Technical Memorandum

TO: Jed Helle, Absher Construction

FROM: Jennifer Wynkoop

DATE: September 28, 2018

RE: **Historical Review of the Jefferson Avenue Site**
Tacoma, Washington
Project No. 1412002.010.011

Overview

The Jefferson Avenue Site (Site) has been in use since 1896. Historical operations at this Site identified as areas of potential concern include gasoline stations, a car wash, a printer, an automobile repair businesses, and a pest control business (Figure 1).

Extensive investigation and cleanup of the site was completed. Two underground storage tanks (USTs), along with a hydraulic hoist and other on-Site structures were removed from the Site of the former gas stations along Jefferson Avenue in 2002. Observed contaminated soil was excavated and follow up sampling confirmed contaminated soil was removed. In January 2013, Ecology and Environment, Inc. (E&E) prepared a Targeted Brownfields Assessment (TBA) of the Site for the U.S. Environmental Protection Agency (EPA) and the City of Tacoma (City; E&E 2013). The Tacoma-Pierce County Health Department signed a Site Closure in February 2013 with respect to UST(s) removed from the Site in 2002 based on the TBA report (TPCHD 2013). An addendum to the TBA was prepared in April 2015 that included additional sampling efforts. Results from previous remediation and sampling events at the Site are described below. Washington State Department of Ecology (Ecology) issued a No Further Action (NFA) determination for the Site in 2014, stating that the Site was within compliance with cleanup standards and issued an Environmental Covenant (Covenant) for the northeast portion of the Site. This Environmental Covenant is described in the following sections. Contaminates of concern associated with this Site include petroleum hydrocarbons and related constituents found in soil and groundwater, as well as arsenic found in groundwater.

In addition to the investigation and cleanup of the former gas stations along Jefferson Avenue, an investigation of a former gas station in the northwest corner of the property was conducted in 2012. Analytical results indicated no impacts related to the former gasoline station at 2105 Tacoma Avenue. Discussion of the investigation is provided further in this memorandum.

Underground Storage Tank Removal and Sampling (2002 through 2005)

Two USTs (500 gallon and 1,800 gallon) containing gasoline were identified at this Site and were subsequently removed along with a hydraulic hoist and other on-Site structures in August of 2002. Approximately 175 cubic yards of contaminated soil was removed from the previous location of the two USTs. Soil samples taken from the pits of both the USTs and hydraulic hoist were found to have concentrations either not detected or below Model Toxics Control Act (MTCA) Method A cleanup

levels for gasoline-, diesel-, and oil-range petroleum hydrocarbons (TPH-G, TPH-D, and TPH-O, respectively) and benzene, toluene, ethylbenzene and xylene (BTEX) compounds. Subsequently, groundwater samples collected from monitoring wells surrounding the excavation, did not have detections of petroleum hydrocarbons in groundwater.

In March 2003, investigations at the Site were conducted to assess the presence of residual contamination in soil and groundwater (Figure 2). Impacted soil was noted in only one location. Three groundwater grab samples taken from three soil borings had concentrations of TPH-D and/or TPH-O at concentrations higher than MTCA Method A cleanup levels. However, permanent monitoring wells (MW1 through MW6) were installed in June 2003. These six wells were sampled at four separate events between March 2004 and January 2005 and analyzed for TPH-G, TPH-D, TPH-O, and BTEX compounds. Initially, TPH-D above the Method A cleanup level, was detected at MW6 but subsequent sampling did not detect petroleum hydrocarbons at that well. None of the other wells had detections above the cleanup levels for any constituent.

Targeted Brownfields Assessment Sampling (2012 through 2015)

In 2012, an additional sampling event occurred at the Site conducted by E&E for EPA and the City. The goal of this sampling event was to determine if concentrations of constituents identified during the 2002 and 2003 investigations were still present. An assessment was performed of the entire vacant city block owned by the City. This assessment included a ground penetrating radar (GPR) assessment to look for possible unidentified USTs, as well as the installation of four additional monitoring wells (MW7 through MW10), excavation of nine test pits at locations identified by the GPR to be potential USTs (TP1 through TP9), and drilling five soil borings (JA01 through JA05; Figure 3). The results of this investigation are presented in the January 2013 TBA report (E&E 2013). Soil and groundwater samples were collected from all 10 monitoring wells (MW1 through MW10), 8 soil borings at various depths (5 soil borings plus 3 monitoring well borings), and 2 of the 9 test pits (TP6 and TP9). These samples were analyzed for varying combinations of volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs), TPH-G, TPH-D, TPH-O, and target analyte list metals including lead. Analysis of samples from investigations of all former operational areas resulted in non-detect concentrations or concentrations below MTCA Method A cleanup levels with three exceptions:

1) The turbid water sample from Test Pit 6 resulted in a detection of total lead, total arsenic, and carcinogenic polycyclic aromatic hydrocarbons (cPAHs) above MTCA Method A cleanup levels. However, these results are not considered valid because of the sample collection method. Results from downgradient monitoring well MW9 are considered representative of groundwater in this area and are discussed below.
2) One soil sample collected from the boring for MW8 detected cPAHs at a concentration above MTCA Method A cleanup levels (0.1662 milligrams per kilogram [mg/kg]). However, cPAHs generally are not soluble in groundwater and groundwater samples from this well did not have detections of cPAHs.

3) The groundwater sample collected at MW9 had a detection of arsenic above MTCA Method A cleanup levels. Two additional samples were collected from this location at different times and concentrations were consistent with original results. Arsenic concentrations from all events ranged from 41.1 µg/L to 48.3 µg/L. Ecology determined that because arsenic was not detected at other wells at the Site, the source is unlikely related to a release at the site, and could be addressed by institutional controls (Ecology 2014). The institutional controls in place to address the groundwater in this portion of the Site include an Environmental Covenant, which is described below.

As described in the TBA, in 2014 and 2015, EPA and E&E resampled groundwater at all monitoring wells, including two re-excavated test pits (TP06 and TP09), and eight re-drilled soil borings at the Site (Figure 4)[1]. These samples were analyzed in varying combinations for VOCs, PCBs, SVOCs, and pesticides. These investigations covered the former gas stations, former printer, former car wash, and former pest control business. Results of this investigation are reported in the April 2015 TBA Addendum report (E&E 2015). No analytes were detected at concentrations that exceeded regulatory standards for soil or groundwater during the resampling event.

2105 Tacoma Avenue Investigation in 2012

Robinson Noble, Inc., on behalf of the City, completed an investigation of a former gas station in the northwest corner of the property in 2012. Borings were completed in 11 locations at depths up to 20 ft below ground surface. Groundwater was not encountered in any of the borings. One to two soil samples were collected from each boring and analyzed for TPH-D, TPH-G, and BTEX. No analytes were detected and all detection limits were below the respective MTCA Method A cleanup levels. No impacts appear to be related to the former gasoline station in the northwest corner of the site.

Ecology No Further Action Determination in 2014

Ecology issued an NFA for this Site in February 2014, removing the Site from the Confirmed and Suspected Contaminated Sites List (Ecology 2014). An Environmental Covenant for Institutional Controls was issued in response to the arsenic concentrations in groundwater identified at MW9 in the northwestern most portion of Parcel 2021080011 (Figure 5). The Covenant restricted the extraction of the groundwater located beneath the defined area for purposes other than temporary construction dewatering, investigation, monitoring, or remediation.

Summary of Investigation Results

Historical activities at the Site resulted in releases of petroleum hydrocarbons and related constituents in the northeast corner of the property. However, cleanup activities to address the petroleum-related contamination were completed and currently, groundwater and soil at the site meet state cleanup standards for soil and groundwater. Other areas of the property, outside of the

[1] Soil borings were re-drilled and samples were taken and analyzed again in January 2015 due to a shipping error with the original samples taken in November 2014.

northeast corner, have not been affected by historical releases. In 2014, Ecology issued an NFA determination documenting the efficacy of the cleanup actions.

The one remaining issue at the Site relates to arsenic in groundwater in the northeast corner of the Site. The groundwater impacts were limited to a single well (MW9). A covenant restricting the use of groundwater for domestic purposes is in place for a limited area in the northeast corner of the site (Figure 5).

Recent Stormwater Testing Results

As part of the testing for discharge to the sanitary sewer and to alleviate concerns about the potential for historical contaminants to enter stormwater, Absher Construction recently tested several stormwater and seep samples for oil and grease, metals (including arsenic), VOCs, and SVOCs at the Site. Stormwater collection, treatment, and discharge at the site can generally be described as follows:

- Stormwater across the site is collected and piped to the temporary sediment pond (pond) in the northeast corner of the site.
- Seepage from the building 2 wall is pumped to a vegetated area where it flows over land and is then collected and piped to the pond.
- Seepage along the northeast edge of the site, adjacent to Jefferson Avenue, is collected and pumped to the pond.
- Water from the pond is pumped into baffled Baker tanks where additional sediment is allowed to settle out before discharge to the sewer system.

Figure 6 shows stormwater collection and flow across the site. Figure 7 shows the stormwater sample locations.

Samples were collected in the following locations: Seepage from the Building 2 wall (two samples), the temporary sediment pond (two samples), and the Baker tank (three samples). Oil and grease, VOCs, and SVOCs, were not detected in any of the samples collected. Low levels of arsenic consistent with background groundwater concentrations were detected. Arsenic samples collected from the Building 2 wall had concentrations ranging from 4.8 micrograms per liter (µg/L) to 46 µg/L. The samples collected from the storage pond ranged in concentration from 5.1 µg/L to 18 µg/L. The samples collected from the Baker tank, which is the last point before discharge to the sewer system, ranged in concentrations from 2.1 µg/L to 3.8 µg/L. The concentrations at the Baker tank and the pond are well below the range of concentrations found in well MW9, which was located in the vicinity of the pond. The concentrations in the baker tank prior to discharge are less than the mean state background concentration for arsenic in groundwater of 3.9 µg/L. Testing of the stormwater at the site indicates that contaminants, if present, are not making their way to the stormwater discharge point.

LANDAU ASSOCIATES, INC.

Jennifer Wynkoop
Principal

KAM/JWW/jrc
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References

E&E. 2013. Jefferson Avenue Site Targeted Brownfields Assessment. Ecology and Environment, Inc. January.

E&E. 2015. Targeted Brownfields Addendum Trip Report, Jefferson Avenue Site, Tacoma, Washington. Ecology and Environment, Inc. April 2015.

Ecology. 2014. Letter: No Further Action at the following Site: Jefferson Avenue Site (aka City Properties Cleanup), 2112-2122 Jefferson Ave, Tacoma, Facility Site No. 1277004, Cleanup Site ID No. 7037, VCP Project No. SW1315. From Scott Rose, Unit Supervisor, SWRO Toxics Cleanup Organization, Washington State Department of Ecology, to Ellen Walkowiak, Business Development Manager, Community & Economic Development Department, City of Tacoma. February 12, 2014.

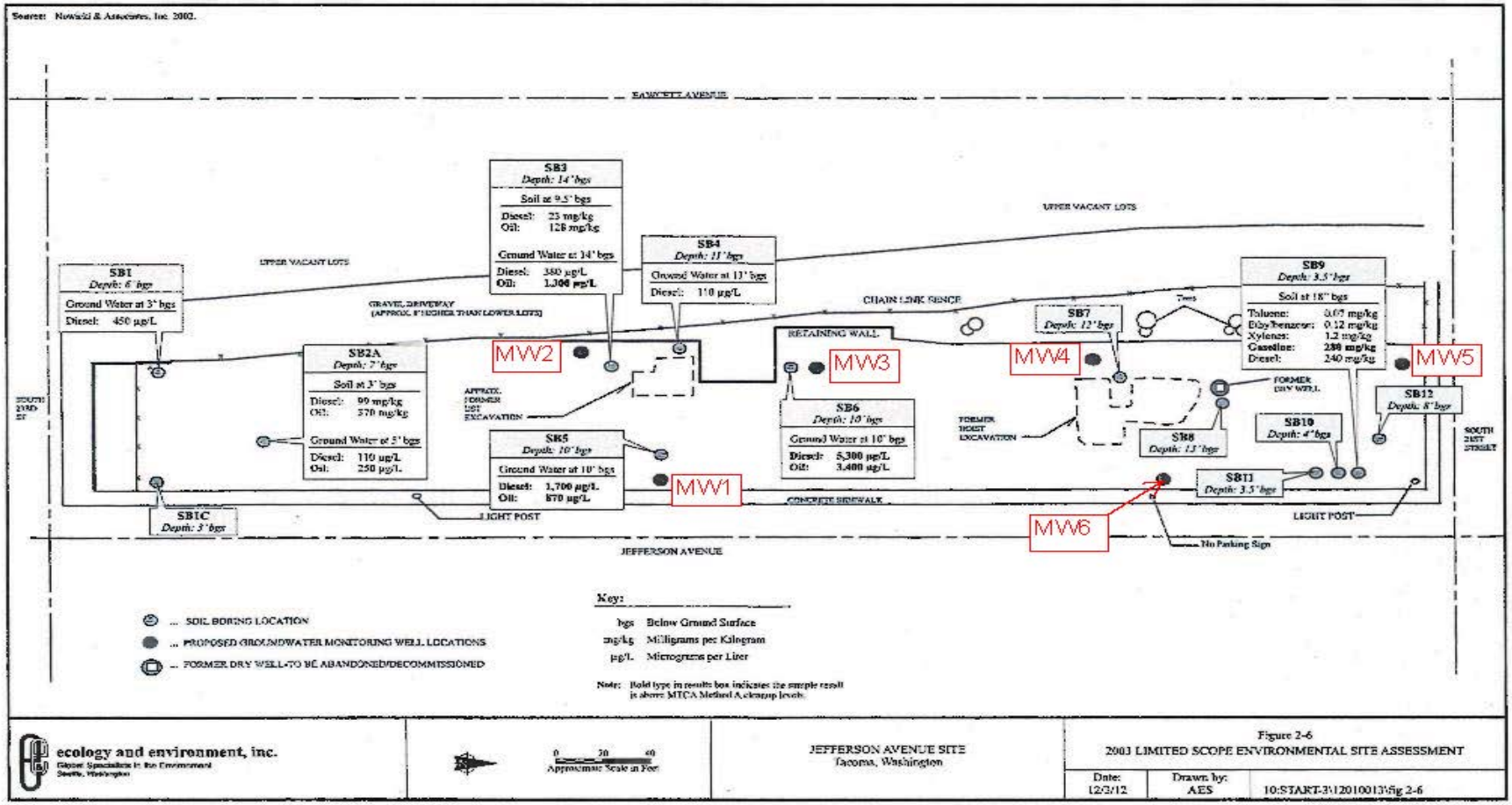
TPCHD. 2013. Letter: Underground Storage Tank (UST) Removal; Site Closure Determination. From Rob Olsen, Environmental Health Specialist II, Environmental Health Division, Tacoma-Pierce County Health Department, to Elly Walkowiak, Community and Economic Development Dept, City of Tacoma. Feburary 14.

Attachments: Figure 1: Site Map
Figure 2: 2003 Limited Scope Environmental Site Assessment
Figure 3: Sample Location Map
Figure 4: E&E Boring Location Map November 2014 and January 2015
Figure 5: Property Map
Figure 6: Site Stormwater Collection and Treatment
Figure 7: Stormwater Sample Locations

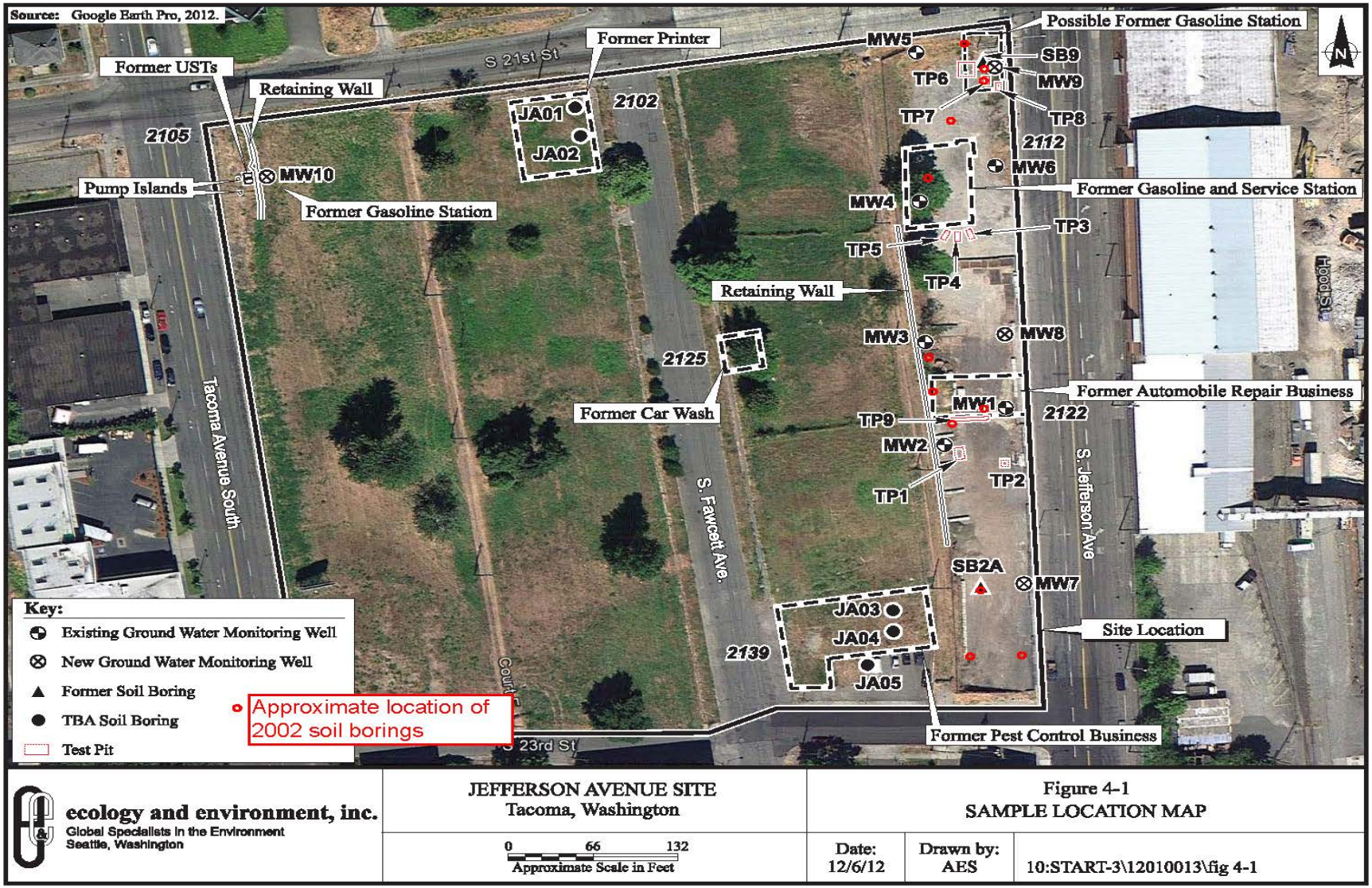
ecology and environment, inc. Global Specialists in the Environment Seattle, Washington	JEFFERSON AVENUE SITE Tacoma, Washington	Figure 2-2 SITE MAP		
	0 66 132 Approximate Scale in Feet	Date: 12/3/12	Drawn by: AES	10:START-3\12010013\fig 2-2

LANDAU ASSOCIATES	Jefferson Avenue Site Historical Review Tacoma, Washington	**Site Map**

Figure
1



LANDAU ASSOCIATES	Jefferson Avenue Site Historical Review Tacoma, Washington	**2003 Limited Scope Environmental Site Assessment**	Figure 2



LANDAU ASSOCIATES	Jefferson Avenue Site Historical Review Tacoma, Washington	**Sample Location Map**

Figure
3

Document Path: R:\4 START 4\Jefferson Ave Re Sampling\02 Execution\GIS\Maps\mxd\2015_03_09\Jefferson_GPS.mxd

Soil Boring

Figure 4
Jefferson Avenue
E & E Boring Location Map
November 2014 and January 2015
Tacoma, Washington

N
0 40 80 160 Feet

ecology and environment, inc.
Global Environmental Specialists

9/11/18 Y:\1412\002\R\Historical Review\Fig 4 Boring Locations.docx

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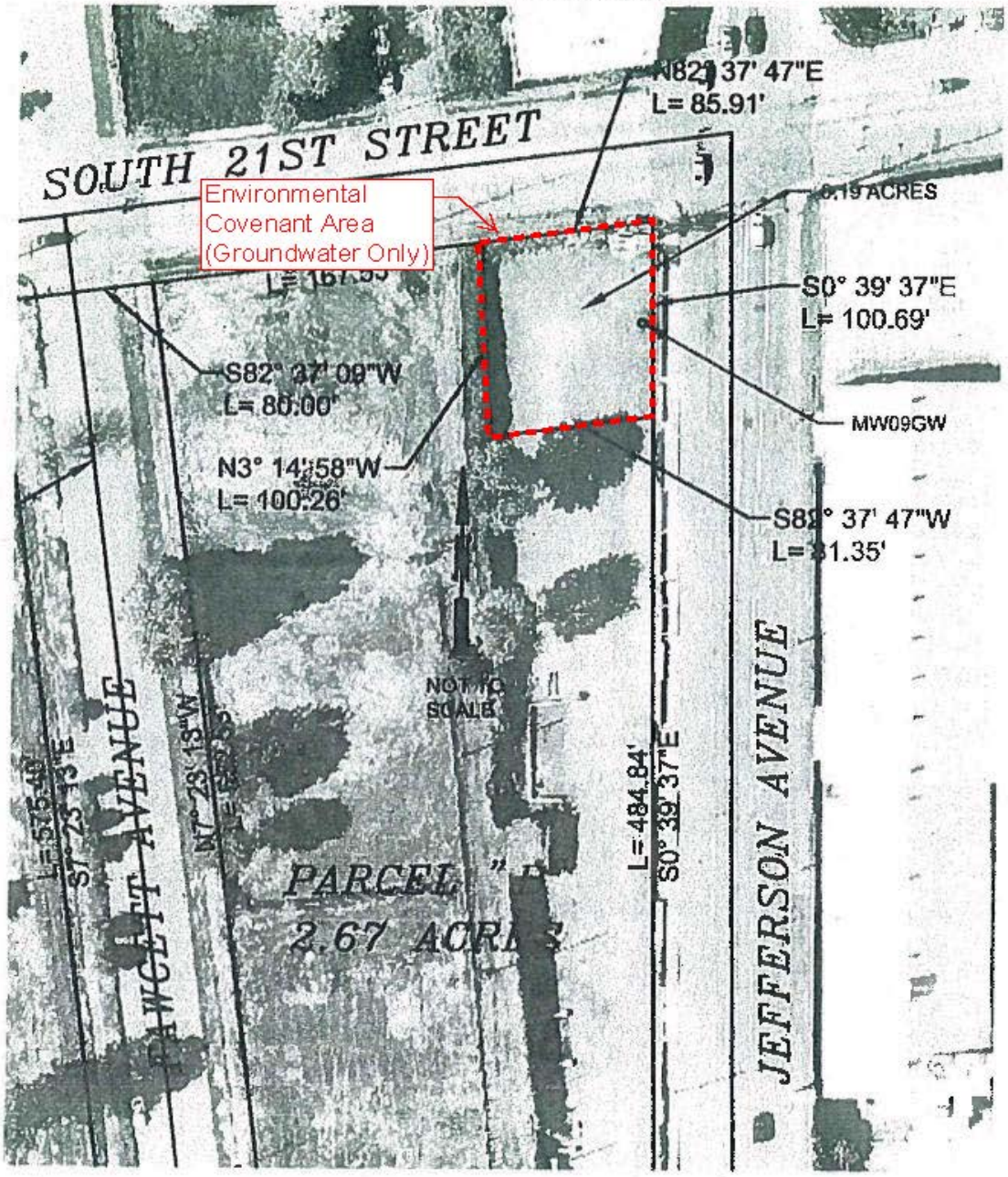
Jefferson Avenue Site Historical Review Tacoma, Washington	**E&E Boring Location Map** **November 2014 and January 2015**	Figure 4

Exhibit B -- PROPERTY MAP



9/11/18 Y:\1412\002\R\Historical Review\Fig 5 Area Map.docx

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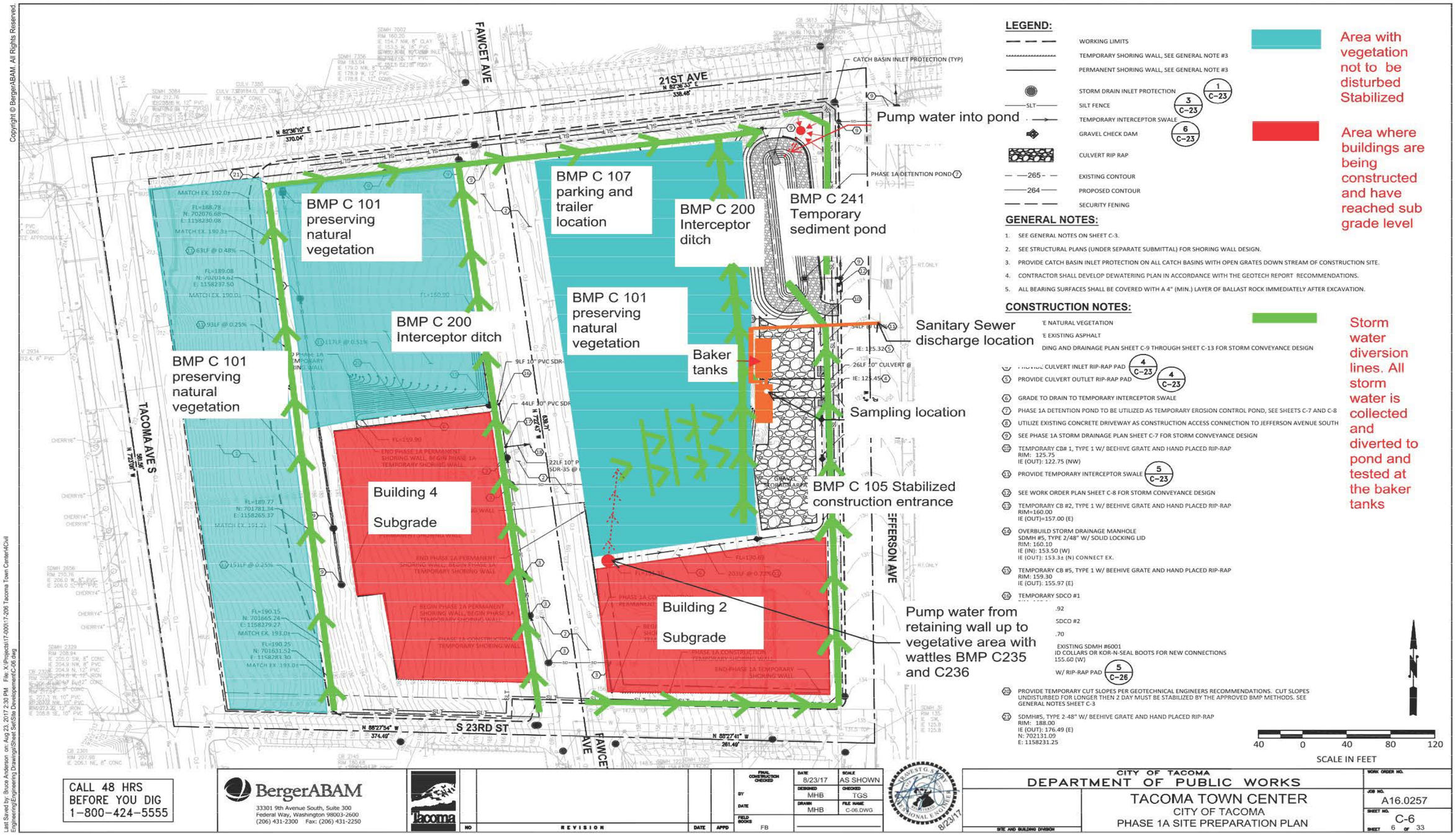
Jefferson Avenue Site Historical Review Tacoma, Washington	**Property Map**	Figure 5



LEGEND:

- WORKING LIMITS
- TEMPORARY SHORING WALL, SEE GENERAL NOTE #3
- PERMANENT SHORING WALL, SEE GENERAL NOTE #3
- STORM DRAIN INLET PROTECTION
- SILT FENCE
- TEMPORARY INTERCEPTOR SWALE
- GRAVEL CHECK DAM
- CULVERT RIP RAP
- 265 EXISTING CONTOUR
- 264 PROPOSED CONTOUR
- SECURITY FENING

Area with vegetation not to be disturbed Stabilized

Area where buildings are being constructed and have reached sub grade level

GENERAL NOTES:

1. SEE GENERAL NOTES ON SHEET C-3.
2. SEE STRUCTURAL PLANS (UNDER SEPARATE SUBMITTAL) FOR SHORING WALL DESIGN.
3. PROVIDE CATCH BASIN INLET PROTECTION ON ALL CATCH BASINS WITH OPEN GRATES DOWN STREAM OF CONSTRUCTION SITE.
4. CONTRACTOR SHALL DEVELOP DEWATERING PLAN IN ACCORDANCE WITH THE GEOTECH REPORT RECOMMENDATIONS.
5. ALL BEARING SURFACES SHALL BE COVERED WITH A 4" (MIN.) LAYER OF BALLAST ROCK IMMEDIATELY AFTER EXCAVATION.

CONSTRUCTION NOTES:

'E NATURAL VEGETATION
'E EXISTING ASPHALT
DING AND DRAINAGE PLAN SHEET C-9 THROUGH SHEET C-13 FOR STORM CONVEYANCE DESIGN

Storm water diversion lines. All storm water is collected and diverted to pond and tested at the baker tanks

4 C-23
PROVIDE CULVERT INLET RIP-RAP PAD
4 C-23
PROVIDE CULVERT OUTLET RIP-RAP PAD

6. GRADE TO DRAIN TO TEMPORARY INTERCEPTOR SWALE
7. PHASE 1A DETENTION POND TO BE UTILIZED AS TEMPORARY EROSION CONTROL POND, SEE SHEETS C-7 AND C-8
8. UTILIZE EXISTING CONCRETE DRIVEWAY AS CONSTRUCTION ACCESS CONNECTION TO JEFFERSON AVENUE SOUTH
9. SEE PHASE 1A STORM DRAINAGE PLAN SHEET C-7 FOR STORM CONVEYANCE DESIGN
10. TEMPORARY CB# 1, TYPE 1 W/ BEEHIVE GRATE AND HAND PLACED RIP-RAP
    RIM: 125.75
    IE (OUT): 122.75 (NW)
11. PROVIDE TEMPORARY INTERCEPTOR SWALE 5 C-23
12. SEE WORK ORDER PLAN SHEET C-8 FOR STORM CONVEYANCE DESIGN
13. TEMPORARY CB #2, TYPE 1 W/ BEEHIVE GRATE AND HAND PLACED RIP-RAP
    RIM=160.00
    IE (OUT)=157.00 (E)
14. OVERBUILD STORM DRAINAGE MANHOLE
    SDMH #5, TYPE 2/48" W/ SOLID LOCKING LID
    RIM: 160.10
    IE (IN): 153.50 (W)
    IE (OUT): 153.3± (N) CONNECT EX.
15. TEMPORARY CB #5, TYPE 1 W/ BEEHIVE GRATE AND HAND PLACED RIP-RAP
    RIM: 159.30
    IE (OUT): 155.97 (E)
16. TEMPORARY SDCO #1
    .92
    SDCO #2
    .70
    EXISTING SDMH #6001
    ID COLLARS OR KOR-N-SEAL BOOTS FOR NEW CONNECTIONS
    155.60 (W)
    W/ RIP-RAP PAD 5 C-26
20. PROVIDE TEMPORARY CUT SLOPES PER GEOTECHNICAL ENGINEERS RECOMMENDATIONS. CUT SLOPES UNDISTURBED FOR LONGER THEN 2 DAY MUST BE STABILIZED BY THE APPROVED BMP METHODS. SEE GENERAL NOTES SHEET C-3
23. SDMH#5, TYPE 2-48" W/ BEEHIVE GRATE AND HAND PLACED RIP-RAP
    RIM: 188.00
    IE (OUT): 176.49 (E)
    N: 702131.09
    E: 1158231.25

40 0 40 80 120
SCALE IN FEET

CALL 48 HRS BEFORE YOU DIG 1-800-424-5555

BergerABAM
33301 9th Avenue South, Suite 300
Federal Way, Washington 98003-2600
(206) 431-2300 Fax: (206) 431-2250

