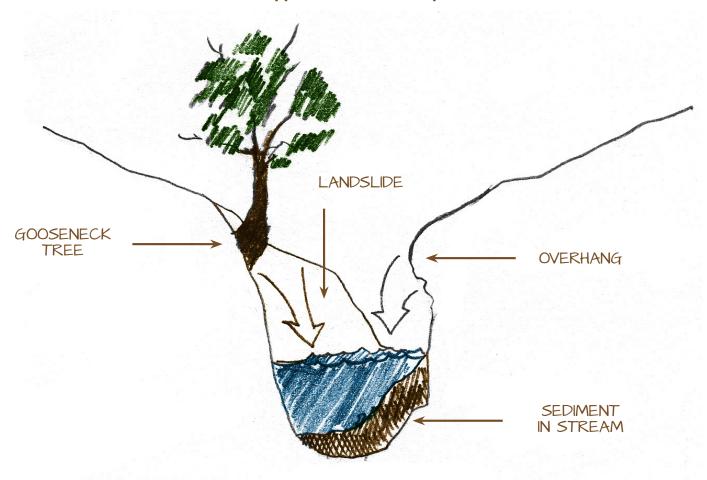
Landslide/Sediment

The purpose of the landslide study was to identify sediment sources that could impact fish and water quality in the Vasa Creek Basin. This study focused solely on potential impacts to the stream, it did not evaluate human safety or property hazards.

For the purposes of this study, a landslide is any area of loose sediment or organic material on the slopes of the ravine that could potentially slide into the stream. Sediment is the sand, gravel, and rocks at the bottom of a stream. Landslides in ravines can cause excess sediment, which can harm habitat and water quality and cause loss of property.

Upper Vasa Creek Floodplain



Landslide/Sediment

Key Findings

All of the areas of potential landslides were located within the areas the city has already documented as steep slopes/geologic hazard (landslide) areas, (see Attachment C). The study found:

5	Inactive landslides	Site of previous landslide, but the slope and conditions have stabilized
4	Potentially active landslides	Sites with water seeping from the bank or vegetation that requires wet soils (e.g. skunk cabbage), bent tree trunks, or surface ruptures and cracks
4	High landslide potential areas	Sites with exposed soils, undercut vegetation, or nearly vertical banks

- Potential sources of sediment also include stormwater outfall pipes that discharge water onto exposed soils. Stormwater flowing out onto the slope can cause erosion and landslides. The study identified eight (8) public and ten (10) private outfall pipes.
- The Washington Department of Transportation maintains a sediment collection pond near I-90. As long as excess sediment is removed regularly from this pond, downstream reaches of Vasa Creek have the potential to be restored to improve fish habitat.

What will Bellevue Utilities do with this information?

- Repair public outfalls
- Work with Washington Department of Transportation to assure
 - maintenance of sediment control facility and
 - monitoring of unstable areas within the WSDOT right of way.
- Inspect culverts during and after storms to check for sediment and debris to reduce the potential for blockages.
- Promote natural drainage practices where feasible when properties re-develop to reduce storm runoff.

Landslide/Sediment

What can you do to reduce landslides?

- Divert water outfalls away from steep slopes.
- Inspect and maintain drainage pipes.
- Dispose of leaves and debris in yard waste service, not into the ravine. Yard waste piles absorbs water and can kill plants whose roots stabilize the soil, increasing the potential for slides. Yard waste piles also create habitat for rats and snakes.
- Hire a geotechnical specialist to evaluate potential hazards and provide recommendations to reduce risk. Homeowners with fractures in their foundation, settling of the building or yard, or gooseneck tree trunks, should consider hiring specialists to help reduce risk of landslides.



Property owners should make sure the outfalls are intact.

Gooseneck trees indicate areas of increased risk for landslides.

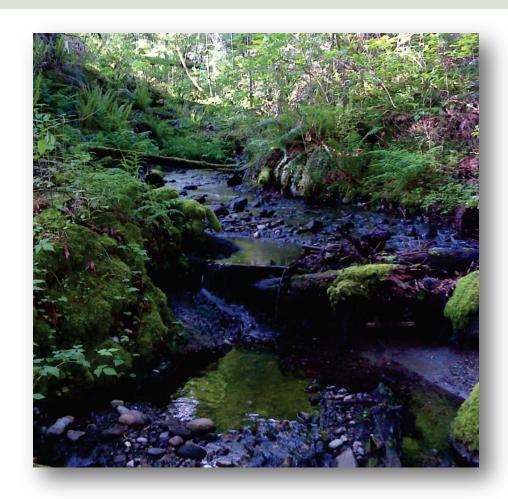
For Additional Information

Questions? Rick Watson 425-452-4896

Vasa Basin Study Reports: http://bellevuewa.gov/pdf/Utilities/Vasa_Creek_Final_Landslide_Memo.pdf

Maps: Nwmaps.net, Environmental www.nwmaps.net/mapsearch.htm

Vasa Creek Landslide Inventory and Slope Stability Reconnaissance



Prepared for:



Prepared by:



Bothell, WA 98011

Vasa Creek Landslide Inventory and Slope Stability Reconnaissance

Prepared for:



Prepared by:



June 2014

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1. Introduction

1.1 Background Information

Vasa Creek is a 1,085-acre basin located in the Puget Lowland that drains into the southwestern end of Lake Sammamish. The watershed is highly developed with a mixture of predominately residential, commercial and institutional development. Forty percent of the land cover is classified as impervious surface. The basin elevation ranges from 31 to 1,195 feet (City of Bellevue 2009).

The lower reach of Vasa Creek, downstream of the fish passage barrier at Interstate 90 (I-90), is fish bearing with rainbow trout, cutthroat trout, coho salmon, and late-run kokanee salmon present. Kokanee spawning habitat within the tributary creeks to Lake Sammamish is relatively limited. Suitable spawning habitat occurs in short reaches due to migration barriers or poor channel conditions upstream (Connor et. al. 2000).

Recent results from the Lake Sammamish Kokanee Technical Work Group (LSKTWG) highlight the importance of the Lake Sammamish tributaries for kokanee salmon. The LSKTWG (2013) report results have shown a major spike in escapement estimates from 2013 demonstrating the success of the supplementation program that began in 2010-2011 and underscoring the need for evaluating kokanee habitat and restoration potential in Lake Sammamish tributaries.

Upstream of the I-90 crossing there is sedimentation pond that forms a large gravel deposit. Flows are subsurface in this reach during the summer low flow period with perennial flow both upstream and downstream. A high-flow bypass at the interstate crossing redirects storm flows from Vasa Creek directly into Lake Sammamish through storm drain pipes.

The bedrock in the drainage basin is known as the Blakeley Formation (Tba), which comprises sandstone and mudstone. The Blakely formation is overlain by a complex pattern of glacial till (Qvt), glacial advance outwash (Qva), glacial lacustrine deposits (Qvrlb), and fan deposits (Qf). Figure A-1 in Attachment A contains a figure showing the mapped surficial geology and hillslope gradients in the basin.

The landslide hazard areas in the Vasa Creek Basin that have been identified by the City of Bellevue (City) include hillslopes with gradients greater than 40 percent. Throughout much of its reach length, Vasa Creek and the East Tributary to Vasa Creek have eroded relatively deep gorges into the glacial sediments with steep side slopes greater than 40 percent. Gorges are canyon-like landforms with steep side-slopes. Landslides are relatively common in gorge landforms, particularly in areas composed of glacial sediments (Benda et al. 1998; Sarikhan et al. 2008). Steep, convergent slopes are associated with the highest landslide probability in western Washington (Montgomery et al. 2000; Stewart et al. 2012). Due to steep slopes and proximity to

the stream, landslides that occur in these gorges are highly likely to deliver sediment and trees to the stream.

Landslides that reach streams can affect aquatic organisms through complex patterns of instream scour and deposition (Cederholm and Reid 1987). Landslide effects, including sediment deposition, have been shown to negatively impact spawning and rearing habitat (Everest et al. 1987; Cederholm and Reid 1987). However, the delivery of gravel, large wood, and boulders from landslides is also recognized as creating important components of habitat (Benda et al. 2003).

Known landslide deposits have previously been mapped by Troost (2012) and Britton (2013). The area is subject to earthquakes and uplift associated with a strand of the Seattle Fault Zone (SFZ) that bisects the basin east-trending fault that intersects Vase Creek near the I-90 crossing. The Entire basin is within the SFZ. In the event of a large earthquake along the SFZ, the area would likely experience significant vertical displacement along the fault line, violent earth shaking, liquefaction, and widespread landsliding. Britton (2013) provides a summary of the local geology, fault systems, and tectonic forces, which includes a more through description of seismic hazards including liquefaction.

1.2 Project Overview

Tetra Tech was contracted by the City to assist with ongoing efforts to study fish habitat and slope stability in the Vasa Creek (State Stream #08-0156) and the East Tributary to Vasa Creek stream corridors. The objective of this project is to evaluate kokanee salmon habitat in the accessible lower reach of Vasa Creek (downstream of I-90) and slope stability concerns upstream that may negatively impact habitat quality and/or restoration potential. This work will build on the technical report (master's thesis) by Britton (2013) that examined Vasa Creek channel conditions and slope stability in a stream segment upstream of the I-90 crossing, which is a complete barrier to fish passage.

This project has two discrete components; a landslide assessment, and a fish habitat assessment. The landslide assessment field work occurred in May of 2014 and the fish habitat assessment field work is scheduled to be completed in June of 2014. During the landslide assessment field work, Tetra Tech staff conducted a landslide inventory and slope stability reconnaissance. The assessment area included the Vasa Creek and East Tributary to Vasa Creek stream corridors with hillslope gradients greater than 40 percent. In addition to the landslide assessment data collected, Outfall Reconnaissance Inventory/Sample Collection forms were completed for observed discharges.

The field survey was divided into a series of stream reaches shown in Figure 1:

Vasa Creek Reach 1 – 163rd Avenue SE to I-90

- Vasa Creek Reach 2 I-90 to SE Newport Way, previously evaluated by Britton (2013)
- Vasa Creek Reach 3 SE Newport Way to SE 45th Street
- Vasa Creek Reach 4 SE 45th Street to SE 46th Way
- Vasa Creek Reach 5 SE 46th Way to SE 48th Drive
- East Tributary to Vasa Creek Newport Way to SE 44th Place

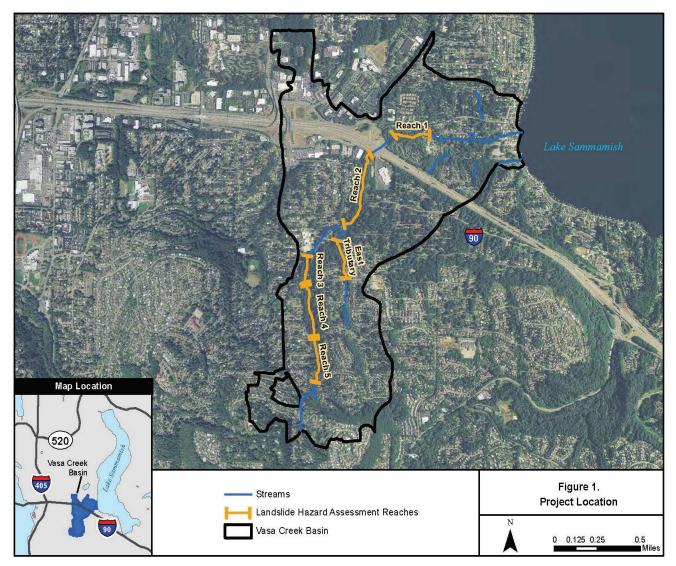


Figure 1. Location Map of Vasa Creek Basin and Landslide Assessment Field Survey Reaches

While Tetra Tech staff did conduct a landslide inventory and slope stability reconnaissance, no geotechnical analyses or detailed slope stability evaluations were included in the scope of work and, therefore, this landslide assessment should not be used as a guarantee of slope stability. It is intended to be provided as a summary of observed existing landslides in the reaches

surveyed, and an identification of landslide size and type. The slope stability reconnaissance is also intended to identify specific areas that have the high potential for landslides that may require further investigation.

The remainder of this document will describe the results of the landslide inventory and slope stability reconnaissance. Section 2 contains a description of the field data collection methods, reporting methods, and a summary of methodology limitations. Section 3 contains a summary of the landslide inventory and slope stability reconnaissance findings, and Section 4 contains a list of recommendations based on the work that was conducted.

2. Methods

2.1 Data Collection

Tetra Tech's field crew conducted a landslide assessment of the Vasa Creek and East Tributary to Vasa Creek stream corridors. The assessment was focused on reaches of the Vasa Creek and East Tributary to Vasa Creek with steep, potentially unstable slopes (greater than 40 percent). A relatively short reach of 334 meters (1,096 feet) downstream of the I-90 crossing was surveyed, with the remaining reaches being located upstream of I-90. The survey area generally excluded the 720-meter (2,362 feet) reach immediately upstream of the I-90 crossing where Britton (2013) had previously surveyed; however this reach was walked to confirm observations. A survey length of 350 meters (1,148 feet) was also evaluated in the East Tributary to Vasa Creek. In total, 1,730 meters (5,676 feet) was surveyed in the landslide inventory and slope stability reconnaissance. Figure 1 illustrates the locations of each of the reaches surveyed.

Landslide Inventory and Slope Stability Reconnaissance Field Forms were developed to identify and document characteristics of three specific types of erosion: 1) observed landslides (LS); 2) potentially unstable slopes (PI); and 3) in-stream erosion areas which are related to stream processes rather than hillslope processes (IE). The field data collected included the following items:

- The location, including Global Positioning System (GPS) coordinates, of scarps, landslides, landslide deposits, and in-channel erosional features
- The location of landforms prone to landslides and slopes that exhibit several signs of
 potential instability including hummocky terrain, concentrated surface or subsurface
 flows (seeps), wet soil vegetation indicators (e.g., Skunk Cabbage, Devil's Club), jackstrawed or pistol-butted trees, or surface ruptures
- Photos of observed scarps, landslides and landslide deposits, in-channel erosional features, seeps, potentially unstable sites, revetment structures, and drainage outfalls

- Approximate volume of observed existing landslides
- GPS coordinates of revetment structures
- GPS coordinates of seeps or drainage structures

The entire set of completed field forms is included in Attachment B (Landslide Inventory and Slope Stability Reconnaissance Field Forms).

The City Outfall Reconnaissance Inventory/Sample Collection Field Forms were also completed to document characteristics of all outfalls that were observed during field surveys. There may have been additional outfalls within the project area that were not detected due to vegetation cover and therefore not surveyed. The field data collected included the following items regarding detected outfalls:

- Location data (GPS Point, Photo)
- Outfall type (Material, Shape, Size)
- Flow dependent indicators (Odor, Color, Turbidity, Floatables)
- Site indicators (Outfall Damage, Deposits/Stains, Abnormal Vegetation, Poor Pool Quality, Pipe Benthic Growth)

The entire set of completed field forms is included in Attachment C (Outfall Reconnaissance Inventory/Sample Collection Field Forms).

2.2 Methodology Limitations

As discussed in Section 1.2, Project Overview, the landslide inventory and slope stability reconnaissance should not be used as a guarantee of slope stability. No geotechnical analyses or detailed slope stability evaluations were included in the scope of work for this project. Numerous factors that influence landsliding, including subsurface hydrology, orientation of bedding and fractures in the bedrock, and other factors that may influence the specific location of landslides were not considered in this assessment.

The landslide assessment results, presented in Section 3, Summary of Findings, provide valuable knowledge about landslides, landslide potential, and sediment supply in Vasa Creek. However, due to the complexity of stream channel processes, a more detailed examination, such as a geomorphic assessment, would be required to determine the full extent of potential impacts of landslides, or other erosion, on proposed restoration actions in the downstream reach. The examination needs to evaluate channel adjustment processes (e.g., bank erosion, scour, aggradation) and patterns and utilize them to evaluate various management scenarios.

3. Summary of Findings

3.1 Landslide Assessment

All survey reaches are situated in gorge landforms that are the result of post-glacial channel incision into a variety of glacial sediments. Upstream of Newport Way, both Vasa Creek and East Tributary to Vasa Creek have eroded through the glacial sediments to bedrock in many locations halting incision. Intermittent exposures of glacial lacustrine deposits (Qvrlb) also result in narrow slots due to the more resistant nature of the sediments. The forest canopy within the gorges consists of mature second-growth timber. Upstream of I-90, old-growth stumps were frequently observed indicating that those areas have been relatively stable for centuries.

The landslide assessment field survey reach characteristics including the survey length, the average channel gradient, maximum hillslope relief, and the quantity of large woody debris (LWD) per 100 meters are included in Table 1. Channel gradient and maximum hillslope relief were calculated from the Light Detection and Ranging (LiDAR) Digital Elevation Model (DEM). The hillslope relief is measured as the elevation difference from the channel bottom to the scarp at the top of the gorge landform.

Table 1. Landslide Assessment Reach Characteristics

Reach Name	Length (m)	Average Channel Gradient (%)	Maximum Hillslope Relief (m)	LWD Quantity Pieces/100 m
Vasa Creek Reach 1	340	7	31	3.8
Vasa Creek Reach 2	700	4.5 ^{1/}	19	2/
Vasa Creek Reach 3	240	6	9	12
Vasa Creek Reach 4	430	8	10	15 ^{3/}
Vasa Creek Reach 5	370	10	8	8
East Vasa Tributary	350	12	15	33

^{1/} Upstream of the sediment wedge and downstream of East Tributary to Vasa confluence

Field survey results support the City landslide hazard criteria that areas with a gradient greater than 40 percent are susceptible to landslides. However, the probability of landslides increases considerably on steeper slopes (greater than 70 percent), with greater relief, saturated soils, and other factors. The highest potential for landslide activity in the survey reaches occurs in Vasa Reach 1 and East Vasa Tributary reaches.

^{2/} The amount of LWD in Vasa Creek Reach 2 is included in Britton (2013).

^{3/} Includes LWD that was placed as part of restoration projects (41 pieces of the 63 tallied)

Landslide inventory and reconnaissance field survey results for each of the survey reaches are presented in the following sections. Located at the end of the section are summary tables for all of the survey reaches. Table 2 contains a summary of the observed landslides data, Table 3 contains a summary of the potentially unstable areas, and Table 4 contains a summary of the instream bank erosion areas. Maps representing the results for all survey reaches are located in Attachment A. On the maps, observed features are identified as follows:

- Landslide sites LS
- Potentially unstable sites PI
- In-stream erosion sites IE
- Outfall sites OF

Each feature is identified with one of these codes, followed by a numeric code to represent the sites in tables and in figures. Each of these locations has an associated photograph with a GPS location as well. In addition, there are other GPS points and associated photographs of features of interest that are identified with PP followed by a numeric code. The list of GPS points and associated photo names is included in Attachment D. Also shown on the map is the boundary of the gorge landform as estimated from the distinct break in slope calculated from the LiDAR DEM.

The sites that are identified as having potential instability (PI) are not intended to identify all areas where landslides could occur, but instead highlight sites and areas of particular concern because of greater landslide probability or risk to property or infrastructure.

Landslide hazards maps for all survey reaches were developed following the methods of Troost and Wisher (2009) and Britton (2013) according to WAC 365-190-120 6a-I, and the results are included as Figure A-8 (Attachment A).

3.1.1 Vasa Creek Reach 1 – 163rd Avenue SE to I-90

Landslides that occur in Vasa Creek Reach 1 have the greatest potential to impact kokanee salmon habitat due the close proximity and the fact that upstream of I-90 there is a large area at the inlet to the I-90 crossing and high-flow bypass intake that effectively traps much of the sediment and mobile debris generated from landslides in the upstream reaches. There were two specific areas of concern in Vasa Reach 1: 1) the north-facing slope of the gorge where there were several observed landslides and potential instability sites, and 2) the south-facing slopes located upslope of the access road for the storm drain infrastructure (Attachment A, Figure A-2).

There were three observed landslides (Sites LS-01, LS-02, and LS-03) in Reach 1. As shown in Figure A-2, all three of the existing landslides were located on the north-facing slope opposite of SE 35th Place. Two of the observed landslides (LS-01 and LS-03) were shallow, rapid debris

slides with deposition volumes estimated to range from 450 cubic meters (m³) (589 cubic yards [CY]) to 3,750 m³ (4,905 CY), which was the largest range of landslide deposits in all study reaches (Table 2). The third landslide (LS-02) was a debris fan from primarily fluvial erosion from a small tributary.

The north-facing slope of Reach 1was also identified as having a relatively high potential for future instability (Site PI-01). This is due to steep slopes (> 60%), the presence of several existing landslides in similar adjacent terrain, wet soil vegetation indicators, and tree deformation (Table 3). Site PI-01 is shown as only two points on Figure A-2 (Attachment A); however, all of the north-facing slopes in Reach 1 could accurately be defined as potential instable. The potential

for instability is considerably less on the west and east ends of the slope where the hillslope gradients are predominately less than 60 percent. Based on conditions observed in the field, the residential properties in close proximity to the gorge boundary on the north-facing slope may be subject to potential property damage from future landslides. Further geotechnical analyses would be required to determine which properties are at risk and the level of potential hazard.

There were no existing landslides observed on the southfacing slopes of Reach 1. East of the access road on the south-facing slopes, the landslide potential is low. Hillslope gradients are relatively low and there were no observed signs of potential instability.

There was potential instability observed on the south-facing slope at Site PI-02, as shown in Figure A-2 (Attachment A). Site PI-02 was identified as having several indicators of potential instability including steep slopes (> 60%), wet soil vegetation indicators and the highly abundant presence of seeps and subsurface drainage as shown in the example photograph in Figure 2. The flow from seeps and subsurface flows at this location is intercepted and stored by the existing access road and an abandoned road grade shown in Figure A-2. There is an existing 18-inch culvert on the access road and a 24-inch culvert on the abandoned road but no cross drain structures were observed to drain any of the seeps.



Figure 2. Seep Observed Upslope of Access Road



Figure 3. Cracked Road Fill Slope along SE 35th Place (PP-11)

Insufficient road drainage may increase soil saturation and lead to an increased landslide risk on potentially unstable slopes. Also observed was a surface rupture in the road fill and asphalt on SE 35th Place, as shown in the photograph in Figure 3. Surface ruptures in glacial materials are a good indicator of potential instability and may indicate the potential for deep-seated landslides. Further geotechnical analyses would be required to determine the landslide hazard at this location, as discussed further in Section 4.

The west-facing slope at the upstream end of Reach 1 is comprised of non-native road fill material that appears to be well-drained and does not exhibit any signs of potential instability (Figure A-2).

There were no areas of substantial in-stream erosion observed in Reach 1.

3.1.2 Vasa Creek Reach 2 – I-90 to SE Newport Way (Britton study area)

The results of the slope stability assessment of Vasa Creek Reach 2 are included in Britton (2013). The field data from Britton (2013) are shown in Figure A-3 (Attachment A) for completeness, and also to correct an error by showing the correct slope gradients calculated from the LiDAR DEM. The corrected slopes are also shown in the landslide hazard map (Figure A-8).

The lower segment of this reach of Vasa Creek serves as a large sediment storage area. The I-90 crossing has caused aggradation in the lower segment of Reach 2 resulting in deep deposits of alluvial gravels. Britton (2013) observed that flows are subsurface in this area during the summer low flow period, while flows upstream and downstream are perennial. This observation in combination with the abundant subsurface flow observed downstream of the I-90 crossing in Reach 1 may indicate that a considerable portion of Vasa Creek flows are subsurface through the I-90 crossing rather than in storm drain infrastructure. More detailed hydrologic analyses would need to be conducted to determine flow distributions.

3.1.3 Vasa Creek Reach 3 – SE Newport Way to SE 45th Street

The survey of Vasa Creek Reach 3 started approximately 200 meters (656 feet) upstream of Newport Way near the southern edge of the Eastgate Elementary School property. Downstream from this point through SE 45th Street, Vasa Creek is carried by storm drainage pipes with a dry overflow channel (Attachment A, Figure A-4).

The overall landslide risk in Reach 3 is relatively low. There was one small slump landslide observed (LS-06) on the west-facing slope. The LS-06 landslide had an estimated deposition volume of 248 m³ (324 CY). The addition of flow to this location delivered from the storm drain shown on Figure A-4 may have contributed to the slope failure. The LS-06 deposit has

apparently forced the flow of Vasa Creek into the opposite bank causing additional bank erosion. Table 2 contains a summary of the data collected for LS-06.

There was one area identified as having potential instability (PI-03) in Reach 3. Table 3 contains summary of the data collected for PI-03. The primary cause for potential instability at PI-03 is bank erosion undermining a small forested streambank. This location has the potential for continued undercutting to cause bank collapse and maintenance issues particularly because this site is located just upstream of the intake structure that diverts water through the Eastgate Elementary property. The overall sediment volume for PI-03 would be relatively modest however, since the relief of the slope is small (approximately 20 feet). The photograph in Figure 4 shows the bank erosion at PI-03.



Figure 4. Bank Erosion Undercutting Slope at PI-03

There were no areas of substantial in-stream erosion observed in Reach 3 other than the bank erosion associated with the potential instability at PI-03 described above.

3.1.4 Vasa Creek Reach 4 – SE 45th Street to SE 46th Way

A pedestrian trail system follows the creek along Reach 4. In addition, there have been a number of restoration efforts (e.g. installed grade control structures, LWD bank protection and sediment retention) made in the channel in this reach to improve channel conditions. The landslide risk in Reach 4 increases slightly from Reach 3 due to generally steeper slopes and

somewhat greater relief (Attachment A, Figure A-5 and Table 1).

There were two observed landslides (LS-07 and LS-08) in Reach 4. The observed landslides were shallow rapid debris slides on east-facing slopes with deposition volumes ranging from 96 m³ to 150 m³ (126 CY to 196 CY). Table 2 contains summary information of the observed landslides and Figure A-5 shows their location.

There was one area in Reach 4 identified as having indicators of potential instability (PI-04).



