



Best Management Practice: Maintained Landscapes (3100) Asset

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Background

Asset-specific best management practices (BMPs) are developed to support asset-specific business practices (BPs) with recommendations on capturing asset data in the Facility Management Software System (FMSS). BMPs may offer data capture options to park managers to enable individual parks to address their unique asset data management needs. Asset-specific BPs are generated to provide National Park Service (NPS) asset managers with the specific rules and requirements to manage an asset and its components within the FMSS.

Best Management Practice

This BMPs document offers recommendations on the capture and management of maintained landscape (ML) asset data in the FMSS. An overview of asset management rules as they relate to all asset categories is addressed in the [Life-Cycle Business Practices, Volume 1](#) and [Life-Cycle Business Practices, Volume 2](#).

Management of Location Records

Asset Code and Definition

Delineating Maintained Landscape Boundaries

Refer to the section on Lumping vs. Splitting Location Records for guidance on delineating ML boundaries.

Addressing Cultural Resources/Landscapes

Parks should capture all cultural resource information in FMSS data fields, where prompted, with the help of Regional Cultural Landscapes Program Leads or Regional Cultural Landscapes Inventory (CLI) coordinators. In addition, parks should mark the heritage indicator field and enter the appropriate Federal Real Property (FRP) historic status in the Financial and Business Management System (FBMS), as the FBMS is now the system of record for those two fields.

Parks can capture List of Classified Structures (LCS) numbers and CLI numbers associated with ML locations or individual asset records in the FMSS. A ML can have multiple LCS and/or CLI numbers associated with it. In these situations, parks are advised to enter a primary LCS and/or CLI number into the designated attribute fields and all subsequent/associated numbers in the long description field.

Addressing Natural Areas

Typically, natural areas that are managed solely for their natural resource values (ecosystem diversity, wildlife habitat, etc.) without constructed improvements on assets fall under the policies and guidelines of the NPS natural resource program and should not be captured as MLs in the FMSS.

Many MLs, such as campsites, picnic grounds and battlefields, are surrounded by naturalized vegetation or “buffer areas”, which should not be included in the boundary or total area of the ML. While natural resources are generally not included in the FMSS, buffer

areas often receive periodic maintenance for invasive plant management, tree pruning, trash and debris removal, fire fuel load management, etc. to maintain the facility in good condition. These types of natural areas have an operations and maintenance investment of labor and materials and should have these costs tracked in the FMSS.

Since these natural areas are not inventoried as components of a ML, they are not measured, do not have a current replacement value and do not contribute to the location's facility condition index. If a park wishes to capture work performed on a natural vegetative "buffer area" adjacent to a ML, the park should enter a "Y" on the "Natural Veg/Buffer Associated" attribute on the *location* specification template. Work orders on the buffer area should then be assigned to the ML *location* record.

Guidance on Categorizing as a Location vs. an Asset

MLs can be classified as either location or asset records depending on the park need. In general, a real property asset should be classified as an FMSS location record if it is large, complex and/or integral to park management objectives. Location records are eligible for project funding. FMSS asset records capture information on components of location records and represent the equipment on which maintenance is actually performed.

The irrigation system for a ML is a unique case. In some parts of the country, an irrigation system is required for preserving the vegetation in the landscape. An irrigation system cannot be marked as a critical system, so where the irrigation system serves an essential function, it should be classified as a location record so that it can be tracked in the Asset Priority Index process to note its high importance for funding. Irrigation systems that serve this essential function or that are large and complex can be captured as location records under the constructed waterways (6200) asset code. Simpler, smaller irrigation systems should be captured as asset records.

Facility Types

There are no BMPs related to the definition of ML facility types. Refer to the BPs for more information.

Location Specification Template

Important fields in the specification template for ML location records are the following:

- Landscape Type (LANDTYPE)
- Campground Type (CMPGTYP)
- Picnic Area Type (PICNTYPE)
- Gross Acreage (ACRES)
- Landscape Quantity (LANDQANT).

Classifying Landscapes ("LANDTYPE")

The Landscape Type attribute in the location specification template allows parks to differentiate between and report on the different types of MLs in the FMSS. Landscape Type attributes are the basis for establishing separate ML location records within a park that are based on land use, purpose, function and character.

Parks may select a single Landscape Type attribute in the location specification template (similar to the Building Type for asset code 4100 – buildings) for each individual ML

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location record. If a ML has more than one Landscape Type, it is recommended that the primary Landscape Type, based on park management objectives, be selected. Alternatively, park areas that include multiple landscape types can be divided into separate location records.

