



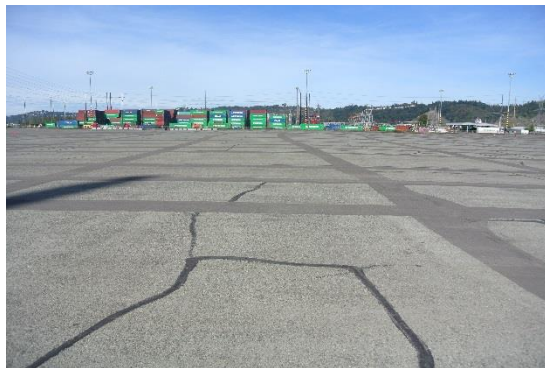
ENVIRONMENTAL CAP INSPECTION REPORT

FORMER CASCADE TIMBER NO. 3 LOG SORT YARD



**Consent Decree No. 94-2-03590-3
Washington State Department of Ecology Facility Site ID # 1206
Inspection Date: February 4, 2017**

March 22, 2017



Prepared by:



200 West Mercer Street, Suite 401
Seattle, Washington • 98119



Table of Contents

Tables	i
Figures	i
Acronyms	ii
Certification	iii
1 Introduction	1
1.1 PURPOSE AND SCOPE	5
1.2 FACILITY BACKGROUND	5
2 Field Observations	7
2.1 ENVIRONMENTAL CAP	7
2.2 STORMWATER DRAINAGE SYSTEMS	14
3 Status and Recommendations	21
3.1 MAINTENANCE AND REPAIR PERFORMED SINCE PREVIOUS INSPECTION	21
3.1.1 Environmental cap	21
3.1.2 Stormwater drainage system	21
3.2 RECOMMENDATIONS AND CURRENT STATUS	21
3.2.1 Environmental cap	21
3.2.2 Stormwater drainage system	22
3.3 LIMITATIONS	22
4 References	23

Tables

Table 1.	Environmental cap condition	11
Table 2.	Environmental cap issues observed during inspection	12
Table 3.	Recent environmental cap repairs observed during inspection	14
Table 4.	Stormwater structure observations	16

Figures

Figure 1.	Cascade Timber No. 3 vicinity map	2
Figure 2.	Cascade Timber No. 3 field observations	3
Figure 3.	Cascade Timber No. 3 cap repair – summer 2015	9

Acronyms

Cascade Timber No. 3	Former Cascade Timber No. 3 Log Sort Yard
Ecology	Washington State Department of Ecology
ID	identification
ISGP	industrial stormwater general permit
MOU	memorandum of understanding
O&M	operations and maintenance
Port	Port of Tacoma
RI/FS	remedial investigation/feasibility study
Windward	Windward Environmental LLC
WUT	Washington United Terminals

Certification

I hereby certify that I am familiar with the facilities addressed in this report and that the inspection was conducted in accordance with acceptable engineering practices.