Figure 5. Bank Erosion Causing Potential Instability at PI-04

Table 3 contains a summary of PI-04 information. The potential instability at PI-04 is due to the

bank erosion (shown in the photograph in Figure 5) undercutting steep slopes (> 80%), with wet soil vegetation indicators and seeps present. PI-04 is on a west-facing slope with the location shown in Figure A-5.

There was one area of active in-stream erosion (bank erosion) of 26 meters (85 feet) in length observed in Reach 4 (IE-01). Table 4 contains a summary of the data collected at IE-01. The instream erosion at this site is differentiated from the bank erosion at PI-03 and PI-04 in that the erosion at IE-01 was not believed to be associated with future potential hillslope instability.

3.1.5 Vasa Creek Reach 5 – SE 46th Way to SE 48th Drive

The pedestrian trail system continues to follows the creek upstream along Reach 5 until a foot bridge crossing near LS-09 where the trail climbs out of the gorge for the remainder of the reach. In addition, there have been a number of restoration efforts. In general, the landslide risk in

Reach 5 is similar to Reach 4 although there are less steep slopes (> 60%) and somewhat less relief (Figure A-6). There was one landslide (LS-09) observed in Reach 5. The landslide was a shallow rapid debris slides on the east-facing slope with a deposit volume of 28 m³ (37 CY). Table 2 contains a summary of the data collected for LS-09. As shown in the photograph in Figure 6, the scarp of LS-09 was close to the deck of the property to the west of the landslide. Other properties in Reach 5 that are in close proximity to the gorge boundary may be



Figure 6. Close Proximity of Residential Property to the Scarp of LS-09

subject to property damage from future landslides. Further geotechnical analyses would be required to determine which properties are at risk and the level of hazard.

There was one site identified as potentially unstable (PI-05). Table 3 contains a summary of the data collected for PI-05. In addition there is the potential for future instability at LS-09. There is a block of oversteepened and saturated material still in place on the hillslope to the north of LS-09 that is potentially unstable. The deposit volume of this landslide would be relatively small but would likely cause severe damage to the footbridge at this location.

There were three areas of in-stream erosion (bank erosion) observed in Reach 5 (IE-02, IE-03, and IE-04). The bank erosion at these sites ranged from 13 meters to 20 meters (43 feet to 66 feet) in length. Table 4 contains a summary of the data collected at IE-02, IE-03, and IE-04.

3.1.6 East Tributary to Vasa Creek – Newport Way to SE 44th Place

The characteristics of the East Tributary to Vasa Creek are notably different than those of Vasa Creek. The average channel gradient (12%) is much steeper and the channel bed is scoured to bedrock in most places except where in-channel LWD are retaining wedges of sediment. The channel gradient of frequent bedrock chutes exceeds 20 percent. The channel is highly confined in a narrow gorge bottom and has a high density of LWD (Table 1). The photograph in Figure 7 shows typical channel conditions in East Tributary to Vasa Creek. Of the reaches surveyed, the

East Tributary of Vasa Creek has the greatest potential to produce a landslide that could develop into a debris flow that could travel for considerable distance down the channel. A debris flow from East Vasa Creek would likely cause considerable damage to the SE Newport Way crossing and have potential downstream impacts as well.

There were two observed landslides (LS-04 and LS-05) in Reach 5 (Attachment A, Figure A-7). Table 2 contains a summary of the data collected for LS-04 and LS-05. These landslides were shallow rapid debris slides. Deposit volumes were not measured because the landslide material had been transported downstream, likely shortly after or during the event.



Figure 7. Typical Channel Conditions in East Tributary to Vasa Creek

The East Tributary to Vasa Creek survey reach should all be considered potentially unstable although the risk increases on the steeper slopes (> 60%). As in Reach 5, the East Tributary to Vasa Creek has residential properties that are in close proximity to the gorge boundary that may be subject to property damage from future landslides. Further geotechnical analyses would be required to determine which properties are at risk and the level of hazard.

There were no areas of substantial in-stream erosion observed in the East Tributary to Vasa Creek.

Table 2. Observed Landslide Inventory

ID#	Reach	Observed Bank Erosion	Scarp Length (m)	Deposit Volume (m³)	Current Activity ^{1/}	Average Slope (%)	Percent Forested (%)	Surface Hydrology
LS-01	Vasa 1	No	25	450	Inactive	70	85	No
LS-02	Vasa 1	No	2/	2/	Inactive	75	70	Seeps Present
LS-03	Vasa 1	No	16	3,750	Inactive	75	70	Seeps Present
LS-04	East Trib.	No	75		Potentially Active	100	20	None
LS-05	East Trib.	No	20		Potentially Active	80	50	None
LS-06	Vasa 3	Yes	15	248	Potentially Active	50	90	Seeps Present
LS-07	Vasa 4	No	11	96	Inactive	90+	50	None
LS-08	Vasa 4	No	10	150	Inactive	80	80	None
LS-09	Vasa 5	Yes	11	28	Potentially Active	100	0	Seeps Present

^{1/} An inactive landslide, as defined in this report, is one that has occurred in a way that does not appear to pose any risk of further movement (i.e., scarp appears stable and deposit material has either been evacuated or in a stable location). A potentially active landslide has the potential for continued movement of the landslide deposit or the scarp may still be unstable.

2/ Sites did not have deposition volume estimates because the deposit had been evacuated by in-stream processes.

Table 3. Areas with High Potential Instability

ID#	Reach	Observed Bank Erosion	Length of Erosion (m)	Average Slope (%)	Forested (%)	Surface Hydrology	Wet Soil Vegetation Indicators
PI-01	Vasa 1	No	1/	75	70	Seep	Yes
PI-02	Vasa 1	No	1/	40	60	Seep	Yes
PI-03	Vasa 3	Yes	10	30	100	None	No
PI-04	Vasa 4	Yes	13	60	60	Tributary, Seep	Yes
PI-05	Vasa 5	No	1/	80	30	Seep	Yes

^{1/} Sites did not have observed bank erosion.

Table 4. In-Stream Erosion (Bank Erosion)

ID#	Reach	Length of Erosion (m)	Current Activity
IE-01	Vasa 4	26	Active
IE-02	Vasa 5	18	Active
IE-03	Vasa 5	20	Active
IE-04	Vasa 5	13	Active

3.2 Outfall Reconnaissance Inventory

During the landslide assessment, the location of observed outfalls was documented and Outfall Reconnaissance Inventory/Sample Collection Filed Forms completed. The completed Outfall Reconnaissance Inventory/Sample Collection Filed Forms are included as Attachment C.

Eighteen outfalls were inventoried during surveys. Table 5 contains a summary of the data collected at the outfall reconnaissance inventory sites. Flow observations indicated that 8 of the 18 outfalls surveyed were completely dry at the time of the survey. Only 2 of the outfalls warranted any notable comments (OF-02 and OF-18) due to a slight odor and staining of the local substrate from benthic growth. The locations of the outfalls inventoried are shown on Figures A-2, A-4, A-5, A-6, and A-7 (Attachment A). No illicit discharges were observed during the field surveys.

Table 5. Outfall Reconnaissance Inventory

ID#	Reach	Material	Diameter (inches)	Flow	Notes about Discharge
OF-01	Vasa 1	Concrete	18in	Trickle	None
OF-02	Vasa 1	СМР	12in	Moderate	Odor (sulfide, faint), Stain (bed coloration), Pool (suds), Benthic growth (orange)
OF-03	Vasa 3	Steel	12in	Trickle	None
OF-04	Vasa 3	PVC	3in	No	None
OF-05	Vasa 3	PVC	9in	No	None
OF-06	Vasa 3	PVC	12in	Moderate	Pool (suds, few)
OF-07	Vasa 4	PVC	12in	Moderate	Pool (suds, few), Benthic growth (green, minor)
OF-08	Vasa 4	Steel	12in	Substantial	Outfall (cracking), Pool (suds, minor), Benthic growth (green, minor)
OF-09	Vasa 4	PVC	4in	No	None
OF-10	Vasa 4	PVC	4in	No	None
OF-11	Vasa 4	PVC	4in	No	None
OF-12	Vasa 4	PVC	4in	No	None
OF-13	Vasa 4	Steel	12in	Moderate	Benthic growth (green, minor)
OF-14	Vasa 4	Steel	24in	Substantial	Pool (suds, minor), Benthic growth (green, minor)
OF-15	Vasa 5	Steel	12in	Substantial	Benthic growth (brown, orange)
OF-16	Vasa 5	PVC	4in	No	None
OF-17	Vasa 5	PVC	4in	No	None
OF-18	Vasa 5	PVC	4in	Trickle	Stains (orange), Benthic growth (orange)

4. Discussion and Recommendations

During the landslide inventory and slope stability reconnaissance, field observations were made that were used to develop the recommendations included in this section. Field survey results support the City sensitive area criterion that areas with a gradient greater than 40 percent are susceptible to landslides. However, the probability of landslides increases considerably on steeper slopes (> 60%), with greater relief, saturated soils, and other contributing factors. Existing landslides and areas of particular concern because of greater landslide potential were identified during the slope stability reconnaissance survey.

The following recommendations are based on the findings of the landslide inventory and slope stability reconnaissance:

- Divert water discharge away from any slopes that are greater than 40 percent, where
 possible, in all survey reaches and particularly in areas that were identified as
 potentially unstable in the slope stability reconnaissance including all of East Tributary
 to Vasa Creek.
- Conduct a detailed geotechnical evaluation of landslide hazard in Reach 1 of Vasa Creek, particularly in the two areas described in Section 3.1 and shown in Figure A-2.
- Identify opportunities to improve road drainage on the access road and abandoned road in Figure A-2.
- Conduct a geomorphic assessment to evaluate the potential downstream impacts of landslides, particularly in Vasa Creek Reach 1, on existing kokanee habitat including proposed or potential restoration alternatives.
- Conduct a risk assessment and detailed geotechnical evaluation for residential properties in close proximity to the gorge boundary, particularly in Vasa Reach 1 and East Vasa Tributary to Vasa Creek, and evaluate potential hazards downstream of Vasa Reach 1.

Overall, slope stability conditions vary among the reaches surveyed. The highest potential for landslide activity in the survey reaches was observed in the Vasa Reach 1 and East Vasa Tributary to Vasa Creek reaches. Landslides that occur in Vasa Creek Reach 1 have the greatest potential to impact kokanee salmon habitat due the close proximity and the fact that there is a large sediment retention area upstream of I-90 that would buffer landslide impacts from the upper reaches. Landslides in Vasa Creek Reach 1 also have the potential to impact private property downstream due to many low-lying properties adjacent to the creek downstream of Reach 1.

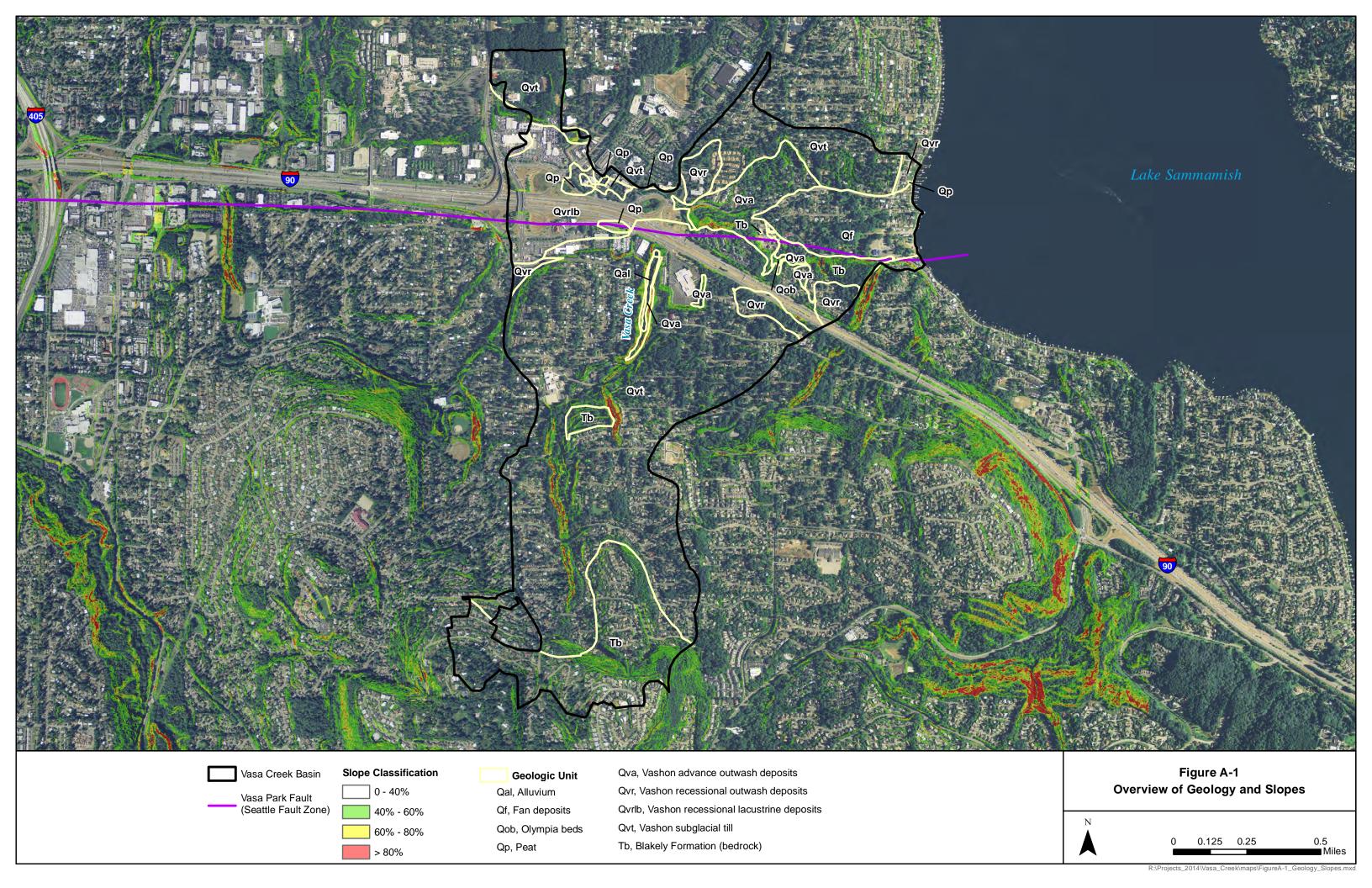
5. References

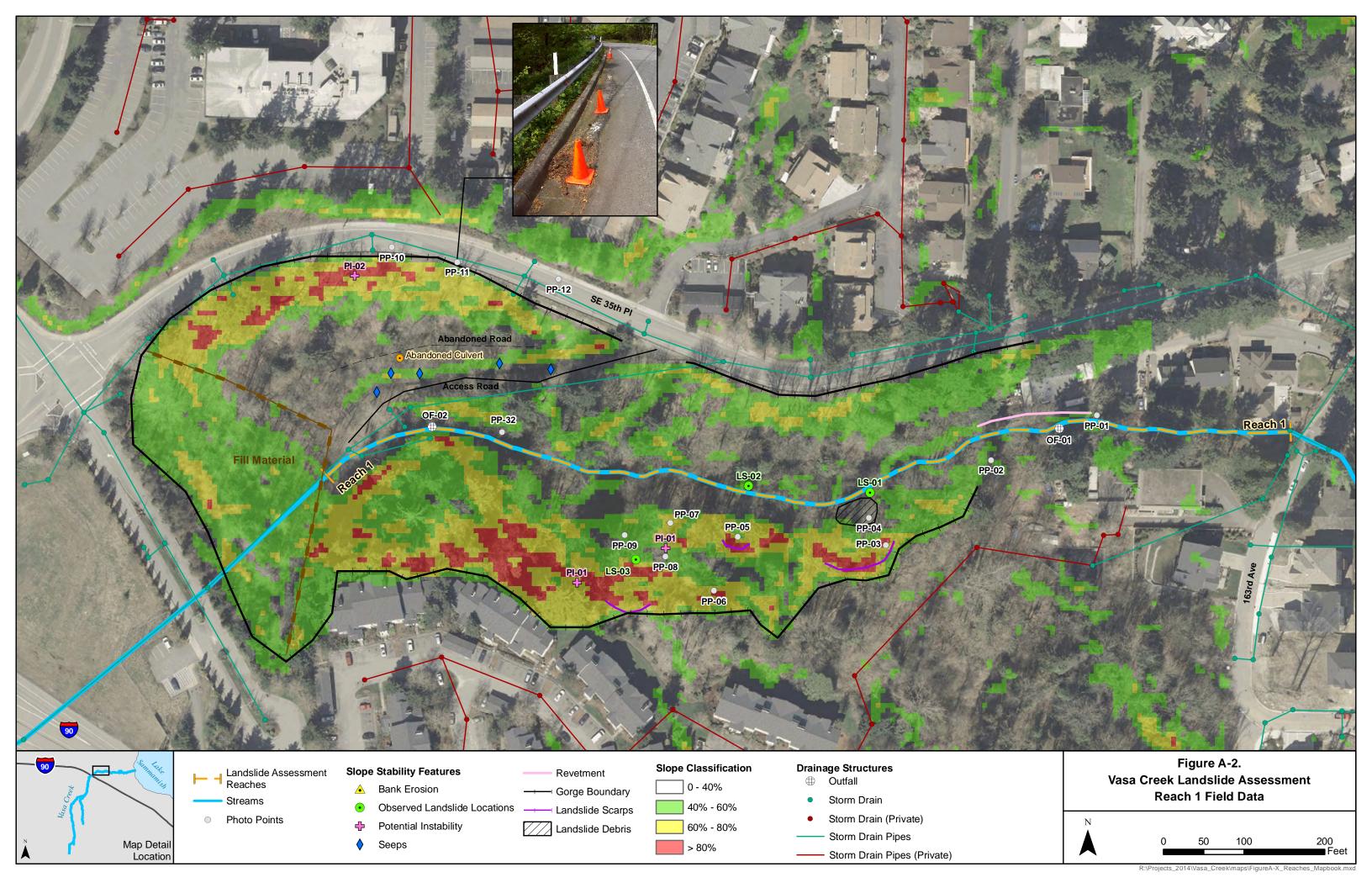
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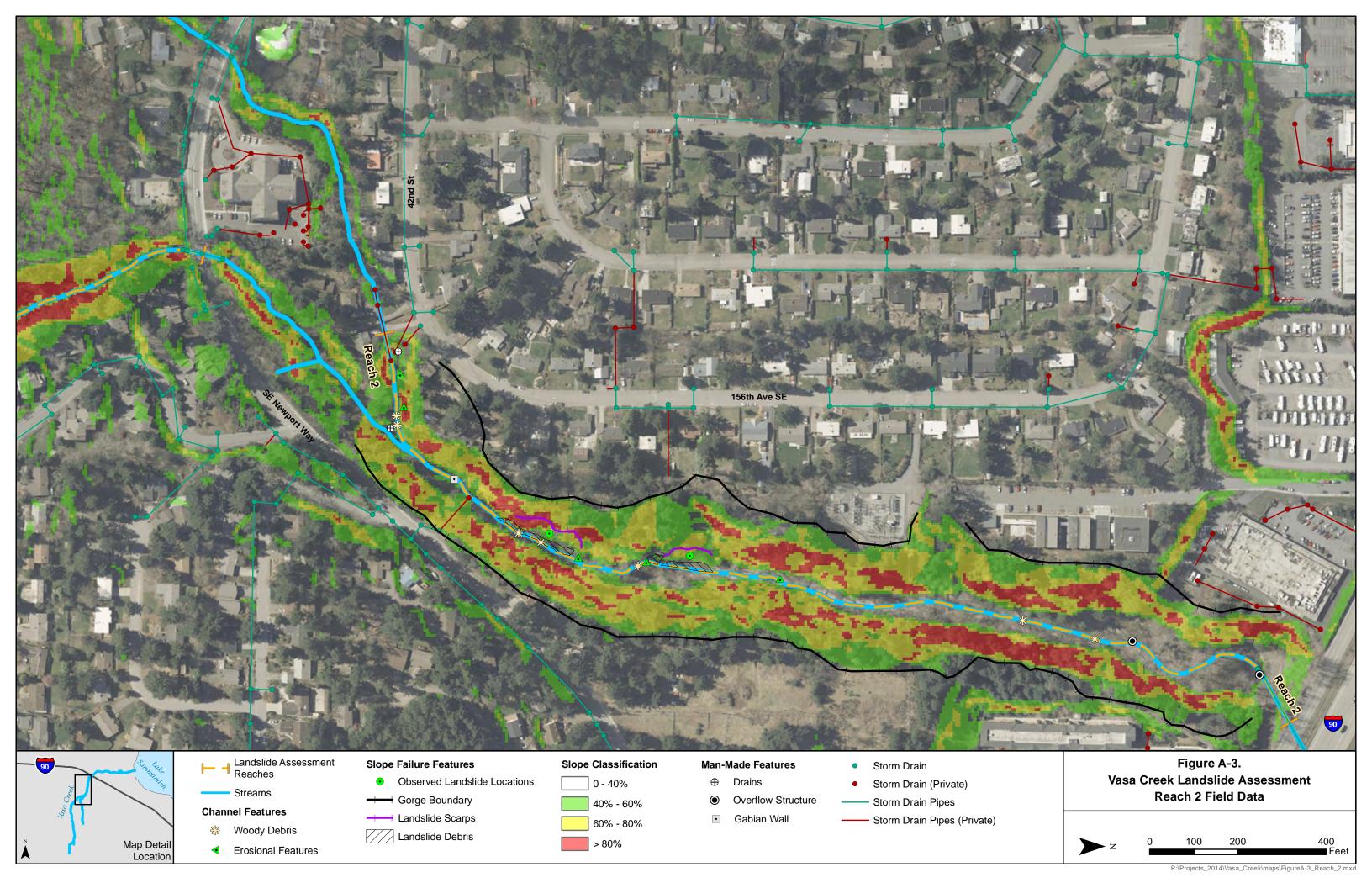
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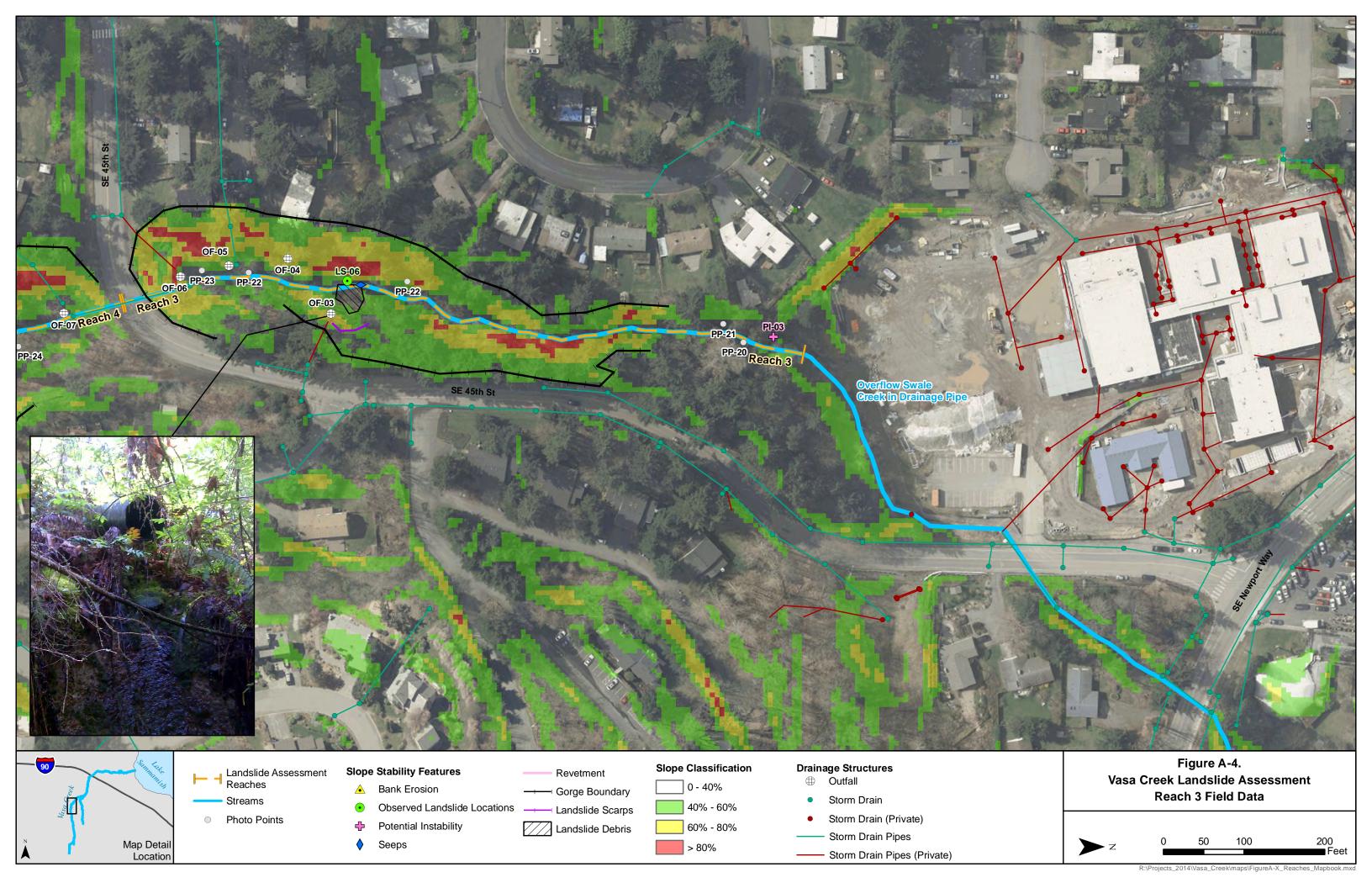
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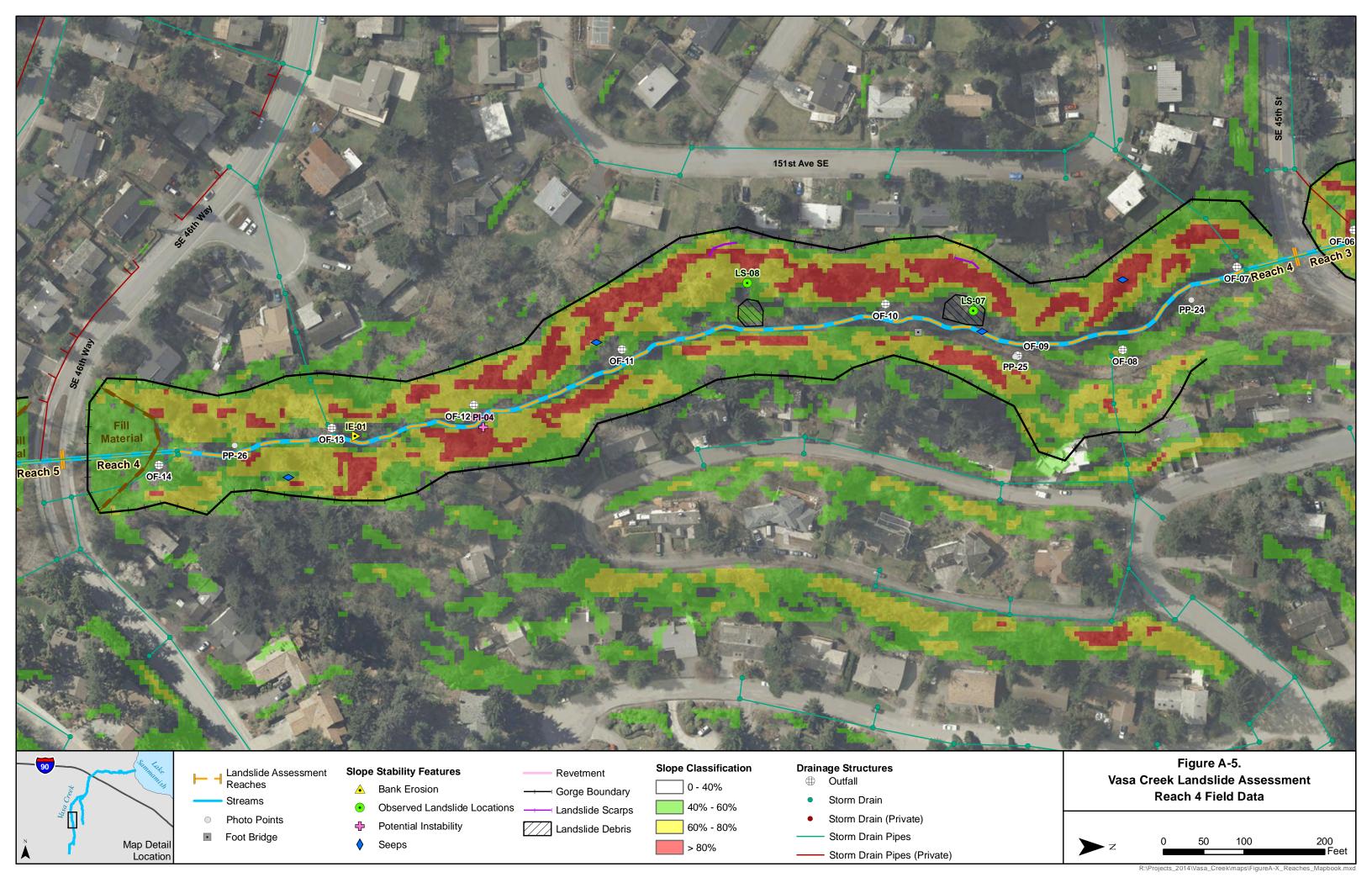
	Vasa Creek Landslide Inventory and Slope Stability F	Reconnaissance
	ATTAC	CHMENT A
		MAPS
City of Pollows		
City of Bellevue		



