND o Native species indicative of anthropogenic disturbance (i.e., increaseers, weedy or ruderal species) absent to minor.
B	<ul style="list-style-type: none"> o Some native diagnostic species absent or substantially reduced in abundance, OR o Some native species sensitive to anthropogenic degradation (native decreaseers) present, OR o Native species indicative of anthropogenic disturbance (increaseers, weedy or ruderal species) are present with low cover.
C	<ul style="list-style-type: none"> o Many native diagnostic species absent or substantially reduced in abundance, OR o No native species sensitive to anthropogenic degradation (native decreaseers) present, OR o Native species indicative of anthropogenic disturbance (increaseers, weedy or ruderal species) are present with moderate cover.
D	<ul style="list-style-type: none"> o Most or all native diagnostic species absent, a few may remain in very low abundance, OR o Native species indicative of anthropogenic disturbance (increaseers, weedy or ruderal species) are present in high cover).

VEG4. Vegetation Structure

Rating	v1. <i>Vegetation Structure variant: FLOODED & SWAMP FOREST</i>	v3, v4, v6. <i>Vegetation Structure variants: FRESHWATER MARSH, WET MEADOW & SHRUBLAND (v3); SALT MARSH (salt/brackish marsh & shrubland) (v4); AQUATIC VEGETATION (v6)</i>	v5. <i>Vegetation Structure variant: BOG & FEN</i>
A	Canopy a mosaic of small patches of different ages or sizes, including old trees and canopy gaps containing regeneration, AND number of live stems of medium size (30-50 cm / 12-20" dbh) and large size (>50 cm / >20" dbh) well within expected range.	Vegetation structure is at or near minimally disturbed natural conditions. Little to no structural indicators of degradation evident.	Peatland is supporting structure with little to no evident influence of negative anthropogenic factors. Some very wet peatlands may not have any woody vegetation or only scattered stunted individuals. Woody vegetation mortality is due to natural factors. The site meets near minimally disturbed condition.
B	Canopy largely heterogeneous in age or size, but with some gaps containing regeneration or some variation in tree sizes, AND number of live stems of medium and large size within or very near expected range.	Vegetation structure shows minor alterations from minimally altered from minimally disturbed natural conditions. Structural indicators of degradation are minor (e.g., levels of grazing, mowing).	Generally, peatland structure has only minor negative anthropogenic influences present or the site is still recovering from major past human disturbances. Mortality or degradation due to grazing, limited timber harvesting or other anthropogenic factors may be present although not widespread. The site can be expected to meet minimally disturbed condition in the near future if negative influences do not continue.

Rating	<i>v1. Vegetation Structure variant: FLOODED & SWAMP FOREST</i>	<i>v3, v4, v6. Vegetation Structure variants: v3 = FRESHWATER MARSH, WET MEADOW & SHRUBLAND v4 = SALT MARSH (salt/brackish marsh & shrubland); v6 = AQUATIC VEGETATION</i>	<i>v5. Vegetation Structure variant: BOG & FEN</i>
C	Canopy somewhat homogeneous in age or size, AND number of live stems of medium and large size below but moderately near expected range.	Vegetation structure is moderately altered from minimally disturbed natural conditions. Structural indicators of degradation are moderate (e.g., levels of grazing, mowing).	Peatland structure has been moderately influenced by negative anthropogenic factors. Expected structural classes are not present. Human factors may have diminished the condition for woody vegetation. The site will recover to minimally disturbed condition only with the removal of degrading influences and moderate recovery times.
D	Canopy very homogeneous, in size or age OR number of live stems of medium and large size well below expected range.	Vegetation structure is greatly altered from minimally disturbed natural conditions. Structural indicators of degradation are strong.	Expected peatland structure is absent or much degraded due to anthropogenic factors. Woody regeneration is minimal and existing structure is in poor condition, unnaturally sparse, or depauperate. Recovery to minimally disturbed condition is questionable without restoration or will take many decades.

VEG5. Woody Regeneration (opt): The metric is typically applied in forested wetlands, but can be used for shrublands or any other wetland with woody vegetation.

Rating	<i>Woody Regeneration: ALL WETLANDS (except for Aquatic Vegetation)</i>
A	Native tree saplings and/or seedlings or shrubs common to the type present in expected amounts and diversity; obvious regeneration.
B	Native tree saplings and/or seedlings or shrubs common to the type present but less amounts and diversity than expected.
C	Native tree saplings and/or seedling or shrubs common to the type present but low amounts and diversity; little regeneration.
D	No, or essentially no regeneration of native woody species common to the type.