Warren G. Hansen, PE

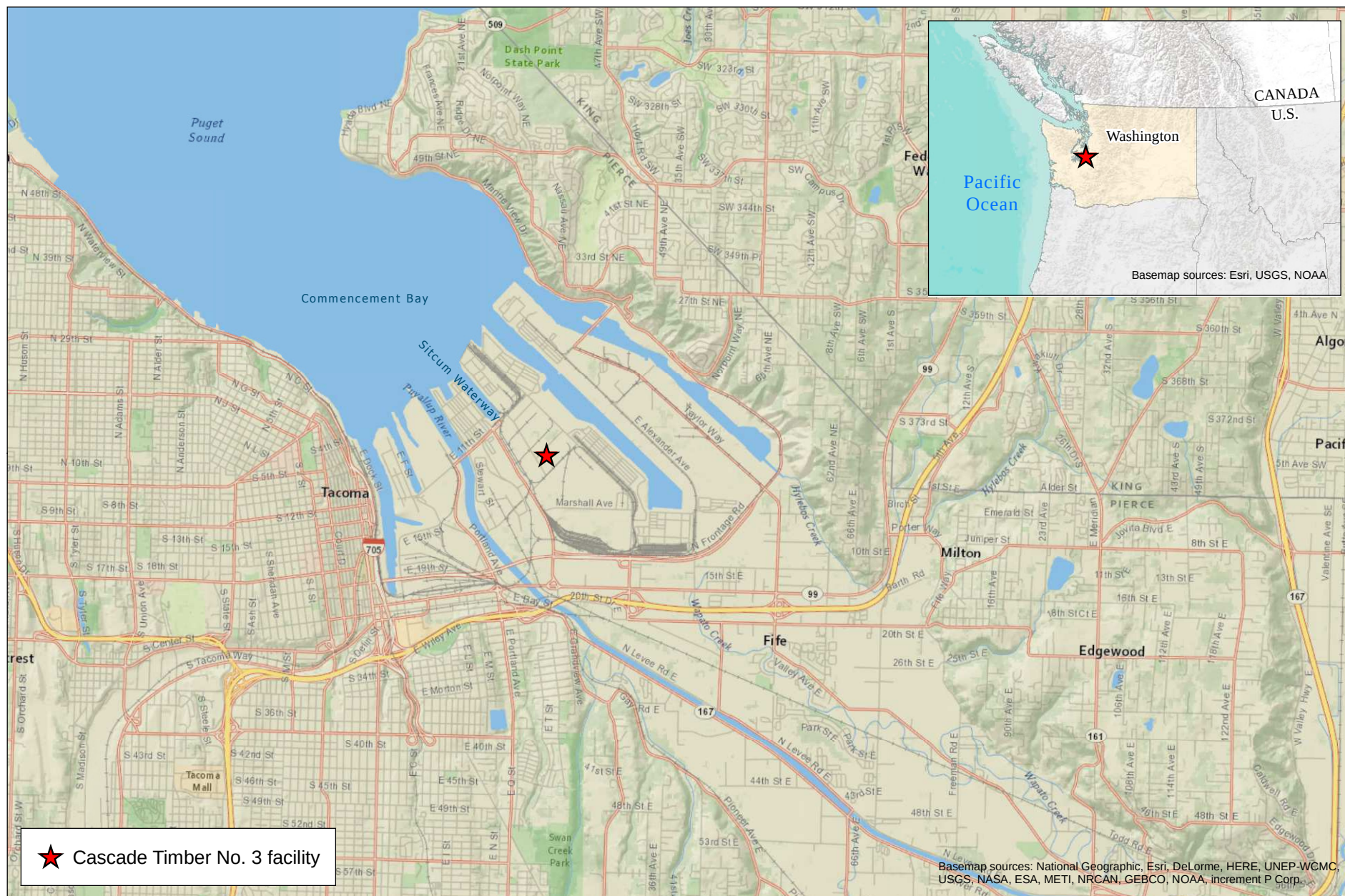


Expires 4-22-2017

1 Introduction

This report summarizes the field activities and results for the cap inspection conducted on behalf of the Port of Tacoma (Port) for the former Cascade Timber No. 3 Log Sort Yard (Cascade Timber No. 3). Cascade Timber No. 3 is located southwest of the Blair Waterway in Tacoma, Washington (Figure 1). The Port-owned property is bordered by Thorne Road and Maxwell Way and is leased to Washington United Terminals (WUT) as a storage facility and truck queue area (Figure 2). The facility is covered with an environmental cap and has several stormwater drainage features, further described herein.

Cap inspection activities were conducted in accordance with the requirements identified in the Consent Decree (No. 94-2-03590-3) dated April 11, 1994, issued by the Washington State Department of Ecology (Ecology) to the Port and the operations and maintenance (O&M) manual published in the engineering design report (HLA 1994b). A memorandum of understanding (MOU) between Ecology and the Port, updating the cap inspection frequency to 30 months starting with an inspection in February 2012, was issued on September 12, 2011 (Ecology and Port of Tacoma 2011).