Table 1 defines the 22 Landscape Types available for selection in the FMSS.

Table 1. Landscape Types

#			
1	Active Sports/ Recreation Area	A facility maintained for various sports or recreational activities	Ball field, tennis court, swimming pool, sports complex, ski area, skate park, basketball court
2	Agricultural Landscape	Land currently or previously used for or supporting the cultivation of crops, orchards or managing livestock	Corral, orchard, farmstead, cropland, pasture, hayfield
3	Battlefield	Landscape that provides a line of fire or demarcates where a battle was staged or fought	Battle site, encampment, artillery area, command and logistic site, reconnaissance point, field of fire
4	Burial Landscape	Land specifically designated as an internment of human remains	Cemetery, gravesite
5	Campground	Landscape designated for multilayer public use, including for erecting temporary structures, eating, sleeping and recreation	Individual or group campsite, tent camp
6	Commemorative/ Memorial Landscape	Landscape commemorating a person or event often associated with and/or adjacent to a monument or memorial	Grounds containing monuments, spiritual landscape, memorial garden
7	Day-use/Rest Area	Day-use area for waiting, resting or other passive use	Rest stop, seating area
8	Industrial Landscape	Land used for industrial activities or extraction of resources, including mines or quarries	Mine, quarry, industrial site
9	Interpretive Area	Landscape that supports educational or interpretive programs and media	Historic site, natural/cultural demonstration area, orientation/information display, amphitheater
10	Military Landscape	Areas developed to support military use, functions or activities	Parade ground, military equipment display, military base grounds, glacis, field of fire around a fortification

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#	Landscape Type	Description	Examples
11	Operations Support Site	Outdoor maintenance or service areas that support park operations	Plant nursery, law enforcement firing range, maintenance storage yard
12	Ornamental Landscape	Designed landscaped area maintained for aesthetic, artistic, scenic or inspirational qualities	Estate landscape, botanic garden, sculpture garden, passive-use urban park
13	Overlook/ Vista Point	Landscape area associated with a designated pull-off area along a roadway or trail	Scenic overlook
14	Picnic Area	Day-use area designated for visitor food preparation, eating and recreation	Individual or group picnic grounds
15	Playground	Area designed for children's recreation, possibly containing play equipment	Area containing slides, swings, climbing equipment, sandboxes and/or play structures
16	Plaza/Mall	Surfaced or natural surface (turf) area improved for social gatherings, events and activities	Promenade, square, courtyard
17	Residential Landscape	Area of land around the perimeter of a current residential structure that is managed through a park's housing program (if not managed through a park housing program, use the Structural/Building Landscape Type)	Park housing area grounds and associated common areas
18	Road Corridor/Landscape	NPS-managed road corridor or perimeter landscape, including median, rotary and roadside plantings	Parkway corridor, median, rotary, roadside planting
19	Structure/Building Landscape	Landscape around the perimeter of a building or structure or a group of buildings or structures used to provide access or support (that is not managed through a park housing program-see Residential Landscape)	Visitor center grounds, restroom waiting area, turf and/or planting around buildings
20	Trail Corridor/Landscape	Landscape adjacent to or at the head or end of a trail	Trailhead, shoulder cleared area
21	Utility Corridor/Landscape	Corridor or site associated with underground, surface or overhead utilities	Vegetation management area associated with supporting utilities
22	Waterfront Use Area	Landscape maintained at a waterfront or shoreline for public day use	Marina grounds, walkway

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Spatial Management for Location Records

The FMSS allows two sets of spatial coordinates for a location record: a primary latitude and longitude and a secondary latitude and longitude. When capturing the Global Positioning System (GPS) location readings for a maintained landscape, all GPS readings should have an accuracy level minimum of 3 meters or less.

Parks should capture the two most useful coordinates for park management purposes of any maintained landscape. These values will populate the primary and secondary latitude and longitude fields in the FMSS.

Boundaries of MLs should be delineated on a site map to illustrate geographic areas within a park. Delineating boundaries on a site map provides a graphic representation of a ML location, dimensions and acreage. In particular, maps are critical in distinguishing ML boundaries at parks that manage data for multiple locations. Many parks have digital mapping capabilities and/or existing Geographic Information Systems (GIS) maps that can be used to delineate ML boundaries. Parks can also contact regional GIS coordinators and/or Regional CLI Coordinators for assistance in obtaining maps.

