



MEMORANDUM

TO: CITY OF DUPONT
FROM: DOMINIC MILLER, P.E. *DJM*
KERRI SIDEBOTTOM, P.E.
DATE: OCTOBER 28, 2022
SUBJECT: BELL HILL SITE PFAS SYSTEM
STORMWATER ANALYSIS
CITY OF DUPONT, PIERCE COUNTY,
WASHINGTON
G&O #21235

BACKGROUND

The City of DuPont is proposing to construct a new water treatment plant at the Bell Hill well site. The development will include several carbon vessels situated on a concrete pad, utility vaults, and installation of new water mains to connect to the existing well facility. The treatment plant will be constructed just north of the existing Bell Hill Well, Reservoir, and Booster Station. The installation of the water mains and other underground utilities is an exempt activity for stormwater purposes, as the overlying surfaces in these areas will be replaced in-kind.

The existing Bell Hill Well and Reservoir site includes stormwater conveyance that drains runoff from the site to an offsite area northwest of the reservoir. This conveyance outlets to Edmond Marsh, and does not connect to the City's larger stormwater system.

The following figures and documents are attached to this report:

FIGURES

1. Project Site.

ATTACHMENTS

1. Manual Flowcharts for Minimum Requirements.



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STORMWATER REQUIREMENTS

The City has adopted the 2019 version of the Department of Ecology Stormwater Management Manual for Western Washington (Manual). This memo documents the relevant stormwater requirements and the measures taken to satisfy these requirements.

EXISTING FACILITIES

The site includes a booster station building, well enclosure, water storage reservoir, and access road and parking area. The entire parcel covers an area of 2.85 acres, and impervious coverage on the site totals approximately 15,965 square feet, approximately 13% of the total site. All of this area is considered non-pollution generating, as the driveway is secured by a locking gate and is only accessed by maintenance personnel infrequently. The total land cover of the site is noted in Table 1.

The facilities appear to be functional at this time, and no drainage complaints associated with the existing site conveyance have been noted.

PROPOSED DEVELOPMENT

The proposed development includes the addition of a concrete pad, carbon treatment vessels, and a utility vault north of the existing site improvements. These surfaces are considered non-pollution generating.

Table 1 includes the existing and proposed site areas.

TABLE 1

Site Areas

Land Cover	Existing Areas	Proposed New Areas	Change
Parking, driveway, road ¹	4,294	4,294	0
Sidewalk ²	4,500	4,500	0
Roof/Facility Pad	7,171	8,973	+1,802
Cleared, Lawn/Landscape	34,250	32,448	-1,802
Forested	75,061	75,061	0

1. Driveways and parking are considered nonpollution generating, as access to the site is secured and vehicle traffic is infrequent.

2. Estimated area of pedestrian trail within parcel



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The project limits, or the total disturbed area, including the new hard surfaces and the utility trenching area to be resurfaced in-kind totals 7,731 square feet. The area associated with utility trenching is subject only to Minimum Requirement #2, and is therefore not considered in the evaluation of the minimum requirement thresholds. Without the utility trenching area, which is exempt from the stormwater requirements (aside from MR #2), the disturbed area totals approximately 6,990 square feet.

Runoff from all of the new impervious surfaces will be collected and conveyed to the existing stormwater conveyance system on site, which discharges to Edmonds Marsh. Runoff modeling was not completed for this site, as the site is below the flow control threshold, as described below.

MINIMUM REQUIREMENTS

The project qualifies as a new development project, as less than 35 percent of the land cover within the project area is currently impervious. Per Figure I-3.1 in the Manual, the project is subject to Minimum Requirement #2, which applies to the entire site, including the utility trenching area. Note that if more than 7,000 square feet of area is disturbed during construction Minimum Requirements #1-5 will be required.

Minimum Requirement #2 – Construction Stormwater Pollution Prevention Plan (SWPPP)

The Contractor will be responsible for preparing and maintaining the final SWPPP during construction.

OFFSITE ANALYSIS

The project is located within the Sequalitchew Creek drainage basin, but there are no signs of surface runoff or channelization of flows on the project site. Sequalitchew Creek is fed primarily from Edmonds Marsh, an upstream wetland located near the center of the City, rather than by surface runoff. The project area is somewhat hilly, but there is no sign of offsite runoff impacting the site. It is assumed that runoff from adjacent areas primarily infiltrates rather than flowing onto the site due to the highly infiltrative soils.

Currently, runoff from the hard surfaces on site is collected and conveyed north towards Edmonds Marsh. There are no drainage problems within the site or downstream of the site.