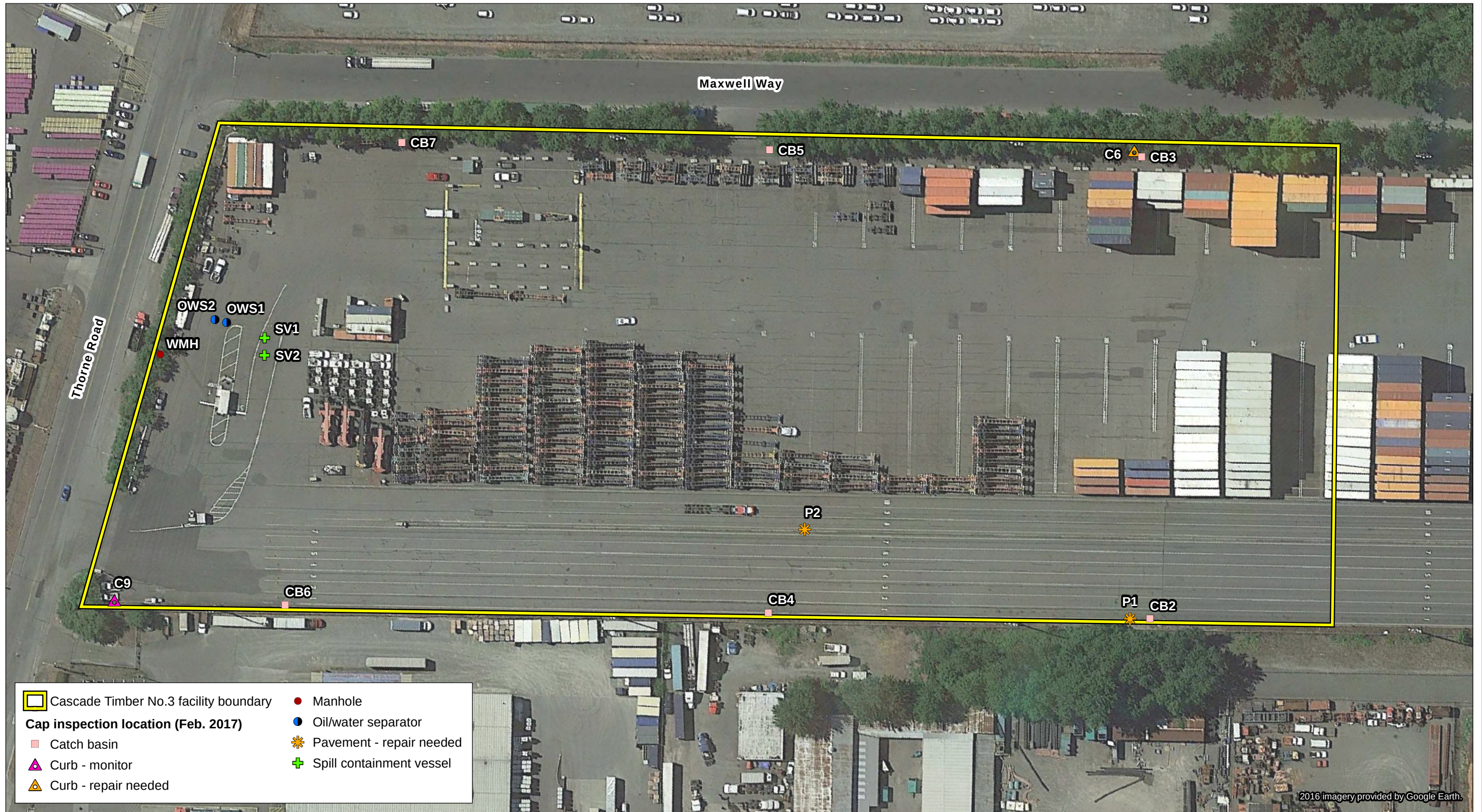


Figure 2. Cascade Timber No. 3 field observations

1.1 PURPOSE AND SCOPE

The purpose of this report is to present the findings of the 2017 environmental cap and stormwater drainage system inspection at Cascade Timber No. 3. The inspection was performed on February 4, 2017, by Windward Environmental LLC (Windward) in accordance with the scope of work provided by the Port (Port of Tacoma 2016), which included the following tasks:

- ◆ Inspection of the asphalt/concrete pavement for presence of cracks or other failures in the pavement that allow surface water runoff to infiltrate the bark/slag surficial fill (e.g., cracks greater than 1/8 in. wide, sub-base material exposed, pavement edge deterioration, and general appearance)
- ◆ Evaluation of the structural and functional condition of the cap and drainage systems (including catch basins, manholes, and oil/water separators)
- ◆ Evaluation of debris/sediment accumulation in the stormwater structures

The purpose of the environmental cap is to prevent water infiltration, exposure of humans and the environment to underlying materials, and erosion. The stormwater drainage system is designed to convey stormwater off the cap surfaces to prevent infiltration and erosion.

1.2 FACILITY BACKGROUND

Cascade Timber No. 3, situated southwest of the Blair Waterway in the Tacoma tideflats area, is a 10.73-ac section in the southwest portion of an industrially zoned parcel of land. The facility was used as a log sort yard from 1967 to 1987 (Ecology 2017) and is the subject of this report. In 1982, approximately 500 tons of ASARCO slag were placed onsite as ballast material. In the 1989 Record of Decision for the Commencement Bay Nearshore/Tideflats Superfund site, the facility was identified as a source of arsenic, copper, lead, and zinc to Sitcum Waterway.

The Port and Ecology entered into an Agreed Order to complete a remedial investigation/feasibility study (RI/FS) for Cascade Timber No. 3 in 1991 (Ecology 2017). The RI, which was conducted in 1992 and 1993, found elevated concentrations of metals in site soil and stormwater. The Port entered into Consent Decree No. 94-2-03590-3 with Ecology on April 11, 1994, requiring the Port to take remedial action. The remedy included the construction of a low-permeability cap and stormwater system, and the installation of groundwater monitoring wells to assess the remedy (Washington Superior Court 1994). A Restrictive Covenant was recorded for the property in 1994 (Ecology 2012; HLA 1994a).

Pavement cap and stormwater drainage system inspections are currently performed every 30 months at Cascade Timber No. 3 (Ecology and Port of Tacoma 2011).¹ The last inspection was performed in August 2014 (Hart Crowser 2014). Groundwater sampling occurs every 18 months; the most recent groundwater monitoring event was in August 2016 (Ecology and Port of Tacoma 2011).

Ecology conducted a recent review of the site remedy (Ecology 2017); it found the cap to be in “excellent” condition and concluded that the remedy continues to be protective of human health and the environment.

¹ In addition to the stormwater system inspection described in this report, the stormwater system is monitored and maintained by WUT under its industrial stormwater general permit (ISGP).

2 Field Observations

Windward staff made field observations on February 4, 2016, making use of existing repair and maintenance documentation and design information provided by the Port (HLA 1994a).

2.1 ENVIRONMENTAL CAP

In general, the environmental cap was observed to be in good condition, with the exception of the localized items described below. A summary of the cap conditions is provided in Table 1. The general appearance of the cap indicated that it is being well maintained. Many newly repaired (i.e., sealed) cracks were observed, indicating that the Port has implemented measures to address maintenance needs identified during the previous survey (Hart Crowser 2014). Most recently, the Port made cap repairs during the summer of 2015; a summary of these repairs is presented in Figure 3. During the summer 2015 repairs, cracks 1/8 in. or wider were blown out (i.e., cleaned using pressurized air) and sealed with rubberized mastic. In high-traffic areas, large repairs were covered with a slurry seal to protect the rubberized mastic. Curbs were repaired where necessary.