Tacoma

NO	REVISION	DATE	APPD

FINAL CONSTRUCTION CHECKED — BY — DATE — FIELD BOOKS FB

DATE 8/23/17 | SCALE AS SHOWN
DESIGNED MHB | CHECKED TGS
DRAWN MHB | FILE NAME C-06.DWG

8/23/17

CITY OF TACOMA
DEPARTMENT OF PUBLIC WORKS
SITE AND BUILDING DIVISION

TACOMA TOWN CENTER
CITY OF TACOMA
PHASE 1A SITE PREPARATION PLAN

WORK ORDER NO.
JOB NO. A16.0257
SHEET NO. C-6
SHEET 6 OF 33

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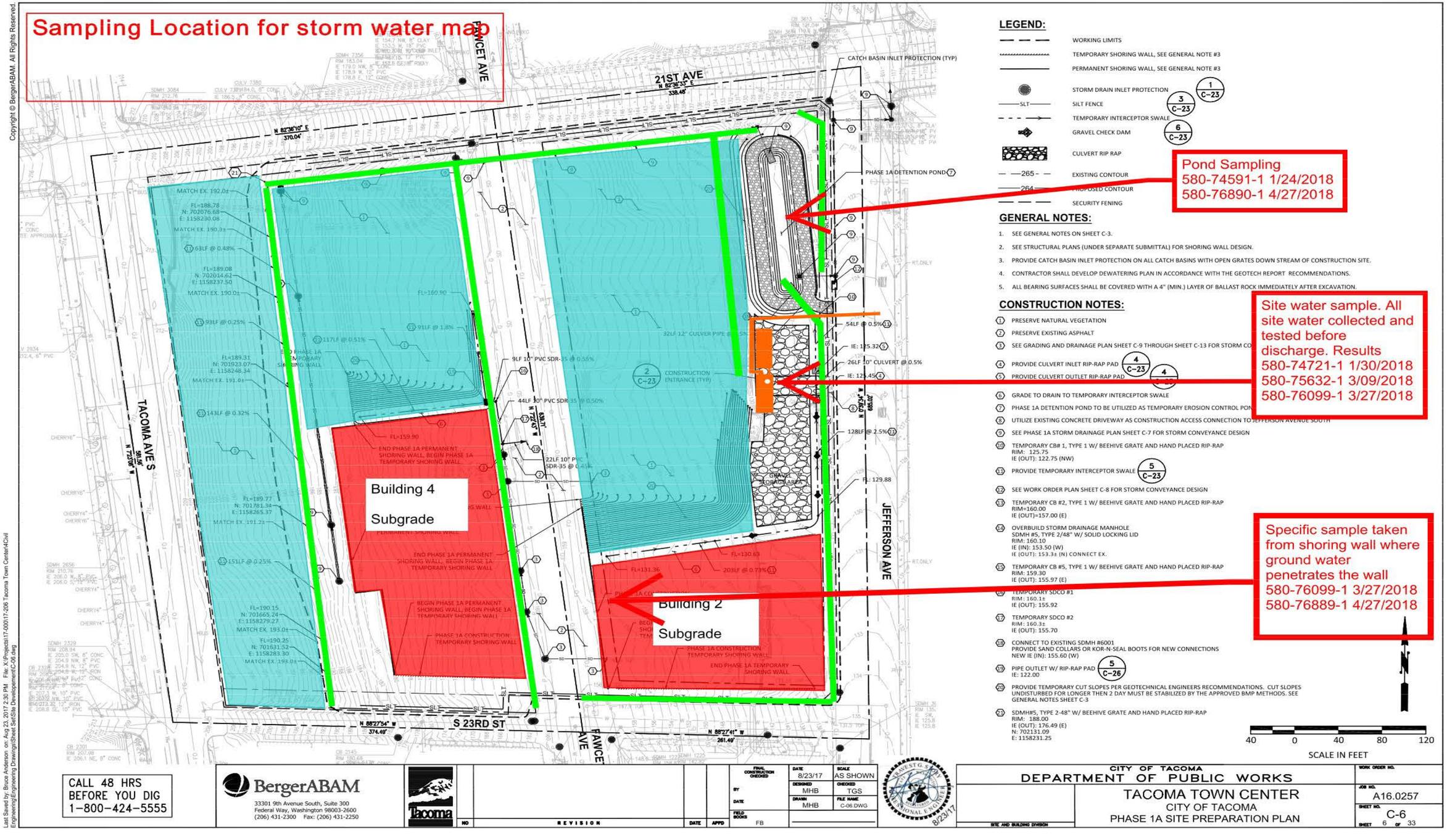
Jefferson Avenue Site Historical Review Tacoma, Washington	**Site Stormwater Collection and Treatment**	Figure 6

Sampling Location for storm water map


21ST AVE
N 82°36'33" E
338.48'
N 82°36'10" E
370.04'
FAWCET AVE
TACOMA AVE S
N 73°08' W
501.55'
JEFFERSON AVE
S 23RD ST
N 88°27'54" W
374.49'
N 88°27'41" W
261.49'
CATCH BASIN INLET PROTECTION (TYP)
PHASE 1A DETENTION POND 7
54LF @ 0.5% 11
IE: 125.32 5
26LF 10" CULVERT @ 0.5%
IE: 125.45 4
128LF @ 2.5% 11
32LF 12" CULVER PIPE @ 2.5%
9LF 10" PVC SDR-35 @ 0.55%
44LF 10" PVC SDR-35 @ 0.50%
22LF 10" PVC SDR-35 @ 0.45%
2 C-23 CONSTRUCTION ENTRANCE (TYP)
GRAVEL STORAGE AREA
Building 4
Subgrade
Building 2
Subgrade
END PHASE 1A PERMANENT SHORING WALL, BEGIN PHASE 1A TEMPORARY SHORING WALL
BEGIN PHASE 1A PERMANENT SHORING WALL, BEGIN PHASE 1A TEMPORARY SHORING WALL
PHASE 1A CONSTRUCTION TEMPORARY SHORING WALL
END PHASE 1A TEMPORARY SHORING WALL
MATCH EX. 192.0±
FL=188.78
N: 702076.68
E: 1158230.08
MATCH EX. 190.3±
63LF @ 0.48% 11
FL=189.08
N: 702014.62
E: 1158237.50
MATCH EX. 190.0±
93LF @ 0.25% 11
117LF @ 0.51% 11
91LF @ 1.8% 11
FL=160.90
FL=189.31
N: 701923.07
E: 1158248.34
MATCH EX. 191.0±
143LF @ 0.32% 11
FL=159.90
FL=189.77
N: 701781.34
E: 1158265.37
MATCH EX. 191.2±
151LF @ 0.25% 11
FL=190.15
N: 701665.24
E: 1158279.27
MATCH EX. 193.0±
FL=190.25
N: 701631.52
E: 1158283.30
MATCH EX. 193.0±
FL=129.88
FL=130.63
FL=131.36
203LF @ 0.73% 11
SDMH 7356
SDMH 3084
SDMH 2656
SDMH 2329
SDMH 2301
SDMH 2145
SDMH 1225
SDMH 36
CB 3613
CB 2301
CB 2145
CULV 7380
CULV 7379
CULV 7378
CULV 7377
CULV 7376
CULV 7375
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