The map(s) should be uploaded or linked as a digital file within the FMSS for reference purposes. The “attachments” field in the FMSS allows uploads of up to 1 MB and only accepts file types of PDF, XLS, DOC, GIF or JPG. Alternatively, the attachment can be entered as a web link. The long description field may be used for further explanation of ML boundaries.

Precise delineation of boundaries is not required for the initial designation of MLs, but mapping must be accurate in order to complete the “inventory” and “quantity” data fields in the specification templates. ML boundary mapping must also be completed before comprehensive condition assessments (CACs) can be accomplished—parks must complete mapping prior to being approved for contractor-performed CACs on MLs.

Lumping vs. Splitting Location Records

Many parks manage multiple MLs that need to be captured and organized within the FMSS. Often, MLs at parks are of different types, have varying maintenance needs and schedules and consist of a diversity of components. When deciding how to organize and delineate the boundaries of individual ML locations within the FMSS, it is recommended that parks consider:

- Existing demarcations, such as property lines, walls, fences, walkways, trails, buildings, roads, etc., that clearly mark the edges of a ML
- Distinct areas that are identified in the park’s enabling legislation
- Distinctions in maintenance goals, functions and operations between adjacent landscapes
- Significant operational or maintenance demands
- Unique maintenance requirements
- High value or density of features in a concentrated area
- Significant geographic separation between MLs within the park
- Differences in character, design, use or landscape type between MLs
- Cultural resource values as documented in a park Cultural Landscape Report or CLI
- The level of data management detail that is desired or sustainable

- Cultural landscape boundaries.

Hierarchy Guidance for Location Records

Parks can organize and classify MLs differently based on considerations that include the intensity of management activities, types of maintenance operations, historical/cultural landscape boundaries, geographic locations, clear boundary demarcations and landscape type.

For example, a historic “farmstead” at a park can encompass several landscape areas, such as a small orchard, a family cemetery and a kitchen garden. One option is for the park to identify one ML location “farmstead” that contains an inventory of all assets, such as vegetation, markers, fencing, etc., that make up the orchard, the cemetery and the garden (see Figure 1).

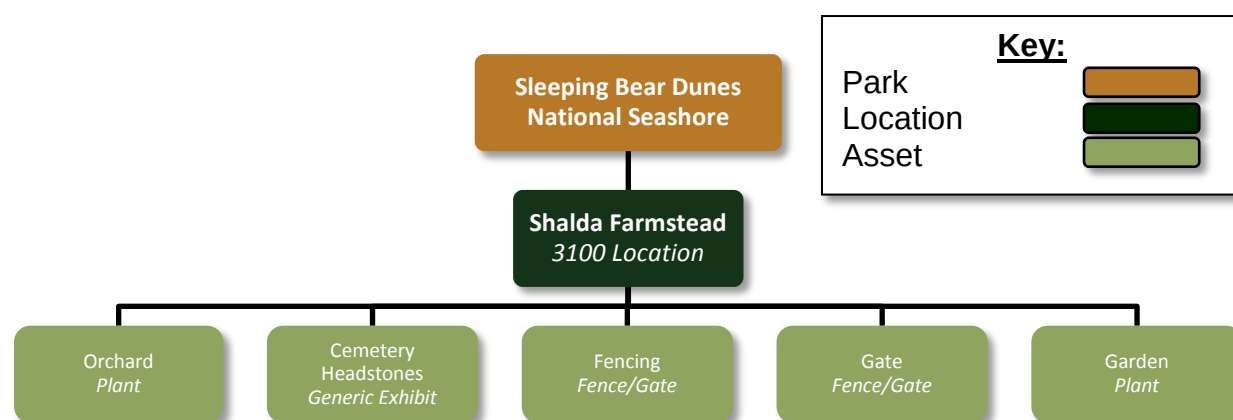


Figure 1. Example of Farmstead Managed as a Single Location Record

Alternatively, the components of the “farmstead” may be managed at a more detailed level. The orchard, cemetery and garden could each be established as individual ML locations associated with a “farmstead” parent location record. At this level of management, individual assets of the three locations (i.e., single trees, fence types, turf areas, etc.) can be rolled up and tracked against the respective parent location record, as seen in Figure 2. However, “site” or “0000” location records cannot have facility maintenance (FM) or any project work orders written against them, so they lack some of the management capabilities of standard location records.