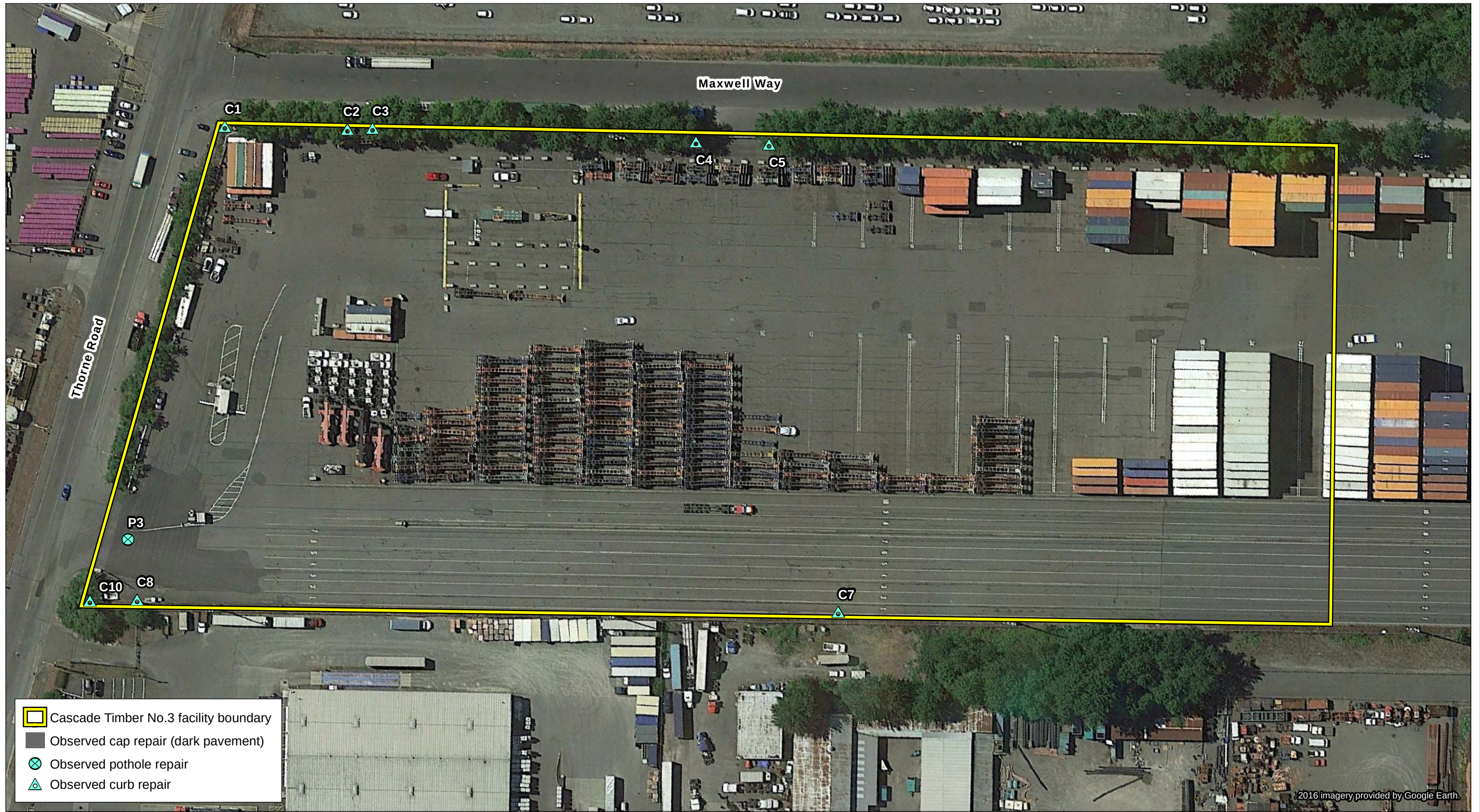


Figure 3. Cascade Timber No. 3 cap repair — Summer 2015

No cracks wider than 1/8 in. were observed except for those located around the perimeters of spill containment vessel manholes SV1 and SV2; surface deterioration was also noted at pavement inspection locations P1 and P2 (Figure 2). These items are listed in Table 2, together with photos showing the damage and recommendations for repair.