VEG6. Coarse Woody Debris (opt): Assess standing or fallen CWD. For shrub and herb wetlands note the quantity and distribution of organic LITTER.

Rating	<i>v1. Coarse Woody Debris (CWD) variant: FLOODED & SWAMP FOREST</i>
A/B	<ul style="list-style-type: none"> o Wide size-class diversity of standing snags and CWD (downed logs). o Larger size class (>30 cm dbh/12" dbh and > 2 m/6' long) present with 5 or more snags per ha (2.5 ac), but not excessive numbers (suggesting disease or other problems). o CWD in various stages of decay.
C	<ul style="list-style-type: none"> o Moderate size-class diversity of standing snags or downed CWD. o Larger size class present with 1-4 snags per ha, or moderately excessive numbers (suggesting disease or other problems). o CWD in various stages of decay.
D	<ul style="list-style-type: none"> o Low size-class diversity of downed CWD and snags. o Larger size class present with <1 snag per ha, or very excessive numbers (suggesting disease or other problems). o CWD mostly in early stages of decay.

Rating	<i>v2. Coarse Woody Debris (Litter) variant: FRESHWATER MARSH, WET MEADOW & SHRUBLAND, BOG & FEN</i>
A	Litter, coarse woody debris, and other organic inputs are typical of the system (i.e., playas should have low litter, whereas meadows and marshes have moderate amounts of litter).
B	Litter, standing snags, dead shrubs, and down woody debris show minor alterations to system.
C	Litter, standing snags, dead shrubs, and down woody debris show moderate alterations to system.
D	Litter, standing snags, dead shrubs, and down woody debris show substantial alterations to system.

HYDROLOGY METRICS - EIA L2 METRIC RATING DEFINITIONS

HYD1. Water Source

Rating	<i>v1. Water Source variant: RIVERINE (Non-tidal)</i>
A	Water source is natural, and site hydrology is dominated by precipitation, groundwater, or overbank flow. There is no indication of direct artificial water sources. Land use in the local drainage area of the wetland is primarily open space or low density, passive uses. Lacks point source discharges into or adjacent to the site.
B	Water source is mostly natural, but wetland directly receives occasional or small amounts of inflow from anthropogenic sources. Indications of anthropogenic input include developed or agricultural land (<20%) in the immediate drainage area of the wetland, some road runoff, small storm drains or other minor point source discharges emptying into the wetland.
C	Water source is moderately impacted by anthropogenic sources. Indications of anthropogenic sources include developed land or irrigated agriculture that comprises 20–60% of the immediate drainage basin or moderate point source discharges into or adjacent to the site, such as many small storm drains or a few large ones.
D	Water source is substantially impacted by anthropogenic sources. Indications of anthropogenic sources include > 60% developed or agricultural land adjacent to the wetland, and major point source discharges into or adjacent to the wetland.

Rating	<i>v2. Water Source variant: DEPRESSION, LACUSTRINE, SLOPE</i>
A	Water source is natural: site hydrology is dominated by precipitation, groundwater, or natural runoff from an adjacent freshwater body. There is no indication of direct artificial water sources. Land use in the local drainage area of the site is primarily open space or low density, passive uses. Lacks point source discharges into or adjacent to the site.
B	Water source is mostly natural, but site directly receives occasional or small amounts of inflow from anthropogenic sources. Indications of anthropogenic input include developed land or agricultural land (<20%) in the immediate drainage area of the site, small storm drains or other local discharges emptying into the site, or some road runoff. No large point sources discharge into or adjacent to the site.
C	Water source is moderately impacted by anthropogenic sources but are still a mix of natural and non-natural sources. Indications of moderate contribution from anthropogenic sources include developed land or irrigated agriculture that comprises 20–60% of the immediate drainage basin or many small storm drains or a few large ones, or moderate road runoff.
D	Water source is substantially impacted by anthropogenic sources (e.g., urban runoff, direct irrigation, pumped water, artificially impounded water, or other artificial hydrology). Indications of substantial artificial hydrology include >60% developed or agricultural land adjacent to the site, and the presence of major point sources that discharge into or adjacent to the site, or large amounts of road runoff.