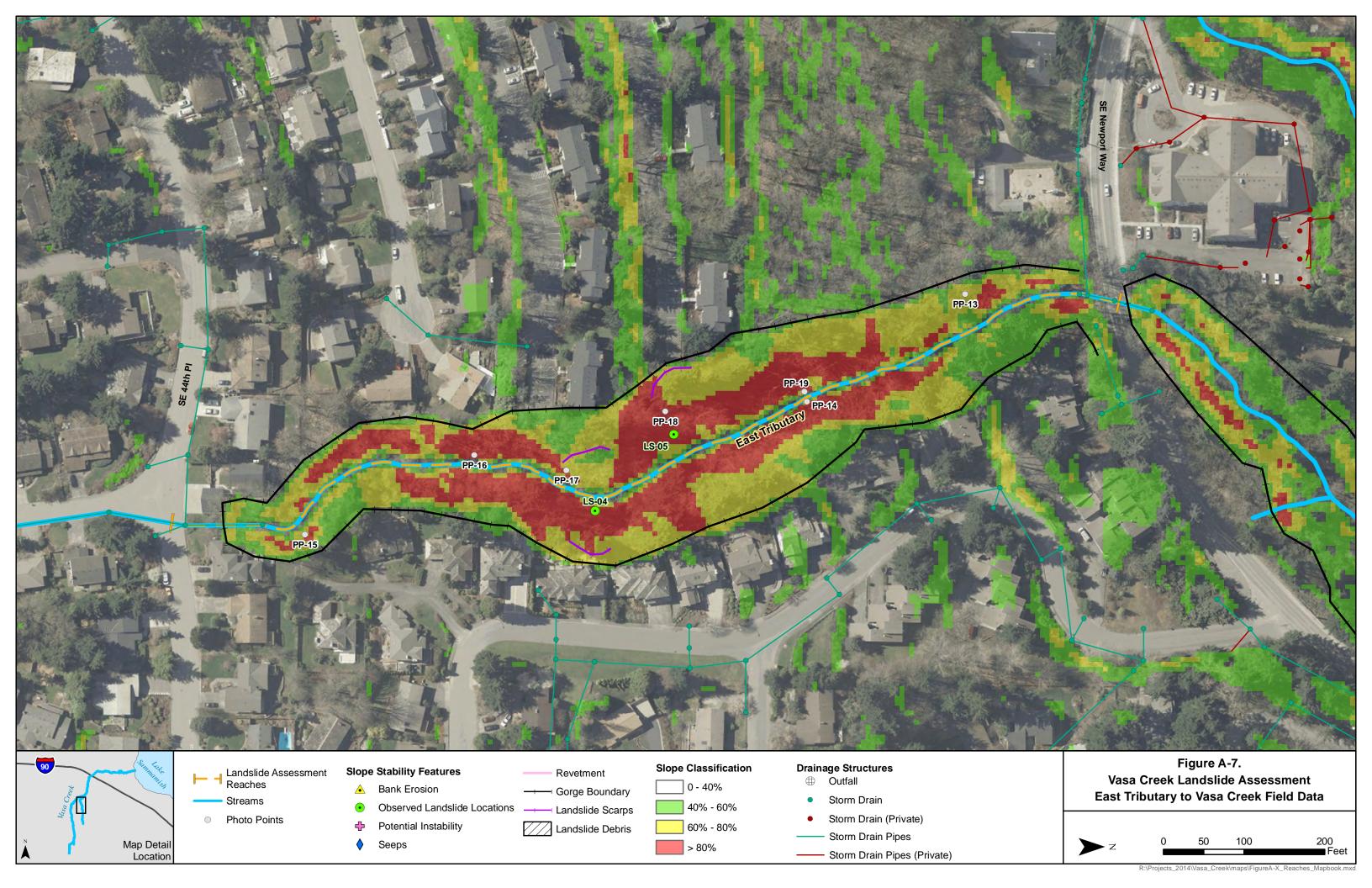


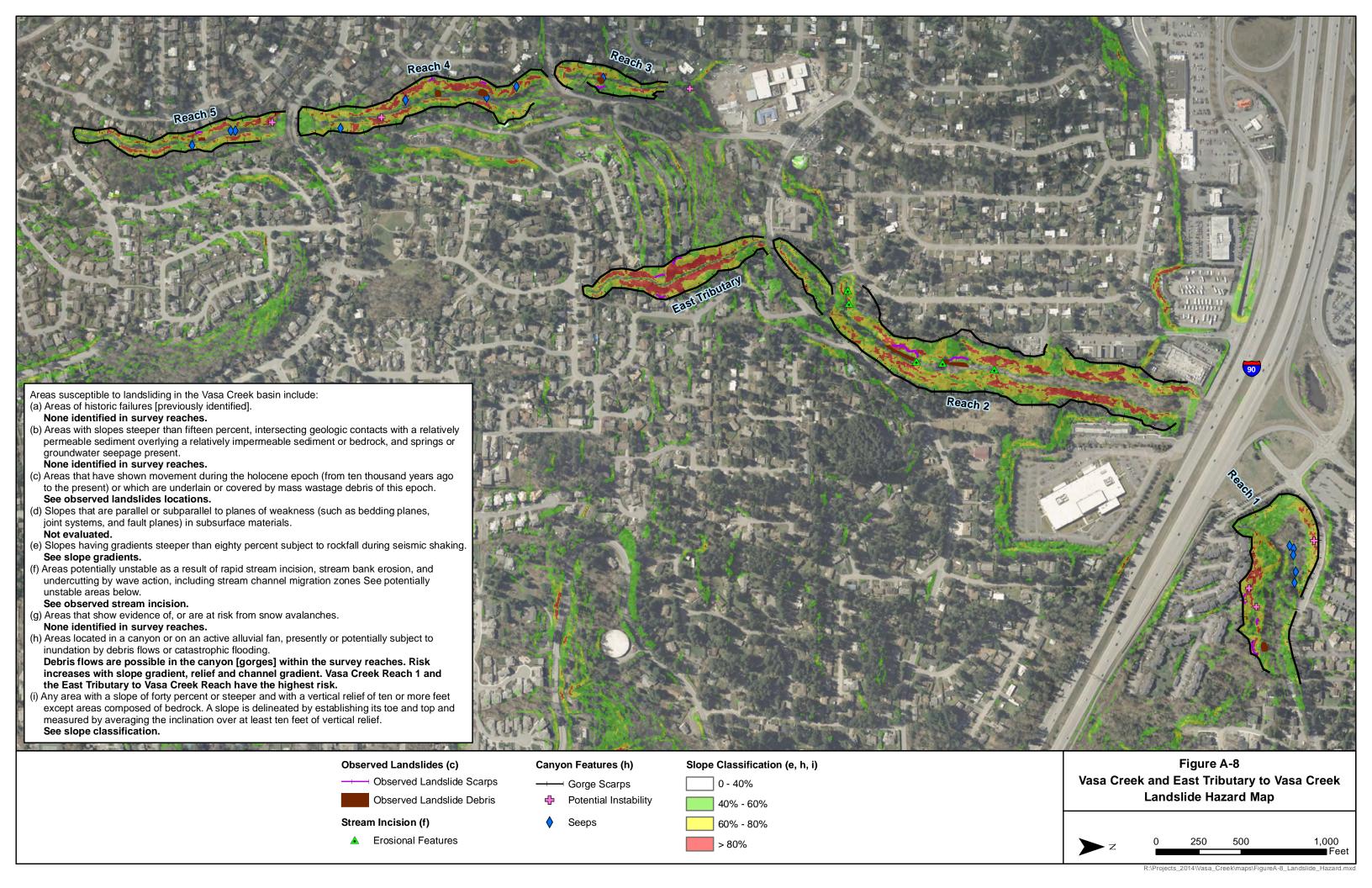


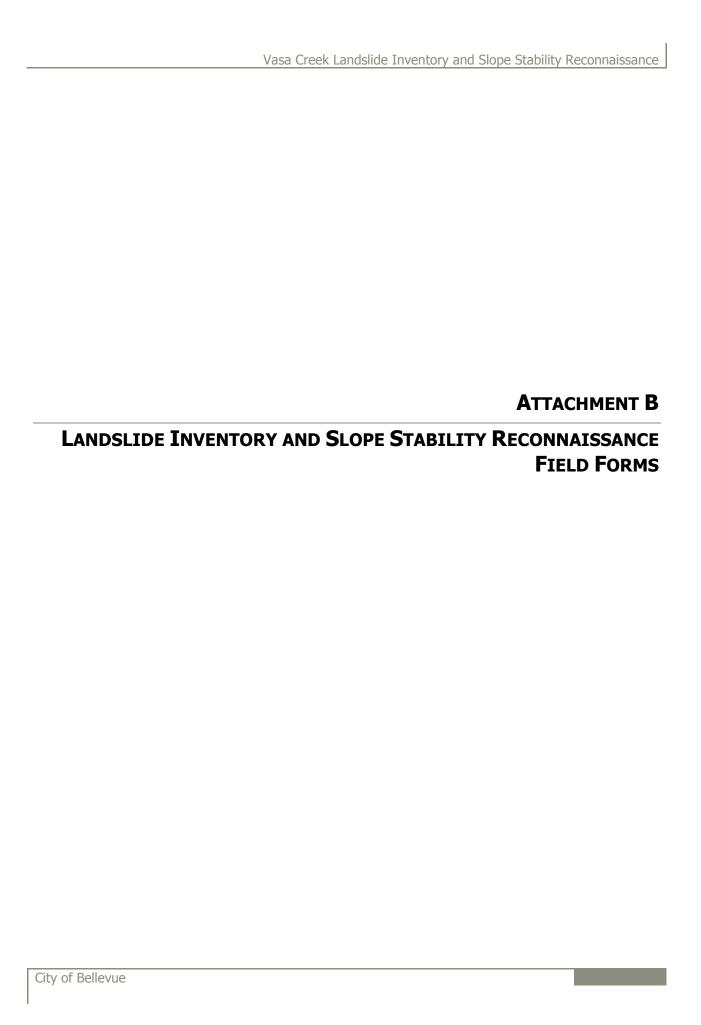












2014 LANDSLIDE ASSESSMENT FIELD FORM VASA CREEK FISH HABITAT EVALUATION AND LANDSLIDE ASSESSMENT PROJECT

Site Information	EC -01	JP JP		6/7/11			
Tt_ID:	Surveyed By:	2/ 21	-	5/7/14	•		7
GPS Unit #	Long. Distance:		Observation Type:	Lands			l instability
			RB		In-chann	el erosion	\supset
GPS Data		~ /					01
GPS Point #	as camela	Description:	01) Bar K E1	15100		000	01
Additional Point #		Description:			Photo #		
Additional Point #		Description:			Photo #		
Additional Point #		Description:			Photo #		
Additional Point #_		Description:			Photo #		
Hillslope Characteristics							*
Mapped Geology:		Slope O	rientation:				
Landslide Observed?	Yes No		In-channel Erosio	n Observed?	Yes	No	
Scarp Legth:	alem Landslide	deposit width:	Length:		Depth:		elivery (Y/N)
Length of In-chann	nel Erosion:	<u></u>				Bun 10	
Type of Movement:	Deep-seated Rotational	Debris Flov	w Debris Av	alanche (Other	10510	^
Current Activity:	Active	Inac	ctive	Mitigated (des	scribe)		
Possible failure cause: (•		
Slope appearance:	Straight	Hummock	y Conc	ave	Conv	vex	Other
Hydrology:	Tributary Creek	Seeps Prese	ent Outfall (see r	recon form)	Groundwate	er recharge	Other
Soil Origin:	Colluvium	Glacial Til	l Fi	II	Combir	nation	Other
Soil Description:							
Signs of Potential Instal	pility:						
Stream Characteristics				F	100	-	
	ream Type:			Trans (3-10%) Alluvial	Incised	Response (<3%) Fan	
	racteristics:			Erosion resistant		Highly Erodible	
Scou	ır potential:	Low		Moderate		High	
Dominant hydrolo	ogic regime:	Spri	ng Snowmelt	Rain	Rain-on-snow	Conv. Thunders	torm
Channel N	Norphology: (FF)	9,1	LWD Present (Y/N)		GPS and pho	to#	
Streambed Substrate							
SA = Sand, Silt, and Clay	(<0.08 in, <2mm.)	(smaller than	"BB")			
GR = Gravel	(0.08 - 2.5 in., 2 -	64 mm.)	("BB to tennis	ball)			
CO = Cobble	(2.5 - 10 in., 64 -	256 mm.)	(tennis ball to	basketball)			
BO = Boulder	(10 - 160 in., 256	- 4096 mm.)	(basketball to	small car)			
BR = Bedrock	>160 in., >4096 n	nm.)	(larger than a	small car)		-	

2014 LANDSLIDE ASSESSMENT FIELD FORM VASA CREEK FISH HABITAT EVALUATION AND LANDSLIDE ASSESSMENT PROJECT

Site information	_	0-0		5/-1.1			
Tt_ID: 12-0	Surveyed By:	135		e: 5/7/14			<u> </u>
GPS Unit #	Long. Distance:		Observation Type	e: Lanc	Islide	Potentia	l instability
					n-chann	nel erosion	
GPS <u>Data</u>							
GPS Point #	C	escription: RB	Benk Er.	051,0	Photo #	000	9/
Additional Point #	C	escription:		- 4000000000	Photo #	5281	
Additional Point #	C	escription:			Photo #		
Additional Point #	C	escription:			Photo #		
Additional Point #		escription:			Photo #		
Hillslope Characteristics							•
Mapped Geology:		Slope Orien	tation: UC5	T/9W	240		
Landslide Observed? Yes	No	•		 sion Observed?	Yes	No	
Scarp Legth: 18		osit width:	Lengt	h:	Depth:		elivery (Y/N)
Length of In-channel Eros				-	•	Benk	
Type of Movement: Deep	-seated Rotational	Debris Flow	Debris	Avalanche	Other	Erosio	\sim
Current Activity:	Active	Inactive		Mitigated (de	escribe)		
Possible failure cause:			·		,		****
Seep + Bunk	2105100	· • · · · · · · · · · · · · · · · · · ·					
1		····					
Average Slope:	% Forested:	7D Ve	g Type: M(ke)	matsle/	LT SLIU	55	
Slope appearance:	Straight	Hummocky	Co	oncave	Conv	vex	Other
Hydrology: 1	ributary Creek	Seeps Present	Outfall (se	ee recon form)	Groundwate	er recharge	Other
Soil Origin:	Colluvium	Glacial Till		Fill	Combir	nation	Other
Soil Description:							
Signs of Potential Instability:							
	W-11 (1800 (1800)						-
Stream Characteristics		Source (>	10%) Colluvial	Trans (3-10%)	Incised	Response	
Stream T		Bedrock Naturally	Non-erodible	Alluvial Erosion resista		(<3%) Fan Highly Erodible	
Bank characteris		Low		Moderate		High	
Scour poter		Spring	Snowmelt	Rain	Rain-on-snow	Conv. Thunders	torm
Dominant hydrologic reg Channel Morphol	- 60 /0	~p	LWD Present (Y/I		GPS and pho		
Streambed Substrate	VBY. 11. 12 / 1 / 20	·		- 50	-		
	1-0 00 in -2-mm 1		(smaller tha	an "RR"\			
SA = Sand, Silt, and Clay GR = Gravel	(<0.08 in, <2mm.) (0.08 - 2.5 in., 2 - 64 n	nm.)	("BB to teni	· ·			
CO = Cobble	(2.5 - 10 in., 64 - 256 i		•	to basketball)			
BO = Boulder	(10 - 160 in., 256 - 40		(basketball	to small car)			
BR = Bedrock	>160 in., >4096 mm.)		(larger than	n a small car)			

Site Information			· /	-/-	
Tt_ID: j	ΣΕ-03 Surveyed By:	3P 3P	Date: <u>5/</u>	Weather:	SUMMY
GPS Unit #	Col Long. Distance:	<u>_</u>	Observation Type:	Landslide	Potential instability
				n-chan	nel erosion
GPS Data					
GPS Point #		Description: 0/5 5	hot of RBerosi.	^ Photo #	000 99
Additional Point #		Description:		Photo #	
Additional Point #		Description:	***************************************	Photo #	
Additional Point #		Description:		Photo #	t
Additional Point #		Description:		Photo #	
Hillslope Characteristics					08
Mapped Geology:		Slope Orient	ation:	\tilde{a}	
Landslide Observed?	Yes No		In-channel Erosion O	bserved? (Yas	No
Bun K Seerp Legth:	20 Landslide	deposit width:	Length:	Depth:	:Delivery (Y/N)
Length of In-char	nnel Erosion:	\			Bank Erosium
Type of Movement:	Deep-seated Rotational	Debris Flow しB	Debris Avalar	oche Other	1901 1102120
Current Activity:	Active	Inactive	Miti	gated (describe)	
Possible failure cause:	seep + satured	SUTIS, STEED	3-6m	Lish	
Average Slope: Slope appearance:	% Forested: Straight	Veg Hummocky	Type:Concave	Con	other Other
Hydrology:	Tributary Creek	Seeps Present	Outfall (see reco	n form) Groundwat	er recharge Other
Soil Origin:	Colluvium	Glacial Till	Fill	Combi	ination Other
	. 36				
Soil Description:					·
Signs of Potential Insta	ability:				··········
Stream Characteristics		,			
9	Stream Type:	Source (>1 Bedrock	10%) Colluvial Trans	s (3-10%) ial	Response (<3%) Fan
Bank ch	aracteristics:	Naturally :	Non-erodible Erosi	on resistant	Highly Erodible
Sco	our potential:	Low	Mod	erate	High
Dominant hydrol	logic regime:	Spring	Snowmelt Rain	Rain-on-snow	Conv. Thunderstorm
Channel I	Morphology: R.F.F.	00	LWD Present (Y/N)	GPS and pho	oto #
Streambed Substrate					
SA = Sand, Silt, and Clay	(<0.08 in, <2mm.))	(smaller than "BB'	')	
GR = Gravel	(0.08 - 2.5 in., 2 -	64 mm.)	("BB to tennis ball)	
CO = Cobble	(2.5 - 10 in., 64 - 2	256 mm.)	(tennis ball to bas	ketball)	
BO = Boulder	(10 - 160 in., 256	- 4096 mm.)	(basketball to sma	III car)	
BR = Bedrock	>160 in., >4096 n	ım.)	(larger than a sma	ll car)	4

Site Information	_ 909	-0 -0		1-1-1	_	
Tt_ID: _	Surveyed By:	JP 3P	Date: <u>5</u> ,	7/14 Weather:	SUN	n 1
GPS Unit #	Co Long. Distance:		Observation Type:	Landslide	Potent	ial instability
_				In-chan	nel erosion	
GPS <u>Data</u>						
GPS Point #		Description: RB	Bunk	Photo #	00	103
Additional Point #		Description:		Photo #	<u> </u>	
Additional Point #		Description:	in the second	Photo #		
Additional Point #	100,000	Description:	100 120 120	Photo #	<u> </u>	
Additional Point #		Description:		Photo #	·	
Ittilalana Chanastonistiss						4
Hillslope Characteristics Mapped Geology:		Slope Orien	tation:			
Landslide Observed?	Yes No		In-channel Erosion (Observed? Yes	No	
Searp Legth:	Landslid	e deposit width:	Length:	Depth	:	Delivery (Y/N)
Length of In-chan					0 /0	
Type of Movement:	Deep-seated Rotational	Debris Flow	Debris Avala	anche Other	Bank	810510
Current Activity:	Active	Inactive	Mi	tigated (describe)		
	WETER eloding	To				
Slope appearance: Hydrology:	Straight Tributary Creek	Seeps Present	Concav Outfall (see rec	on form) Groundwat	er recharge	Other
Soil Origin:	Colluvium	Glacial Till	Fill	Comb	ination	Other
Soil Description:						
Signs of Potential Insta	bility:					
Shara wa Chanasha siabian	A					
Stream Characteristics	tream Type:	Source (> Bedrock		ns (3-10%) Incised	Response (<3%) Fan	
	racteristics:		7	sion resistant	Highly Erodib	le
	ur potential:	Low	Mo	oderate	High	
Dominant hydrole		Spring	Snowmelt Ra	Rain-on-snow	Conv. Thunde	erstorm
	Morphology:		LWD Present (Y/N)	GPS and pho	oto #	
Streambed Substrate	. 0.					
SA = Sand, Silt, and Clay	(<0.08 in, <2mm	J	(smaller than "Bi	3")		
GR = Gravel	(0.08 - 2.5 in., 2		("BB to tennis ba	•		
CO = Cobble	(2.5 - 10 in., 64 -	•	(tennis ball to ba	•		
BO = Boulder	(10 - 160 in., 256	5 - 4096 mm.)	(basketball to sm	nall car)		
RR = Redrock	>160 in >4096	mm)	(larger than a sm	nall car)	194	

Site Information	=0-()	-12/11	
Tt_ID: _	Surveyed By: $\sqrt{30}$	Date;	5/2/14 Weather:	SUNNY
GPS Unit #_	Long. Distance:	Observation Type:	Landslide	Potential instability
_	-		In-chann	el erosion
GPS Data				
GPS Point #	as Photo Description	on: RB Igndstile Sci	Photo#	00004
Additional Point #	Description	=/4 1 / 6	Photo #	00005
Additional Point #	as Photo Description	on: De Oos', T	Photo #	00006
Additional Point #	Description	on:	Photo #	
Additional Point #	Description	on:	Photo #	
-			V	
Hillslope Characteristics		Slope Orientation: 330		1083
Mapped Geology:			Observed Yes	Na
Landslide Observed?	Yes No	In-channel Erosion	Gr.	No Dollyany (V/N)
Scarp Legth:	Landslide deposit wid	th: Length:	Depth:	Delivery (Y/N)
Length of In-chan				
Type of Movement:	Deep-seated Rotational Del	bris Flow Debris Ava	lanche Other	Peblis Slide
Current Activity:	Active	Inactive	Aitigated (describe)	
Possible failure cause:	heavy (sins,			
	70/ % Forested: 85/	Veg Type: Conifer, Kil	1.16	
Average Slope:				oth or
Slope appearance:	Straight Hu	mmocky	Conv	rex Other
Hydrology:	NA Tributary Creek See	os Present Outfall (see re	econ form) Groundwate	r recharge Other
Soil Origin:	Colluvium (GI	acial Till Fill	Combin	ation Other
	50	delai 101	2011011	other.
Soil Description:	Wa = Vashon Outiles	- Rea		
Signs of Potential Insta	bility: allewy failed	Ghiubs & Feins 9	rowing	V. 6.453.9
Stream Characteristics		Source (>10%)	rans (3-10%)	Response
S:	tream Type:	Bedrock Collusial A	lluvial	(<3%) Fan
Bank cha	racteristics:	Naturally Non-erodible	rosion resistant	Highly Erodible
Scou	ur potential:	Low	Moderate	High
Dominant hydrolo	ogic regime:	Spring Snowmelt	ain Rain-on-snow	Conv. Thunderstorm
Channel N	Morphology: Pool (gnall) Riff	E LWD Present (Y/N)	GPS and phot	o#
Streambed Substrate		-	······································	
SA = Sand, Silt, and Clay	(<0.08 in, <2mm.)	(smaller than "	BB")	
GR = Gravel	(0.08 - 2.5 in., 2 - 64 mm.)	("BB to tennis I		
CO = Cobble	(2.5 - 10 in., 64 - 256 mm.)	(tennis ball to b	•	
BO = Boulder	(10 - 160 in., 256 - 4096 mm.)	(basketball to s	mall car)	
BR = Bedrock	>160 in., >4096 mm.)	(larger than a s	mall car)	76

ite information	_	TO -0					
Tt_ID: _	LS-07 Surveyed By:	St St	Da	ate: <u>5/2/14</u>	_	SUNN	1
GPS Unit #_	Col Long. Distance:	291ft	Observation Ty	pe: Lan	dslide	Potential i	nstability
_		from STRIT			In-chan	nel erosion	
PS Data							
GPS Point #_	as PLOTO	Description: Dep	usitin fan		Photo #	0000	7
Additional Point #		Description: 🕦 🕒	inge. of le	T	Photo #	0000	8
Additional Point #		Description:			Photo #		
Additional Point #_		Description: _5್ರಮ	eeping con:	fel @ 7.00	Photo #	00011)
Additional Point #_		Description:			Photo #		
iillslope Characteristics							
Mapped Geology:		Slope Orie	entation:				
Landslide Observed?	Yes No			 rosion Observed	? Yes	No	
Scarp Legth:	Landslide	e deposit width:	Leng	gth:	Depth;	Del	livery (Y/N
Length of in-chan	nel Erosion:						
Type of Movement:	Deep-seated Rotational	Debris Flow	Debr	is Avalanche	Other	Dobies	1
	Active	Inacti	iva	Mitigated (d	lescribe)	PC 21()	16/
Current Activity:			fan	Soils		2) ste	L
Possible failure cause:			10vement	20113	20101011	3113	7
thou enteling.	Tires Show S	13	(047-1031)				
Average Slope:	75/- % Forested:	70	Veg Type: Mixeu	1/5410	5		
Slope appearance:	Straight	Hummocky	,	Concave	Con	vex	Other
Hydrology:	Tributary Creek	Seeps Presen	t Outfall (see recon form)	Groundwat	er recharge	Other
Soil Origin:	Colluvium	Glacial Till		Fill	Combi	nation	Other
Soil Description:	Satured Soils, 5	1-9hT Flow	entelias,				
Signs of Potential Instal	D ()	ed of mati	/	TOD. Sor	To Tree!	s show	Sign
MISPMENT	1000	111,00					
tream Characteristics						-	
St	tream Type:	Source Bedro	e (>10%) ck Colluvial	Trans (3-10%)	Incised	Response (<3%) Fan	
Bank cha	racteristics:	***************************************	ally Non-erodible	Erosion resista	nt	Highly Erodible	
Scou	ır potential:	Low		Moderate		High	***************************************
Dominant hydrolo		Spring	Snowmelt	Rain	Rain-on-snow	Conv. Thundersto	rm
Channel N	Norphology:		LWD Present (Y	//N)	GPS and pho	to#	
treambed Substrate					-		
A = Sand, Silt, and Clay	(<0.08 in, <2mm.)	(smaller t	han "BB")			
GR = Gravel	(0.08 - 2.5 in., 2 -	-	("BB to te	-			
O = Cobble	(2.5 - 10 in., 64 -	256 mm.)	(tennis ba	ill to basketball)			
O = Boulder	(10 - 160 in., 256	- 4096 mm.)	(basketba	ili to small car)			
BR = Bedrock	>160 in., >4096 n	nm.)	(larger th	an a small car)		24	

Site Information	10 07 -0 50	_	/7 /14 Weather:	Sugar
-	US-03 Surveyed By: SV JV	Date: <u></u>	Weather.	Patratial instability
GPS Unit #_	Col Long. Distance:	Observation Type:	andslide	Potential instability
			In-chan	nel erosion
GPS Data				(
GPS Point #	as Photo Description	· Deposio	Photo #	000 4
Additional Point #	Description	Slope	Photo #	00015
Additional Point #	Vasa_US_UASTable Description	: end of Potential	ZOIR PROMO#	100 Kg
Additional Point #_	Description	:	Photo #	
Additional Point #_	Description	:	Photo #	-
Hillslope Characteristics Mapped Geology: Landslide Observed?	Yes No	ope Orientation: Maria		(No
Scarp Legth:	Landslide deposit width	: <u>50</u> Length:	Depth:	Delivery (Y/N)
Length of In-chan	nel Erosion:	_		
Type of Movement:	Deep-seated Rotational Debri	is Flow Debris Avala	nche Other	Deblis Stile
Current Activity:	Active	Inactive Mi	tigated (describe)	
Possible failure cause:	heavy rains			
Average Slope: Slope appearance: Hydrology: Soil Origin: Soil Description:	Tributary Creek Seeps Colluvium Glac	Veg Type: Concav Present Outfall (see rec		er recharge Other
Signs of Potential Insta	bility:			
	tream Type:	Bedrock Colluvial All	ns (3-10%) Incised via	Response (<3%) Fan Highly Erodible
Scol	ur potential:	Low	derate	High
Dominant hydrol	ogic regime:	Spring Snowmelt Rain	Rain-on-snow	Conv. Thunderstorm
Channel N	Morphology: Rool / 1544	LWD Present (Y/N)		to#
Streambed Substrate		_		
SA = Sand, Silt, and Clay GR = Gravel CO = Cobble	(<0.08 in, <2mm.) (0.08 - 2.5 in., 2 - 64 mm.) (2.5 - 10 in., 64 - 256 mm.)	(smaller than "BE ("BB to tennis ba (tennis ball to ba	II)	
BO = Boulder	(10 - 160 in., 256 - 4096 mm.)	(basketball to sm	all car)	
BR = Bedrock	>160 in., >4096 mm.)	(larger than a sm	all car)	9

Site Information	. (14)	D TP		Date:5/2/	/ Weather:	C	1
Tt_ID: <u>U</u> GPS Unit #	Surveyed By: 2)(0)	Observation	0.500 - A	Landslide Landslide		instability
GPS UNIT #	cong. Distance.				In-chan	nel erosion	
GPS Data	0	- 1	LOST C	(4)	Dh A H	052	7237
GPS Point #	as Photo	Description:	(1 + -	City	Photo #		70 11
Additional Point #		Description:	7.651	20/11)	Photo #		2.5
Additional Point #_		Description:			Photo #		
Additional Point #		Description:					· · · · · · · · · · · · · · · · · · ·
Additional Point #_		Description:			Photo #	·	
Hillslope Characteristics Mapped Geology:		Slope (Orientation:	152		para and a second	Š
Landslide Observed?	(Yes) No	•		nel Erosion Obs	erved? Yes	No	
25 Je of Scarp Legth:	75m Landslide	e deposit width:	0	Length:	Depth:	D	elivery (Y/N)
Length of in-chann	nel Erosion:						0
Type of Movement:	Deep-seated Rotational	Debris Flo)W	Debris Avalanch	ne Other	Debis	5/1/0
Current Activity:	Active	Ina	active	Mitiga	ted (describe)		**
Possible failure cause:	Heavy Chine						
Slope appearance: Hydrology:	Straight Tributary Creek	Hummoc Seeps Pres	•	Concave		er recharge	Other ^
Soil Origin:	Colluvium	Glacial T	111	Fill	Comb	ination	Other
	Collaviani						
Soil Description: Signs of Potential Instal	bility:						
Stream Characteristics							
	tream Type:	/	urce (>10%) drock	vial Trans (i		Response (<3%) Fan	
	racteristics:		turally Non-erodible		resistant	Highly Erodible	
	ur potential:	Lov	w)	Modera	ate	High	
Dominant hydrolo		Sp	ring Snow	vmelt Rain	Rain-on-snow	Conv. Thunders	torm
	Morphology: Lusicale		LWD Pres	ent (Y/N)	GPS and ph	oto#	
Streambed Substrate				<u></u>	 		
SA = Sand, Silt, and Clay	(<0.08 in, <2mm.	.)	(sm	aller than "BB")			
GR = Gravel	(0.08 - 2.5 in., 2 -			to tennis ball)			
CO = Cobble	(2.5 - 10 in., 64 -	256 mm.)	(ten	nis ball to baske	tball)		
BO = Boulder	(10 - 160 in., 256	- 4096 mm.)	(bas	ketball to small	car)		
BR = Bedrock	>160 in., >4096 r	nm.)	(lar	ger than a small	car)	17	

ite Information	(- (-	10 -0	C	1-1.10	SUNT
Tt_ID: <u>L</u>	9-05 Surveyed By:	11, 11	Date: >	/2/19 Weather:	
GPS Unit #_	Long. Distance:		Observation Type:	Landslide	Potential instability
				In-chan	nel erosion
S Data GPS Point # 4	e D1 -	Description: S Ca	CD	Photo #	00039
	0.1	Description: 1)/S	. 0	Conditions Photos	- 4
Additional Point #_	as thelo	Description:	Channel	Photo #	
Additional Point #_		Description:		Photo #	
Additional Point #			· · · · · · · · · · · · · · · · · · ·	Photo #	
Additional Point #_		Description:			
Ilslope Characteristics					3
Mapped Geology:		Slope Orienta	ation: East		
Landslide Observed?	Yes No		In-channel Erosion		No
Scarp Legth:		deposit width:	Length: _	Depth	: Z-S Delivery (Y/N)
Length of In-chan	nel Erosion:				. ~ 1
Type of Movement:	Deep-seated Rotational	Debris Flow	Debris Ava	lanche Other	Debris Stave
Current Activity:	Active	Inactive	N	Nitigated (describe)	
Possible failure cause:	older than wo	silean Slide			
Heavy (ain)					
, , , , , , , , , , , , , , , , , , ,	7	· <u>.</u> · .		/ 	
Average Slope:	35 % Forested:	50 Veg	Type: MikeJ /	5410b5	
Slope appearance:	Straight	Hummocky	Conca	rvė Coi	nvex Other
Hydrology:	Tributary Creek	Seeps Present	Outfall (see re	econ form) Groundwat	ter recharge Other /
		1	E111	Comple	in at land
Soil Origin:	Colluvium	Glacial Till	Fill	Comb	ination Other
Soil Description:			-		
Signs of Potential Insta	bility:				
ream Characteristics				- (N	
	tream Type:	Source (>1		rans (3-10%) Iluvial	Response (<3%) Fan
	racteristics:	Bedrock Naturally N		rosion resistant	Highly Erodible
	ur potential:	Low		1oderate	High
Dominant hydrok		Spring	Snowmelt R	ain Rain-on-snow	Conv. Thunderstorm
And the second s	Morphology: Beliack C	1,50	LWD Present (Y/N)	GPS and ph	oto #
reambed Substrate	Tothlorogy. Design	NOTE	· · · · -		
A = Sand, Silt, and Clay	(<0.08 in, <2mm.)		(smaller than "	BB")	
R = Gravel	(0.08 - 2.5 in., 2 - 6		("BB to tennis i		
O = Cobble	(2.5 - 10 in., 64 - 2		(tennis ball to b	•	
O = Boulder	(10 - 160 in., 256 -		(basketball to s	mall car)	
R = Bedrock	>160 in., >4096 m	ım.)	(larger than a s	mall car)	19

<u>Site Information</u>	50 -	D	7/11/
	Surveyed By: S	Date: 5/-	/// Weather: Coc /
GPS Unit #_	Long. Distance:	Observation Type: —	
			In-channel erosion
GPS Data			1 6-10
GPS Point #	Description	on: Down slope from Top a	Photo # 000 40
Additional Point #	Description	on: LB seep	Photo# 000 49
Additional Point #	Description	on:	Photo #
Additional Point #	Description	on:	Photo #
Additional Point #	Description	on:	Photo #
Hillslope Characteristics			
Mapped Geology:	= -	Slope Orientation: 790 We	51
Landslide Observed?	(Yes) No	In-channel Erosion Ob	()
Scarp Legth:	15m Landslide deposit widt	th: 15 Length: //	Depth: 1 5 Delivery (Y/N)
Length of In-chann	el Erosion:		5 00
Type of Movement:	Deep-seated Rotational Deb	pris Flow Debris Avalan	che Other Slump
Current Activity:	Active	Inactive Mitig	gated (describe)
	RB Slump, forcing STream	1 /	Cleating Prosion
LB SEED GO) elosion.	/	
Slund cause) by	wrtetl Blainage Sail	sing the slope	
Average Slope:	50% % Forested: 90	Veg Type: Mike)	
Slope appearance:	Straight Hu	mmocky Concave	Convex Other
Hydrology:	Tributary Creek Seep	os Present Outfall (see recor	n form) Groundwater recharge Other
Soil Origin:	Colluvium Gla	acial Till Fill	Combination Other
Soil Description:			
Signs of Potential Instab	nility:		
Stream Characteristics	Notes on Made To		
	ream Type:		(3-10%) Response
	racteristics:	Bedrock Alluvi Naturally Non-erodible Erosic	al (<3%) Fan on resistant Highly Erodible
	r potential:	Low Mode	erate High
Dominant hydrolo		Spring Snowmelt Rain	Rain-on-snow Conv. Thunderstorm
	lorphology: (184/2/800)	LWD Present (Y/N)	GPS and photo #
Streambed Substrate	o.phology.		
SA = Sand, Silt, and Clay	(<0.08 in, <2mm.)	(smailer than "BB")	
GR = Gravel	(0.08 - 2.5 in., 2 - 64 mm.)	("BB to tennis ball)	
CO = Cobble	(2.5 - 10 in., 64 - 256 mm.)	(tennis ball to bask	
BO = Boulder	(10 - 160 in., 256 - 4096 mm.)	(basketball to smal	
BR = Bedrock	>160 in., >4096 mm.)	(larger than a smal	l car)

ite information	57 -0 -6	_	. 5/7/14	W 5
	57 Surveyed By: Jf Jf	-	ite:	Weather: Potential instability
GPS Unit #	Long. Distance:	Observation Ty —	pe: Landslid	
				In-channel erosion
PS Data		Car		
GPS Point #	Description	Scarp		Photo # 000 66
Additional Point #	Description	:		Photo #
Additional Point #	Description	:		Photo #
Additional Point #	Description	l:		Photo #
Additional Point #	Description	1:		Photo #
Hillslope Characteristics	el.	one Orientation:	ST	•
Mapped Geology:		ope Orientation.	rosion Observed?	Yes No
	No Landslide deposit width	4. 4	1	Depth: 0 - 5 Delivery (Y/
Scarp Legth:		1. 16 21	12.01	<u> </u>
		— ris Flow Debr	ris Avalanche O	ther Debis stad
	· · · · · · · · · · · · · · · · · · ·	Inactive	Mitigated (desc	rihe)
Current Activity:	fail steep Slipe		iviitigateu (desc	
Average Slope: 40	+ % Forested: <u>60</u>	Veg Type:	1 some shi	55
Slope appearance:	Straight Hun	nmocky	Concave	Convex Other
Hydrology:	Tributary Creek Seeps	Present Outfall	(see recon form)	Groundwater recharge Other
Soil Origin:	Colluvium	cial Till	Fill	Combination Other
Soil Description:				
Signs of Potential Instability:		***		
Stream Characteristics				
Stream	i Type:	Source (>10%) Bedrock Colluvial	Trans (3-10%) Alluvial	cised (<3%) Fan
Bank characte		Naturally Non-erodible	Erosion resistant	
Scour pot		Low	Moderate	High
Dominant hydrologic r		Spring Snowmelt	(Rain R	ain-on-snow Conv. Thunderstorm
	ology: Rikle gool	LWD Present (Y/N) Y G	PS and photo #
Streambed Substrate		_		
SA = Sand, Silt, and Clay	(<0.08 in, <2mm.)	(smaller	than "BB")	
GR = Gravel	(0.08 - 2.5 in., 2 - 64 mm.)	("BB to te	ennis ball)	
CO = Cobble	(2.5 - 10 in., 64 - 256 mm.)	(tennis b	all to basketball)	
BO = Boulder	(10 - 160 in., 256 - 4096 mm.)	(basketb	all to small car)	
BR = Bedrock	>160 in., >4096 mm.)	(larger th	ian a smail car)	

Site Information	500000		Date: 5/-1/	14 Weather: Su	104
_	S-08 Surveyed By: SV >V	— Ohservat	Date: /// tion Type: La		tential instability
GPS Unit #	Long. Distance:	_	ion type.	In-channel erosi	
				m-channel el osi	OII
GPS Data GPS Point #	Description	n: Photo of	Scalp	Photo # OC	73
Additional Point #	Description	+101-c)		Photo #	
Additional Point #	Description			Photo #	
Additional Point #	Description		MACAME - 20	Photo #	
Additional Point #	Description			Photo #	
Hillslope Characteristics	s		7 = 0		
Mapped Geology:		lope Orientation: 9		ed? Yes 😡)
Landslide Observed?	Yes No		nnel Erosion Observe		
Scarp Legth:	Landslide deposit widtl	n: 10 /	Length: 107	Depth: 1,5	Delivery (Y/N)
Length of In-channe		_		Debi	ic 5/1.)e
Type of Movement:	Deep-seated Rotational Deb	ris Flow	Debris Avalanche	Other	3 3/100
Current Activity:	Active	Inactive	Mitigated	(describe)	
Possible failure cause:	STEEP Slope				
In covered a	offently, Conifer a	y lowing on Tap	D: 1.5in	12fr high	
Average Slope:	36 % Forested: 80	Veg Type: M	1xp1, 17 0	InvelsTol-1	1-00
Slope appearance:	Straight Hun	mmocky	Concave	Convex	Other
Hydrology:	Tributary Creek Seep	s Present O	utfall (see recon form	n) Groundwater recha	rge Other
Soil Origin:	Colluvium Gla	icial Till	Fill	Combination	Other
Soil Description:					
Signs of Potential Instab	ility:				
Stream Characteristics		Source (>10%) Coll	uvial Trans (3-109		
	ream Type:	Bedrock Naturally Non-erodible	Alluvial	(<3%) Fa	
	acteristics:	Low	Moderate	High	
	· potential:		wmelt Rain		understorm
Dominant hydrolog			sent (Y/N)	GPS and photo#	
	orphology: [:ffle/Pool		Selic (1714)	GF3 and photow	<u></u>
Streambed Substrate					
SA = Sand, Silt, and Clay	(<0.08 in, <2mm.)	52	naller than "B8")		
GR = Gravel	(0.08 - 2.5 in., 2 - 64 mm.)	•	B to tennis ball)	III.	
CO = Cobble	(2.5 - 10 in., 64 - 256 mm.)	•	nnis ball to basketbal		
BO = Boulder	(10 - 160 in., 256 - 4096 mm.)	•	sketball to small car)		
BR = Bedrock	>160 in., >4096 mm.)	(lar	ger than a small car)		

Site Information	16.6		c 41/1		A /
Tt_ID:_	15-09 Surveyed By: JP JP	_	e: 5/7/14		9.
GPS Unit #_	Co Long. Distance:	Observation Typ	e: Land	Islide	Potential instability
				In-channel ero	osion
GPS Data					
GPS Point #	Description	LB Scarp		Photo #	10095
Additional Point #	Description	Depos TT		Photo #	96
Additional Point #	Description	:		Photo #	
Additional Point #	Description	:		Photo #	
Additional Point #	Description	:		Photo #	
Hillslope Characteristics Mapped Geology:	SI	ope Orientation: Eas T			
Landslide Observed?	Yes No		— osion Observed?	(Yes)	lo
Scarp Legth:	Landslide deposit width	T.	h: 5~	Depth: 9	Delivery (Y/N)
Length of In-chan					
Type of Movement:	Deep-seated Rotational Debri	is Flow Debris	Avalanche	Other 51	Je.
Current Activity:	Active	Inactive	Mitigated (de	escribe)	· · · · · · · · · · · · · · · · · · ·
**************************************	Seel SESSON SUTURIED	Soils, Depos	in push	ing sileum	(15 Tecolle
Causing mole	RB eleston.				,
Average Slope:	100 × % Forested:	Veg Type:		_	
Slope appearance:	Straight Hum	mocky C	oncave	Convex	Other
Hydrology:	Tributary Creek Seeps	Present Outfall (se	ee recon form)	Groundwater recl	narge Other
Soil Origin:	Colluvium	ial Till	Fill	Combination	Other
Soil Description:	Saturate)				
Signs of Potential Insta	ibility: Large maple on	edge May fa	Il on/no	eal for	ride
Stream Characteristics		· · · · · · · · · · · · · · · · · · ·			****
	tream Type:	Source (>10%) Bedrock Colluvial	rans (3-10%) Alluvial	Incised Respo	
	eracteristics:	Naturally Non-erodible	Erosion resistan		Erodible
	ur potential:	Low	Moderate	High	
Dominant hydrol		Spring Snowmelt	Rain	Rain-on-snow Conv.	Thunderstorm
	Morphology: REFLE POOL	LWD Present (Y/	N) \	GPS and photo #	
Streambed Substrate		_			
SA = Sand, Silt, and Clay	(<0.08 in, <2mm.)	(smaller th	an "BB")		
GR = Gravel	(0.08 - 2.5 in., 2 - 64 mm.)	("BB to ten	nis ball)		
CO = Cobble	(2.5 - 10 in., 64 - 256 mm.)	(tennis ball	l to basketball)		
BO = Boulder	(10 - 160 in., 256 - 4096 mm.)	(basketball	to small car)		
BR = Bedrock	>160 in., >4096 mm.)	(larger tha	n a small car)		3

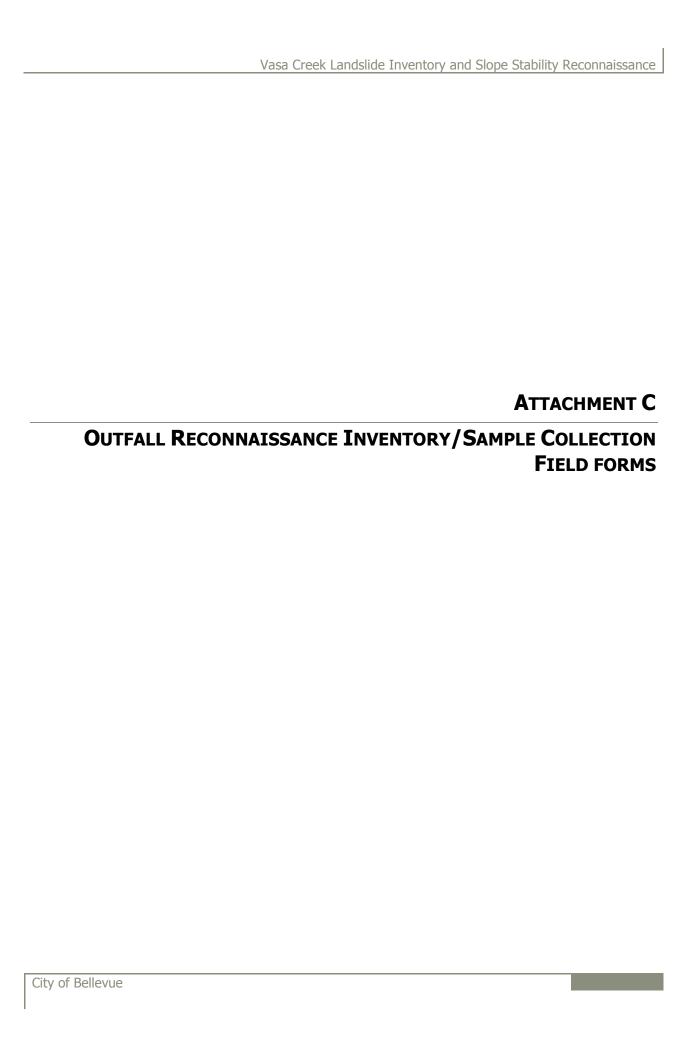
Site Information	D. 4				
	Surveyed By:	3P 3P	Date: <u>5/2</u>		
GPS Unit #_	Long. Distance:	325	Observation Type:	Landslide	Potential instability
				In-channe	l erosion
GPS Data					
GPS Point #	as Photo	Description: Τορ		Photo #	0001
Additional Point #	as Photo	Description: De 5	1115 fga	Photo #	00017
Additional Point #	25 Photo	Description: Cla	lens	Photo #	00013
Additional Point #_		Description:		Photo #	
Additional Point #_		Description:		Photo #	
Hillslope Characteristics					(8
Mapped Geology:		Slope Orient	tation:		
Landslide Observed?	Yes No	•	In-channel Erosion Obse	erved? Yes	No
Scarp Legth:	Landslic	le deposit width:	Length:	Depth: _	Delivery (Y/N)
Length of In-chan	nel Erosion:				
Type of Movement:	Deep-seated Rotational	Debris Flow	Debris Avalanch	e Other	
Current Activity:	Active	Inactive	Mitiga	ted (describe)	
Possible failure cause:					
				/	
Average Slope:	75%. % Forested	:	g Type: Mixe / /	shrubs	
Slope appearance:	Straight	Hummocky	Concave	Conve	ex Other
Hydrology:	Tributary Creek	Seeps Present	Outfall (see recon f	orm) Groundwater	recharge Other
Soil Origin:	Colluvium	Glacial Till	Fill	Combina	ntion Other
Soil Description:	Spil SyTulatel	more Then	presious si	Te.	Mark 10
Signs of Potential Insta	bility: Date ac	Tively Flowing	sints Cleek	, Devils (1	ر دا د
acea between Pr	evius site als	u unstable			
Stream Characteristics					
' s	tream Type:	Source (>: Bedrock	10%) Colluvial Trans (3	ncised	esponse <3%) Fan
	racteristics:	**************************************			lighly Erodible
	ur potential:	Low	Modera	te H	ligh
Dominant hydrol	ogic regime:	Spring	Snowmelt Rain	Rain-on-snow C	onv. Thunderstorm
Channel N	Morphology: Pool / [:	FFR	LWD Present (Y/N)	GPS and photo	#
Streambed Substrate					
SA = Sand, Silt, and Clay	(<0.08 in, <2mm	1.)	(smaller than "BB")		
GR = Gravel	(0.08 - 2.5 in., 2		("BB to tennis ball)		
CO = Cobble	(2.5 - 10 in., 64	256 mm.)	(tennis ball to basket	ball)	37
BO = Boulder	(10 - 160 in., 25	6 - 4096 mm.)	(basketball to small o	car)	
BR = Bedrock	>160 in., >4096	mm)	(larger than a small o	ar)	3

Site Information) 02	70 -0					
Tt_ID: <u> </u>	1 - 02 Surveyed By:	SP, JP		5/2/14	Weather:	- Contraction -	
GPS Unit #_	Long. Distance:		Observation Type:	Landsi	lide	Potenti	al instability
					In-chann	el erosion	
GPS Data			100%			050	
GPS Point #	as phore	Description: 0 + c	OTIET 18"	c1055: 4	Photo #	000	18
Additional Point #		Description: Pond	WATEL U/S	of inles	Photo #		19
Additional Point #		Description: 5			Photo #	1	26
Additional Point #		Description: Se	ер		Photo #	-	2
Additional Point #			1' culveli upslo		Photo #	2	7
		0	Thei colvert,	Secps	1		23
Hillslope Characteristics Mapped Geology:		Slope Orient	To Left + (Tg)	71 of Culy)-(')	5-00(77
Landslide Observed?	Yes No	Sope Official	In-channel Erosion	Observed?	Yes	No	
Scarp Legth:	Landslide	deposit width:	Length:		Depth:		Delivery (Y/N)
Length of In-chann	el Erosion:						
Type of Movement:	Deep-seated Rotational	Debris Flow	Debris Ava	lanche (Other		
Current Activity:	Active	Inactive	N	Nitigated (desc	cribe)		
Possible failure cause:		/		7		·	
			<u> </u>				
		10	- 0 - 0 / 1	1 : -			
Average Slope:	% Forested:		Type: Decid /sh		6		Other
Slope appearance:	Straight	Hummocky	Conca	ve	Conv	/ex	Other
Hydrology:	Tributary Creek	Seeps Present	Outfall (see re	con form)	Groundwate	r recharge	Other
Soil Origin:	Colluvium	Glacial Till	Fill		Combir		Other
Soil Description:	muttiple flow 1.	ines to inle	T Seeps	allons	UPSI	ope of	a ((e S S (o .
Signs of Potential Instab	oility:						
Stream Characteristics							
St	ream Type:	Source (>1 Bedrock		rans (3-10%) Iluvial	ncised	Response (<3%) Fan	
Bank chai	acteristics:	Naturally N	Non-erodible Er	rosion resistant		Highly Erodible	•
Scou	r potential:	Low	M	loderate		High	
Dominant hydrolo		Spring	Snowmelt Ra	ain / R	Rain-on-snow	Conv. Thunder	storm
	orphology:		LWD Present (Y/N)		GPS and phot	to#	
Streambed Substrate							
SA = Sand, Silt, and Clay	(<0.08 in, <2mm.)) 	(smaller than "B	3B")			
GR = Gravel	(0.08 - 2.5 in., 2 -		("BB to tennis b				
CO = Cobble	(2.5 - 10 in., 64 - 2	256 mm.)	(tennis ball to be	asketball)			
BO = Boulder	(10 - 160 in., 256	- 4096 mm.)	(basketball to sr	mail car)			
BR = Bedrock	>160 in., >4096 m	nm.)	(larger than a sr	mall car)		204	

Site Information		-0-0	f	12/11			
Tt_ID: <u>Q</u>	Surveyed By:	31 70	Date:	1//14	Weather: _		-
GPS Unit #	Long. Distance:	(Observation Type:	Landslid	e	Potentia	l instability
				(In-channe	el erosion	-21
GPS <u>Data</u>						956	
GPS Point #	asploto	Description: LB	2105721		Photo #	000	43
Additional Point #	0600	A A	en buse		Photo #		44
Additional Point #	h) (***********************************	Description: STICE	· · · · · · · · · · · · · · · · · · ·	(2)	Photo #		45
Additional Point #		Description:		•	Photo #		
Additional Point #		Description:			Photo #		
							¥.
Hillslope Characteristics Mapped Geology:		Slope Orientat	ion:				
Landslide Observed?	Yes No	Siope Official	In-channel Erosion	Observed?	Yes	No	
Scarp Legth:		e deposit width:	Length:		Depth:		Delivery (Y/N)
Length of In-chann							
Type of Movement:	Deep-seated Rotational	Debris Flow	Debris Aval	anche Ot	her		
Type of Movement.	Beep seated (totalional	/		/			/
Current Activity:	Active	Inactive	М	itigated (descr	ibe) _		
Possible failure cause:		/		/		/_	
/	/					_/	
							
Average Slope:	% Forested:	Veg Ty	/pe:				
Slope appearance:	Straight	Hummocky	Concav	ve .	Conve	ex	Other
Hydrology:	Tributary Creek	Seeps Present	Outfall (see red	con form) G	iroundwater	recharge	Other
Soil Origin:	Colluvium	Glacial Till	Fill		Combina	ation	Other
Soil Description:	Det						
Signs of Potential Instal	pility: In-channel e	rosion on left	bank, (15~	a) poTe	17:11 11	ndel eu	Tot
mature conit	ors which would	pull down	postion of Be	nK			
Stream Characteristics					_		
St	ream Type:	Source (>109 Bedrock		ans (3-10%) Iuvial	isen :	(esponse <3%) Fan	
Bank cha	racteristics:	Naturally No	n-erodible Ero	osion resistant	ŀ	lighly Erodible	
Scou	r potential:	Low	М	oderate	ŀ	ligh	
Dominant hydrolo	egic regime:	Spring	Snowmelt Ra	in Ra	in-on-snow C	Conv. Thunders	torm
Channel N	torphology: Bedialic	hane	.WD Present (Y/N)	N GI	S and photo	o# —	
Streambed Substrate			_		_		
SA = Sand, Silt, and Clay	(<0.08 in, <2mm.)	(smaller than "B	В")			
GR = Gravel	(0.08 - 2.5 in., 2 -	•	("BB to tennis ba	-			
CO = Cobble	(2.5 - 10 in., 64 -		(tennis ball to ba	•			
BO = Boulder	(10 - 160 in., 256	- 4096 mm.)	(basketball to sn	nall car)			
RR = Redrock	>160 in >4096 r	nm l	(larger than a sn	nall carl		106	

Site Information	الم الم	1010	Date: 5	17/14			
_	11-04 Surveyed By:		Date:	Landslide	Potential	instability	5
GPS Unit #_	Col Long. Distance:		baci vation Type.				
				ur-cna	nnel erosion		
GPS Data			1 6		00	7	
GPS Point #		Description:	cone (rosion	Photo	# 007		
Additional Point #_		Description:		Photo	#		
Additional Point #		Description:	12	Photo	#		
Additional Point #_		Description:		Photo	#		
Additional Point #_		Description:		Photo	#		
	70.00					4	
Hillslope Characteristics		Slone Orientati	on: West				
Mapped Geology:	Yes No	Slope Offertati	In-channel Erosion Ol	oserved? (Yes	No		
Bink & Searp Legth:	\sim	eposit width:	Length:		h: 7.00 De	livery (Y/N	1)
Length of In-chan				· ·	0 1		
Type of Movement:	Deep-seated Rotational	Debris Flow	Debris Avalan	che Other	E105/3-	$\overline{}$	
	V Bank	lanatha	B diei:	rated (describe)			
Current Activity: Possible failure cause:	Active	Inactive	- iviiti	gated (describe)			
rossible failule cause.	seep plesent						
* · · · · · · · · · · · · · · · · · · ·	**************************************			· · · · · · · · · · · · · · · · · · ·		-	
Average Slope:	% Forested:	Veg Ty	pe: Mixe)/	LT		-	
Slope appearance:	Straight	Hummocky	Concave	Co	onvex	Other	
Hydrology:	Tributary Creek	Seeps Present	Outfall (see reco	n form) Groundwa	iter recharge	Other	
Soil Origin:	Colluvium	Glacial Till	Fill	Comi	oination	Other	
Soil Description:							70
Signs of Potential Insta	bility: Present ab	ove elasion	/				_
					·		—
Stream Characteristics		Source (>10%	Colluvial Trans	(3-10%) Incised	Response		
	tream Type:	Bedrock	Alluvi	al	(<3%) Fan		Transis and Alberta March
Bank cha	racteristics:	Naturally Nor		on resis ant	Highly Erodible		
Scot	ur potential:	Low	Mode	erate	High	to Andreal Section (Andrew Andread Section Section (Andread Section Section (Andread Section Section Section Sec	
Dominant hydrol	ogic regime:	Spring	Snowmelt Rain	Rain-on-snow	Conv. Thundersto	ırm	
Channel N	Morphology:	Dool	WD Present (Y/N)	GPS and ph	noto #		
Streambed Substrate						8	0
SA = Sand, Silt, and Clay	(<0.08 in, <2mm.)		(smaller than "BB")			
GR = Gravel	(0.08 - 2.5 in., 2 - 6	4 mm.)	("BB to tennis ball)	ı			
CO = Cobble	(2.5 - 10 in., 64 - 25	6 mm.)	(tennis ball to bask	etball)			
BO = Boulder	(10 - 160 in., 256	1096 mm.)	(basketball to sma	ll car)			
BR = Bedrock	>160 in., >4096 mm	1.)	(larger than a small	l car)	19		

Site Information	21 - 5	-0 -0		- / / !		
Tt_ID:	P1-05 Surveyed By:	50 30	Date: _	5/7/14	Weather: _	4110
GPS Unit #	Col Long. Distance:		Observation Type:	Landslide	! (Potential instability
GPS Data						
GPS Point #		Description:	lope		Photo #	000 87
Additional Point #		Description:			Photo #	
Additional Point #		Description:			Photo #	
Additional Point #		Description:			Photo #	
Additional Point #		Description:			Photo #	
			· · · · · · · · · · · · · · · · · · ·	1		
Hillslope Characteristics Mapped Geology:		Slope Orient	tation:			i k
Landslide Observed?						
Scarp Legth:	Landslide	deposit width:	Length:	 	Depth:	Delivery (Y/N)
Type of Movement:	Deep-seated Rotational	Debris Flow	Debris Ava	alanche Oth	er	
Current Activity:	Active	Inactive		Mitigated (describ	 ре)	
Possible failure cause:						. 64
Average Slope:	% Forested	30 Veg Typ	e YUUR A	11065		Other described below
Slope appearance:		Hummocky	Conca		Convex	Out
Stope appearance.	Straight	Training only				Other
Hydrology:	Tributary Creek	Seeps Present	Outfall (see re	econ form) Gr	oundwater re	echarge Other
Soil Origin:	Colluvium	Slacial Till	Fill	I	Combinati	on Other
Soil Description:	7.					
Signs of Potential Insta	ability: Steep W	ish seep	on LB 1	1345 ab	ove C	UlvelT clossin
May plug with failure	inta (ce, so	Mell scalp re	41 TOPIL	let Ves	eles	ScT soils-
Stream Characteristics		Sauras Is	100/1	rans (3-10%)	Por	ponse
**************************************	Stream Type:	Source (>: Bedrock	COURMS	Alluvial Incis	no:	%) Fan
Bank ch	aracteristics:	Naturally	Non-erodible E	rosion resist int	Hig	hly Erodible
Sco	our potential:	Low	l N	Moderate	Hig	h
Dominant hydro	logic regime:	Spring	Snowmelt \R	Rain Rain	-on-snow Cor	nv. Thunderstorm
Channel	Morphology: [Kfl/Pa	20]	LWD Present (Y/N)	GP!	and photo #	<u> </u>
Streambed Substrate	S					
SA = Sand, Silt, and Clay	(<0.08 in, <2mm.)		(smaller than "	вв")		
GR = Gravel	(0.08 - 2.5 in., 2 - 6	i4 mm.)	("BB to tennis i	·		
CO = Cobble	(2.5 - 10 in., 64 - 2	56 mm.)	(tennis ball to b	basketball)		
BO = Boulder	(10 - 160 in., 256 -	4096 mm.)	(basketball to s	small car)		
BR = Bedrock	>160 in., >4096 m	m.)	(larger than a s	small car)		



Subwatershed:	Jasa Cree	-	Outfall ID:	T-0F01					
Today's date: 5/	2/2014	The second second	Time (Military):	09:00					
Investigators: Tel	f Phillips +	Jet Parr	Form completed		1 (Tetra Te				
Temperature (°F):	550	Rainfall (in.): Last 24 h	ours: D Last 48 hou						
Latitude:	Longi	tude:	GPS Unit:	GPS Unit: GPS LMK #:					
Camera: 6P5			Photo #s:	SC00003	AND DESCRIPTION				
Land Use in Drainage Industrial Ultra-Urban Resident Commercial Notes (e.g., origin of commercial LOCATION	outfall, if known): Description MATERIAL RCP C		☐ Open Space ☐ Institutional Other: Known Industrie	DIMENSIONS (IN.) Diameter/Dimensions:	SUBMERGED In Water: No Partially				
Closed Pipe	Steel	Вох	Triple		Fully With Sediment: No Partially Fully				
X Open drainage	Concrete Earthen rip-rap Other:	☐ Trapezoid ☐ Parabolic ☐ Other:		Depth: Top Width: 18 Bottom Width:					
☐ In-Stream	(applicable when col	lecting samples)							
Flow Present?	☑ Yes	□ No If N	o, Skip to Section 5						
Flow Description (If present)		Moderate Substantial							
ection 3: Quantit	ative Characterizati	AND DESCRIPTION OF THE PARTY OF	OR FLOWING OUTFAL	ıs					
PARA	METER	RESULT			QUIPMENT				
/Par	Volume		200 200 200 200 200 200 200 200 200 200	Liter	Bottle				
Flow #1	Time to fill			Sec					
	Flow depth			In .	Tape measure				
Flow #2	Flow width	, ,,			Tape measure				
Flow #2	Measured length	, "		Ft, In	Fape measure				
	Time of travel			S	Stop watch				
Temp	perature			°F	Thermometer				
	pH			pH Units T	est strip/Probe				
	24				Test strip				
Am	monia		I	mg/L	rest strip				

INDICATOR	CHECK if Present			DESCRIPTIO	N			RE	ELATIVE SEVERITY INDEX	(1-3)
· Odor No		Sewage	☐ Rancid/s	our Petroleu	ım/gas		☐ 1 — Faint	Law Mark	2 - Easily detected	3 - Noticeable from a distance
Color No	0	Clear Green	☐ Brown ☐ Orange	☐ Gray	☐ Yellow ☐Other:		☐ 1 – Faint col sample bo		2 - Clearly visible in sample bottle	3 - Clearly visible in outfall flow
Turbidity No	. 🛮			See severity			☐ 1 – Slight cle	oudiness	2 - Cloudy	3 - Opaque
Floatables -Does Not Include Trash!!	0		(Toilet Paper, etc m (oil sheen)	Suds Other:			l – Few/slig	ht; origin	2 - Some; indications of origin (e.g., possible suds or oil sheen)	3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)
INDICATOR Outfall Damage	CHECK if							COMMENTS		
Outfall Damage			Spalling,		ipping 🔲	Peeling Pain	t			
Deposits/Stains	APRIN -		Oily 🗆	Flow Line	Paint	Other:				
Abnormal Vegetation			☐ Excessive	☐ Inhibited	-no-we-street and the					
Poor pool quality			Odors Suds	Colors Excessive	Floatables	Oil Sheer	1			
Pipe benthic growth			Brown	☐ Orange	Green	Other:				
ection 6: Overall Out	fall Character	ization								
Unlikely []	Potential (pres	ence of two	or more indic	ators)	Suspect (or	ne or more in	dicators with	a severity	of 3) Dovious	
ection 7: Data Collect	tion									
Sample for the lab?			Yes	☐ No						
		-			····					
If yes, collected from:] Flow	□ Pool						

Section 1: Backs	round Data									
Subwatershed:	Vash		Outfall ID:	OF-02						
Today's date:	5/2/14		Time (Military)	Time (Military):						
Investigators:	JP401 5		Form complete	đ by:						
Temperature (°F):		Rainfall (in.): Last	24 hours:	urs: O						
Latitude:	Long	ritude:	GPS Unit:	GPS Unit: GPS LMK #:						
Camera:			Photo #s: 05 (Photo #s: 05(016, 017						
Land Use in Drainag	ge Area (Check all that apply	/) :		UT Be STR	ining					
☐ Industrial			Open Space							
Ultra-Urban Res	idential		☐ Institutional							
Suburban Reside	ntial ·		Other:							
☐ Commercial			Known Industri							
Notes (e.g., origin of										
LOCATION	MATERIAL		SHAPE	DIMENSIONS (IN.)	SUBMERGED					
	□RCP □C	MP Circular	☑ Single	Diameter/Dimensions:	In Water:					
	□PVC □H	DPB Bliptical	Double .	12"	☐ No☐ Partially					
Closed Pipe	☐ Steel	Box	☐ Triple	2.03	Fully					
	Other:	Other:			With Sediment: No Partially Fully					
	Concrete	☐ Trapezoid		Depth:	,,,,					
	☐ Barthen				李·李·秦·秦林					
Open drainage .	□ rip-гар	Parabolic '		Top Width:						
	☐ Other:	Other:	- 17 15 16	Bottom Width:						
In-Stream	(applicable when coll	ecting to malest								
low Present?		1 Duit 13.140	T No, Skip to Section 5	A CONTRACTOR OF THE PARTY OF TH						
low Description if present)	,	oderate Substant								
oction 3: Quantit	ative Characterizatio	Printer and the second second second second								
15 21 2		FIELD DATA	FOR FLOWING OUTFAL	ACCUPACION OF THE PROPERTY OF						
1000	METER	RESU	if the first	UNIT E	QUIPMENT					
JFlow#1	Volume			Liter	Bottle					
	Time to fill			Sec						
	Flow depth			In T	ape measure					
Flow #2	Flow width	,		Ft, In T	ape measure					
	Measured length	*,		Ft, In T	ape measure					
	Time of travel			S	Stop watch					
Temp	erature			op T	hermometer					
P	Н			pH Units Te	st strip/Probe					
Amn	nonia			mg/L	Test strip					

Section 4: Physical Ind Are Any Physical Indicato	licators for Flowi rs Present in the flow	ng Outfalls Only v? Yes 1	No (If No, Skip to Section 5)			
INDICATOR	CHECK if Present		DESCRIPTION	RE	LATIVE SEVERITY INDEX	(1-3)
Odor		Sewage Ranci	d/sour Petroleum/gas	☑1 – Faint	2 - Easily detected	3 - Noticeable from a
Color		Clear Brown Green Orang	2 10000	1 - Faint colors in sample bottle	2 - Clearly visible in sample bottle	3 – Clearly visible in outfall flow
Turbidity			See severity	☐ 1 — Slight cloudiness	2 - Cloudy	3 - Opaque
Floatables -Does Not Include Trash!!		Sewage (Toilet Paper, Petroleum (oil sheen)	etc.) Suds	1 - Few/slight; origin not obvious	2 - Some; indications of origin (e.g., possible suds or oil sheen)	3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)
INDICATOR	CHECK if Pre	sent			сомием	īs
Outfall Damage		Spallin Corros	ng, Cracking or Chipping Peeling Pai	int		
Deposits/Stains	Ø	□ Oily [Flow Line Paint Other:	oleTisa	4.: · 11.9	
Abnormal Vegetation		☐ Excessiv				
Poor pool quality	.,¤	Odors Suds	☐ Colors ☐ Floatables ☐ Oil She☐ Excessive Algae ☐ Other:	en .		
Pipe benthic growth		☐ Brown	Orange Green Other:			- 1
ection 6: Overall Outf	all Characterizat	ion .				
		e of two or more ind	المناس		•	
	4.00020	o or two or more mu	icators) Suspect (one or more	indicators with a severity	of 3) Dovious	
ection 7: Data Collecti	ion					
Sample for the lab?	Fire English	☐ Yes	□ No.			
If yes, collected from:		Flow	Pool			P4
Intermittent flow trap s	set?	☐ Yes	☐ No If Yes, type: ☐ (DBM Caulk dam		

Section 1: Backgr Subwatershed:				Outfall ID:	OF-03						
Today's date:	17/14			Time (Military)							
Investigators:	ZR 26				Time (Military): 0906 Form completed by: 5 P						
	ZP 3P	Point	all (in.): Last 24 ho			V					
Temperature (°F):	I to	ngitude:	an (m.). Last 24 no			IV 4.					
		igitude.		GPS Unit:		IK #:					
	Area (Check all that app	ılv).		Photo #s: Oc	004						
☐ Industrial	Three (Chook all marap)	,,.		П о S							
				Open Space							
Ultra-Urban Resid				☐ Institutional							
Suburban Residen	itial			Other:							
☐ Commercial	A CONTRACTOR OF THE PROPERTY O			Known Industri	ies:						
Notes (e.g., origin of RG , Top of Section 2: Outfall		-60-	A SiTTI	ag on surfe	pad Diainage						
LOCATION	MATERIA	L.		SHAPE	DIMENSIONS (IN.)	SUBMERGED					
		CMP HDPE	☐ Circular	Single Double	Diameter/Dimensions:	In Water: No					
Closed Pipe	Steel		Box	☐ Triple		Fully					
Closed Fipe						With Sediment:					
	Other:		Other:	Other:	lary. Pop	No Partially Fully					
Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other:		☐ Trapezoid ☐ Parabolic ☐ Other:		Depth: Top Width: Bottom Width:						
☐ In-Stream	(applicable when o	allastina	somples)	TV design versions							
Now Present?	Yes	□ No	F 10 - 11 W 2 1 W 2 2 W 2 2 W 2 W 2 W 2 W 2 W	, Skip to Section 5							
Flow Description (If present)	1	Moderat		,							
Section 3: Quanti	tative Characteriza	ition									
			FIELD DATA FO	R FLOWING OUTFA	ius .						
PAR	AMETER	1	RESULT		UNIT	EQUIPMENT					
Flow #1	Volume				Liter	Bottle					
tanti low #1	Time to fill				Sec						
	Flow depth				In .	Tape measure					
Flow #2	Flow width		, ,,		Ft, In	Tape measure					
THE TOWN THE	Measured length			38	Ft, In	Tape measure					
	Time of travel				S	Stop watch					
Tem	perature				°F	Thermometer					
	pН				pH Units	Test strip/Probe					
Δm	nmonia				mg/L	Test strip					

INDICATOR	CHECK if Present		DESCRIPTION		RELATIVE SEVERITY INDEX (1-3)					
· Odor		☐ Sewage	☐ Rancid/sour ☐ Petroleum/ga	s	☐ 1 — Faint	2 – Easily detected	3 – Noticeable from a distance			
Color		Clear Green		☐ Yellow ☐Other:	☐ 1 - Faint colors in sample bottle	2 – Clearly visible in sample bottle	3 - Clearly visible in outfall flow			
Turbidity			See severity		☐ 1 – Slight cloudiness	2 - Cloudy	3 - Opaque			
Floatables -Does Not Include Trash!!		_	(Toilet Paper, etc.) Suds		☐ 1 – Few/slight; origin not obvious	2 – Some; indications of origin (e.g., possible suds or oil sheen)	3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)			
INDICATOR Outfall Damage	CHECK if		Spalling, Cracking or Chipping Corrosion	CRIPTION g Peeling Pai	nt	COMMEN				
Outfall Damage			Spalling, Cracking or Chipping	g Peeling Pai	nt					
Deposits/Stains		- lo-	Oily Flow Line Paint	t Other:						
Abnormal Vegetation	ner le c		☐ Excessive ☐ Inhibited			· · · · · · · · · · · · · · · · · · ·				
Poor pool quality			Odors Colors Suds Excessive Algae	Floatables Oil Shee	en	***				
Pipe benthic growth			☐ Brown ☐ Orange ☐	Green Other:						
ction 6: Overall Out			or more indicators)	uspect (one or more i	indicators with a severit	y of 3) Dovious				
Unlikely :	NATT BOOK									
Unlikely	ion						247			
	ion	E	Yes No							

Subwatershed:	und Data		Outfall ID:	0F-04						
			Time (Military):	0921						
	5/7/14		Form completed t	0. 1						
Investigators:	P	tainfall (in.): Last 24 hour		/21						
Temperature (°F):	Longitud				4.					
Latitude:		ic.	GPS Unit: Colsille GPS LMK #:							
	Area (Check all that apply):		Thotows.							
	Area (Cheek all that apply).									
Industrial			Open Space							
Ultra-Urban Reside	ential		☐ Institutional	☐ Institutional						
Suburban Residenti	ial		Other:							
☐ Commercial			Known Industries	s:						
Notes (e.g., origin of o			- magazia							
LOCATION	MATERIAL		SHAPE	DIMENSIONS (IN.)	SUBMERGED					
	□ RCP □ CM	P Circular	Single	Diameter/Dimensions:	In Water:					
-1	☑PVC □HD	PE Eliptical	☐ Double	29 for	☐ No ☐ Partially					
Closed Pipe	☐ Steel	Вох	☐ Triple	3 10	☐ Fully					
	☐ Other:	Other:	Other:		With Sediment:					
	U Oulei.	N. C.		1 1 24	☐ Partially					
		Collugated			☐ Fully					
	Concrete	☐ Trapezoid		Depth:						
Open drainage	☐ Earthen	☐ Parabolic		Top Width:						
C) Open aramage	☐ rip-rap	Other:		Bottom Width:						
	Other:	LJ Other:		Bottom width:						
☐ In-Stream	(applicable when collec	ting samples)								
Flow Present?	☑ Yes	No If No.	Skip to Section 5							
Flow Description (If present)	☐ Trickle ☐ Mod	derate Substantial								
Section 3: Quantit	ative Characterization	1								
			R FLOWING OUTFAL	ıs						
PARA	METER	RESULT		UNIT E	QUIPMENT					
Flow#i	Volume	•		Liter	Bottle					
Call Tow WI	Time to fill			Sec						
	Flow depth			În .	Tape measure					
Flow #2	Flow width _	, , , , ,		Ft, In	Tape measure					
FIRST LAW III	Measured length _		WC 400-340-350-00-00-00-00-00-00-00-00-00-00-00-00-0	Ft, In	Fape measure					
	Time of travel			S	Stop watch					
Temp	perature			°F	Thermometer					
	ЭН			pH Units T	est strip/Probe					
Am	monia			mg/L	Test strip					

INDICATOR	CHECK if Present			DESCRIPTION				RE	LATIVE SEVERITY INDEX	(1-3)
· Odor		☐ Sewage	_	our Petroleum	n/gas		☐ 1 – Faint		2 - Easily detected	3 – Noticeable from a distance
Color		☐ Clear☐ Green	☐ Brown ☐ Orange	☐ Gray	☐ Yellow ☐Other:		☐ 1 – Faint col sample bo		2 - Clearly visible in sample bottle	3 - Clearly visible in outfall flow
Turbidity	. 0			See severity			☐ 1 - Slight cl	oudiness	2 - Cloudy	3 - Opaque
Floatables -Does Not Include Trash!!	0		(Toilet Paper, etc.) im (oil sheen)	Suds Other:			☐ 1 – Few/slig	ht; origin	2 - Some; indications of origin (e.g., possible suds or oil sheen)	3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)
INDICATOR Outfall Damage	CHECK IF	and the second	☐ Spalling, C		Ces No (If No, Skip to Section 6) DESCRIPTION COMMENTS acking or Chipping Peeling Paint				S	
Deposits/Stains			Corrosion Oily F	low Line P		Other:				
Abnormal Vegetation				Inhibited	ant L	Other:	. 11-			
Poor pool quality	۵,			Colors Excessive A	☐ Floatables Ìgae	Oil Sheen				
Pipe benthic growth			☐ Brown	Orange	Green	Other:				
ection 6: Overall Out	fall Characteri	zation								
-6 -			or more indicat	ors)	Suspect (on	ne or more in	dicators with a	severity (of 3) Obvious	
Unlikely 🔲 1	Potential (prese		or more indicat	tors)	Suspect (on	ne or more in	dicators with a	severity (of 3) Dobvious	
-6 -	Potential (prese	ence of two			Suspect (on	ne or more in	dicators with a	severity (of 3) Obvious	
Unlikely 1	Potential (prese	ence of two	or more indicat Yes Flow	Ors) No	Suspect (on	ne or more in	dicators with a	severity (of 3) Obvious	

Subwatershed:	Vagh		Outfall ID:	0F-05			
Today's date: 5/	7/14		Time (Military):	0925			
Investigators:	SP JP		Form completed by	y: 58			
Temperature (°F):	Ra	infall (in.): Last 24 hou	rs: Last 48 hours	· X			
Latitude:	Longitude	×	GPS Unit: Colu	GPS LMK	#:		
Camera:	ille		Photo #s: 00	05)			
Land Use in Drainage	Area (Check all that apply):						
☐ Industrial			Open Space				
Ultra-Urban Resid	ential		☐ Institutional				
Suburban Resident	tial		Other:				
☐ Commercial			Known Industries:				
- CALLES CO.	outfall, if known): Reve	Theoto in be					
				ledge, flows or			
TA1. 2000	The flatile of	11-tall , 1-5-	above water	leise, flows or	10 10(16)		
Section 2: Outfall	Description						
LOCATION	MATERIAL	TO THE STATE OF	SHAPE	DIMENSIONS (IN.)	SUBMERGED		
	□ RCP □ CMP	Circular	Single	Diameter/Dimensions:	In Water:		
	ØPVC □ HDP	E Eliptical	☐ Double	* In	No Partially		
Closed Pipe	☐ Steel	Вох	☐ Triple	977	☐ Fully		
Other:		☐ Other:	☐ Other:	1 1/1	With Sediment:		
		Smooth			Partially		
	Concrete	5,0001					
	☐ Earthen	☐ Trapezoid		Depth:			
Open drainage		☐ Parabolic		Top Width:			
	☐ rip-rap	Other:		Bottom Width:			
100 mm and	Other:		No carriado de esta esta esta esta esta esta esta est				
☐ In-Stream	(applicable when collect		in Figure 1				
Flow Present?	☐ Yes	No If No,	Skip to Section 5				
Now Description (If present)	☐ Trickle ☐ Mode	crate Substantial			-		
ection 3: Quantit	tative Characterization						
		FIELD DATA FO	R FLOWING OUTFALL	5			
PARA	METER	RESULT		UNIT	EQUIPMENT		
Flow#1	Volume			Liter	Bottle		
	Time to fill			Sec			
,	Flow depth			In	Tape measure		
[]Plow #2	Flow width			Ft, In	Tape measure		
	Measured length	7 79		Ft, In	Tape measure		
	Time of travel			S	Stop watch		
Temp	perature			°F	Thermometer		
рН				pH Units Test strip/Probe			

mg/L

Ammonia

Test strip

INDICATOR	CHECK if Present			DESCRIPTIO	N		RELATIVE SEVERITY INDEX (1-3)		
· Odor		☐ Sewage	☐ Rancid/s	our Petroleu	ım/gas	☐ 1 — Faint		2 - Easily detected	3 - Noticeable from a distance
Color		☐ Clear ☐ Green	☐ Brown ☐ Orange	☐ Gray	☐ Yellow ☐Other:	☐ 1 – Faint o		2 - Clearly visible in sample bottle	3 - Clearly visible in outfall flow
Turbidity			See severity		☐ 1 – Slight	cloudiness	2 - Cloudy	3 - Opaque	
Floatables -Does Not Include Trash!!			(Toilet Paper, etc. m (oil sheen)	Suds		1 - Few/sl	ight; origin	2 - Some; indications of origin (e.g., possible suds or oil sheen)	3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)
ection 5: Physical Ind re physical indicators INDICATOR		ted to flow		Yes No		to Section 6)	T	COMMENT	rs .
Outfall Damage		Tesene	Spalling, Cracking or Chipping Peeling Paint Corrosion		ng Paint		COMMEN	5	
Deposits/Stains	0	T had		low Line 🔲	Paint Other:				
Abnormal Vegetation			☐ Excessive	☐ Inhibited					
Poor pool quality	.0		Odors Suds	Colors Excessive	☐ Floatables ☐ C	il Sheen ther:			
Pipe benthic growth			☐ Brown	☐ Orange	Green C	ther:			
ection 6: Overall Out	foll Characteri	zation							
<u></u>	Potential (prese		or more indica	tors)	Suspect (one or r	oro indicators with	25	of 3) Dovious	
, cannot,	cotential (brese		or more marea	1013)		lore mulcators with	a severity	Ol 3) U Obvious	
ection 7: Data Collect	ion					24			
Sample for the lab?			Yes	☐ No					
If yes, collected from:			Flow	Pool					
Intermittent flow trap	set?		Yes	□ No	If Yes, type:	□овм □с	aulk dam		

Section 1: Backs Subwatershed:	Vase	•	Outfall ID:	0F-06					
Today's date:	5/17/14		Time (Military						
Investigators:	JP TP		Form complete						
Temperature (°F):	Re	infall (in.): Last 24 h							
Latitude:	Longitude		GPS Unit:		MV #				
Camera:			Photo #s:	000.54					
Land Use in Drainag	ge Area (Check all that apply):			000 39					
☐ Industrial			Open Space	☐ Open Space					
Ultra-Urban Resi	idential		☐ Institutiona	☐ Institutional					
Suburban Reside	ntial		Other:						
☐ Commercial				ies:					
Notes (e.g., origin of	outfall, if known):	•	ACHOWII MICUSA	100.					
Section 2: Outfal	Description								
LOCATION			SHAPE	DIMENSIONS (IN) SUBMERGED				
	☐RCP ☐ CMP	Circular Circular	Single	Diameter/Dimensions:	In Water:				
	PVC HDPB	☐ Bliptical	Double	12:	_				
Closed Pipe	☐ Steel	Вох	☐ Triple		Fully				
	☐ Other:	Other:	Other:		With Sediment:				
	in the later of th	smouthwhite			Partially . Fully				
	Concrete				Title Title				
	☐ Barthen	☐ Trapezoid		Depth:					
Open drainage	☐ rip-rap	☐ Parabolic		Top Width:					
		Other:		Bottom Width:					
In-Stream	Other:		E CONTRACTOR						
Distriction of the last of the	(applicable when collectin		The second secon						
low Present?	Yes N		, Skip to Section 5						
Now Description If present)	☐ Triokle ☐ Modera	te Substantial							
oction 3: Ouantit	ative Characterization								
	PROPERTY BOOK ATTACK COMPANY OF THE RESTREET	FIELD DATA FO	R FLOWING OUTEAL						
APANX.	METER	RESULT		UNIT	EQUIPMENT				
Plow#1	Volume			Liter	Bottle				
Plow #1	Time to fill			Sec					
	Flow depth			In ·	Tape measure				
Mow #2	Flow width			Ft, In	Tape measure				
	Measured length	,,		Ft, In	Tape measure				
	Time of travel			S	Stop watch				
Tempe	prature			ols	Thermometer				
pl	н			pH Units	Test strip/Probe				
Ammonia				mg/L Test strip					

Section 4: Physical Ind Are Any Physical Indicator	rs Present in the	flow?	es N	(If No.	Skip to Section .	5)	,,		F19(5), h. (Telephone .
INDICATOR	Present			DESCRIPTIO	N			RE	LATIVE SEVERITY INDEX	(1-3)
· Odor		☐ Sewage	Rancid Other:	/sour Petroleu	un/gas		1 - Faint		2 - Easily detected	3 - Noticeable from a distance
Color		Clear Green	☐ Brown ☐ Orange	☐ Gray	☐ Yellow ☐ Other:		1 - Faint col		2 - Clearly visible in sample bottle	3 - Clearly visible in outfall flow
Turbidity				See severity			☐ 1 - Slight cloudiness		2-Cloudy	3 - Opaque
Floatables -Does Not Include Trash!!	<u>, </u>		(Toilet Paper, e um (oil sheen)	tc.) Suds Other:	ano/		1 - Few/slig	at; origin	2 - Some; indications of origin (e.g., possible suds or oil sheen)	3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)
Are physical indicators to	CHECK IF				DESCRIPTION			i na	СОМИЕМ	is ·
Outfall Damage		· & a ·	Spalling, Cracking or Chipping		Peeling Paint		1	COMMEN	TS .	
Deposits/Stains			Corrosi							
Abnormal Vegetation					Paint C	Other:				
Poor pool quality	, p		Odors Suds							
Pipe benthic growth			Brown	Orange	Green	Other:				
Section 6: Overall Outf	all Character	zation								
-	Potential (prese	the same of the sa	or more in di		7 a					
	Ordinate (Dress	TICO OI IMO	or more mar	ators) L	J Suspect (one	or more in	dicators with	severity	of 3) Dovious	
Section 7: Data Collecti	ion									
. Sample for the lab?			Yes	□ No.			7,2-00			
2. If yes, collected from:] Flow	· Pool						
3. Intermittent flow trap s	set?	F-141-5	Yes	□No	If Yes to	une. II OE	M DC-	** *		Ledis Flage .

Section 1: Background Data

Subwatershed:	Vase			Outfall ID:	Outfall ID: OF-07				
Today's date:	5/7/14			Time (Military)					
Investigators:	ISP 38	7		Form completed					
Temperature (°F):		Rain	nfall (in.): Last 24 h	nours: Last 48 hor	ure:				
Latitude:		Longitude:		GPS Unit: Co	Wille GPS LM	K#:			
Camera: Colo.	18			Photo #s: OO					
Land Use in Drainag	e Area (Check all t	hat apply):							
☐ Industrial				Open Space					
Ultra-Urban Resid	dential			☐ Institutional	☐ Institutional				
Suburban Residen	ntial			Other:					
☐ Commercial				Known Industrie	96:				
Notes (e.g., origin of	outfall, if known):	above ban	kfull, sma	il pail presen					
Section 2: Outfall	1.4.	¥. (* . ·	4. 27 7 440	is received the second					
LOCATION		ERIAL		SHAPE	DIMENSIONS (IN.)	SUBMERGED			
	RCP	☐ CMP	Circular	Single	Diameter/Dimensions:	In Water:			
	Z PVC	HDPB	☐ Bliptical	Double .	12in	Partially			
Closed Pipe	☐ Steel		Box	☐ Triple		Fully			
	Other:		Other:	Other:		With Sediment: No Partially Fully			
Open drainage	☐ Concrete ☐ Barthen ☐ rip-rap ☐ Other:		☐ Trapezoid ☐ Parabolic ☐ Other:		Depth: Top Width:				
In-Stream	(applicable w	hen collecting	samples)	n on hall to	A constitution				
low Present?	☑ Yes	□No		, Skip to Section 5	e established				
low Description (f present)	☐ Triokle	Moderate							
oction 3: Quantita		rization	FIELD DATA FO RESULT	R FLOWING OUTFAL		EQUIPMENT.			
Plow#1	Volume				Liter	Bottle			
	Time to fill			Į.	Sec				
	Flow depth			10.4	In .	Tape measure			
Mow #2	Flow width				Ft, In	Tape measure			
	Measured length		"		Ft, In	Tape measure			
	Time of travel				S	Stop watch			
Temper					ob	Thermometer			
pH	L. BELL				pH Units 7	est strip/Probe			
Ammo	onia			6	mg/L	Test strip			

INDICATOR	CHECK if Present:		DESCRIPTION		RE	LATIVE SEVERITY INDEX	(1-3)
Odor			Rancid/sour Petroleum/gas	☐ 1 - Faint		2 - Easily detected	3 - Noticeable from a distance
Color			Brown Gray Yellow Drange Red Other:	☐ 1 — Faint co sample be		2 - Clearly visible in sample bottle	3 - Clearly visible in outfall flow
Turbidity			See severity □ 1 - Slight clo		oudiness	2-Cloudy	3 - Opaque
Floatables -Does Not Include Trash!!	ø	Sewage (Toilet Pa		2 - Some; indications of origin (e.g., possible suds or oil sheen)	3 - Some; origin clear (e.g., obvious oil sheen, suds, or floatin sanitary materials)		
Outfall Damage		s		Peeling Paint		CAMPIER	15
INDICATOR	CHECK IF		DESCRIPTION	Daties Date		COMMEN	TS
			Corrosion				
Deposits/Stains			y Flow Line Paint O	ther:			
Abnormal Vegetation		☐ Exc	cessive Inhibited				The Late of the Late
Poor pool quality	. 7	Ode Suc		Oil Sheen Other:	heen minol		1711
Pipe benthic growth	. 2	m'130 Bro	own Orange Green	Other:	mino	(
ection 6: Overall Out	fall Character	ization .					1000 - 11
		ence of two or more	e indicators) Suspect (one	on many in disease			
			, indicators) Suspect (one	or more indicators with	a severity	of 3) Obvious	
ction 7: Data Collect	ion						
Sample for the lab?		☐ Yes	□ No.				
75 11 . 10		The state of the s					
If yes, collected from: Intermittent flow trap		☐ Flow	· Pool				

Subwatershed:			Outfall ID:	0F-03				
Today's date:	5/7	M	Time (Military)	40.0				
Investigators:	JO TO		Form complete	- 11				
Temperature (°F):	, , , ,	fall (in.): Last 24 hour		- // \				
Latitude:	Longitude:	()	GPS Unit:		#.			
Camera: Colville	· ·	FI TO THE		20059				
	Area (Check all that apply):			7005 1				
☐ Industrial			Open Space					
I will me and the	anatal			실명된 보이었다고 모르면 일이 되었다면 이 때문을 만나요				
Ultra-Urban Reside			- -	☐ Institutional				
Suburban Resident	ial		Other:	Other:				
☐ Commercial			Known Industr	ies:				
Notes (e.g., origin of o	on Tisil, end	Jenit box	cendl, f	lowing onto Cob	ble s liplap			
LOCATION	MATERIAL		SHAPE	DIMENSIONS (IN.)	SUBMERGED			
Closed Pipe	RCP CMP PVC HDPE Steel Other: Concrete Earthen	Circular Eliptical Box Other: Congare Trapezoid	Double Triple	Diameter/Dimensions:	In Water No			
Open drainage	ip-rap	Parabolic Other:		Top Width:				
☐ In-Stream	(applicable when collecting	g samples)						
Flow Present?	Yes No	If No,	Skip to Section 5					
Flow Description (If present)	☐ Trickle ☐ Modera	te Substantial						
Section 3: Quantit	ative Characterization	FIELD DATA FOR	FLOWING OUTFA	uis	- 1826			
PARA	METER	RESULT			EQUIPMENT			
2.50	Volume	112011111111111111111111111111111111111	2.73 A. 25.75.150 A.	Liter	Bottle			
Flow #1	Time to fill	7.5		Sec				
	Flow depth			In	Tape measure			
Flow #2	Flow width	,,		Ft, In	Tape measure			
Flow #2	Measured length	, "		Ft, In	Tape measure			
	Time of travel			S	Stop watch			
Temp	perature			°F	Thermometer			
	Н			pH Units	Test strip/Probe			
Amı	monia			mg/L	Test strip			

INDICATOR	CHECK if Present			DESCRIPTIO	N	r esty		RE	LATIVE SEVERITY INDEX	(1-3)
· Odor		☐ Sewage	☐ Rancid/s	our Petroleu	ım/gas		☐ 1 – Faint		2 - Easily detected	3 – Noticeable from a distance
Color		☐ Clear☐ Green	☐ Brown ☐ Orange	☐ Gray	☐ Yellow ☐Other:		☐ 1 - Faint cold sample bott		2 - Clearly visible in sample bottle	3 - Clearly visible in outfall flow
Turbidity				See severity			☐ 1 – Slight cloudiness		2 - Cloudy	3 - Opaque
Floatables -Does Not Include Trash!!	0		(Toilet Paper, etc	.) Suds	negael -	7	☐ 1 – Few/slight; origin not obvious		2 - Some; indications of origin (e.g., possible suds or oil sheen)	3 - Some; origin clear (e.g., obvious oil sheen, suds, or floatin sanitary materials)
Outfall Damage				Spalling, Cracking or Chipping Peeling Paint Corrosion					COMMEN	rs .
Outfall Damage	P	1	Spalling, Cracking or Chipping Peeling Paint							
Deposits/Stains	E		□ Oily □	Flow Line	Paint 🔲	Other:				
Abnormal Vegetation]	☐ Excessive	☐ Inhibited	Mos	5			*********	
Poor pool quality	, Z		Odors Suds	Colors Excessive	☐ Floatables Algae	Oil Sheen Other:		m,701		-
Pipe benthic growth	Z	í i	Brown	Orange	Green	Other:				
ction 6: Overall Out	fall Character	ization								
	Potential (pres		or more indic	ntoma) [7 Sugnant (on		dicators with a		of 3) Dovious	
- Chinkery Ly	r otentiar (pres	echec of two	of more marc	1015)] Suspect (of	ie of more m	dicators with a	severity	Obvious	
ction 7: Data Collect	tion									
Sample for the lab?			Yes	□No				a din		
If yes, collected from			Flow	☐ Pool						
Intermittent flow trap	set?		Yes	☐ No	If Yes,	type: OF	BM Cau	lk dam		

Subwatershed:	lash		Outfall ID:	0F-09	
Today's date:	5/7/14		Time (Military)	1018	
Investigators:	56 26		Form complete	d by: 5-P	
Temperature (°F):		Rainfall (in.): Last 24 hours	: Last 48 ho	ours:	
Latitude:	Longitu	ıde:	GPS Unit: Co		#:
Camera: Coluil	(Photo #s:	0062 /0063 5	ource of Pipe
Land Use in Drainage	Area (Check all that apply):				
☐ Industrial			Open Space		
Ultra-Urban Resid	ential		☐ Institutional		
Suburban Residen	ial		Other:		
☐ Commercial			Known Industr	ies:	
Notes (e.g., origin of o					
LOCATION			HAPE	DIMENSIONS (IN.)	SUBMERGED
☐ Closed Pipe ☐ Open drainage ☐ In-Stream i'low Present? i'low Description (If present)	☐ Trickle ☐ Mo	Box Other: Other: Trapezoid Parabolic Other: Other:	Single Double Triple Other:	Diameter/Dimensions: C	In Water: No Partially Fully With Sediment: No Partially Fully
oction 3: Quantit	ative Characterizatio	n FIELD DATA FOR	FLOWING OUTFA	LLS	
PARA	METER	RESULT			EQUIPMENT
[] Flow #1	Volume		The second of th	Liter	Bottle
1110W #1	Time to fill			Sec	
	Flow depth			In	Tape measure
Flow #2	Flow width	,,		Ft, In	Tape measure
lands to 11 112	Measured length	3 39		Ft, In	Tape measure
	Time of travel			S	Stop watch
Temp	perature			°F	Thermometer
	Н			pH Units T	est strip/Probe

INDICATOR	CHECK if Present		DE	SCRIPTION			RE	LATIVE SEVERITY INDEX	(1-3)
Odor		Sewage	☐ Rancid/sour	Petroleum	n/gas	☐ 1 – Faint		2 - Easily detected	3 – Noticeable from a distance
Color		☐ Clear ☐ Green	☐ Brown ☐ Orange	☐ Gray	☐ Yellow ☐Other:	☐ 1 — Faint cold sample bot		2 - Clearly visible in sample bottle	3 - Clearly visible in outfall flow
Turbidity				See severity		☐ 1 — Slight clo	udiness	2 - Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!			(Toilet Paper, etc.)	Suds Other:		☐ 1 – Few/slight; origin not obvious		2 - Some; indications of origin (e.g., possible suds or oil sheen)	3 - Some; origin clear (e.g., obvious oil sheen, suds, or floatin sanitary materials)
INDICATOR Outfall Damage	CHECK if P	resent			ing Paint		· COMMEN	TS	
- Carlos - Carlos -			☐ Spalling, Cracking or Chipping ☐ Peeling Pe		ing Paint	Paint			
Deposits/Stains				ow Line P	Paint				
			Excessive [Inhibited					
Abnormal Vegetation							heen r:		
Abnormal Vegetation Poor pool quality			Odors [Suds [Colors Excessive A	☐ Floatables ☐ C	Oil Sheen Other:			
			Suds	☐ Colors ☐ Excessive A ☐ Orange	ligae 🔲 (Oil Sheen Other: Other:			
Poor pool quality Pipe benthic growth ction 6: Overall Out	ifall Characteri		Suds [Excessive A	ligae Creen C	Other:	severity	of 3) \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	
Poor pool quality Pipe benthic growth ction 6: Overall Out	ifall Characteri		Suds	Excessive A	ligae Creen C	Other:	severity	of 3)	
Poor pool quality Pipe benthic growth ction 6: Overall Out Unlikely	ifall Characteric	ence of two	Suds [Brown [Or more indicate	Excessive A	ligae Creen C	Other:	severity	of 3) 🔲 Obvious	
Poor pool quality Pipe benthic growth ction 6: Overall Out	ifall Characteric	ence of two	Suds [Brown [Or more indicate	Excessive A	ligae Creen C	Other:	severity	of 3)	

Subwatershed:	lasa CIC		Outfall ID:	OF-10				
Today's date:	5/7/14		Time (Military):	1042				
Investigators:	26 26		Form completed b	ру: 5P				
Temperature (°F):	Ra	infall (in.): Last 24 hours:	Last 48 hour	s: X				
Latitude:	Longitude		GPS Unit: (-a)	GPS LMI	C #:			
Camera: Colvill			Photo #s:	0069	,			
Land Use in Drainage	Area (Check all that apply):							
Industrial			Open Space					
Ultra-Urban Resid	ential		☐ Institutional					
Suburban Residen	tial		Other:					
☐ Commercial			Known Industries					
Notes (e.g., origin of	outfall if known):		Known industries	•				
-		1 04			10-			
LD, Smill	1/45/16, 001 /01	on Trail, Vie	COMECTER	m: 1 Way Up	slope			
ection 2: Outfall	Description							
LOCATION	MATERIAL	SHA	\PE	DIMENSIONS (IN.)	SUBMERGED			
	☐ RCP ☐ CMP	Circular	☐ Single	Diameter/Dimensions:	In Water			
	PVC HDPE	Eliptical	☐ Double	134	☑ No ☐ Partially			
2 Closed Pipe	Steel	Box	☐ Triple		Fully			
	☐ Other:	Other:	☐ Other:	4-10	With Sediment:			
			Olior.		☐ Partially			
	Concrete	Converted			☐ Fully			
		☐ Trapezoid		Depth:				
Open drainage	☐ Earthen	☐ Parabolic		Top Width:				
	rip-rap	☐ Other:		Bottom Width:				
Water a series	Other:							
In-Stream	(applicable when collecti	E TO THE OPEN AND THE WARREN OF THE						
Flow Present?	☐ Yes	No If No, Skip	o to Section 5					
Flow Description (If present)	☐ Trickle ☐ Mode	rate Substantial						
ection 3: Quanti	tative Characterization							
Audios. 1		FIELD DATA FOR FL	OWING OUTFALL	S				
PARA	METER	RESULT		UNIT	EQUIPMENT			
Character III	Volume			Liter	Bottle			
Flow#1	Time to fill	X- 1.00/03/1		Sec				
	Flow depth	5.1		In	Tape measure			
	Flow width	, , ,		Ft, In	Tape measure			
Tag				Ft, In	Tape measure			
Plow #2	Measured length	, ,,	1	- 7	rape measure			
Plow #2	Measured length			S	Stop watch			

mg/L

Test strip

Ammonia

INDICATOR	CHECK if Present		DESCRIPTION	R	ELATIVE SEVERITY INDEX	(1-3)
Odor		☐ Sewage		☐ 1 — Faint	2 - Easily detected	3 – Noticeable from a distance
Color		☐ Clear ☐ Green	☐ Brown ☐ Gray ☐ Yellow ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	2 – Clearly visible in sample bottle	3 - Clearly visible in outfall flow
Turbidity			See severity	☐ 1 - Slight cloudiness	2 - Cloudy	3 – Opaque
Floatables -Does Not Include Trash!!			e (Toilet Paper, etc.) Suds um (oil sheen) Other:	☐ 1 – Few/slight; origin not obvious	2 - Some; indications of origin (e.g., possible suds or oil sheen)	3 - Some; origin clear (e.g., obvious oil sheen, suds, or floatin sanitary materials)
INDICATOR Outfall Damage	CHECK if P			ing Paint	COMMEN	IS
Outfall Damage			☐ Spalling, Cracking or Chipping ☐ Peeli☐ Corrosion	ing Paint	5	
Deposits/Stains			Oily Flow Line Paint Other:			
Abnormal Vegetation			☐ Excessive ☐ Inhibited			
Poor pool quality	0,	T _A	Odors Colors Floatables O Suds Excessive Algae O	oil Sheen Other:		
			☐ Brown ☐ Orange ☐ Green ☐ O	Other:		
Pipe benthic growth	0					
ction 6: Overall Out	fall Characteri		o or more indicators)	nore indicators with a severity	of 3) Dovious	
ction 6: Overall Out	tfall Characteri		or more indicators)	nore indicators with a severity	of 3) Dobvious	
Ction 6: Overall Out Unlikely	tfall Characteri	ence of two	or more indicators) Suspect (one or n	nore indicators with a severity	of 3) Dovious	

Subwatershed:	Vasa		Outfall ID:	OFVI		
Today's date:	3/7/14		Time (Military)			
Investigators:	6 26		Form complete	d by: 50		
Temperature (°F):	Rai	nfall (in.): Last 24 hours	: Last 48 ho	ours:		
Latitude:	Longitude:	4	GPS Unit:	GPS LMK	#:	
Camera: Col	Ville		Photo #s:	00 75		
Land Use in Drainage	Area (Check all that apply):				Verification 1	
Industrial			Open Space			
☐ Ultra-Urban Reside	ential		☐ Institutional			
☐ Suburban Resident						
Commercial			Known Industri	ies:		
Notes (e.g., origin of o	pipes					
Section 2: Outfall LOCATION	Description MATERIAL		HAPE	DIMENSIONS (IN.)	SUBMERGED	
LOCATION	RCP CMP	Circular	Single	Diameter/Dimensions:		
				Diameter/Dimensions:	In Water:	
_			Double		Partially Fully	
Closed Pipe	☐ Steel	Вох	Triple	-347	With Sediment:	
Other: Other: Collogate		Collogates	Other:	4:1	☑ No ☐ Partially ☐ Fully	
Open drainage	☐ Concrete ☐ Trapezoid			Depth: Top Width: Bottom Width:		
☐ In-Stream	Other:		ATTENDED TO	SAN OF CAMPACAGES	The second second second	
	(applicable when collecting	P. P. LEWIS CO., LANSING STREET, S.			SALE CONTRACTOR	
Flow Present?	☐ Yes	lo If No, S	kip to Section 5			
Flow Description (If present)	☐ Trickle ☐ Moder	ate Substantial			A star a	
ection 3: Quantit	ative Characterization	ETELD DATA EOD	FLOWING OUTFA	нс		
PAPA	METER	RESULT	1 LOWER COTTA		QUIPMENT	
THE STATE OF THE S	Volume	RESULT		Liter	The state of the s	
☐Plow#I	Time to fill			Sec	Bottle	
	Flow depth				Tape measure	
Affile.	Flow width	, ,,			Tape measure	
Flow #2	Measured length	, ,,			Tape measure	
-	Time of travel					
Temp	erature			S Stop watch "F Thermometer		
	oranio oH				est strip/Probe	
Amı	monia			mg/L	Test strip	

INDICATOR	CHECK if Present		DESCRIPTION		RE	LATIVE SEVERITY INDEX	(1-3)
Odor		☐ Sewage	☐ Rancid/sour ☐ Petroleum/gas ☐ Other:	1 – Faint		2 - Basily detected	3 - Noticeable from a distance
Color		Clear Green	☐ Brown ☐ Gray ☐ Yellow ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint cold sample bott		2 - Clearly visible in sample bottle	3 - Clearly visible in outfall flow
Turbidity		- 35	See severity	☐ 1 – Slight clo	udiness	2 - Cloudy	3 - Opaque
Floatables -Does Not Include Trash!!			(Toilet Paper, etc.) Suds am (oil sheen) Other:	☐ 1 – Few/sligh	t; origin	2 - Some; indications of origin (e.g., possible suds or oil sheen)	3 - Some; origin clear (e.g., obvious oil sheen, suds, or floatin sanitary materials)
INDICATOR Outfall Damage	CHECK IF		☐ Spalling, Cracking or Chipping ☐ Peelin	g Paint		COMMENT	rs
INDICATOR	CHECK if		DESCRIPTION DESCRIPTION Description Description	- Daint		COMMENT	rs
Outfall Damage			Corrosion				
Deposits/Stains			Oily Flow Line Paint Other:				
Abnormal Vegetation			Excessive Inhibited				
Poor pool quality	, 🗆	II. Yaz	Odors Colors Floatables Oil Suds Excessive Algae Otl	Sheen ner:			
Pipe benthic growth			☐ Brown ☐ Orange ☐ Green ☐ Ot	ner:			
	fall Character	ization					
Ction 6: Overall Out		ence of two	or more indicators)	ore indicators with a	severity	of 3) Obvious	
Unlikely Collection 7: Data Collection	Potential (pres			ore indicators with a	severity	of 3) Obvious	
Unlikely	Potential (pres		or more indicators)	ore indicators with a	severity	of 3) Obvious	

Subwatershed:			Outfall ID:	0F-12		
Today's date:	7/7/14		Time (Military)	-		
Investigators:	P 5P		Form complete			
Temperature (°F):	R	ainfall (in.): Last 24 hour	rs: Last 48 ho	ours:		
Latitude:	Longitud	e:	GPS Unit: C	GPS LMK	#:	
Camera: Cul			Photo #s:	0078		
☐ Industrial ☐ Ultra-Urban Resident ☐ Suburban Resident			☐ Open Space☐ Institutional			
Commercial			Known Industri	ies:		
Notes (e.g., origin of o	Pipe M	STEPP Slo	pe, stex	T TO In Sileen	e10550n	
LOCATION	MATERIAL		SHAPE	DIMENSIONS (IN.)	SUBMERGED	
Closed Pipe	☐ Other: ☐ Other:		☐ Single ☐ Double ☐ Triple ☐ Other:	Diameter/Dimensions:	In Water: No Partially Fully With Sediment: No Partially Fully	
Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other:	☐ Trapezoid ☐ Parabolic ☐ Other:		Depth: Top Width: Bottom Width:		
☐ In-Stream	(applicable when collect	ing samples)				
Flow Present?	☐ Yes	No If No.	Skip to Section 5	description of the second		
Mow Description (If present)	☐ Trickle ☐ Mode	erate				
ection 3: Quantit	tative Characterization		R FLOWING OUTFA	116		
PARA	METER	RESULT			EQUIPMENT	
	Volume	31, T-9 - 3 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1		Liter	Bottle	
Tlow#1	Time to fill	***		Sec		
	Flow depth			In	Tape measure	
Parley No.	Flow width	1 19		Ft, In	Tape measure	
Flow #2	Measured length	1 11		Ft, In	Tape measure	
	Time of travel			s	Stop watch	
Temp	perature			°F Thermometer		
The state of the s						
	pH			pH Units 7	est strip/Probe	

INDICATOR	CHECK if Present		D	ESCRIPTION			RELATIVE SEVERITY INDEX	(1-3)
· Odor		Sewage Sulfide	☐ Rancid/sou	ur Petroleur	n/gas	☐ 1 – Faint	2 - Easily detected	3 - Noticeable from a distance
Color		☐ Clear☐ Green	☐ Brown ☐ Gray ☐ Yellow ☐ 1 - Faint colors in sample bottle			☐ 1 – Faint colors in sample bottle	2 - Clearly visible in sample bottle	3 - Clearly visible in outfall flow
Turbidity			See severity			☐ 1 - Slight cloudiness	2 - Cloudy	3 - Opaque
Floatables -Does Not Include Trash!!			(Toilet Paper, etc.) m (oil sheen)	Suds Other:		☐ 1 — Few/slight; origin not obvious	2 - Some; indications of origin (e.g., possible suds or oil sheen)	3 - Some; origin clear (e.g., obvious oil sheen, suds, or floatin sanitary materials)
INDICATOR	CHECK if	Present	DESCRIPTION Spalling, Cracking or Chipping Peeling Paint				COMMEN	TS
			The state of the s					
Outfall Damage			Spalling, C	Cracking or Chip	oping Peeling	Paint		
Outfall Damage Deposits/Stains			Согтоsion	Cracking or Chip		Paint		
			☐ Corrosion☐ Oily☐ F			Paint		
Deposits/Stains			☐ Corrosion☐ Oily☐ F	low Line	Paint	iheen		
Deposits/Stains Abnormal Vegetation			Corrosion Oily F Excessive Odors Suds	low Line	Paint	iheen r:		
Deposits/Stains Abnormal Vegetation Poor pool quality Pipe benthic growth ction 6: Overall Out Unlikely	fall Character	ization	Corrosion Coily F Excessive Odors Suds Brown Or more indicate	low Line	Paint	iheen r:	ty of 3)	
Deposits/Stains Abnormal Vegetation Poor pool quality Pipe benthic growth ction 6: Overall Out	fall Character Potential (pres	ization	Corrosion Oily F Excessive Odors Suds Brown	low Line	Paint	iheen r: r:	ty of 3)	

Subwatershed:	Vasa		7/2017	Outfall ID:	0F-13				
Today's date:	5/7/14			Time (Military):	1117				
Investigators:	P 3P			Form completed	by:				
Temperature (°F):		Rain	fall (in.): Last 24 hours	s: Last 48 hour	rs: X				
Latitude:	Lon	gitude:		GPS Unit: (GPS LMK	#:			
Camera: Colst	e			Photo #s:	0082				
Land Use in Drainage	Area (Check all that app	ly):							
☐ Industrial				Open Space					
Ultra-Urban Reside	ential			☐ Institutional					
Suburban Residenti	ial			Other:					
☐ Commercial				Known Industrie					
Notes (e.g., origin of o									
LOCATION	MATERIA	Lyada	The Property of	HAPE	DIMENSIONS (IN.)	SUBMERGED			
		CMP HDPE	Circular Eliptical	Single Double	Diameter/Dimensions:	In Water: No Partially Fully			
Closed Pipe	Steel		Вох	☐ Triple					
			Other:	Other:		With Sediment: No Partially Fully			
🗍 Open drainage	☐ Concrete ☐ Trapezoid		☐ Parabolic		Depth: Top Width: Bottom Width:				
In-Stream	(applicable when c	ollecting	samples)						
Flow Present?	Yes	□ No	If No, S	Skip to Section 5					
Flow Description (If present)	☐ Trickle	Moderat	- V						
ection 3: Quantit	ative Characteriza	tion	FIELD DATA FOR	FLOWING OUTFAL	ıs				
PARA	METER		RESULT			QUIPMENT			
	Volume		11 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	10 mm	Liter	Bottle			
Flow#I	Time to fill	1			Sec				
	Flow depth				In 7	Tape measure			
[Flow #2	Flow width		, ,,		Ft, In	Tape measure			
Land I TOW IT 2	Measured length		, 19 ———		Ft, In 1	Tape measure			
	Time of travel				S	Stop watch			
Temp	eratur e		500 E 100 E 10		°F 1	Thermometer			
р	Н				pH Units To	est strip/Probe			
Δmr	nonia				mg/I	Test strip			

Color Turbidity Floatables -Does Not Include Trash!! ection 5: Physical Indicators the			Rancid/so Cother: Brown Corange Toilet Paper, etc. (oil sheen)		n/gas Yellow Other:		☐ 1 - Faint ☐ 1 - Faint colors in sample bottle ☐ 1 - Slight cloudiness	2 - Easily detected 2 - Clearly visible in sample bottle	3 - Noticeable from a distance 3 - Clearly visible in outfall flow
Turbidity Floatables -Does Not Include Trash!!	0	Green Sewage	Orange Toilet Paper, etc.	Red See severity Suds			sample bottle	sample bottle	_
Floatables -Does Not Include Trash!!	0) 🔲 Suds			☐ 1 — Slight cloudiness		
-Does Not Include Trash!!								2 – Cloudy	3 - Opaque
		1000		Other:			☐ 1 – Few/slight; origin not obvious	2 - Some; indications of origin (e.g., possible suds or oil sheen)	3 - Some; origin clear (e.g., obvious oil sheen, suds, or floatin sanitary materials)
INDICATOR Outfall Damage	CHECK IF		DESCRIPTION Spalling, Cracking or Chipping Peeling Pai			Peeling Paint		COMMENT	rs
Outfall Damage			Spalling, Corrosion		oping [Peeling Paint			
Deposits/Stains			Oily 1	Flow Line 🔲	Paint 🔲	Other:			
Abnormal Vegetation			☐ Excessive	☐ Inhibited		1.7.			
Poor pool quality	, 🗆		Odors Suds	Colors Excessive	☐ Floatables Algae	Oil Sheen Other:			
Pipe benthic growth	Ø		Brown	☐ Orange	☑ Green	Other:			
ction 6: Overall Outfa			or more indica	ntors)	Suspect (on	ne or more in	dicators with a severit	y of 3) Dovious	
ction 7: Data Collectio	on								
Sample for the lab?			Yes	□ No					
If yes, collected from:			Flow	Pool					

Subwatershed:			Outfall ID:	OF-14			
Today's date: 5/	7/14		Time (Military):	1132			
Investigators:	50 50		Form completed				
Temperature (°F):		Rainfall (in.): Last 24 hou					
Latitude:	Longi		GPS Unit: Co	GPS LMK	#:		
Camera:			Photo #s: OC				
0-1	ge Area (Check all that apply)):			CALCE OF THE		
☐ Industrial			Open Space				
Ultra-Urban Res	idential		☐ Institutional				
Suburban Reside	ential		Other:				
☐ Commercial			Known Industrie				
Notes (e.g., origin o	foutfall if known):		AMOWIT MAUSTIC				
	of Main la	lveft ()	d Vasa	under the road			
ection 2: Outfa	***						
LOCATION	MATERIAL		SHAPE	DIMENSIONS (IN.)	SUBMERGED		
	□ RCP □ C	MP Circular	☐ Single	Diameter/Dimensions:	In Water:		
	□PVC □H	DPE	☐ Double	24 (2fr)	Partially		
Closed Pipe	Steel	Вох	☐ Triple		☐ Fully		
	Other:	☐ Other:	☐ Other:		With Sediment:		
Gomes.				Partially Fully			
	Concrete						
	☐ Earthen	☐ Trapezoid		Depth:			
Open drainage		☐ Parabolic		Top Width:			
	rip-rap	☐ Other:		Bottom Width:			
	Other:		Microsophic and a second	The second state of the se			
☐ In-Stream	(applicable when col	The state of the s					
Flow Present?	✓ Yes	□ No If No,	Skip to Section 5				
Flow Description (If present)	☐ Trickle ☐ M	Ioderate Substantial					
Section 3: Quant	titative Characterizati	on			7.3		
		FIELD DATA FOI	R FLOWING OUTFAL	LS			
PAR	AMETER	RESULT		UNIT	QUIPMENT		
Flow#1	Volume			Liter	Bottle		
and riow #1	Time to fill			Sec			
	Flow depth		,	In	Tape measure		
Flow #2	Flow width	, ,,		Ft, In	Tape measure		
Finit LIAM 42	Measured length	1 29		Ft, In	Tape measure		
	Time of travel			S	Stop watch		
Ter	mperature			°F Thermometer			
	pН			pH Units T	est strip/Probe		
	mmonia			mg/L Test strip			

INDICATOR	CHECK if Present			DESCRIPTION	Ň			RE	LATIVE SEVERITY INDEX	(1-3)
Odor		☐ Sewage	Rancid Other:	sour Petroleu	m/gas		☐ 1 – Faint		2 - Easily detected	3 - Noticeable from a distance
Color		Clear Green	☐ Brown ☐ Orange	☐ Gray	☐ Yellow ☐Other:		☐ 1 — Faint colors in sample bottle		2 - Clearly visible in sample bottle	3 - Clearly visible in outfall flow
Turbidity			- 11 34	See severity			☐ 1 - Slight clo	udiness	2 - Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!			(Toilet Paper, e	c.) Suds Other:	And .		1 – Few/sligh	it; origin	2 - Some; indications of origin (e.g., possible suds or oil sheen)	3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)
re physical indicators INDICATOR	CHECK if	A STATE OF THE STA	DESCRIPTION				ction 6)		COMMENT	rs
Outfall Damage			☐ Spalling, Cracking or Chipping ☐ Peeling Pain ☐ Corrosion			nt				
Deposits/Stains			-	Flow Line	Paint 🔲	Other:	***			
Abnormal Vegetation			☐ Excessive	☐ Inhibited					10	
Poor pool quality	ø		Odors Suds	Colors Excessive	☐ Floatables Algae	Oil Shee	n ~~.//o(
Pipe benthic growth	Ø		☐ Brown	☐ Orange	Green	Other:				
ection 6: Overall Out	fall Characteri	zation								
					1 0					
Ollikely []	Potential (pres	ence of two	or more man	cators) _	J Suspect (or	e or more i	ndicators with a	severity	of 3)	
ection 7: Data Collect	ion									
Sample for the lab?			Yes	☐ No		1, 1,-1				
If yes, collected from:	THE STATE] Flow	☐ Pool						
Intermittent flow trap	set?		Yes	□No	If Yes,	type: 🔲 O	BM Cau	lk dam		

Subwatershed:	Vasa		Outfall ID:	0F-15		
Today's date:	5/7/14		Time (Military):	OF-15	190	
Investigators:	P JP		Form completed	~ 0		
Temperature (°F):	Rai	infall (in.): Last 24 hour	rs: Last 48 hou	urs: X		
Latitude:	Longitude		GPS Unit:	CO GPS LMK	#:	
Camera:			Photo #s:	0.86		
Land Use in Drainage	Area (Check all that apply):	PROFES				
☐ Industrial			Open Space			
Ultra-Urban Reside	ential		☐ Institutional			
Suburban Resident	tial		Other:			
☐ Commercial			Known Industrie	es:		
Notes (e.g., origin of o	by Trail, Pa	Tally be	urie)			
LOCATION	MATERIAL		БНАРЕ	DIMENSIONS (IN.)	SUBMERGED	
	□ RCP □ CMP	☑ Circular	Single	Diameter/Dimensions:	In Water:	
	□ PVC □ HDPE	Eliptical	☐ Double	17. in	☐ No ☐ Partially	
Closed Pipe	☑ Steel	Вох	☐ Triple		☐ Fully	
	☐ Other:	Other:	☐ Other:		With Sediment:	
					Partially Fully	
	☐ Concrete					
	☐ Earthen	Trapezoid		Depth:		
Open drainage	☐ rip-rap	☐ Parabolic		Top Width:		
		☐ Other:		Bottom Width:		
☐ In-Stream	Other:	-c complet)		40 y - (2000) (200		
Flow Present?	Yes 1	A P. A. L. S. L. S. L. S.	Skip to Section 5			
Flow Description		1	only to because 5			
(If present)	☐ Trickle ☐ Modes	rate Substantial			32%	
Section 3: Quantit	tative Characterization	77 1 1 1 1				
		FIELD DATA FOR	FLOWING OUTFAL	LS		
PARA	METER	RESULT		UNIT E	QUIPMENT	
Flow #1	Volume	15	153	Liter	Bottle	
	Time to fill			Sec		
-	Flow depth			In 1	Tape measure	
Flow #2	Flow width	, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		Ft, In 7	ape measure	
	Measured length			Ft, In 7	ape measure	
	Time of travel			S	Stop watch	
Temp	perature			°F 1	Thermometer	
	рН			pH Units Te	est strip/Probe	
Am	monia		mg/L Test strip			

INDICATOR	CHECK if Present		DESCRIPTION			ELATIVE SEVERITY INDEX	(1-3)
· Odor		☐ Sewage ☐ Sulfide	☐ Rancid/sour ☐ Petroleur☐ Other:	m/gas	☐ 1 – Faint	2 - Easily detected	3 - Noticeable from a distance
Color		Clear Green	☐ Brown ☐ Gray ☐ Orange ☐ Red	☐ Yellow ☐Other:	☐ 1 – Faint colors in sample bottle	2 - Clearly visible in sample bottle	3 - Clearly visible in outfall flow
Turbidity			See severity			2 - Cloudy	3 - Opaque
Floatables -Does Not Include Trash!!		Sewage (To	oilet Paper, etc.) Suds		☐ 1 – Few/slight; origin not obvious	2 - Some; indications of origin (e.g., possible suds or oil sheen)	3 - Some; origin clear (e.g., obvious oil sheen, suds, or floatin sanitary materials)
11.0214q. 12.00		APACE STREET		the state of the s	Paint	COMMEN	IS .
INDICATOR	CHECK if	APACE APACE		DESCRIPTION		COMMEN'	rs
Outfall Damage			☐ Spalling, Cracking or Chi☐ Corrosion	pping recing	Paint		
Deposits/Stains			Oily Flow Line	Paint	40		
Abnormal Vegetation			Excessive Inhibited			20	
Poor pool quality	, □		Odors Colors Excessive	Floatables Oil	Sheen er:		Ta:
Pipe benthic growth	8	8	Brown Drange	☐ Green ☐ Oth	er:		
	7		•				
ection 6: Overall Out				-			
Unlikely	Potential (pres	ence of two or	more indicators)	Suspect (one or mo	re indicators with a severit	y of 3)	f also
ection 7: Data Collect	tion						
Sample for the lab?	Tallel		es No			1 2 2 1 3 1	
If yes, collected from		□F	low Pool				
Intermittent flow trap	set?	ПΥ	es 🔲 No	If Yes, type:	OBM Caulk dam		

Subwatershed:	Jasa		Outfall ID:	OF-16			
Today's date:	5/7/14	BUSE TET	Time (Military)		MINE STATE		
Investigators:	5P 3P		Form completes				
Temperature (°F):	Rai	nfail (in.): Last 24 hour	s: Last 48 ho	urs: X			
Latitude:	Longitude:	1 1 1 1 1 1	GPS Unit:	GPS LMK	#:		
Camera: Col			Photo #s:	200 93			
Land Use in Drainage Industrial Ultra-Urban Resid	e Area (Check all that apply):		☐ Open Space				
Suburban Residen			Other:				
☐ Commercial			Known Industries:				
Notes (e.g., origin of	bank						
LOCATION	MATERIAL		SHAPE	DIMENSIONS (IN.)	SUBMERGED		
Closed Pipe	RCP CMP PVC HDPE Steel	☐ Circular ☐ Eliptical ☐ Box ☐ Other:	Single Double Triple Other:	Diameter/Dimensions:	In Water: No Partially Fully With Sediment: No Partially Fully		
Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other:	☐ Trapezoid ☐ Parabolic ☐ Other:		Depth: Top Width: Bottom Width:			
In-Stream	(applicable when collectin	o samnles)	LARLEMENT CA	The state of the s			
Flow Present?	☐ Yes N		Skip to Section 5		A SHARE THE SAME OF THE SAME		
Flow Description (If present)	☐ Trickle ☐ Modern						
ection 3: Quanti	tative Characterization	FIELD DATA FOR	FLOWING OUTFA	us			
PARA	METER	RESULT	80715-197	AND COLUMN TO THE REAL PROPERTY.	QUIPMENT		
Part	Volume	to the transfer of the transfe		Liter	Bottle		
CFlow#i	Time to fill			Sec			
	Flow depth	10.00		In 7	Cape measure		
Flow #2	Flow width				ape measure		
IUW #2	Measured length	,,			ape measure		
	Time of travel				Stop watch		
Temp	perature	***************************************		°F Thermometer			
	pH				est strip/Probe		
	monia						

INDICATOR	CHECK if Present		ON		RELATIVE SEVERITY INDEX (1-3)			
· Odor		Sewage Sulfide	Rancid/sour Petro	☐ 1 – Faint		2 - Easily detected	3 - Noticeable from a distance	
Color	0	☐ Clear ☐ Green	☐ Brown ☐ Gray ☐ Orange ☐ Red	1 - Faint colors		2 - Clearly visible in sample bottle	3 - Clearly visible in outfall flow	
Turbidity		1	See severit	у	☐ 1 – Slight cloud	diness	2 - Cloudy	3 - Opaque
Floatables -Does Not Include Trash!!	0		(Toilet Paper, etc.) Suds		1 - Few/slight;	origin	2 - Some; indications of origin (e.g., possible suds or oil sheen)	3 - Some; origin clear (e.g., obvious oil sheen, suds, or floatin sanitary materials)
Outfall Damage	CHECKII	Maria, Act	Spalling, Cracking or Corrosion	of particular and the second	Paint		Comment	
INDICATOR	CHECK IF	Maria, Act	Spalling, Cracking or	DESCRIPTION Chipping Peeling	Paint		COMMEN	15
Deposits/Stains			Oily Flow Line Paint Other:					
Abnormal Vegetation			Excessive Inhibite					
Poor pool quality	, [Odors Colors Suds Excessi	Floatables Oil S	heen ::			
Pipe benthic growth			☐ Brown ☐ Orange	Green Othe	:			
ection 6: Overall Ou	tfall Character	rization					= 33.28	
			au mana in diantama)	Suspect (one or mor	n indicators with a	an vorite	of 3) Dovious	
∐ Unlikely □	Potential (pres	ence or two	or more indicators)	Suspect (one of mor	e indicators with a	Severity	013) 🗀 Obvious	
ection 7: Data Collec	tion							
Sample for the lab?			Yes No					
If yes, collected from			Flow Pool					
Intermittent flow trap	set?		Yes No	If Yes, type:	OBM Caul	k dam	The state of the s	

Subwatershed:	Vaga		Outfall ID: OF-17					
Today's date:	5/7/14		Time (Military): 1732					
Investigators:	JP 30		Form completed by: 5 (
Temperature (°F):		Rainfall (in.): Last 24 hours	s: Last 48 hours:	X				
Latitude:	Long	ritude:	GPS Unit: Co	ille GPS LMK	#:			
Camera: Col			Photo #s:	0098				
Land Use in Drainag	e Area (Check all that apply	y):						
☐ Industrial			Open Space					
Ultra-Urban Resi	dential		☐ Institutional					
Suburban Resider	ntial							
	Itiai		Other:					
Notes (e.g., origin of			Known Industries:					
-	merging fr	~ Property	on Top a	1 slope				
LOCATION	MATERIAL	s	HAPE	DIMENSIONS (IN.)	SUBMERGED			
	□ RCP □ C	CMP Circular	Single	Diameter/Dimensions:	In Water:			
	PVC DI	HDPE Eliptical	Double	0.34	☑ No ☐ Partially			
Closed Pipe	Steel	Вох	☐ Triple	113	Fully			
	☐ Other:			Min	With Sediment:			
	U Other:	(ollogate)	Other: 4 otherside of Property		☑ No ☐ Partially ☐ Fully			
	☐ Concrete							
	☐ Earthen	☐ Trapezoid		Depth:				
Open drainage	☐ rip-rap	☐ Parabolic		Top Width:	Jan San			
	Other:	Other:		Bottom Width:				
In-Stream	(applicable when co	liecting samples)						
Flow Present?	☐ Yes		kip to Section 5		A A Comment			
Now Description		Moderate ☐ Substantial	np to becam y					
(If present)	There	- Substantial						
ection 3: Quanti	tative Characterizat	ion						
		FIELD DATA FOR	FLOWING OUTFALLS					
PAR	AMETER	RESULT		UNIT E	QUIPMENT			
Flow#1	Volume			Liter	Bottle			
tand 10W IF 1	Time to fill			Sec				
	Flow depth			In T	ape measure			
Flow #2	Flow width			Ft, In T	ape measure			
	Measured length	7 11		Ft, In T	ape measure			
	Time of travel			S	Stop watch			
Tem	perature			°F T	hermometer			
	рН		pl	H Units Te	st strip/Probe			
TO THE STREET OF THE STREET STREET, STREET	monia			mg/L	Test strip			

Color	RE	LATIVE SEVERITY INDEX	(1-3)
Color	□ 1 – Faint	2 – Easily detected	3 – Noticeable from a distance
Turbidity	☐ 1 – Faint colors in sample bottle	2 - Clearly visible in sample bottle	3 - Clearly visible in outfall flow
-Does Not Include	☐ 1 — Slight cloudiness	2 - Cloudy	3 - Opaque
The physical indicators that are not related to flow present? Yes No (If No, Skip to Section 6) INDICATOR CHECK if Present DESCRIPTION Outfall Damage Spalling, Cracking or Chipping Peeling Paint Corrosion Deposits/Stains Spalling, Cracking or Chipping Peeling Paint Other: Abnormal Vegetation Successive Inhibited Poor pool quality Suds Excessive Algae Other: Pipe benthic growth South South Orange Green Other: Pection 6: Overall Outfall Characterization Very Unlikely Potential (presence of two or more indicators) Suspect (one or more indicators)	☐ 1 – Few/slight; origin not obvious	2 - Some; indications of origin (e.g., possible suds or oil sheen)	3 - Some; origin clear (e.g., obvious oil sheen, suds, or floatin sanitary materials)
Abnormal Vegetation			
Corrosion Corrosion Corrosion Corrosion Corrosion Corrosion Corrosion Corrosion Colly Flow Line Paint Other: Colors Colors Floatables Oil Sheen Colors Excessive Algae Other: Colors Colors Floatables Colors Colors Floatables Colors Colors		COMMEN	TS
Abnormal Vegetation	Marian Maria	<u> </u>	
Poor pool quality			
Pipe benthic growth			
Cection 6: Overall Outfall Characterization Unlikely Potential (presence of two or more indicators) Suspect (one or more indicators)			
Unlikely Potential (presence of two or more indicators) Suspect (one or more indicators)			
☐ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators)			
	icators with a severity	of 3) Dovious	
ection 7: Data Collection			
Y 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2			
Sample for the lab?			
If yes, collected from:			

Section 1: Backgr Subwatershed:	Vase		Outfall ID:	0F-18			
Today's date:	5/7/14		Time (Military)	01.00			
Investigators:	38 38		Form completed				
Temperature (°F):		infall (in.): Last 24 hour					
Latitude:	Longitude				ш.		
Camera:	Congitude		-	00 105/10A	. #:		
0	Area (Check all that apply):		Tiloto #s.	00 109/108			
☐ Industrial	riiva (onook an mai appry).		5 0				
2			Open Space				
Ultra-Urban Resid			☐ Institutional				
Suburban Resider	tial		Other:				
☐ Commercial			Known Industri	es:			
Notes (e.g., origin of	under walking	Treil, by	Timbel	(etaning wa	el		
LOCATION	MATERIAL		SHAPE	DIMENSIONS (IN.)	SUBMERGED		
	□ RCP □ CMP	Circular	Single	Diameter/Dimensions:	In Water:		
	PVC HDPI	E Eliptical	☐ Double	0.3	No Partially		
☐ Closed Pipe	☐ Steel	Box	☐ Triple	La La	☐ Fully		
	☐ Other:	☐ Other:	☐ Other:	4:7	With Sediment:		
	Li Oulei.		Outer:		No Partially		
		Blac			Fully		
	Concrete	☐ Trapezoid		Depth:			
Open drainage	☐ Earthen	☐ Parabolic		Top Width:	1000		
	☐ rip-rap	☐ Other:		Bottom Width:			
	☐ Other:	Other.		Bottom width:			
☐ In-Stream	(applicable when collecti	ng samples)					
Flow Present?	✓ Yes □	No If No. 1	Skip to Section 5				
Mow Description (If present)	Trickle Mode	rate Substantial		E F BY I I -			
Section 3: Quanti	tative Characterization						
1.00		FIELD DATA FOR	FLOWING OUTFAI	LS			
PARA	METER	RESULT			QUIPMENT		
	Volume	AN THEOLOGICAL PROPERTY.		Liter	Bottle		
□Plow #1	Time to fill			Sec			
to proper to the second second					Tape measure		
	Flow depth						
78 May #2	Flow width	, ,		Ft, In	Tape measure		
Flow #2) 19 			Tape measure Tape measure		
Flow #2	Flow width				Tape measure		
	Flow width Measured length			Ft, In			
Tem	Flow width Measured length Time of travel			Ft, In S oF	Tape measure Stop watch		

INDICATOR	CHECK if Present		DI	ESCRIPTION	V		RELATIVE SEVERITY INDEX (1-3)			
· Odor	Ø	Sewage Sulfide				☑1 - Faint		2 - Easily detected	3 – Noticeable from a distance	
Color	0	Clear Green				1 - Faint co		2 - Clearly visible in sample bottle	3 - Clearly visible in outfall flow	
Turbidity				See severity		☐ 1 – Slight cl	oudiness	2 - Cloudy	3 - Opaque	
Floatables -Does Not Include Trash!!			☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:			l – Few/slig	ht; origin	2 - Some; indications of origin (e.g., possible suds or oil sheen)	3 - Some; origin clear (e.g., obvious oil sheen, suds, or floatin sanitary materials)	
Outfall Damage	CHECK		☐ Spalling, Cracking or Chipping ☐ Peeling Paint			III	COMPLET			
INDICATOR	CHECK if	Present			DESCRIPTION		COMMENTS			
Outfall Damage			Corrosion							
Deposits/Stains			Oily Fl	ow Line	Paint Other:	(onge	ye Olange Strining on bank below			
Abnormal Vegetation]	☐ Excessive	☐ Inhibited		19		and the second		
Poor pool quality	, .			☐ Colors ☐ Excessive	Floatables Oil					
Pipe benthic growth]	☐ Brown ☐ Orange ☐ Green ☐ Other:				0			
ction 6: Overall Out Unlikely			or more indicat	ors)	Suspect (one or mo	ore indicators with	a severity	of 3) 🔲 Obvious		
ction 7: Data Collec	tion					7				
Sample for the lab?			Yes	☐ No		100				
If yes, collected from	: 1		Flow	☐ Pool	34					
Intermittent flow trap	o set?						ulk dam			

	Vasa Creek Landslide Inventory and Slope Stability F	Reconnaissance
	ATTAC	CHMENT D
	DIGITAL DELI	VERABLES
	(PROVIDED SEP	ARATELY)
City of Bellevue		

Attachment D contains a summary of digital data that will be delivered separately including: 1) GPS point locations and associated digital photographs, and 2) a list of the GIS data that will be included the project geodatabase.

1) Photolog of GPS Points with Associated Digital Photographs

	TT- ID	Point Type	Latitude Longitude	Time	Comments
DSC00001 20140502			47.57844800000	2014/05/02	Downstream end of
Revetment PP-01	PP-01	Photo	-122.12346800000	15:56:20	private revetment
DSC00002 20140502			47.57828900000	2014/05/02	Upstream stream end of
Revetment PP-02	PP-02	Photo	-122.12399600000	16:01:22	private revetment
DSC00003 20140502			47.57840000000	2014/05/02	OF-01 Outfall GPS point
Outfall OF-01	OF-01	Outfall	-122.12365500000	16:07:55	and Photo
DSC00004 20140502			47.57817300000	2014/05/02	
landslide scarp LS-01	LS-01	Landslide	-122.12460000000	16:20:09	LS-01 scarp
DSC00005 20140502			47.57799500000	2014/05/02	
Scarp Photo PP-03	PP-03	Photo	-122.12451600000	16:22:09	LS-01 scarp photo
DSC00006 20140502			47.57808600000	2014/05/02	
Deposit PP-04	PP-04	Photo	-122.12460500000	16:24:27	LS-01 deposit photo
DSC00007 20140502			47.57818800000	2014/05/02	
Deposition Fan LS-02	LS-02	Landslide	-122.12521000000	16:42:19	LS-02 deposit
DSC00008 20140502			47.57801600000	2014/05/02	LS-02 drainage outlet
Drainage outlet PP-05	PP-05	Photo	-122.12526100000	16:43:08	photo
DSC00010 20140502					
Sweeping conifer PP-			47.57783000000	2014/05/02	Photo of Sweeping
06	PP-06	Photo	-122.12537500000	16:48:26	conifer on top of bank
DSC00011 20140502					
Potential Instability		Potential	47.57797100000	2014/05/02	PI-01 Potential
PI-01	PI-01	Instability	-122.12562000000	16:56:45	Instability site top
DSC00013 20140502			47.57794400000	2014/05/02	
Clay Lense PP-08	PP-08	Photo	-122.12562100000	16:59:36	PI-01 clay lens photo
DSC00014 20140502			47.57801400000	2014/05/02	
Deposit PP-09	PP-09	Photo	-122.12582900000	17:09:05	LS-03 deposit photo
DSC00015 20140502			47.57793100000	2014/05/02	
Slope LS-03	LS-03	Landslide	-122.12577000000	17:09:39	LS-03
DSC00016 20140502			47.57837000000	2014/05/02	OF-02 Outfall GPS point
Outfall OF-02	OF-02	Outfall	-122.12680400000	17:30:08	and Photo
DSC00017 20140502					
DS sediment staining			47.57835700000	2014/05/02	Photo of sediment
PP-32	PP-32	Photo	-122.12645300000	17:31:29	staining from OF-02
DSC00018 20140502			47.57841900000	2014/05/02	outlet of culvert on
Culvert Outlet PI-02	PI-02	Culvert	-122.12696200000	17:44:22	access road
DSC00019 20140502			47.57855000000	2014/05/02	Photo of seep upstream
Ponded water		Seep	-122.12701400000	17:45:34	of access road
DSC00021 20140502			47.57848500000	2014/05/02	Photo of seep upstream
Seep		Seep	-122.12708300000	17:47:42	of access road
DSC00022 20140502					
Abandoned Road			47.57861100000	2014/05/02	outlet of culvert on
Culvert PI-02	PI-02	Culvert	-122.12695300000	17:51:17	abandoned access road

Photo Name	TT- ID	Point Type	Latitude Longitude	Time	Comments
DSC00024 20140502				2014/05/02	Photo of seep upstream
Seep		Seep	-122.12687000000	17:54:59	of access road
DSC00025 20140502			47.57858800000	2014/05/02	Photo of seep upstream
Seep		Seep	-122.12647000000	17:57:09	of access road
DSC00026 20140502			47.57857200000	2014/05/02	Photo of seep upstream
Seep		Seep	-122.12621200000	17:59:24	of access road
DSC00027 20140502			47.57897800000	2014/05/02	Road drainage
Road Drainage PP-10	PP-10	Photo	-122.12702100000	18:15:47	infrastructure photo
DSC00028 20140502			47.57893200000	2014/05/02	Road damage from
Road Cracking PP-11	PP-11	Photo	-122.12669200000	18:27:36	slope movement
Rodd Cracking 11 11		111010	122.12003200000	10.27.50	Exposed glacial till cap
DSC00029 20140502			47.57887900000	2014/05/02	on 35th street road cut
Exposed Till PP-12	PP-12	Photo	-122.12618100000	18:31:12	slope
<u> </u>	FF-12	FIIOLO			siope
DSC00033 20140502	DD 42	Dhoto	47.56954600000	2014/05/02	Dodrook and de combret
Bedrock PP-13	PP-13	Photo	-122.13408000000	20:25:35	Bedrock grade control
DSC00034 20140502			.=		
Channel Conditions			47.56901400000	2014/05/02	Photo of characteristic
PP-14	PP-14	Photo	-122.13352700000	20:32:35	channel conditions
DSC00035 20140502					
Channel Conditions			47.56731700000	2014/05/02	Photo of characteristic
PP-15	PP-15	Photo	-122.13281700000	20:52:17	channel conditions
DSC00036 20140502					
Channel Conditions			47.56788800000	2014/05/02	Photo of characteristic
PP-16	PP-16	Photo	-122.13323000000	21:03:26	channel conditions
DSC00037 20140502			47.56830100000	2014/05/02	
West face LS-04	LS-04	Landslide	-122.13295900000	21:09:50	LS-04 west face
DSC00038 20140502			47.56820100000	2014/05/02	
East face PP-17	PP-17	Photo	-122.13316200000	21:11:51	LS-04 East face
DSC00039 20140502			47.56856400000	2014/05/02	
Scarp LS-05	LS-05	Landslide	-122.13335100000	21:22:04	LS-05 scarp
DSC00040 20140502	L3 03	Lariasiiae	122.13333100000	21.22.04	25 05 3carp
Channel Conditions			47.56853400000	2014/05/02	Photo of characteristic
	DD 10	Dhoto			channel conditions
PP-18	PP-18	Photo	-122.13346500000	21:25:00	channel conditions
DSC00041 20140502			47 500050000	204 4 /05 /02	Distant af all and attantiation
Channel Conditions	DD 40	51 .	47.56900500000	2014/05/02	Photo of characteristic
PP-19	PP-19	Photo	-122.13357600000	21:29:58	channel conditions
DSC00043 20140507					
Bank Erosion with					
Potential Instability		Potential	47.56870800000 -	2014/05/07	PI-03 Bank Erosion with
PI-03	PI-03	Instability	122.13771600000	15:41:37	Potential Instability
DSC00044 20140507					
RB stream gauge PP-			47.56860700000	2014/05/07	
20	PP-20	Photo	-122.13768600000	15:45:30	Photo of stream gauge
DSC00045 20140507					
Instream LWD			47.56853700000	2014/05/07	Photo of Instream LWD
control PP-21	PP-21	Photo	-122.13777700000	15:47:31	control
DSC00046 20140507					
Channel Conditions			47.56746100000	2014/05/07	Channel conditions
		Photo	-122.13796200000	16:00:55	

Photo Name	TT- ID	Point Type	Latitude Longitude	Time	Comments
DSC00047 20140507			47.56722400000	2014/05/07	
Outfall OF-03	OF-03	Outfall	-122.13794100000	16:06:37	OF-03 Outfall
DSC00048 20140507					
Downslope from top			47.56725700000	2014/05/07	Downslope from top of
of scarp LS-06	LS-06	Landslide	-122.13795900000	16:11:38	scarp
DSC00049 20140507			47.56730300000	2014/05/07	
LB seep		Seep	-122.13794000000	16:16:48	Left bank seep
DSC00050 20140507			47.56705300000	2014/05/07	
Outfall OF-04	OF-04	Outfall	-122.13806600000	16:21:31	OF-04 Outfall
DSC00051 20140507			47.56685300000	2014/05/07	
Outfall OF-05	OF-05	Outfall	-122.13802500000	16:25:59	OF-05 Outfall
DSC00052 20140507					
Channel Bank			47.56692200000	2014/05/07	Photo of channel bank
Armoring PP-22	PP-22	Photo	-122.13799400000	16:27:29	armoring
DSC00053 20140507			47.56676300000	2014/05/07	
Culvert Outlet PP-23	PP-23	Photo	-122.13799900000	16:31:01	Photo of culvert outlet
DSC00054 20140507			47.56669000000	2014/05/07	
Outfall OF-06	OF-06	Outfall	-122.13796700000	16:36:29	OF-06 Outfall
DSC00055 20140507			47.56629500000	2014/05/07	
Outfall OF-07	OF-07	Outfall	-122.13777200000	16:46:56	OF-07 Outfall
DSC00057 20140507					
Culvert inlet and			47.56614400000	2014/05/07	Photo of culvert inlet
bank armoring PP-24	PP-24	Photo	-122.13760400000	16:52:01	and bank armoring
DSC00058 20140507			47.56590800000	2014/05/07	Left bank seep causing
LB Seep		Seep	-122.13769800000	16:59:18	minor erosion
DSC00059 20140507			47.56591200000	2014/05/07	
Outfall OF-08	OF-08	Outfall	-122.13734700000	17:04:10	OF-08 Outfall
DSC00062 20140507			47.56555600000	2014/05/07	
Outfall OF-09	OF-09	Outfall	-122.13730900000	17:18:36	OF-09 Outfall
DSC00063 20140507					
OF-09 Outfall on			47.56554800000	2014/05/07	Sediment Staining at OF-
slope PP-25	PP-25	Photo	-122.13730500000	17:19:28	09
DSC00065 20140507			47.56543400000	2014/05/07	Left bank seep causing
LB seep		Seep	-122.13742700000	17:24:53	minor erosion
DSC00066 20140507			47.56540300000	2014/05/07	
Scarp LS-07	LS-07	Landslide	-122.13753000000	17:31:04	Scarp
DSC00068 20140507		Foot	47.56521800000	2014/05/07	Jean p
Foot Bridge 1		Bridge	-122.13741800000	17:37:54	Foot Bridge
DSC00069 20140507		211480	47.56510400000	2014/05/07	. 001 511050
Outfall OF-10	OF-10	Outfall	-122.13755600000	17:42:33	OF-10 Outfall
DSC00073 20140507	<u> </u>	Jaciun	47.56463400000	2014/05/07	3. 10 Gat.an
Scarp LS-08	LS-08	Landslide	-122.13765100000	17:52:02	Scarp
DSC00075 20140507		Larrasnae	47.56421100000	2014/05/07	
Outfall OF-11	OF-11	Outfall	-122.13730600000	18:01:20	OF-11 Outfall
DSC00076 20140507	01-11	Jutiali	47.56412500000	2014/05/07	Small scarp ~ 20 m
LB seep		Seep	-122.1373400000	18:02:55	upslope with no delivery
rp seeh		seeh	-122.13734000000	10.02.33	apsiope with no delivery

Photo Name	TT- ID	Point Type	Latitude Longitude	Time	Comments
DSC00077 20140507					
Bank Erosion with					
Potential Instability		Potential	47.56374600000	2014/05/07	Bank Erosion with
PI-04	PI-04	Instability	-122.13690600000	18:09:42	Potential Instability
DSC00078 20140507			47.56371100000	2014/05/07	
Outfall OF-12	OF-12	Outfall	-122.13701600000	18:10:40	OF-12 Outfall
DSC00081 20140507					
Old RB bank erosion		Bank	47.56331400000	2014/05/07	
IE-01	IE-01	Erosion	-122.13685000000	18:16:58	Old Right bank erosion
DSC00082 20140507			47.56323000000	2014/05/07	
Outfall OF-13	OF-13	Outfall	-122.13688800000	18:17:57	OF-13 Outfall
DSC00083 20140507			47.56308600000	2014/05/07	
Seep		Seep	-122.13663500000	18:26:12	Small seep
DSC00084 20140507		'			•
Gabion Grade Control			47.56290200000	2014/05/07	Photo of gabion grade
PP-26	PP-26	Photo	-122.13679300000	18:29:30	control
DSC00085 20140507			47.56264600000	2014/05/07	
Outfall OF-14	OF-14	Outfall	-122.13668800000	18:32:37	OF-14 Outfall
DSC00086 20140507			47.56208300000	2014/05/07	
Outfall OF-15	OF-15	Outfall	-122.13645200000	18:55:28	OF-15 Outfall
DSC00087 20140507					
Slope with Potential		Potential	47.56199200000	2014/05/07	Slope with Potential
Instability PI-05	PI-05	Instability	-122.13674700000	19:01:35	Instability
DSC00089 20140507		Foot	47.56159200000	2014/05/07	cq
Foot Bridge 2		Bridge	-122.13648700000	19:07:40	Foot Bridge
DSC00090 20140507		280	47.56139600000	2014/05/07	Small scarp ~ 20 m
LB seep		Seep	-122.13653900000	19:10:07	upslope with no delivery
DSC00091 20140507		Bank	47.56139600000	2014/05/07	apsiope with no delivery
RBBank Erosion IE-02	IE-02	Erosion	-122.13649500000	19:12:52	Right Bank Erosion
DSC00092 20140507	02	2.03.011	47.56132200000	2014/05/07	mgm barn Erosion
LB seep		Seep	-122.13652800000	19:16:49	Small Left Bank seep
DSC00093 20140507		Эсср	47.56116000000	2014/05/07	Sman Left Barn Seep
Outfall OF-16	OF-16	Outfall	-122.13639400000	19:19:38	OF-16 Outfall
DSC00094 20140507	01 10	Foot	47.56076900000	2014/05/07	Or 10 Odition
Foot Bridge 3		Bridge	-122.13636100000	19:21:44	Foot Bridge
DSC00095 20140507		bridge	47.56088800000	2014/05/07	1 oot bridge
LB Scarp LS-09	LS-09	Landslide	-122.13630600000	19:24:00	Left Bank Scarp
DSC00096 20140507	L3-03	Landshae	47.56069800000	2014/05/07	Left Bank Scarp
Deposit PP-29	PP-29	Photo	-122.13633600000	19:26:04	Deposit
DSC00097 20140507	11-23	111000	47.56070500000	2014/05/07	Right Bank seep causing
RB Seep		Seep	-122.13617000000	19:30:45	minor erosion
DSC00098 20140507		Эсер	47.56066800000	2014/05/07	minor erosion
Outfall OF-17	OF-17	Outfall	-122.13614300000	19:32:38	OF-17 Outfall
DSC00099 20140507	01-17	Bank	47.56000300000	2014/05/07	IE-03 Photo of Right
RB erosion IE-03	IE-03	Erosion	-122.13600900000	19:40:48	Bank erosion
DSC00100 20140507	IL-03	LIUSIUII	-122,13000300000	13.40.40	Photo of gabion grade
Gabion Grade Control			47 55007900000	2014/05/07	control (view)
PP-30	PP-30	Photo	47.55997800000 -122.13604700000	2014/05/07 19:44:28	downstream
FF-3U	PP-3U	711010	-122.13004/00000	19.44.28	uowiistieaiii

Photo Name	TT- ID	Point Type	Latitude Longitude	Time	Comments
DSC00103 20140507		Bank	47.55963800000	2014/05/07	IE-04 photo of Right
RB bank IE-04	IE-04	Erosion	-122.13606800000	19:50:22	Bank erosion
DSC00104 20140507					
Gabion Grade Control			47.55946900000	2014/05/07	Photo of downstream
PP-31	PP-31	Photo	-122.13632000000	19:58:19	end of gabion wall
DSC00105 20140507			47.55898600000	2014/05/07	
Outfall OF-18	OF-18	Outfall	-122.13624600000	20:08:23	OF-18 Outfall

2) List of the GIS data included in geodatabase:

☐ It_Vasa_Assessment.gdb □ Geology Fault_Strands ☑ Geology_Britton_2013 ☑ Geology_Troost_2012 Landslide_Debris_Troost_2012 Scarp_Troost_2012 □ ♣ Objects_Britton Culvert Drains Gabian_Wall Slope_Break Transect Location Woody_Debris □ □ SlopeStability_Britton Erosional_Features Landslide_Debris Landslide_Scarp Observed_Landslide_Location Bank_Erosion Foot_Bridge Gorge_Scarp Landslide_Deposit Observed_Landslide · OUtfall Photo_Points Potential_Instability Revetment Scarp_Gorge Scarp_Landslide Seeps Tt_Use

basinslope_Britton
 creekslope_Britton