Numerous areas with container divots (small, shallow depressions in the pavement caused by container corner fittings) were observed in the container storage area in the north and central portions of the cap. These divots were shallow (less than 1/2 in. deep) and no sub-base material was exposed. No repairs are currently needed, though these areas should be monitored during future inspections.

Numerous portions of the curb surrounding the facility were observed to have been recently repaired (Figure 2 and Table 3). One portion of the curb on the northwest side of the facility is broken and should be repaired (Section 3.2.1 and Figure 2). Another portion of the curb located near the southern corner of the facility is deteriorating and should be monitored during future inspections (Figure 2).

Table 1 provides a summary of the cap conditions observed during the inspection.

Table 1. Environmental cap condition

Required Inspection Elements	Observed Condition	Recommended Actions
Presence of cracks wider than 1/8 in.	Cracks wider than 1/8 in. were observed around the two manholes at the spill containment vessel.	Repair pavement around manhole opening (Figure 2 and Table 2).
Sub-base material exposed	No exposed sub-base material was observed.	none
Pavement edge deterioration	No pavement edge deterioration was observed; one section of the curb is in need of repair.	See Figure 2 and Table 2 for location of curb damage and repair.
Degradation, subsidence, general appearance	Two localized areas of surface raveling/degradation were observed. Otherwise no degradation or subsidence was observed; the cap is in generally good condition.	See Figure 2 and Table 2 for locations of P1 and P2 and repair.

Table 2 lists cap condition-related issues observed during the inspection, which are also shown on Figure 2.

Table 2. Environmental cap issues observed during inspection

Location ID ^a	Observations	Recommended Actions	Photos
C6	curb broken in several locations (within 15 ft); middle portion of curb no longer located on cap	repair curb	
C9	curb deterioration in area approximately 15 ft long	none; monitor during future inspections	 

Location ID ^a	Observations	Recommended Actions	Photos
P1	pavement surface deterioration (raveling) in area approximately 2.5 x 20 ft	patch	
P2	surficial rutting in area approximately 30 x 6 ft	patch	
SV1	cracks wider than 1/8 in. around spill containment vessel cover	repair pavement	

Location ID ^a	Observations	Recommended Actions	Photos
SV2	cracks wider than 1/8 in. around spill containment vessel cover	repair pavement	

^a See Figure 2.

C – curb

ID – identification

P – pavement

SV – spill containment vessel

Table 3 lists recent cap repairs observed during the inspection, which are also shown on Figure 2.

Table 3. Recent environmental cap repairs observed during inspection

Location ID ^a	Observations
C1	curb repaired; extends approximately 10 ft south and 30 ft east from corner of cap
C2	curb repaired; extends approximately 30 ft
C3	curb repaired; extends approximately 8 ft
C4	curb repaired; extends approximately 15 to 20 ft
C5	curb repaired; extends approximately 8 ft
C7	curb repaired; extends approximately 25 to 30 ft
C8	curb repaired; extends approximately 8 ft
C10	curb repaired; extends approximately 5 ft around corner of cap
P3	pothole near site entrance repaired

^a See Figure 3. Locations C6 and C9 are listed in Table 2.

C – curb

ID – identification

P – pavement

Photos of the observed repairs are maintained in the project file and are available upon request.

2.2 STORMWATER DRAINAGE SYSTEMS

The stormwater drainage system within the cap consists of six catch basins, one spill containment vessel, one oil/water separator, and one manhole (Figure 2). Each drainage system component was inspected for general appearance, sediment and debris accumulation, and structural and functional condition.

Heavy rainfall was occurring during the inspection, and the catch basins were draining well. Each catch basin was equipped with a filter insert that contained between ½ and 6 in. of sediment accumulation. The filter inserts were in good condition.