Rating	<i>v3. Water Source variant: ORGANIC SOIL FLATS, MINERAL SOIL FLATS</i>
A	Water source is natural, and site hydrology is dominated by precipitation. There is no indication of direct artificial water sources. Land use in the local drainage area of the site is primarily open space or low density, passive uses. Lacks point source discharges into or adjacent to the site.
B	Water source is mostly natural, but site directly receives occasional or small amounts of inflow from anthropogenic sources, or is ditched, causing peatland to dry out more quickly. Indications of anthropogenic input include developed land or agricultural land (<20%) in the immediate drainage area of the site; or the presence of small storm drains, ditches, or other local discharges emptying into the site; road runoff; or the presence of scattered homes along the wetland that probably have septic systems. No large point sources discharge into or adjacent to the site.
C	Water source is moderately impacted by anthropogenic sources but is still a mix of natural and non-natural sources. Indications of moderate contribution from anthropogenic sources include developed land or irrigated agriculture that comprises 20–60% of the immediate drainage basin, the presence of a many small storm drains or a few large ones, or moderate amounts of road runoff.
D	Water source is substantially impacted by anthropogenic sources, indications of anthropogenic sources include >60% developed or agricultural lands in the immediate drainage basin, large amounts of road runoff, impoundments or diversions of water or other input into or withdrawals directly from the site its encompassing wetland, or from areas adjacent to the site or its wetland.

Rating	<i>v4. Water Source: ESTUARINE (Tidal)</i>
A	Tidal and non-tidal water sources are natural with no artificial alterations to natural salinity; no indication of direct artificial water sources (e.g., no tide gates, land use in the local drainage area of the wetland is primarily open space or low density, passive uses). Lacks point source discharges into or adjacent to the wetland.
B	Tidal and non-tidal water sources are mostly natural with minor alterations to natural salinity. Site directly receives occasional or small continuous amounts of inflow from anthropogenic sources; indicators include <20% of core landscape is agricultural or developed land, road runoff, storm drains, or other minor discharges emptying into the wetland.
C	Tidal and non-tidal water sources are moderately impacted by human activity; indicators of anthropogenic input include 20-60% developed or agricultural land adjacent to the site, including direct irrigation, or pumped water, moderate amounts of road runoff, moderately sized storm drains, and/or moderate point source discharges into or adjacent to the wetland.
D	Tidal and non-tidal water sources are substantially impacted by human activity. Indicators of anthropogenic input include >60% developed or agricultural land adjacent to the site, large amounts of road runoff, large-sized storm drains, and major point source discharges into or adjacent to the wetland.

HYD2. Hydroperiod. *Variants for Riverine (Non-Tidal), other HGM (Depression, Lacustrine, Slope), Organic and Mineral Soil Flats, and Estuarine Fringe (Tidal)*

Condition	HYDROPERIOD FIELD INDICATORS for Evaluating RIVERINE Wetlands
Channel Equilibrium	<ul style="list-style-type: none"> o The channel (or multiple channels in braided systems) has a well-defined usual high water line, or bankfull stage that is clearly indicated by an obvious floodplain, topographic bench that represents an abrupt change in the cross-sectional profile of the channel throughout most of the site. o The usual high-water line or bank full stage corresponds to the lower limit of riparian vascular vegetation. o The channel contains embedded woody debris of the size and amount consistent with what is available in the riparian area. o There is little or no active undercutting or burial of riparian vegetation.
Active Degradation (Erosion)	<ul style="list-style-type: none"> o Portions of the channel are characterized by deeply undercut banks with exposed living roots of trees or shrubs. There are abundant bank slides or slumps, or the banks are uniformly scoured and unvegetated. o Riparian vegetation may be declining in stature or vigor, and/or riparian trees and shrubs may be falling into the channel. o The channel bed lacks any fine-grained sediment. o Recently active flow pathways appear to have coalesced into one channel (i.e., a previously braided system is no longer braided).
Active Aggradation (Sedimentation)	<ul style="list-style-type: none"> o The channel through the site lacks a well-defined usual high-water line. o There is an active floodplain with fresh splays of sediment covering older soils or recent vegetation. o There are partially buried tree trunks or shrubs. o Cobbles and/or coarse gravels have recently been deposited on the floodplain. o There are partially buried, or sediment-choked, culverts.