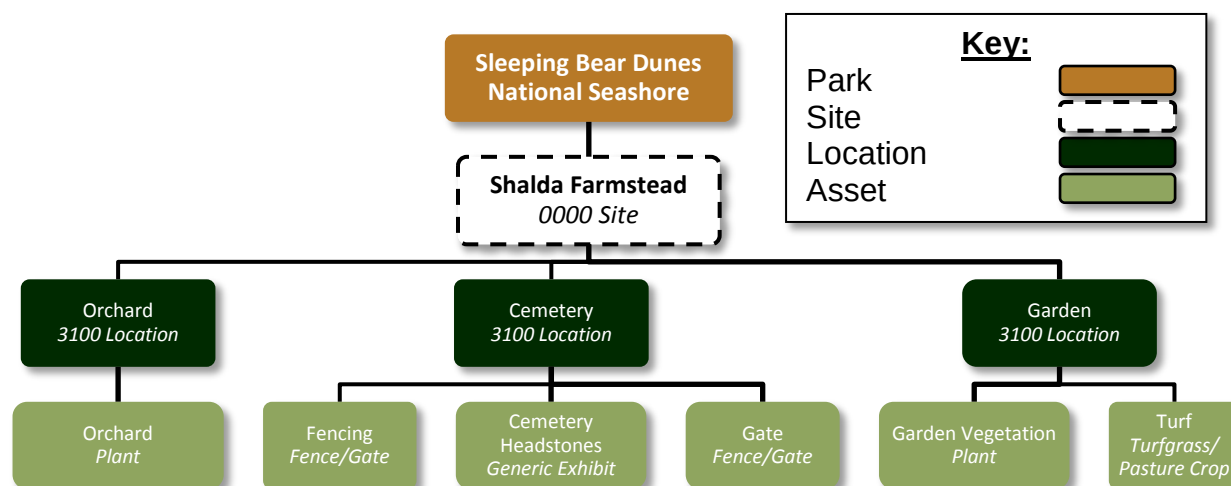


Figure 2. Example of Farmstead Managed as *Multiple* Location Records

Management of Asset Records

In the FMSS, asset records are used to capture information on the components of each location. Non-critical system components of MLs should be captured along with critical systems to help parks fully define their inventories and plan for operations and maintenance costs.

All classifications are available for each asset category. A complete list of all classifications can be found in the Asset Management Reporting System (AMRS) under Public Folders > Locations > “Component Classification Hierarchy Reference List.”

A complete list of all associated attributes for each classification can be found in the AMRS under Public Folders > Assets > “Specification Attributes by Classification Reference List.”

Critical Systems

The classification “Surface/Land Surface” presents a challenge for achieving consistency, as attributes of the specification template overlap with those of other classifications, including “Surface/Turfgrass-Pasture Crop” and “Surface/Traffic Surface.” The “Surface/Land Surface” specification attributes generally use feet as the unit of measure, while “Surface/Traffic Surface” attributes are generally measured in miles.

Use these considerations in classifying assets as “Surface/Land Surface” and completing the indicated attributes in the specification template:

Table 2. “Surface/Land Surface” Attribute Considerations

Attribute	Value	Considerations
Type	Mulch	Mulched areas (either with or without vegetation) are classified as “Surface/Land Surface” to allow for the accurate calculation of mulched areas. Vegetative features are inventoried as separate assets classified as “Surface/Plant or Vegetation.”
Type	Recreational Surface	Use this asset classification to inventory non-grass courts, artificial turf and intensively-managed sports fields used solely for sports activities

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Attribute	Value	Considerations
		that have a finite, durable surface with a defined edge. Recreational fields that are mown turf undifferentiated from the surrounding mown turf areas are classified as “Surface/Turfgrass-Pasture Crop” assets.
Type	Surface	Select this type of Land Surface for paved areas, plazas, patios, etc. that are not dedicated to recreational use and are not covered in turf or ground-covering plant material.
Type	Tread	The type of tread may be paved or unpaved. Smaller pathways that are contained within a ML location and are intended only for pedestrian use are classified as “Surface/Land Surface,” whether paved or unpaved. Sidewalks within the engineered cross section of a parking lot or roadway are inventoried as “Traffic Surface” assets of those locations.
Length	[User Entered]	For “Surface/Land Surface,” the unit of measure is feet, not miles. Thus, this classification is appropriate for shorter length assets, such as shorter pathways.