The spill containment vessel appeared to be in good condition and able to function as intended. The north side of the spill containment vessel had approximately 4 in. of sediment accumulation centered under the grate, and no sediment accumulation near the sides of the vault. Cracking observed around the spill containment vessel access manholes is discussed in Section 2.2.

The field team was unable to remove the covers to the oil/water separator and the manhole (on the west side of the facility) during the inspection, because they lacked sufficient lift points or were fitted too tightly into the cover ring. Observations were made through the grate of the east lid of the oil/water separator. The oil/water separator appeared to be in structurally sound condition. No cracking was observed around the oil/water separator or the west manhole.

Table 4 summarizes the observations made at each stormwater structure.

Table 4. Stormwater structure observations

Location ID ^a	Type of Structure	Observed Condition	Sediment Accumulation (inches)	Additional Observations	Recommended Actions	Photos
CB2	catch basin	functioning normally	6	catch basin insert present	Continue to maintain catch basin under tenant ISGP.	
CB3	catch basin	functioning normally	0.5	catch basin insert present; organic debris accumulating in vicinity of catch basin	Continue to maintain catch basin under tenant ISGP.	
CB4	catch basin	functioning normally	1	catch basin insert present	Continue to maintain catch basin under tenant ISGP.	

Location ID ^a	Type of Structure	Observed Condition	Sediment Accumulation (inches)	Additional Observations	Recommended Actions	Photos
CB5	catch basin	functioning normally	0.5	catch basin insert present; organic debris in vicinity of catch basin	Continue to maintain catch basin under tenant ISGP.	
CB6	catch basin	functioning normally	3	catch basin insert present	Continue to maintain catch basin under tenant ISGP.	
CB7	catch basin	functioning normally	6	catch basin insert present; some ponding in vicinity of catch basin; organic debris accumulating in vicinity of catch basin	Continue to maintain catch basin under tenant ISGP; remove accumulated organic debris to prevent surface ponding.	

Location ID ^a	Type of Structure	Observed Condition	Sediment Accumulation (inches)	Additional Observations	Recommended Actions	Photos
OWS1	oil/water separator	functioning normally	nm	could not open grated cover (cover stuck due to grit/traffic loads); some floatables visible	Restore accessibility, remove floating debris.	
OWS2	oil/water separator	could not open lid due to lack of sufficient lift points and tight fit in lid ring	nm	none	Restore accessibility; observe structure during next stormwater compliance survey.	
SV1	spill containment vessel	functioning normally	approximately 4 in. under grate, less near sides of vault	some floatables; cracking wider than 1/8 in. in pavement around cover	Repair cracked pavement; remove accumulated sediment and floatables from vault.	

Location ID ^a	Type of Structure	Observed Condition	Sediment Accumulation (inches)	Additional Observations	Recommended Actions	Photos
SV2	spill containment vessel	functioning normally	0	cracking wider than 1/8 in. in pavement around cover	Repair cracked pavement.	
WMH	manhole	could not open lid due to lack of sufficient lift points and tight fit in lid ring	nm	none	Observe structure during next stormwater compliance survey.	

^a See Figure 2.

ID – identification

ISGP – industrial stormwater general permit

nm – not measured

3 Status and Recommendations

3.1 MAINTENANCE AND REPAIR PERFORMED SINCE PREVIOUS INSPECTION

3.1.1 Environmental cap

In the 2014 inspection report, it was recommended that the Port seal approximately 3,350 ft of cracks, repair curb damage at three locations around the edge of the cap, and repair potholes (number and specific location not specified) near the facility entrance. During the 2017 environmental cap and stormwater drainage system inspection, these recommendations were observed to have been addressed. Numerous cracks were sealed and the seals were in excellent condition. Eight areas of curb repair were noted and in excellent condition (Figure 3; Table 3). A pothole near the facility entrance had been repaired (Figure 2; Table 3).