Rating	<i>v1. Hydroperiod variant: RIVERINE (Non-tidal)</i>
A	Hydroperiod (flood frequency, duration, level, and timing) is characterized by natural patterns, with no major hydrologic stressors present. The channel/riparian zone is characterized by equilibrium conditions, with no evidence of severe aggradation or degradation indicative of altered hydroperiod (see field indicators table).
B	Hydroperiod inundation and drying patterns (flood frequency, duration, level, and timing) deviate slightly from natural conditions due to presence of stressors such as: flood control dams upstream or downstream, small ditches or diversions; berms or roads at/near grade; minor trampling by livestock; or minor flow additions. If wetland is artificially controlled, the management regime closely mimics a natural analog (it is very unusual for a purely artificial wetland to be rated in this category). The channel/riparian zone is characterized by some aggradation or degradation, none of which is severe, and the channel seems to be approaching an equilibrium form (see field indicators table).
C	Hydroperiod filling or inundation and drying patterns (flood frequency, duration, level, and timing) deviate moderately from natural conditions due to presence of stressors such as: flood control dams upstream or downstream moderately effect hydroperiod ditches or diversions 1–3 ft. deep; two lane roads; culverts adequate for base stream flow but not flood flow; moderate pugging by livestock that could channelize or divert water; or moderate flow additions. Outlets may be moderately constricted, but flow is still possible. If wetland is artificially controlled, the management regime approaches a natural analogue. Site may be passively managed, meaning that the hydroperiod is still connected to and influenced by natural high flows timed with seasonal water levels. The channel/riparian zone is characterized by severe aggradation or degradation (see field indicators table).
D	Hydroperiod filling or inundation and drawdown (flood frequency, duration, level, and timing) deviate substantially from natural conditions because of high intensity alterations such as: flood control dams upstream or downstream moderately effect hydroperiod a 4-lane highway; diversions > 3ft. deep that withdraw a significant portion of flow; large amounts of fill; significant artificial groundwater pumping; or heavy flow additions. Outlets may be substantially constricted, blocking most flow. If wetland is artificially controlled, the site is actively managed and not connected to any seasonal fluctuations, but the hydroperiod supports natural functioning of the wetland. The channel is concrete or artificially hardened (see field indicators table).

Condition	HYDROPERIOD FIELD INDICATORS for Evaluating NON-RIVERINE, NON-TIDAL FRESHWATER WETLANDS	HYDROPERIOD FIELD INDICATORS for Evaluating ORGANIC SOIL FLAT WETLANDS (BOG AND POOR FEN)
Reduced Extent and Duration of Inundation or Saturation	<ul style="list-style-type: none"> ○ Upstream spring boxes, diversions, impoundments, pumps, ditching, or draining from the wetland. ○ Evidence of aquatic wildlife mortality. ○ Encroachment of terrestrial vegetation. ○ Stress or mortality of hydrophytes. ○ Compressed or reduced plant zonation. ○ Organic soils occurring well above contemporary water tables. 	<ul style="list-style-type: none"> ○ Upstream spring boxes, diversions, impoundments, pumps, ditching, or draining from the wetland. ○ Water withdrawal (regional or local wells) ○ Evidence of aquatic wildlife mortality. ○ Encroachment of terrestrial vegetation. ○ Stress or mortality of hydrophytes. ○ Drying or mortality of non-vascular species (e.g., <i>Sphagnum</i>) ○ Compressed or reduced plant zonation. ○ Organic soils occurring well above contemporary water tables.
Increased Extent and Duration of Inundation or Saturation	<ul style="list-style-type: none"> ○ Berms, dikes, or other water control features that increase duration of ponding (e.g., pumps). ○ Diversions, ditching, or draining into the wetland. ○ Late-season vitality of annual vegetation. ○ Recently drowned riparian or terrestrial vegetation. ○ Extensive fine-grain deposits on the wetland margins. 	<ul style="list-style-type: none"> ○ Berms, dikes, or other water control features that increase duration of ponding (e.g., pumps). ○ Diversions, ditching, or draining into the wetland. ○ Late-season vitality of annual vegetation. ○ Recently drowned riparian or terrestrial vegetation (e.g., beaver created impoundment). ○ Removal of vegetation for peat mining.