Vegetation is often a critical component of park MLs. Within the FMSS, vegetation should be inventoried as either:

- “Surface/Plant or Vegetation”: This is used for inventorying plants/shrubs/trees as individual plantings or groupings (hedges, orchards, windbreaks, shrub beds, allées [tree rows], gardens, etc.). In the specification template, indicate whether the plant is a tree, shrub, vine or other in *Plant Type*. To identify a grouping of plants, enter information in the *Landscape Vegetation Features* attribute.
- “Surface/Turfgrass-Pasture Crop”: This is used for all mowable areas, lawns, pastures and field crops.
 - o It is important to inventory mowable areas as ML assets so that their life cycle, repair and/or rehabilitation needs can be tracked. Preventive maintenance of turf includes annual aeration, overseeding and top dressing, whereas recurring maintenance projects may involve turf removal, soil amendment and turf re-establishment.
 - o It is important to identify whether fields are in agricultural production with hay, field crops or row crops or are managed as pasture. These should be inventoried as ML assets so that their life cycle, maintenance or rehabilitation needs can be tracked. Preventive maintenance of pastures may include brush hogging, whereas field or row crops have seasonal agricultural needs. Recurring maintenance projects may include rototilling, soil amendment, pasture or crop re-establishment.

Non-Critical Systems

Any classification in the FMSS can be used to categorize components of a ML. Common non-critical components for MLs are identified in Table 3.

Table 3. Common Non-Critical Systems – Maintained Landscapes

Top-Level Classification	Classification
Barrier/	Fence/Gate
Barrier/	Traffic Barrier
Exhibit/Sculpture	Sculpture
Furnishing/	Exterior Furnishing
Furnishing/	Generic Furnishing
Liquid and Gas/Plumbing	Fixture
Liquid and Gas/Plumbing	Irrigation System
Marking/	Sign
Structure/	Generic Structure
Structure/Access	Stairs
Surface/	Traffic Surface
Surface/	Trailer Pad

For consistency of classifications, the following practices are recommended:

- “Barrier/Fence-Gate”: Structures that serve to demark boundaries or divide land by acting as a fence should be classified as a “Barrier/Fence-Gate.” This includes masonry walls with no retaining function. To accurately calculate area, double the fence length attribute for the asset where both sides of the structure need maintenance.
- “Surface/Traffic Surface”: Long pathways, road or trails that pass through or border multiple locations and have engineering features, such as waterbars, culverts, shoulders, sidewalks adjacent, curbs, gutters and other attributes listed in the specification template for “Surface/Traffic Surface,” should be classified as such, not as “Surface/Land Surface.”

Spatial Management for Asset Records

There are no BMPs related to spatial management of MLs.

Lumping vs. Splitting Asset Records

Each individual ML asset record with unique classification subcomponents is to be captured in the FMSS. Both “splitting” and “lumping” techniques will accomplish this and offer different pros and cons to managers. While splitting techniques provide more detailed information for management, lumping techniques may be less time-consuming in terms of capturing and managing information. The decision on whether to lump or split assets should be based on park management objectives for the component classes and whether there is a need to track more detailed information. For example, at Gettysburg National Military Park, split rail fences are entered as individual assets, as they are high cost drivers for the park (the park is reconstructing historic fences from 1863). Alternatively, at Fredericksburg & Spotsylvania National Military Park, fences are entered as a grouped asset, as there are fewer fences, and the park does not have a management objective to track them individually.

“Splitting” separates all the components of a ML asset into individual asset records (e.g., trees X, Y and Z). As such, each component (e.g., each tree) has its own asset record and specifications in the FMSS.

“Lumping” combines multiple ML components of the same classification (e.g., a group of trees) into one asset record for the purposes of efficiency and estimation. For example, in lieu of creating an asset record for each tree for a particular ML, a manager could create an asset record called “Orchard” and insert the approximate number of trees in the ML.

When deciding whether to lump or split asset records within the FMSS, it is recommended that parks consider:

- Asset materials
- Estimated life spans, replacement cycles and associated costs
- Contributing/non-contributing asset (historic significance)
- Park maintenance or operational requirements, such as field practices, schedules and/or intensities
- Data management workload
- Management needs for data tracking.

Hierarchy Guidance for Asset Records

It is important that parks identify all ML asset records in the FMSS and attach them to the ML location record with which they have a functional relationship. For example, a retaining wall that delineates the boundary between two MLs should be captured as an asset of the higher elevation landscape that it was built to structurally/functionally support.

