APPENDIX A – FIELD DATA COLLECTION METHODS

Elevation Surveys

Vegetation along the transect line is trimmed to allow clear line-of-sight. A measuring tape is used to mark the transect stations. Ground elevations are read using a rod and transit, recorded to the nearest hundredth of a foot. Inundated areas are read as soundings below the top of water, recorded to the nearest tenth of a foot. Measurement intervals may range from 1 foot to 20 feet or more, depending on topographic complexity and distribution of features of interest to the investigator. Such features may include obvious topographic breaks, changes in vegetation or soil features, and high water marks. Spot elevations may also be recorded at discrete points not part of a larger transect.

Elevations are calculated relative to a datum associated with established benchmarks near the transect. All elevation data from this project are relative to NAVD 88. Latitude and longitude data are collected with a global positioning system (GPS) receiver at selected points along the length of the transects.

Soil Sampling Procedures

MFLs field investigations typically involve delineating the extent and types of hydrologically sensitive soil features such as deep organic soils (Histosols and histic epipedons) and hydric indicators (NRCS, 2010). Hydric indicators with alphanumeric "S" abbreviation are restricted to soils with sandy surface textures (loamy fine sand or coarser). Hydric indicators with alphanumeric "F" abbreviation are restricted to soils with finer, mineral, surface textures. Hydric indicators with "A" abbreviations can occur in all soils without regard to surface texture. The extent of hydric indicators along transect lines is estimated by close inspection of topographic breaks in conjunction with frequent soil borings.

Soil borings along transects should sample all significant geomorphic features, landscape positions, and plant communities. Permanently flooded areas such as deep marshes are generally not sampled due to difficulty in obtaining samples and frequent lack of hydric indicators in such environments. Soil profile descriptions follow NRCS guidelines (Schoeneberger et al. 2002). Soil descriptions include the horizon depth, texture, colors, redoximorphic features, presence of roots, and consistence of soil materials.

Taxonomic keys are used to determine classification of selected soil pedons (Soil Survey Division Staff 1999). A soil pedon is the smallest body of one kind of soil sufficient to represent the nature and arrangement of horizons and other features. Soil classification of a pedon allows investigators to query the NRCS website of official series descriptions, select an appropriate soil series, and access associated hydrologic data. The following website provides additional information:

(http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/survey/geo/?cid=nrcs142p2_053587)

A variant of a soil series is assigned if the pedon fits the taxonomic classification but has some feature that is out of range for the series criteria. A taxadjunct of a soil series may be assigned if the pedon does not fit some part of the taxonomic classification of a soil series but is otherwise similar in morphology and can be expected to have the same properties as the named series.

Vegetation Sampling Procedures

Plant associations are well-documented groupings of vegetation with relatively consistent floristic composition, uniform physiognomy, and a distribution characteristic of a particular habitat (Barbour et al., 1999). For purposes of the MFLs program, plant associations are termed “communities.” Ecotones are intermediate habitats that have characteristics of more than one adjoining community. Community boundaries are spatial localities where the magnitude of change in species composition is greatest (Fagan et al., 2003).

MFLs investigations involve sampling vegetation along a belt transect: a long, narrow, rectangular area sub-divided into smaller sampling areas or plots, which traverses the area of interest (SJRWMD 2006). Each plot represents a separate community or ecotone. Belt width is 10 feet for herbaceous areas and 50 feet for forested areas (Figure A1). Biologists may delineate plots based on presence of dominant or common species, indicator species, vegetation physiognomy, soil characteristics, and topography. A biologist may also deem additional criteria important based on his or her experience in the region. Community types are based on a SJRWMD classification system (Kinser 2012).

Once the sampling plots are defined, a detailed assessment is conducted of vegetation cover, which is the percentage of the plot area beneath the canopy of species rooted within the plot (Barbour, 1999). Cover has greater ecological significance than stem density since it is a better measure of biomass. Since the canopies of plant species often overlap, total cover may sum to more than 100 percent. Cover of each species within a plot is recorded based on an ocular estimate, a technique known as relevé. Annuals, vines, and floating species, which are not reliable indicators of site hydrology, are often excluded from the assessment. Broad cover class estimates are preferable because results are more likely to be consistent between observers. The following cover class scale (with descriptors) is based on a Braun-Blanquet cover abundance scale (Barbour et al, 1999):