Rating	v2. Hydroperiod variant: DEPRESSION, LACUSTRINE, SLOPE (including Playas)
A	Hydroperiod characterized by natural patterns associated with inundation – drawdown, saturation, and seepage discharge. There are no major hydrologic stressors that impact the natural hydroperiod (see field indicators table).
B	Hydroperiod filling or inundation patterns deviate slightly from natural conditions due to presence of stressors such as: small ditches or diversions; berms or roads at/near grade; minor pugging by livestock; or minor flow additions. Outlets may be slightly constricted. Playas are not significantly impacted pitted or dissected. If wetland is artificially controlled, the management regime closely mimics a natural analogue (it is very unusual for a purely artificial wetland to be rated in this category).
C	Hydroperiod filling or inundation and drying patterns deviate moderately from natural conditions due to presence of stressors such as: ditches or diversions 1–3 ft. deep; two lane roads; culverts adequate for base stream flow but not flood flow; moderate pugging by livestock that could channelize or divert water; shallow pits within playas; or moderate flow additions. Outlets may be moderately constricted, but flow is still possible. If wetland is artificially controlled, the management regime approaches a natural analogue. Site may be passively managed, meaning that the hydroperiod is still connected to and influenced by natural high flows timed with seasonal water levels.
D	Hydroperiod filling or inundation and drawdown of the AA deviate substantially from natural conditions from high intensity alterations such as: a 4-lane highway; large dikes impounding water; diversions > 3ft. deep that withdraw a significant portion of flow, deep pits in playas; large amounts of fill; significant artificial groundwater pumping; or heavy flow additions. Outlets may be substantially constricted, blocking most flow. If wetland is artificially controlled, the site is actively managed and not connected to any natural season fluctuations, but the hydroperiod supports natural functioning of the wetland.

Rating	v3. Hydroperiod variant: ORGANIC SOIL FLATS, MINERAL SOIL FLATS
A	Hydroperiod is characterized by natural patterns of filling, inundation saturation and drying or drawdowns. There are no major hydrologic stressors that impact the natural hydroperiod (see field indicators table)
B	Hydroperiod filling or inundation patterns deviate slightly from natural conditions due to presence of stressors such as: small ditches or diversions; berms or roads at/near grade; minor pugging by livestock; or minor flow additions. Outlets may be slightly constricted. If wetland is artificially controlled, the management regime closely mimics a natural analogue (it is very unusual for a purely artificial wetland to be rated in this category).
C	Hydroperiod filling or inundation and drying patterns deviate moderately from natural conditions due to presence of stressors such as: ditches or diversions 1–3 ft. deep; two lane roads; culverts adequate for base stream flow but not flood flow; moderate pugging by livestock that could channelize or divert water; or moderate flow additions. Outlets may be moderately constricted, but flow is still possible. If wetland is artificially controlled, the management regime approaches a natural analogue. Site may be passively managed, meaning that the hydroperiod is still connected to and influenced by natural high flows timed with seasonal water levels.
D	Hydroperiod filling or inundation and drawdown deviate substantially from natural conditions from high intensity alterations such as: a 4-lane highway; large dikes impounding water; diversions > 3ft. deep that withdraw a significant portion of flow; large amounts of fill; significant artificial groundwater pumping; or heavy flow additions. Outlets may be significantly constricted, blocking most flow. If wetland is artificially controlled, the site is actively managed and not connected to any natural season fluctuations, but the hydroperiod supports natural functioning of the wetland. Upstream diversions severely stress the wetland. If wetland is artificially controlled, hydroperiod does not mimic natural seasonality.

Rating	v4. Hydroperiod variant: ESTUARINE FRINGE (Tidal)
A	Area is subject to the full tidal prism, with two daily tidal minima and maxima. Storm tides, tidal river flooding and onshore wind-maintained high tides causing short-term changes in tidal amplitude are within the expected norm. <u>Lagoons</u> : Area subject to natural inter-annual tidal fluctuations (range may be severely muted or vary seasonally) and is episodically fully tidal by natural breaching or overwash due to fluvial flooding, storm surge or wind-driven tides (extreme highs or lows).
B	Area is subject to minor reduced, or muted, tidal prism, although two daily minima and maxima are observed. <u>Lagoons</u> : Area is subject to full tidal range more often than would be expected under natural circumstances due to artificial breaching of the tidal barrier.
C	Area is subject to moderately muted tidal prism, with tidal fluctuations evident only in relation to extreme daily highs or spring tides. <u>Lagoons</u> : Area is subject to full tidal range less often than would be expected under natural circumstances due to management of the breach to prevent its opening.
D	Area is subject to substantially muted tidal prism; there is inadequate drainage, such that the marsh tends to remain flooded during low tide. <u>Lagoons</u> : Area appears to have no episodes of full tidal exchange.