Management of Work Orders

Examples of Facility Operations (FO), Capital Improvements (CI) and FM work types for MLs are provided below. The FM section also includes examples of Deferred Maintenance (DM), Preventive Maintenance (PM) and Recurring Maintenance (RM) sub-work types for MLs.

Facility Operations – Work activities performed on a recurring basis throughout the year to meet routine, daily park operational needs. Examples include:

- Grounds care
- Empty campground trash cans
- Perform custodial work at campground vault toilets
- Sweep pedestrian plaza
- Unlock/lock visitor access gate.

Capital Improvements – Alterations or new construction that help an asset better meet its intended purpose. Examples include:

- Construct new landscape area
- Install new irrigation system
- Install new stormwater management system.

Facility Maintenance – Day-to-day activities as well as the planned work required to preserve an asset in such a condition that it may be used for its designated purpose over its expected life cycle. The following are sub-work types of FM.

Deferred Maintenance – Maintenance that was not performed when it should have been or that was scheduled and was put off or delayed. Continued deferment of maintenance results in deficiencies. Specific examples of DM may include the following:

- Repair deteriorated picnic table
- Remove overgrown vegetation
- Repair deteriorated fire ring
- Replace missing or dead plant
- Aerate compacted soil
- Stake leaning trees.

Preventive Maintenance – Regularly scheduled periodic maintenance activities (within a year) on selected equipment. For MLs, PM typically includes inspection, clearing and removal activities. Specific examples of PM include the following:

- Test soil pH
- Drain irrigation system to winterize
- Remove dead wood from trees and shrubs
- Shear hedges
- Reset uplifted or loose unit paving.

Recurring Maintenance (Cyclic in nature) – Work activities that recur based on normal wear patterns on a periodic cycle of greater than one year and less than ten years, although a few RM activities may have cycles greater than ten years, such as repointing of bricks. For MLs, RM typically includes minor repair (rather than full replacement) of constructed structures. Specific examples of RM include the following:

- Lift/divide perennials
- Structural or rejuvenation pruning of trees/shrubs
- Resod or reseed lawn
- Replace deteriorated irrigation heads.

Resources

Name	Work Group/Company Name	E-mail Address	Date Added
Susan Dolan	Program Manager, Park Cultural Landscapes Program	Susan_Dolan@nps.gov	7/24/2013
Kathleen Fitzgerald	Historical Landscape Architect, Olmsted Center for Landscape Preservation	Kathleen_Fitzgerald@nps.gov	7/24/2013
Linda Hamilton	Facility Management Systems Specialist, Harpers Ferry National Historical Park	Linda_Hamilton@nps.gov	7/24/2013

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Stephanie Nelson	Asset Preservation Coordinator, Park Cultural Landscapes Program	Stephanie_Nelson@nps.gov	5/20/2014
Charlie Pepper	Manager, Cultural Landscapes Preservation Maintenance and Education, Olmsted Center for Landscape Preservation	Charlie_Pepper@nps.gov	7/24/2013

References

The following resources were used in developing this best management practice:

- *Life-Cycle Business Practices, Volumes 1–2*
- Classification Mapping Document
- Federal Real Property
- Operations and Maintenance: Facility Management Software System Student Manual
- Asset Management Toolbox
- Director's Order #80: Real Property Asset Management
- Asset Life Cycle E-Course
- WebCRV Calculator
- API Scoring Guide
- Landscape Lines #17: "Cultural Landscapes and Facility Management"
- Cultural Landscape Inventory (one or more inventories for each park)
- [Park Cultural Landscapes Program website](#).

Related Documents

The following documents provide additional information on the asset category discussed in this BMP:

- Maintained Landscapes Asset Business Practice
- Maintained Landscapes Inspection Guidance
- Critical Systems List
- Life-Cycle Estimates.

Appendix A Best Management Practice Change Log

Business Practice Title:	Maintained Landscapes (3100) Asset Best Management Practice
Responsible Group:	Comprehensive Asset Strategic Tools (CASTL) Development Group
Title of Business Practice Origin White Paper:	N/A
Last Change Made On:	June 2, 2014

#	Page #	Change Description	Reason for Change	Requested By	Requested On	Change Made On	Approved By	Approved On
1.0	N/A	Initial Release	Initial Release	N/A	N/A	N/A	Mike Seibert	4/1/2014
1.1	7-8	Add Hierarchy Guidance, Critical System Content	Requested by ML Subject Matter Experts	Kathleen Fitzgerald	4/18/2014	6/2/2014	Gayle Burgess	6/2/2014