As described in Section 2.1, the environmental cap is in good condition except for the pavement surrounding the two spill containment vessel manholes and the two localized areas of surface deterioration.

3.1.2 Stormwater drainage system

In the previous inspection report, it was recommended that the filter insert in catch basin CB2 be replaced due to its deteriorated condition (Hart Crowser 2014). The filter insert appears to have been replaced as it was observed to be in good condition during the inspection.

3.2 RECOMMENDATIONS AND CURRENT STATUS

3.2.1 Environmental cap

Two areas of curb damage and two areas of pavement deterioration were observed during this inspection. The first area of curb damage is located on the north side of the cap, in the vicinity of catch basin CB3 (C6 on Figure 2). The curb is broken in several locations and is not aligned with the surrounding curb. In addition, the middle portion of the damaged curb is no longer located on the cap; it is now in the ditch north of the cap. The curb should be repaired in this area to prevent water from draining off the capped area.

The second area of curb damage is located in the southwest corner of the facility (C9 on Figure 2). A section of curb approximately 15 ft long is deteriorating and should be monitored during future inspections.

The first area of pavement deterioration is located in the vicinity of catch basin CB2 (P1 on Figure 2; Table 2) and is approximately 2.5 ft wide by 20 ft long. The second area of pavement deterioration is located near the center of the facility on the west side (P2 on Figure 2; Table 2) and is approximately 6 ft wide by 30 ft long. The two areas

exhibit shallow surficial deterioration (less than 1 in. deep). No sub-base is exposed in either area. These areas should be repaired.

As described, cracking was observed around the two spill containment vessel manholes (SV1 and SV2 on Figure 2); these areas of cracking should be repaired.

3.2.2 Stormwater drainage system

Sediment accumulation of 0.5 to 6 in. was observed in the filter inserts in the six catch basins located within the capped area. Catch basins are maintained by the tenant under its ISGP. Sediment should be removed from the filter inserts during the next scheduled maintenance event per the tenant's stormwater pollution prevention plan, or the sediment traps should be replaced if damaged. Three manhole covers could not be opened.

3.3 LIMITATIONS

Observations contained in this report are limited to environmental cap areas that were visible to the field team. In some instances, portions of the cap surface may have been covered and not readily available for inspection. Inspection of stormwater structures was limited to observations made from the surface and by means of direct observation, probes (extendible poles to check for sediment), and photography. No confined space entry was performed. Observation of some stormwater structures was also limited by storm flow and/or the presence of damaged or sediment-laden catch basin inserts that could not be safely removed. No guarantee is made that all cap or stormwater deficiencies that could impact cap/drainage system performance were identified.

4 References

- Ecology, Port of Tacoma. 2011. Memorandum of understanding. Former log yard groundwater monitoring and cap inspection. Washington State Department of Ecology and Port of Tacoma.
- Ecology. 2012. Periodic review. Final. Cascade Timber 3. Facility site ID#: 1206. Thorn Road and Maxwell Way, Tacoma, Washington 98421. Washington State Department of Ecology.
- Ecology. 2017. Second periodic review report final. Cascade Timber 3 POT. Washington State Department of Ecology.
- Hart Crowser. 2014. Cap inspection report. Former Cascade Timber No. 3 log sort yard. Hart Crowser, Seattle, WA.
- HLA. 1994a. Cascade timber remediation project construction drawings. Harding Lawson Associates, Seattle, WA.
- HLA. 1994b. Engineering design report, remedial action, Cascade Timber Log Yard No. 3, Port of Tacoma, Washington. Appendix D. Operation and maintenance plan. Harding Lawson Associates, Seattle, WA.
- Port of Tacoma. 2016. Long-term monitoring events - scope of work February 2017. Port of Tacoma, Tacoma, WA.
- Washington Superior Court. 1994. Case No. 94TC-S167. No. 94-2-03590-3 consent decree. Superior Court of the State of Washington for Pierce County, Pierce County.