- 5: >75% cover (dominant)
- 4: 50-75% cover (co-dominant)
- 3: 25-50% cover (abundant)
- 2: 10-25 % cover (numerous)
- 1: 1-10% cover (scattered)
- 0: <1 % cover (rare)

Line-intercept is a technique used in the MFLs program to sample distribution of plant species. This semi-quantitative method involves measuring the lengths of vegetation by plant species that either overlap the transect line or that occur within a defined distance of the line. This data can confirm or modify plant community boundaries based on professional judgment. It can also provide information on finer-scale vegetation features that are hydrologically sensitive but not detected by the belt method. While the belt method involves delineating community boundaries prior to collecting cover data, the line intercept method collects vegetation data prior to delineating community boundaries. The two techniques used in conjunction improve accuracy and consistency of vegetation surveys.

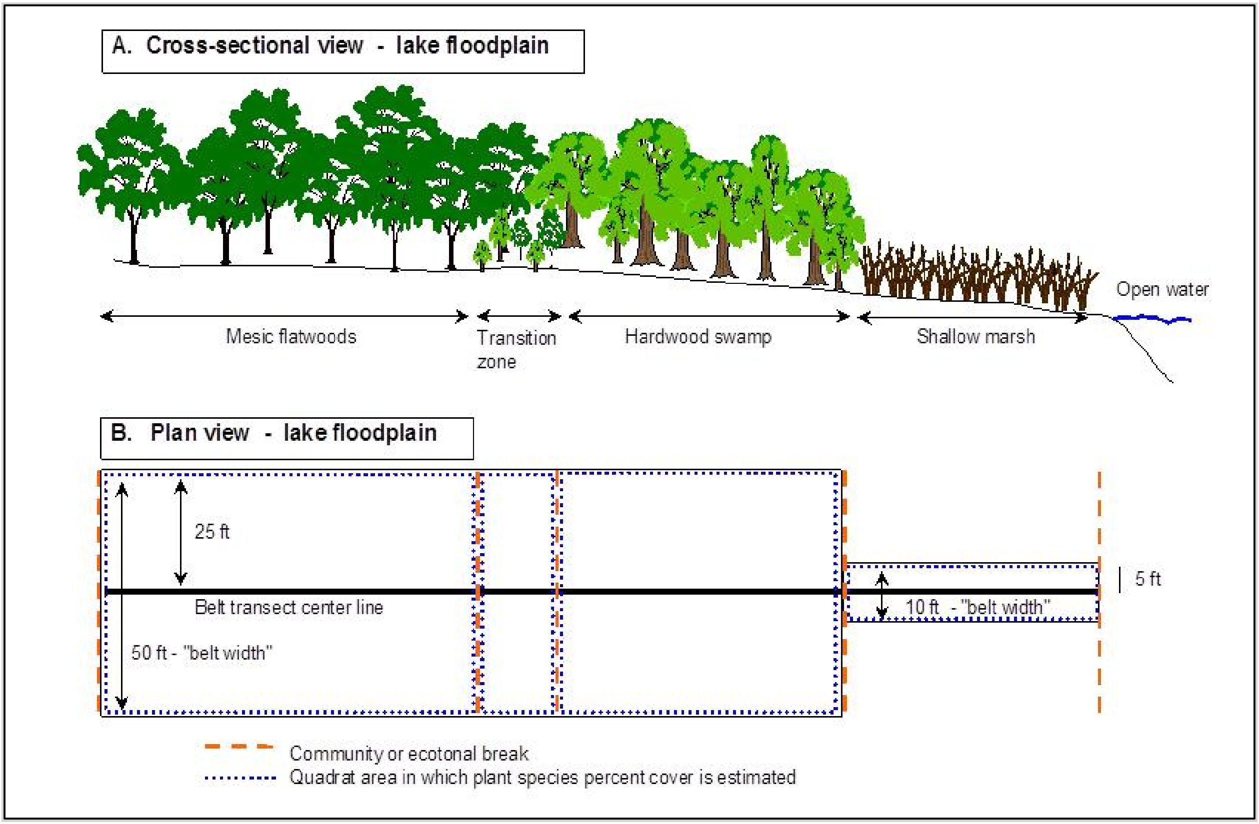

Figure A1 Generalized belt transect through forested and herbaceous plant communities