HYD3. Hydrologic Connectivity

Rating	v1. Hydrologic Connectivity variant: RIVERINE (Non-tidal)
A	Completely connected to floodplain (backwater sloughs and channels). No geomorphic modifications made to contemporary floodplain. Channel is not unnaturally entrenched.
B	Minimally disconnected from floodplain. Up to 25% of stream banks are affected due to dikes, rip rap and/or elevated culverts. Channel is somewhat entrenched (overbank flow occurs during most floods).
C	Moderately disconnected from floodplain due to multiple geomorphic modifications. Between 25 and 75% of stream banks are affected (e.g., dikes, tide gates, rip rap, concrete, and elevated culverts). Channel is moderately entrenched ((overbank flow only occurs during moderate to severe floods).
D	Channel is severely entrenched and entirely or extensively disconnected from the floodplain; >75% of stream banks are affected due to dikes, tide gates, rip rap, concrete, and elevated culverts. Channel is substantially entrenched (overbank flow never occurs or only during severe floods).

Rating	v2. Hydrologic Connectivity variant: DEPRESSION, LACUSTRINE, SLOPE including Playa variant
A	No unnatural obstructions to lateral or vertical movement of ground or surface water. Rising water in the site has unrestricted access to adjacent upland, without levees, excessively high banks, artificial barriers, or other obstructions to the lateral movement of flood flows. If perched water table, then impermeable soil layer (fragipan or duripan) intact. <u>Playa</u> : Surrounding land cover / vegetation does not interrupt surface flow. No artificial channels feed water to playa.
B	Minor restrictions to the lateral or vertical movement of ground or surface waters by unnatural features, such as levees or excessively high banks. Less than 25% of the site is restricted by barriers to drainage. Restrictions may be intermittent along the site, or the restrictions may occur only along one bank or shore. Flood flows may exceed the obstructions, but drainage back to the wetland is incomplete due to impoundment. If perched then impermeable soil layer partly disturbed (e.g., from drilling or blasting). <u>Playa</u> : Surrounding land cover / vegetation does not interrupt surface flow. Artificial channels may feed minor amounts of excess water to playa.
C	Moderate restrictions to the lateral or vertical movement of ground or surface waters by unnatural features, such as levees or excessively high banks. Between 25-75% of the site is restricted by barriers to drainage. Flood flows may exceed the obstructions, but drainage back to the wetland is incomplete due to impoundment. If perched, then impermeable soil layer moderately disturbed (e.g., by drilling or blasting). <u>Playa</u> : Surrounding land cover / vegetation may interrupt surface flow. Artificial channels may feed moderate amounts of excess water to playa.
D	Essentially no hydrologic connection to adjacent wetlands or uplands. Most or all water stages are contained within artificial banks, levees, sea walls, or comparable features. Greater than 75% of wetland is restricted by barriers to drainage. If perched, then impermeable soil layer strongly disturbed. <u>Playa</u> : Surrounding land cover / vegetation may dramatically restrict surface flow. Artificial channels may feed significant amounts of excess water to playa.

Rating	v3. Hydrologic Connectivity variant: ORGANIC SOIL FLATS (especially bogs and poor fens), MINERAL SOIL FLATS
A	No or very little direct connectivity to groundwater. Precipitation is the dominant or only source. Surrounding land cover / vegetation does not interrupt surface flow. No artificial channels feed water to wetland.
B	Minor hydrological connectivity, as caused by human activity (e.g., ditching). Surrounding land cover / vegetation does not interrupt surface flow. Artificial channels may feed minor amounts of excess water to wetland.
C	Moderate connectivity caused by human activity (e.g., ditching). Surrounding land cover / vegetation may interrupt surface flow. Artificial channels may feed moderate amounts of excess water to wetland.
D	Substantial to full connectivity caused by human activity. Surrounding land cover / vegetation may dramatically restrict surface flow. Artificial channels may feed significant amounts of excess water to wetland.

Rating	<i>v4. Hydrologic Connectivity variant: ESTUARINE FRINGE (Tidal)</i>
A	Tidal channel sinuosity reflects natural processes; absence of channelization. Marsh receives unimpeded tidal flooding. Total absence of tide gates, flaps, dikes culverts, or human-made channels.
B	Tidal channel sinuosity minimally altered: marsh receives essentially unimpeded tidal flooding, with few tidal channels blocked by dikes or tide gates, and human-made channels are few. Culvert, if present, is of large diameter and does not significantly change tidal flow, as evidenced by similar vegetation on either side of the culvert.
C	Tidal channel sinuosity moderately altered: marsh channels are frequently blocked by dikes or tide gates. Tidal flooding is somewhat impeded by small culvert size, as evidenced in obvious differences in vegetation on either side of the culvert.
D	Tidal channel sinuosity extensively altered: tidal channels are extensively blocked by dikes and tide gates; evidence of extensive human channelization. Tidal flooding is totally or almost totally impeded by tidal gates or obstructed culverts.