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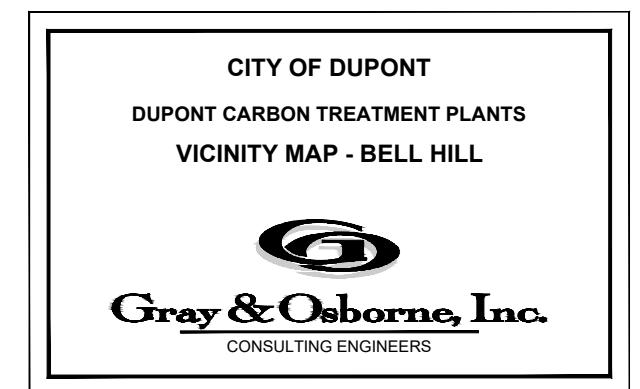
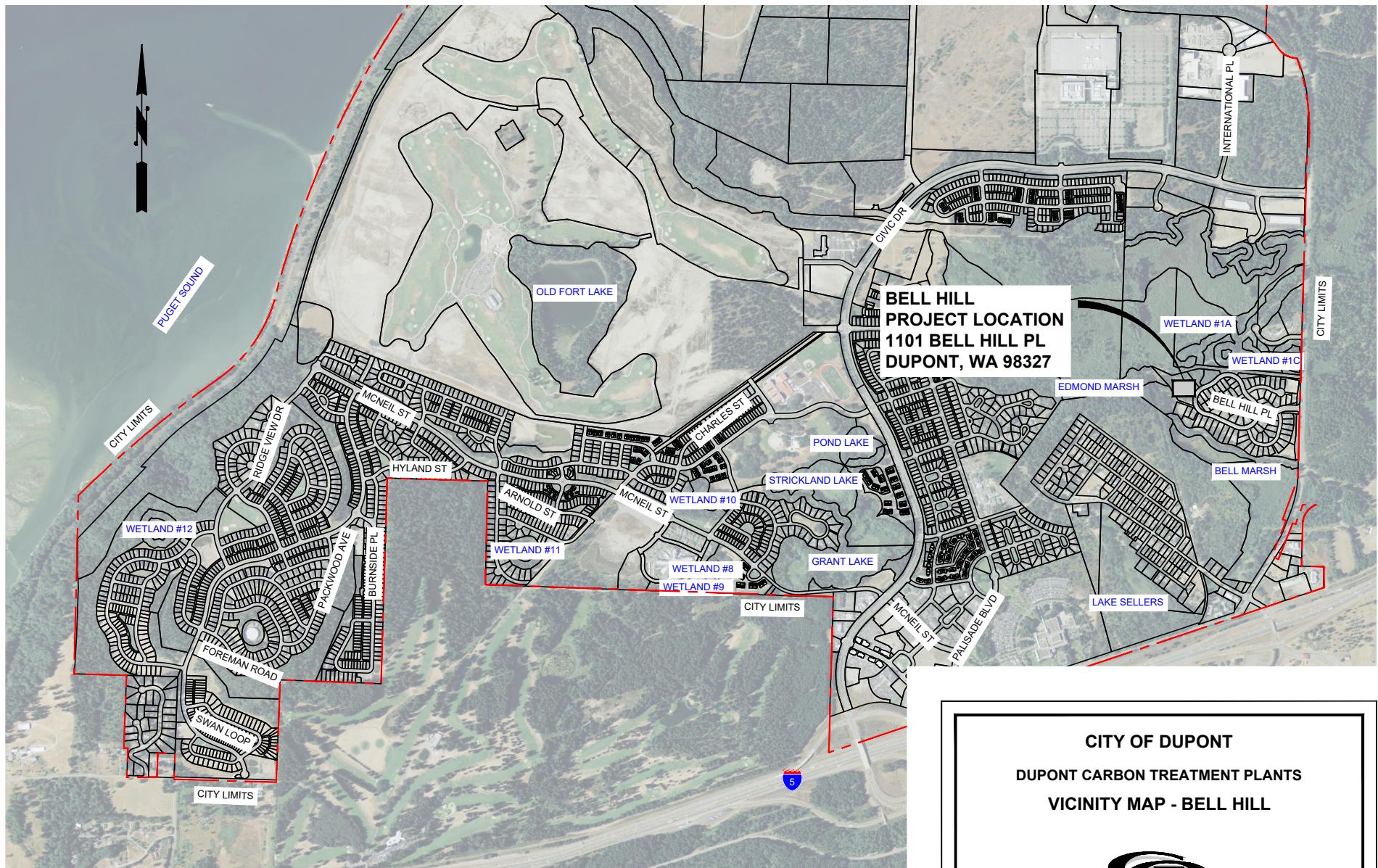
The project will tie runoff from the proposed impervious areas to the existing system. A new 8-inch diameter storm drain will connect to the existing system.

