



Technical Memorandum

May 2, 2026

To	Trevor Estlow, County of Humboldt
From	Adam Wagschal, GHD
Subject	Manila Community Services District – Monitoring Wells Project – Biological Resources

1. Introduction

A site visit of the Manila Community Services District (MCSD) Monitoring Wells Project in Manila California was conducted on April 29, 2026. The purpose of the site visit was to determine if the proposed project (installation of four groundwater monitoring wells) has potential to impact special status biological resources.

2. Methods

A reconnaissance-level biological survey was conducted on April 29, 2026. The survey included a pedestrian assessment of each proposed well location and surrounding area to document existing vegetation, habitat conditions, and potential for special-status species. Prior to the site visit, a review of the California Natural Diversity Database, USFWS Information for Planning and Consultation, and the California Native Plant Society Rare Plant Inventory was conducted for the project vicinity.

3. Project Description

The four proposed well locations are shown in Figures 1 and 2. All monitoring wells will have a 2-inch diameter casing. Monitoring Well 1R will be constructed to a 35-ft depth and Monitoring Wells 2, 3 and 4 will be constructed to a 45-ft depth. The monitoring wells are more thoroughly described in the permit application provided to the County of Humboldt (dated April 23, 2026).

4. Biological Resources

The monitoring wells are located in disturbed areas adjacent to the Manila dunes.

Monitoring Well 2 will be constructed in a landscaped grass area adjacent to the existing wastewater treatment facility pump house; the ground cover consists of non-native grass and gravel. There is no potential for special status plant species.

Monitoring Wells 1R, 3 and 4 will be constructed on the perimeter berm of existing infiltration ponds. The perimeter berm is highly disturbed and serves as an access road around the infiltration ponds. The sites are dominated by a mix of non-native annual grasses and invasive succulent species, with scattered native coastal dune species present in lower abundance. Dominant vegetation includes rigpgut brome (*Bromus diandrus*) and cheatgrass (*Bromus tectorum*), both invasive annual grasses that have extensively colonized disturbed coastal areas throughout California. These species create dense seasonal cover. Ice plant

(*Carpobrotus* spp.) is also prominently represented across the locations. Ice plant is a South African succulent classified as a "High" impact invasive species by the California Invasive Plant Council, known for forming dense vegetative mats that alter soil chemistry, displace native flora, and facilitate establishment of additional non-native species.

Native species observed include beach strawberry (*Fragaria chiloensis*), a low-growing perennial groundcover characteristic of Pacific coastal dunes and Pacific wax myrtle (*Myrica californica*), an evergreen shrub adapted to coastal conditions. These common native species persist in a matrix otherwise heavily dominated by invasive taxa, indicating the location represents a heavily degraded coastal dune scrub/grassland community rather than intact native dune habitat. The vegetation composition reflects substantial human disturbance and ongoing invasion dynamics typical of accessible coastal areas in northern California.

The invasive annual grasses ripgut brome and cheatgrass collectively represent a significant component of herbaceous cover at the locations. Ripgut brome, rated as "Moderate" impact by Cal-IPC, has displaced native grasses throughout California's coastal and inland areas and readily hybridizes with other invasive *Bromus* species, further complicating management. The extensive presence of ice plant is particularly notable, as this taxon is among the most ecologically damaging coastal invaders in the state. Ice plant establishes dense monocultures that increase soil organic matter and moisture retention, fundamentally altering dune habitat structure and function, and actively suppressing germination and establishment of native dune flora including rare species.

Ground disturbance is extensive across the locations. The proposed well locations are situated atop berms that are actively driven upon, compacting the soil. This regular mechanical disturbance prevents natural revegetation by native species and perpetuates conditions favorable to opportunistic, disturbance-adapted invasive plants. The combination of non-native fill substrate, compaction from vehicle use, absence of intact native topsoil and seed bank, and dominance by aggressive invasive species indicates these sites function as highly disturbed, anthropogenic landforms rather than natural dune habitat.

Given the site conditions described above, the potential for occurrence of special status plant species is assessed as low to none. The Manila and Humboldt Bay dune system supports populations of federally listed and state rare plant species, including *Erysimum menziesii* (Menzies' wallflower) and *Layia carnosa* (beach layia), both of which are endemic to coastal dune habitats in Humboldt County. However, these rare taxa are obligate specialists of intact, native dune substrates with specific edaphic, hydrological, and microhabitat requirements. The well sites lack the native soil profile, seed bank, mycorrhizal associations, and substrate chemistry necessary to support rare dune endemics. Additionally, the locations are subject to ongoing disturbance from vehicular traffic, which creates compacted, unstable conditions incompatible with the establishment and persistence of sensitive plant populations. The heavy dominance of invasive species, particularly ice plant, further precludes rare plant occurrence by competitively excluding native flora. Based on the documented site conditions—fill substrate, active disturbance, invasive species dominance, and absence of native dune structure—no rare or special status plant species are expected to occur at the proposed well sites. The sites also do not have indications of wetlands (soils, hydrology or hydrophytic vegetation).

The four well sites are also poor habitat for special-status wildlife species. Special-status wildlife species known from the Manila dune system include western snowy plover (*Charadrius nivosus*) and northern red-legged frog (*Rana aurora*). The proposed well sites lack the open sandy nesting substrate required by snowy plover and the ponded freshwater breeding habitat required by northern red-legged frog. The sites are characterized by heavily compacted fill material (or landscaped grass/gravel), ongoing vehicular disturbance on active berms, and dense invasive vegetation that provide limited structural and functional habitat value. Invasive species dominance—particularly ice plant and non-native annual grasses—has

simplified vegetation structure, eliminating the diverse native plant communities and microhabitat heterogeneity essential for supporting coastal dune wildlife. Additionally, the absence of native soil profiles, seed banks, and natural substrate characteristics precludes the establishment of invertebrate communities and other prey species that form the foundation of coastal food webs. Active disturbance from vehicle traffic, soil compaction, and lack of connectivity to higher-quality habitat further reduce the sites' ability to support special-status wildlife species.

5. Conclusion

Based on the April 29, 2026 site assessment, the four proposed monitoring well locations are situated in heavily disturbed, invasive-dominated habitats that lack the native substrate, vegetation structure, and ecological function necessary to support special-status plant or wildlife species. No wetland indicators were observed. The proposed project is not expected to result in significant impacts to biological resources.



Figure 1. General area of proposed monitoring wells in Manila, California.

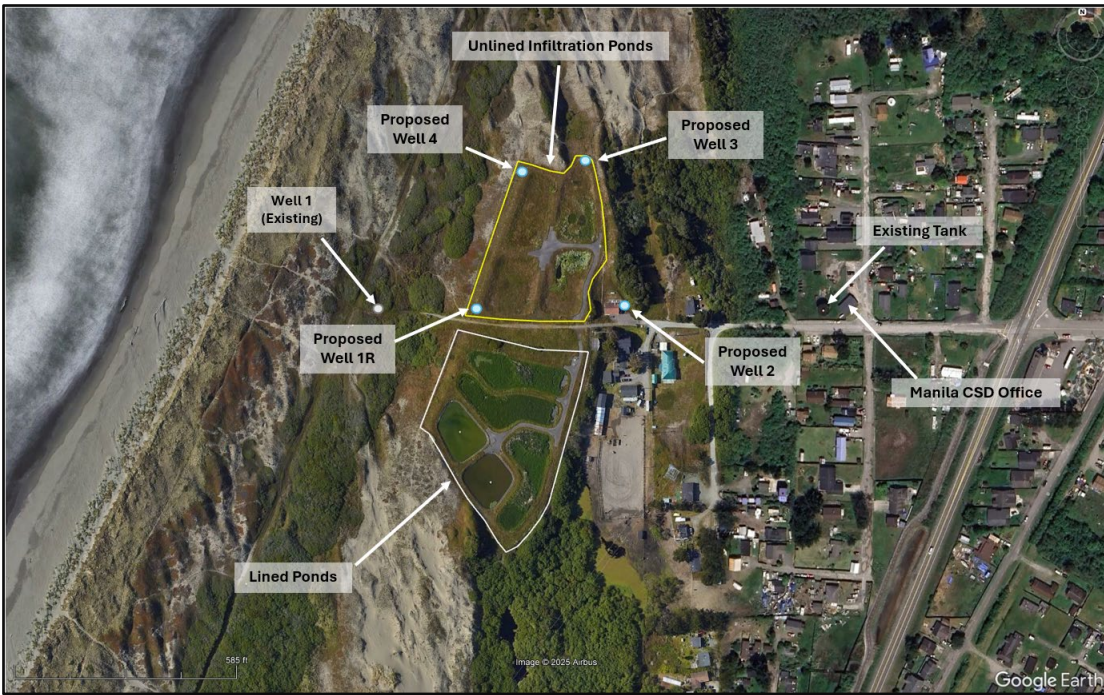


Figure 2. Proposed monitoring well locations.

Regards

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