SOIL METRICS - EIA L2 METRIC RATING DEFINITIONS

SOI1. Soil Condition

Rating	<i>v1. Soil Condition variant: ALL FRESHWATER NON-TIDAL WETLANDS</i> (FLOODED & SWAMP FOREST, FRESHWATER MARSH, WET MEADOW & SHRUBLAND, BOG & FEN, AQUATIC VEGETATION)
A	Little bare soil OR bare soil and soil disturbed areas are limited to naturally caused disturbances such as flood deposition or game trails, OR soil is naturally bare (e.g., playas). No disturbances are evident from trampling, erosion, soil compaction, ruts, sedimentation, invasive earthworms, or boat traffic.
B	Small amounts of bare or disturbed soil are present, but the extent and impact is minimal. Examples include disturbance from cattle (trampling or heaving grazing that leads to erosion), compaction or trampling by machinery, ruts or other disturbances from ATV or other vehicular activity, sedimentation due to human causes, invasive earthworms, or effects of boat traffic. The depth of disturbance is limited to only several centimeters (a few inches) and does not show evidence of ponding or channeling of water.
C	Moderate amounts of bare or disturbed soil are present, and the extent and impact is moderate. Examples include disturbance from cattle (trampling or heaving grazing that leads to erosion), compaction or trampling by machinery, ruts or other disturbances from ATV or other vehicular activity, sedimentation due to human causes, invasive earthworms, or effects of boat traffic. The depth of disturbance may extend 5 – 10 cm (2-4 inches), or localized deeper ruts, and shows some evidence of ponding or channeling of water.
D	Substantial amounts of bare or disturbed soil are present, with extensive and long-lasting impacts. Examples include disturbance from cattle (trampling or heaving grazing that leads to erosion), compaction or trampling by machinery, ruts or other disturbances from ATV or other vehicular activity, sedimentation due to human causes, invasive earthworms, or effects of boat traffic. The depth of disturbance extends > 10 cm (4 inches), or deeper ruts are widespread, and show some evidence of extensively altering hydrology, e.g., ponding or channeling of water.

Rating	<i>v2. Soil Condition variant: ESTUARINE WETLANDS</i> (MANGROVE, SALT MARSH, and tidal variants of FRESHWATER MARSH, WET MEADOW & SHRUBLAND)
A	Excluding mud flats, bare or disturbed soils are naturally occurring and largely limited to salt pannes.
B	Small amounts of bare or disturbed soil areas caused by rafts of anthropogenic debris (killing marsh vegetation and creating artificial pannes), ditch spoils impounding water and forming artificial pannes, trampling by livestock, and erosion of marsh and channel banks due to excavation by marine traffic and/or altered current/tidal patterns resulting from deficient culverts (leading to erosion).
C	Moderate amounts of bare or disturbed soil areas caused by rafts of anthropogenic debris (killing marsh vegetation and creating artificial pannes), ditch spoils impounding water and forming artificial pannes, trampling by livestock, erosion of marsh and channel banks due to excavation by marine traffic and/or altered current/tidal patterns resulting from deficient culverts (leading to erosion), or moderate open marsh water management (OMWM) ponds, ditches, and/or radials.
D	Substantial amounts of bare or disturbed soil areas caused by rafts of anthropogenic debris (killing marsh vegetation and creating artificial pannes), ditch spoils impounding water and forming artificial pannes, trampling by livestock, erosion of marsh and channel banks due to excavation by marine traffic and/or altered current/tidal patterns resulting from deficient culverts (leading to erosion), or extensive open marsh water management (OMWM) ponds, ditches, and/or radials.

SOI2. Surface Water Turbidity/Pollutants

Rating	<i>Surface Water Turbidity/Pollutants: ALL WETLANDS CONTAINING OPEN WATER</i>
N/A	No open water in AA
A	No visual evidence of degraded water quality. No visual evidence of turbidity or other pollutants.
B	Some negative water quality indicators are present but limited to small and localized areas within the wetland. Water is slightly cloudy, but there is no obvious source of sedimentation or other pollutants.
C	Water is cloudy or has unnatural oil sheen, but the bottom is still visible. Sources of water quality degradation are apparent (identify in comments). <i>Note: If the sheen breaks apart when you run your finger through it, it is a natural bacterial process and not water pollution.</i>
D	Water is milky and/or muddy or has unnatural oil sheen. The bottom is difficult to see. There are obvious sources of water quality degradation (identify in comments). <i>Note: If the sheen breaks apart when you run your finger through it, it is a natural bacterial process and not water pollution.</i>