PFAS ANALYSIS

The project proposes running backwash water from the carbon treatment vessels into the on-site stormwater system. Raw water is used for the backwash process and is run through the vessels from bottom to top. The backwash water exits the vessels through the central valve skid and flows to the proposed catch basin connected to the existing storm system. Since the PFAS chemicals adsorb into the granulated activated carbon (GAC), no harmful chemicals are being introduced into the storm system by this system. The raw water running through the vessels will only pick up minor sediment present at the top layer of the GAC clogging up the carbon filtration system. For these reasons, no additional filtration or treatment will be required for backwash water entering into the storm system.



FIGURE 1
PROJECT VICINITY





ATTACHMENTS

1. **Manual Flowcharts for Minimum Requirements.**

Figure I-3.1: Flow Chart for Determining Requirements for New Development

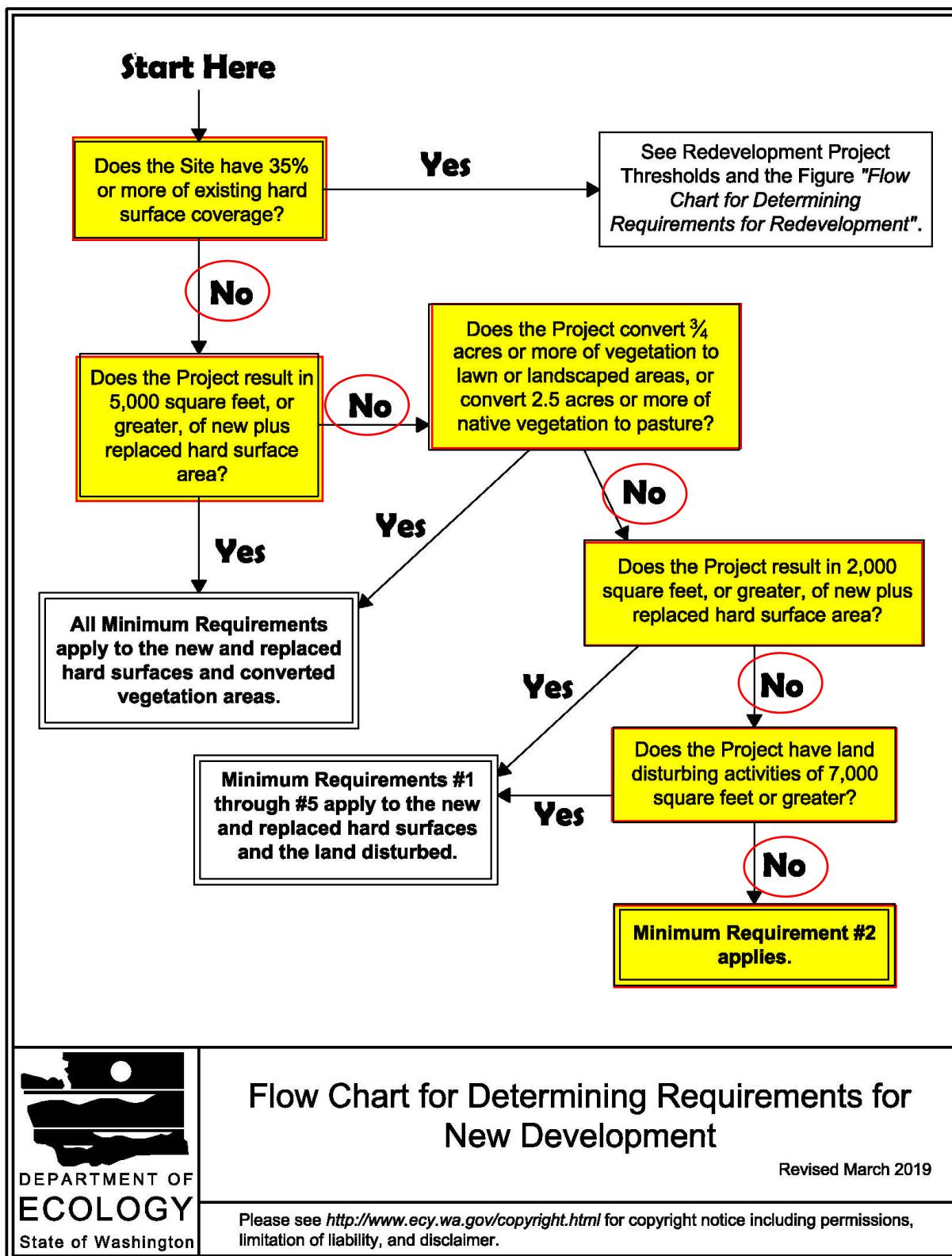


Figure I-3.2: Flow Chart for Determining Requirements for Redevelopment

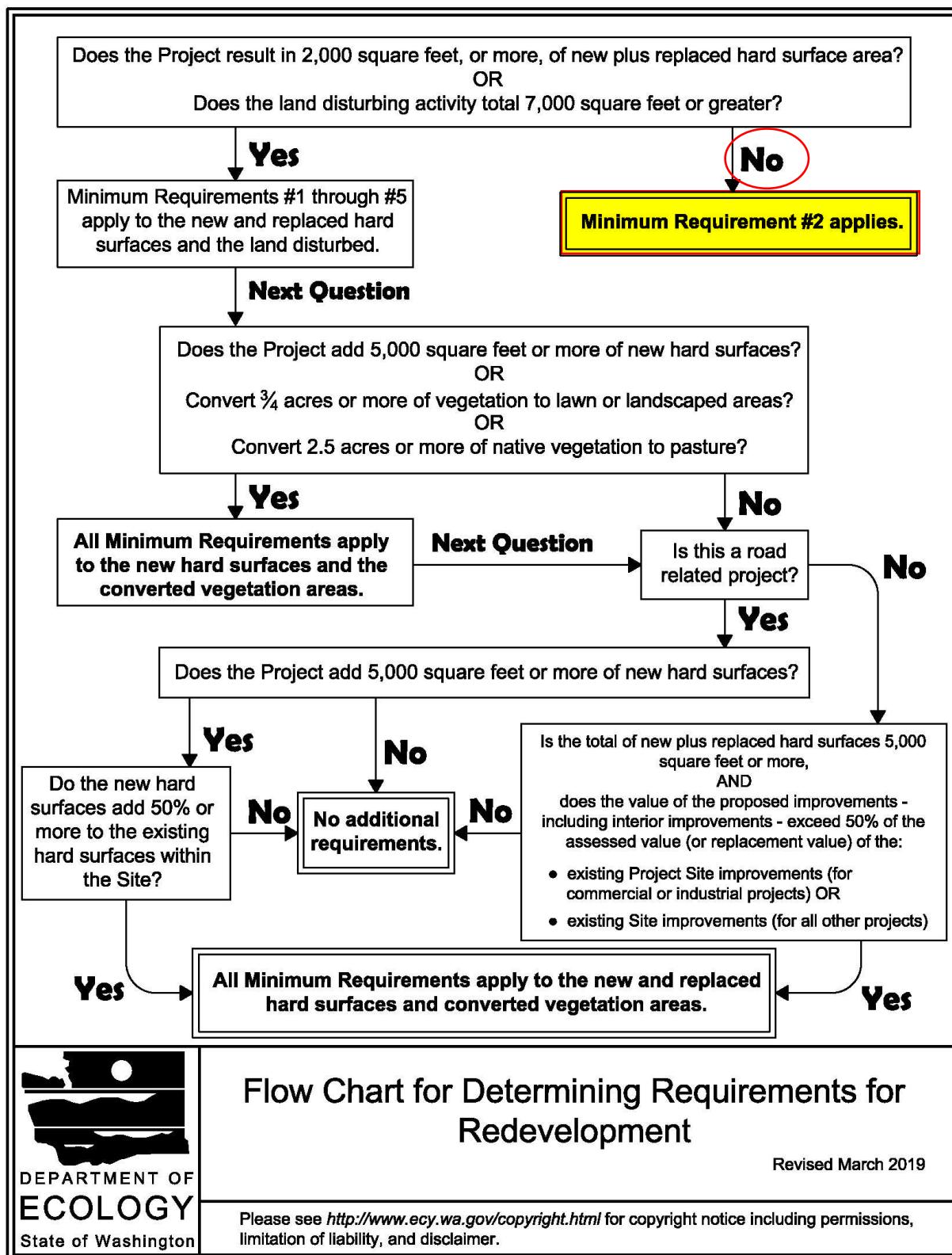


Figure I-3.3: Flow Chart for Determining MR #5 Requirements