SOI3. Algal / Macrophyte Growth

Rating	<i>Algal Growth: ALL WETLANDS CONTAINING OPEN WATER</i>
N/A	No open water in AA or evidence of open water.
A	Water is clear with minimal algal growth.
B	Algal growth is limited to small and localized areas of the wetland. Water may have a greenish tint or cloudiness.
C	Algal growth occurs in moderate to large patches throughout the AA. Water may have a moderate greenish tint or sheen. Sources of water quality degradation are apparent (identify in comments).
D	Algal mats are extensive, blocking light to the bottom. Water may have a strong greenish tint and the bottom is difficult to see. There are obvious sources of water quality degradation (identify in comments).

SIZE METRICS

SIZ1. Comparative Size (Patch Type): A measure of the current absolute size of the entire wetland type polygon or patch. This metric is assessed with respect to a comparison of patch-type sizes for the type across its range. This size metric applies to ALL WETLANDS.

Metric Rating	<i>COMPARATIVE SIZE BY PATCH TYPE in hectares (acres), kilometers (miles)</i>						
Spatial Pattern Type	<i>MATRIX</i>	<i>LARGE PATCH</i>			<i>SMALL PATCH</i>		<i>LINEAR</i>
	Matrix in ha (ac)	Large Patch - high in ha (ac)	Large Patch - typic in ha (ac)	Large Patch - low in ha (ac)	Small Patch - typic in ha (ac)	Small Patch - low in ha (ac)	Linear length in km (mi)
EXCELLENT (A)	>5,000 ha (>12,500 ac)	>500 ha (>1,250 ac)	>125 ha (>300 ac)	>50 ha (>125 ac)	>10 ha (>25 ac)	>2 ha (>5 ac)	>5 km (>3 mi)
GOOD (B)	500–5,000 ha (1,250–12,500 ac)	100–500 ha (250–1,250 ac)	25–125 ha (60–300 ac)	10–50 ha (25–125 ac)	2–10 ha (5–25 ac)	0.5–2 ha (1–5 ac)	1–5 km (0.6–3 mi)
FAIR (C)	100–500 ha (250–1,250 ac)	20–100 ha (50–250 ac)	5–25 ha (12–60 ac)	2–10 ha (5–25 ac)	0.5–2 ha (1–5 ac)	0.1–0.5 ha (0.25–1.25 ac)	0.1–1 km (0.06–0.6 mi)
POOR (D)	<100 ha (<250 ac)	<20 ha (<50 ac)	<5 ha (<12 ac)	<2 ha (<5 ac)	0.5 ha (1 ac)	0.1 ha (0.25 ac)	<0.1 km (<0.06 mi)

SIZ2. Change in Size [Optional]: A measure of the current size of the wetland (ha or acres) divided by the historical wetland size (within most recent period of intensive settlement or 200 years), multiplied by 100.

Metric Rating (<i>change in rating of Comparative Size</i>)	<i>Change in Size: ALL WETLANDS (Required for small AAs of large-patch/matrix ecosystems; optional for all other small AAs)</i>
EXCELLENT (A) <i>No change to Comparative Size rating</i>	Occurrence has not been artificially reduced (0%) or increased from its original, natural extent; any detectable change in size is due to natural fluctuations. <i>See note¹ below for interpretation of "reduction."</i> No change in scoring of Comparative Size (SIZ1)
GOOD (B) <i>-1/3 letter grade</i>	Occurrence is minimally reduced (1–5%) or increased from its original natural extent. Lower the Comparative Size (SIZ1) rating by one-third (e.g., B+ to B).
FAIR (C) <i>-2/3 letter grade</i>	Occurrence is moderately reduced (5–30%) or increased from its original, natural extent. Lower the Comparative Size (SIZ1) rating by two-thirds (e.g., B+ to B-).
POOR (D) <i>-1 letter grade</i>	Occurrence is substantially reduced (>30%) or increased from its original, natural extent. Lower the Comparative Size (SIZ1) rating by one (e.g., B+ to C+)."

¹Note: Reduction in size for metric ratings A-D can include conversion or disturbance (e.g., changes in hydrology due to roads, impoundments, development, human-induced drainage; or changes caused by recent cutting). Assigning a metric rating depends on the degree of reduction.

Change in Size COMMENTS: