

TECHNICAL MEMORANDUM

October 25, 2017

To:	Ms. Tamela Van Winkle, Bainbridge Island School District
From:	Will K. Hohman, PWS, Wetland Scientist Richard W. Lundquist, M.S., Wildlife Biologist Raedeke Associates, Inc.
RE:	Blakely Elementary School – Addendum to Critical Areas and Habitat Management Report dated July 19, 2017 (R.A.I. No. 2017-014-002)

The purpose of this memo is to provide an addendum and update to the July 19, 2017 Critical Areas and Habitat Management Report (Raedeke Associates Inc. 2017) prepared for the Blakely Elementary School Project in the City of Bainbridge Island, Washington. This addendum is intended to review the updated site plans and proposed impacts to the buffers of the off-site wetland with respect to requirements for a Habitat Management Plan (HMP) under the City of Bainbridge Island Municipal Code (BIMC) Title 16 Environment, Chapter 16.20 Critical Areas (BIMC16.20). Since the July 19, 2017 report, the proposed site plan has been revised to further minimize the footprint of the proposed building and associated facilities and increase the area of proposed buffer restoration and enhancement, based on review comments from City staff, the technical advisory committee, and Washington Department of Fish and Wildlife (WDFW), as well as subsequent discussions and meetings with City staff. The following presents an analysis of the latest proposed site plan and design information provided by Mithun Inc. and LPD Engineering PLLC to date, with respect to BIMC Criteria (BIMC 16.20.060) for Habitat Management Plans. The impacts and mitigation measures discussed herein shall serve to replace those discussed in the July 19, 2017 report (Raedeke Associates, Inc. 2017) based on additional avoidance and further minimization of impacts (reduced fire lane, reduced classroom/building sizes, re-orienting pathways, etc. specifically to minimize impervious surfaces) within the critical areas buffer, as well as an expanded buffer restoration/enhancement area.

Discussion of the habitat buffer and/or water quality buffer from this point forward shall mean the entire respective prescriptive buffer area as measured on a horizontal plane from the regulated wetland edge associated with the off-site Wetland 18, rated as Category I/II (Raedeke Associates, Inc. 2017). The entire prescriptive buffer, interchangeably discussed as the “standard” buffer in BIMC and herein, as measured from the wetland edge is made up of both the water quality and habitat buffer areas per BIMC. Refer to the updated Figure 5 (Attachment A) to this addendum depicting the location and extent of the buffer areas on site. In addition, from this

point forward, the project site, or property shall mean the entirety and extent of the Blakely School property parcel boundaries.

EXISTING CONDITIONS

The City of Bainbridge Island (2017) requires a 300-foot standard buffer (consisting of a 100-foot inner water quality buffer and a 200-foot habitat buffer) on the off-site Wetland 18. A portion of the buffer extends onto the eastern and northeastern portions of the site (see Figure 5, attached). This section summarizes existing site conditions within the prescriptive wetland buffer. As outlined in our July 19, 2017 report (Raedeke Associates, Inc. 2017), the portion of the 300-foot wetland buffer that occurs on the project site consists of existing forest/shrub cover, lawn play areas, and impervious surfaces (building and associated hardscapes). This review includes area calculations provided by Mithun Inc. on October 11, 2017.

Here we discuss the type, area, and functions associated with the existing conditions in the buffer areas, to provide an initial baseline with which to compare the proposed condition. To our knowledge, there is no buffer functional assessment methodology available to evaluate the current and future functioning of the on-site buffer areas. Consequently, we will reference relevant information on buffer functioning found in several state publications, including Castell et al. 1992, Sheldon et al. 2005, Granger et al. 2005, Washington Department of Ecology 2006, Hruby 2013, among others, in our discussion of existing and proposed conditions, as have been used in other HMP documents approved by the City. It should be noted that the width of buffer necessary to protect the functions of a critical area such as Wetland 18 is related to the functions of the critical area and the buffer itself (Castelle, et al. 1992) and may vary depending on buffer characteristics, such as soils, topography, unique physical features, width, slope, geology, surface water movements, vegetation, and other habitat features, as well as the watershed context.

The following list summarizes the current conditions, functions, and values of the existing 300-foot standard wetland buffer on site. Further discussion of the existing conditions is found in our July 19, 2017 report (Raedeke Associates, Inc. 2017), and Appendix D includes photos of representative areas.

1. Contiguous forested areas in the buffer total 73,508 square feet (SF) (approximately 65,088 SF in the habitat buffer and 8,420 SF within the on site water quality buffer area) and provide well-developed forest/shrub habitat that provides vegetative screening of the off-site Wetland 18 from existing play areas in the on-site buffer.
2. Degraded play areas within the buffer total approximately 66,122 SF (3,595 SF of the water quality buffer and 62,527 SF in the habitat buffer) and consist of regularly mowed lawns with some areas of bare ground that are heavily used by students and school staff. These areas have compacted soils of fill material and provide little functional habitat for wildlife, especially with the regular use by people. This degraded buffer extends closest to the off-site wetland within a portion of the water quality buffer (see Figure 5, attached).

3. Soils in the lawn areas are compacted from existing uses and past historical use of the site and thus provide limited mobility of stormwater by infiltration. The compacted soil conditions also provide poor soil medium for natural propagation of native plant species from nearby sources,
4. Impervious surfaces within the habitat buffer total approximately 20,746 SF, and consist of portions of the existing school building and a portable classroom (approximately 3,232 SF) and other hardscapes (approximately 17,514 SF), including paved paths paved play areas, raised play areas with playground equipment, and an outdoor propane storage area.
5. Stormwater runoff from existing buildings and hardscape within the habitat buffer currently run off site without any stormwater management or little ability to be pre-treated or infiltrate due to regularly accessed and compacted surrounding soil areas,
6. With respect to the watershed context, all of the water quality buffer drains toward the wetland, whereas only a portion of the habitat buffer does (Figure 5, attached). The portion of the on-site prescriptive buffer that drains to the wetland represents a very small fraction of its overall drainage basin. Notably, the existing site sits on top of several drainage divides draining the entire site in several directions. The four existing stormwater discharge points are described in more detail in the Preliminary Stormwater Site Plan Report dated October 9, 2017 (LPD Engineering PLLC 2017). Regardless of the distance from the wetland, areas which drain toward the wetland pass through degraded portions of the buffer (lawn/play areas) with only limited ability to effectively filter and remove pollutants prior to entering Wetland 18.

A detailed breakdown of the project site's existing buffer land uses is depicted on the 10/24/2017 revised Figure 5 (Attachment A).

PROPOSED SITE PLAN

SITE DESIGN CONSTRAINTS

The proposed site plan reflects a number of design constraints, requirements, and project needs that result in unavoidable impacts in the prescriptive buffer. First, the existing school needs to remain in operation while the proposed school is being built. Other general site constraints that have driven the overall site design include the following:

- Size of school buildings needed to accommodate educational programs, student population, teachers, and staff
- Seismic/geologic constraints (pushes buildings north)
- Site access limitations (Blakely Avenue only)
- Location of site drive way access to and from Blakely Ave (opposite NE Baker Hill Rd.)
- Vehicle parking area needed to serve facilities

- Fire lane and other safety and access requirements
- Stormwater management requirements
- General topography and amount of available land outside the buffer, with required setbacks
- General design parameters that make the proposed facilities useable, accessible

Additional information regarding design constraints can be found in associated project architectural and engineering reports and plans.

PROPOSED BUFFER CONDITIONS AND IMPACTS

The proposed site plan has been revised to minimize impacts within the prescriptive buffer and provide an expanded area of buffer restoration and enhancement. Attached 10/25/17 revised Figure 6 (Attachment B) presents an overview of the proposed project and the HMP Restoration Planting Plan dated 10/25/2017 (Attachment C) presents the area proposed for restoration and enhancement within the prescriptive buffer areas. Generally speaking, the following elements of the project are proposed in the prescriptive buffer:

1. The proposed school buildings and associated walkways will be limited to approximately 26,126 SF within the outer portions of the buffer (24,323 SF of building and 1,803 SF of paths, impervious play area, and walkways);
2. The fire lane to access the back (north side) of the school buildings, encompassing 5,579 SF, would be constructed of Grasspave (or equivalent) material and planted with an “eco-lawn” grass mix, to provide a pervious surface that can accommodate heavy vehicles;
3. The buffer restoration/enhancement area will now encompass approximately 29,968 SF within the overall buffer area per the HMP Restoration Planting Plan prepared by Mithun dated 10/25/17, Attachment C. This will involve plantings to establish a full native forest/shrub community within the currently degraded portions of the habitat and water quality buffers that now consist of the lawn and play areas (hardscape, playground equipment, and lawn play fields). In addition, this buffer enhancement area would extend into the edges of the existing forest/shrub cover on the norwestern portions of the restoration area. In these locations where the restoration overlaps into existing cacluated forest area to remain, thickets of invasive Himalayan blackberry and installation of infill plantings may occur where needed. The lawn portions of the restoration/enhancement area that correspond to the existing water line easement would be planted with shallow-rooted native shrubs so as not to endanger the water line.
4. Areas around the proposed buildings, pathway, and fire lane within the buffer, outside of the proposed buffer restoration/enhancement area, would be planted with an “eco-lawn” mixture of grasses.
5. Existing contiguous forested areas (high value habitat) of the buffer will remain preserved in the proposed build out. Furthermore, portions of the existing dripline (forest edge) will

be enhanced with a combination of invasive species removal and native vegetation in-fill plantings. This will more naturally transition and integrated existing forest areas with the proposed restoration area,

6. The existing building and hardscapes will be removed from buffer areas upon constructing the new proposed school,
7. The designated play field north and west of the westernmost segment of the new building would be limited to the outermost portion of the buffer, at the base of a southwest-facing forested slope outside of the drainage basin of the wetland (greater than 10 foot elevation difference between the base and top of slope). In this way, the noise and activity of children at play will be shifted to this field and away from the existing lawn areas that currently extend closer to the wetland

ANALYSIS OF IMPACTS WITH REFERENCE TO HMP REQUIREMENTS

Considering Bainbridge Island Municipal Code Criteria (BIMC 16.20.060) for Habitat Management Plans and discussions to date with the City of Bainbridge Island, the HMP requires comparison of the proposed plan to “providing the prescribed habitat buffers” with respect to protection of wetland functions and values. Specifically, a habitat management plan shall clearly demonstrate that greater protection of the functions and values of critical areas can be achieved through the HMP than could be achieved through providing the prescribed habitat buffers.

In theory, if this project could be built on site entirely outside the standard habitat buffer, the buffer would be set aside and left fallow (unmanaged). However, the code (BIMC 18.30.020, 16.20.040 does not appear to require the applicant to remove existing facilities (except the existing building, depending on the proposal) or provide any enhancements within the buffer, and it would likely remain largely in its existing condition. In addition, in such a case, the code (BIMC 16.20.040.C) does not preclude normal and routine maintenance of existing landscaping and vegetation that will not further impact or alter the critical area or buffers, nor does it (BIMC 18.30.020) necessarily preclude continued non-conforming use (i.e., children use of play area) within buffers, provided use is not enlarged, increased, or extended to occupy greater area. It does not presume a fully forested condition that does not currently exist there. Therefore, in the following analysis, we focus largely on comparison of the proposed project to existing conditions within the prescriptive buffer.

We do recognize, however, that if the existing degraded buffer were to be left to grow in naturally some native plant species may establish themselves naturally in the degraded areas (specifically the mowed lawn areas). However, because of the compacted soils, soil makeup as a medium for establishing plants, and past history of the site, it is likely that the degraded buffer will remain as a weedy field with patches of blackberry and other invasive species for the foreseeable future. Therefore, for comparison with the proposed site plan and HMP, we assume that for this site “providing the prescribed habitat buffers” means that most of the existing degraded buffer area would remain in a relatively low-functioning, degraded state.

The proposed project design will result in reduction of some of the habitat buffer area on site to accommodate the proposed school, keep the existing school facilities operational during construction, and to demolish the existing school upon constructing the new school. Although this will result in reduction of a portion of the habitat buffer, it will avoid tree removal and retain the entirety of the existing forested areas in the buffer that are contiguous to Wetland 18. The proposed buffer impacts will be entirely in portions of the buffer that is already highly degraded by current uses (playground, compacted lawn, existing buildings, and paved areas).

HMP CRITERIA COMPLIANCE

Due to site constraints, design requirements, and project needs, the project has been designed to not only service the students and faculty who utilize the site but also balance these constraints in a manner that avoids and minimizes impacts to the prescriptive buffer. Therefore, as the following sections outline, the current HMP site plan has been prepared to allow the buffer to provide greater protection as well as enhanced function and value of habitat and the off-site Wetland 18 than would the degraded buffer if left to go fallow from its current state.

16.20.060 Habitat management plan.

A. General. *A habitat management plan shall comply with the requirements of this section, and shall clearly demonstrate that greater protection of the functions and values of critical areas can be achieved through the HMP than could be achieved through providing the prescribed habitat buffers. The director shall prepare performance standards and monitoring guidelines for habitat management plans, including a program for city oversight of such plans. Once the standards and guidelines are in place, an applicant may propose to implement an HMP as a means to protect habitat buffers associated with wetlands and/or fish and wildlife conservation areas.*

Consistent with BIMC 16.20.060.A, the site plan has been revised since the July 2017 submittal to reduce the building/hardscape area (to 26,126 sf) within the 300-foot prescriptive buffer and increase the area of proposed forest/shrub plantings within the buffer area (to 29,968 sf). The proposed fire lane (5,579 sf) is designed to function as an entirely permeable surface.

- The proposed (revised plan) achieves greater function by preserving existing high-functioning (forest/shrub) habitat, and enhancing currently low functioning habitat (lawn and areas dominated by invasive species) by planting native forest/shrub plantings. The area of enhancement (29,968 sf) exceeds the total area of proposed impervious surfaces within buffer (26,126 sf).
- Under existing conditions, the overall prescribed buffer consists of 45.8% relatively high-functioning buffer of forest/shrub cover; the rest (54.1%) is highly degraded, low functioning (building/hardscape and heavily used lawn).
- Under the proposed (revised) plan, implementation of the proposed forest/shrub plantings would increase the area of higher functioning buffer over time to a total of over

60% of the 300-foot buffer, and the rest would consist of lawn or other landscaping (including a vegetated, permeable fire lane and proposed buildings, paths, and trails).

B. Intent. *HMPs are primarily intended as a means to restore or improve buffers that have been degraded by past activity, and should preserve, and not reduce, existing high quality habitat buffers. While not primarily intended as a means to reduce buffers, the HMP may propose a reduction of the habitat buffer width where it is shown that the HMP will comply with the other requirements of this section. An HMP shall not reduce the prescribed water quality buffer width as listed in BIMC 16.20.130 and 16.20.160 under any circumstance.*

- The proposed plan preserves all the existing relatively high-functioning forest habitat within the buffer (73,508 sf, or 45.8% of the 300-foot buffer area on site) and would provide enhancement to the perimeter areas by removing invasive species and installing native plantings.
- The proposed plan does not reduce the existing water quality buffer, and the portion that is currently lowest functioning (including 3,595 sf that is currently lawn) would be enhanced with forest/shrub plantings thereby improving its wildlife habitat value, as well as its water quality functioning; additional areas within the water quality buffer would be enhanced by removal of invasive species (i.e., blackberry) and installation of native plantings.
- Additional currently low-functioning portion of the habitat buffer (heavily used lawn) would be enhanced via forest/shrub plantings, thus increasing the total area of forest/shrub cover within the overall prescribed buffer (to a total of more than 60% of the buffer area), compared with existing conditions (45.8% of the buffer).

C. Effect of Buffers. *An HMP shall provide habitat functions and values that are greater than would be provided by the prescribed habitat buffers. When habitat buffers are a component of an HMP, they shall be at least the minimum size necessary to accomplish the objectives of the HMP. The HMP may propose, but the city shall not require, a habitat buffer containing a greater area than is required by the prescribed habitat buffer.*

- With proposed enhancements, the total area of forest/shrub habitat within the buffer would increase, compared with existing condition (over 60% of the on-site buffer area, compared with less than 46% under existing conditions), even if for comparison the existing buffer were left to go fallow and most of the existing hardscape areas were to remain.
- With habitat improvements via forest/shrub plantings on existing degraded lawn and play areas, as well as removal of invasive species, the habitat functions of the prescribed buffer under the proposed HMP site plan would provide (over time) greater screening between the school facilities and the wetland and more native cover, nesting, and foraging opportunity for wildlife, than is the case under existing conditions or if the existing degraded areas were left to go fallow.

- Proposed building/hardscape would be located only on currently degraded portions of the buffer (existing paved play areas & heavily used lawns); the total buffer enhancement area (29,968 sf, which would convert existing lawn and play area to native forest/shrub plantings) will exceed the total area of proposed building and associated hardscape (26,126 sf).
- The proposed new school building would be located closer to the off-site wetland than the existing building, which has the potential for greater impacts to the functions of the buffer than under existing conditions. However, the proposed building would be located in the outer portions of the buffer, outside of the wetland drainage basin, so would not adversely impact the hydrologic functions of the off-site wetland. Existing hardscape play areas and walkways within the buffer, including those within the wetland drainage basin, would be removed, and the net increase in impervious under the proposed plan over existing conditions would be minimized (approximately 5,380 sf). Human activity within the buffer will be more limited than under existing conditions, with play activities shifted primarily to the new playfield north and west of the new building, most of which is outside the buffer. Primary access to and from the larger building area would be located on the south and west sides, outside the buffer. Exterior lighting of the buildings within the buffer would be shielded and directed so as not to shine into the off-site wetland or buffer.
- The outer perimeter of the revised buffer line, encompassing existing forest habitat and the proposed buffer restoration within the prescribed buffer (see attached 10/25/17 revised HMP Figure 6 as Attachment B, and Mithun 10/25/17 HMP Restoration Planting Plan as Attachment C), where it borders the proposed school facilities, would be clearly marked with fencing and critical areas signage, per requirements of the City of Bainbridge Island (2017) code. This would serve to limit access to the designated buffer areas to minimize disturbance from human activity within the buffer, compared with existing conditions.

D. Impact Mitigation – General. *The HMP shall encompass an area large enough to provide mitigation for buffer reduction below the standard required buffers, and shall identify how the development impacts resulting from the proposed project will be mitigated. The developer of the plan shall use the best available science in all facets of the analyses. The Washington Department of Fish and Wildlife Priority Habitat and Species Management Recommendations, dated May 1991, and/or bald eagle protection rules outlined in WAC 232-12-292, as now or hereafter amended, may serve as guidance for this report. For habitat management plans addressing wetland buffers, Method for Assessing Wetland Functions, Ecology Publication No. 99-116 shall be used for guidance in determining function equivalency.*

As noted in the CAR/HMP submitted to the City, the WDFW PHS database does not indicate the presence of listed or other priority wildlife species as occurring on site or in the immediate vicinity, neither does it indicate the presence of bald eagle nest or communal roost sites in the vicinity of the project, so these management guidelines do not apply to the project. As noted above, there is no standard functional assessment tool for evaluating buffer functions. Consistent with the Code requirements for an HMP, the proposed site plan

includes the following mitigation measures to avoid, minimize, or compensate for buffer impacts, which would increase habitat and other functions of the buffers as recognized in the available literature:

- The proposed plan avoids direct adverse impacts to existing high functioning forest/shrub habitat in the buffer, including the inner water quality buffer.
- The proposed total area of impervious within the buffer (26,126 sf) would be mitigated in part by buffer restoration and enhancement planting approximately 29,968 sf, with native forest/shrub plantings, which consists of existing heavily used lawn area, in the inner portions of the buffer. This would greatly increase the total area of native forest/shrub cover over time, increasing the area of higher functioning wildlife, compared with existing conditions or with continued retention of degraded, fallow conditions.
- Enhancement via plantings of native forest/shrub cover is proposed within portions of the water quality and inner portions of the habitat buffer, contiguous with existing forest habitat, where they would have the most benefit in improving habitat functioning, consistent with best available science on wetland buffer functioning (e.g., Granger et al. 2005, Hruby 2013; Sheldon et al. 2005); with successful development of the proposed forest/shrub buffer restoration and enhancement plantings (totaling 29,968 sf), the minimum width of forest/shrub cover in the buffer would increase significantly compared with current conditions or if the existing degraded areas of the buffer were left to go fallow.
- Proposed buildings/hardscapes would be located in the outer portions of the prescriptive buffer, entirely outside the wetland drainage basin in areas that are currently low functioning; the proposed buildings and associated features would not impact any areas of currently high-functioning buffer; thus the proposed building and hardscape area would have no measureable impact on hydrologic or water quality conditions within the off-site wetland.
- Existing paved play areas within the wetland buffer (nearest edge approx. 120 feet from the wetland boundary) would be removed, portions of which currently occur within the drainage basin of the wetland, and soils decompacted and planted with either native forest/shrub within the buffer restoration area or with native "eco-lawn", which would promote infiltration of stormwater runoff, thereby help to enhance water quality protection within the buffer and thus help to protect habitat functions of the off-site wetland. Under the proposal, the nearest hardscape edge to the wetland would increase from 120 feet under current conditions to approximately 190 feet for the nearest proposed building corner or walkway.
- The Proposed fire lane within the buffer (totaling 5,579 sf) is reduced in width from standard requirements (while still meeting fire access requirements) and proposed to consist of permeable surface (such as "Grasspave" or equivalent), to further promote infiltration of stormwater runoff and vegetation for habitat.
- Stormwater runoff from the proposed building directed away from wetland (mostly already outside wetland drainage basin) and routed through water quality treatment and detention facilities. The net on-site area that drains to the wetland would remain the

same as under current conditions, thereby avoiding adverse hydrologic impacts and maintaining hydrologic conditions within the wetland.

- The existing waterline easement that is currently compacted lawn will be planted with shallow rooting shrub and/or understory plantings within the restoration planting area. Adaptive management during maintenance activities associated with the easement could involve invasive species treatments (removal) and restoration with native species plantings consistent with this plan.
- The proposal includes demarcation of the boundary of the proposed modified buffer area, encompassing existing forest/shrub habitat as well as the proposed restoration/enhancement areas with fencing and signage in a manner consistent with BIMC code requirements, with specific details to be determined in coordination with City staff.
- To the extent feasible, the proposed project would employ mitigation measures similar to those outlined in Table 7 in BIMC 16.20.160.D(6) to further minimize potential impacts from light, noise, toxic runoff and human disturbance. Examples include:
 - Light – exterior building lighting within the buffer would be shielded and oriented to avoid light shining into the buffer areas or the off-site wetland
 - Noise and Human Disturbance – human activity within the designated buffer would be limited via proposed fencing and signage, and shifting of primary play areas into the proposed playfield located mostly outside the buffer or in the outermost portion at the base of a forested slope (more than a 10-foot separation at ground surface elevation between the toe and top of slope). Primary access to the portions of the buildings that extend into the buffer would be located on the south and west sides, outside the buffer
 - Toxic Runoff – no toxic runoff would be directed toward the wetland; stormwater runoff from impervious surfaces would be directed away from the wetland. Increased area of native forest/shrub cover, with decompacted and revegetated soils to promote better infiltration compared with current conditions
 - Change in Water Regime – the net area within the drainage basin of the wetland within the buffer would remain the same, compared with existing conditions, thus avoiding changes to hydrologic conditions within the wetland (LPD Engineering PLLC 2017).
- Details of the current buffer restoration and enhancement plans are shown on the plan sheet prepared by Mithun (Attachment C dated October 25, 2017). Refer also to Mithun's latest Permit Set submittals for more detailed landscaping plan information. The July 19, 2017 report and HMP (Raedeke Associates, Inc. 2017) outlines the proposed mitigation plan in terms of implementation and monitoring plans. Details regarding implementation of the mitigation plan, including site preparation, installation and placement of enhancement of native plantings, and monitoring, will be determined in coordination with the design team, City staff, landscape contractors, and the School District's hired consultants.

CONCLUSIONS

The revised site plan and HMP provides measures that clearly improve functions of the proposed buffer in protecting functions of the off-site wetland, compared with current conditions within the overall prescribed standard buffer or potential continuance of fallow, degraded conditions therein. In summary with respect to habitat functions, the proposed plan provides the following:

- Increased area within the buffer that provides nesting and foraging for wildlife via the proposed restoration/enhancement plantings to establish native forest/shrub cover, including removal of invasives. This would significantly improve habitat functions over current degraded areas of the buffer.
- Increasing screening of the wetland from noise, light, and intrusion by substantially increasing the width of native forest/shrub cover (where such cover is currently narrowest), by shielding and orienting exterior building lights away from the buffer and wetland, by shifting play activities to the north and west sides of the buildings, farther away from the wetland than under current conditions, and by marking the outer boundary of the designated buffer with fencing and signage and limiting human access within the buffer area.
- Protection of high value wildlife habitat by avoiding removal of existing well-developed forest cover within the buffer, and providing some enhancement by removing invasive species and installing of a variety of native shrubs and trees. Features protected include large trees within the existing forested cover that can provide potential habitat for cavity nesting wildlife. Selected large trees within the existing play areas would be retained during construction.
- Maintaining groundwater discharge to Wetland 18 – the net area of the buffer that drains to the wetland would remain essentially unchanged, and decompaction of existing soils and revegetation with buffer restoration or eco-lawn areas will promote better infiltration of runoff draining to the wetland, thereby maintaining hydrologic conditions and protecting habitat conditions (soils, vegetation) within the wetland

LIMITATIONS

We have prepared this document for the exclusive use of the Bainbridge Island School District and their consultants. No other person or agency may rely upon the information, analysis, or conclusions contained herein without permission from the Bainbridge Island School District.

The determination of ecological system classifications, functions, values, and boundaries is an inexact science, and different individuals and agencies may reach different conclusions. With regard to wetlands, the final determination of their boundaries for regulatory purposes is the responsibility of the various agencies that regulate development activities in wetlands. We cannot guarantee the outcome of such agency determinations. Therefore, the conclusions of this

document should be reviewed by the appropriate regulatory agencies prior to any detailed site planning or construction activities.

We warrant that the work performed conforms to standards generally accepted in our field, and has been prepared substantially in accordance with then-current technical guidelines and criteria. The conclusions of this report represent the results of our analysis of the information provided by the project proponent and their consultants, together with information gathered in the course of the study. No other warranty, expressed or implied, is made.

Thank you for the opportunity to provide this information. If you have any questions or need additional information, please do not hesitate to contact us at (206) 525-8122 or via email at rwlundquist@raedeke.com or whohman@raedeke.com.

LITERATURE CITED

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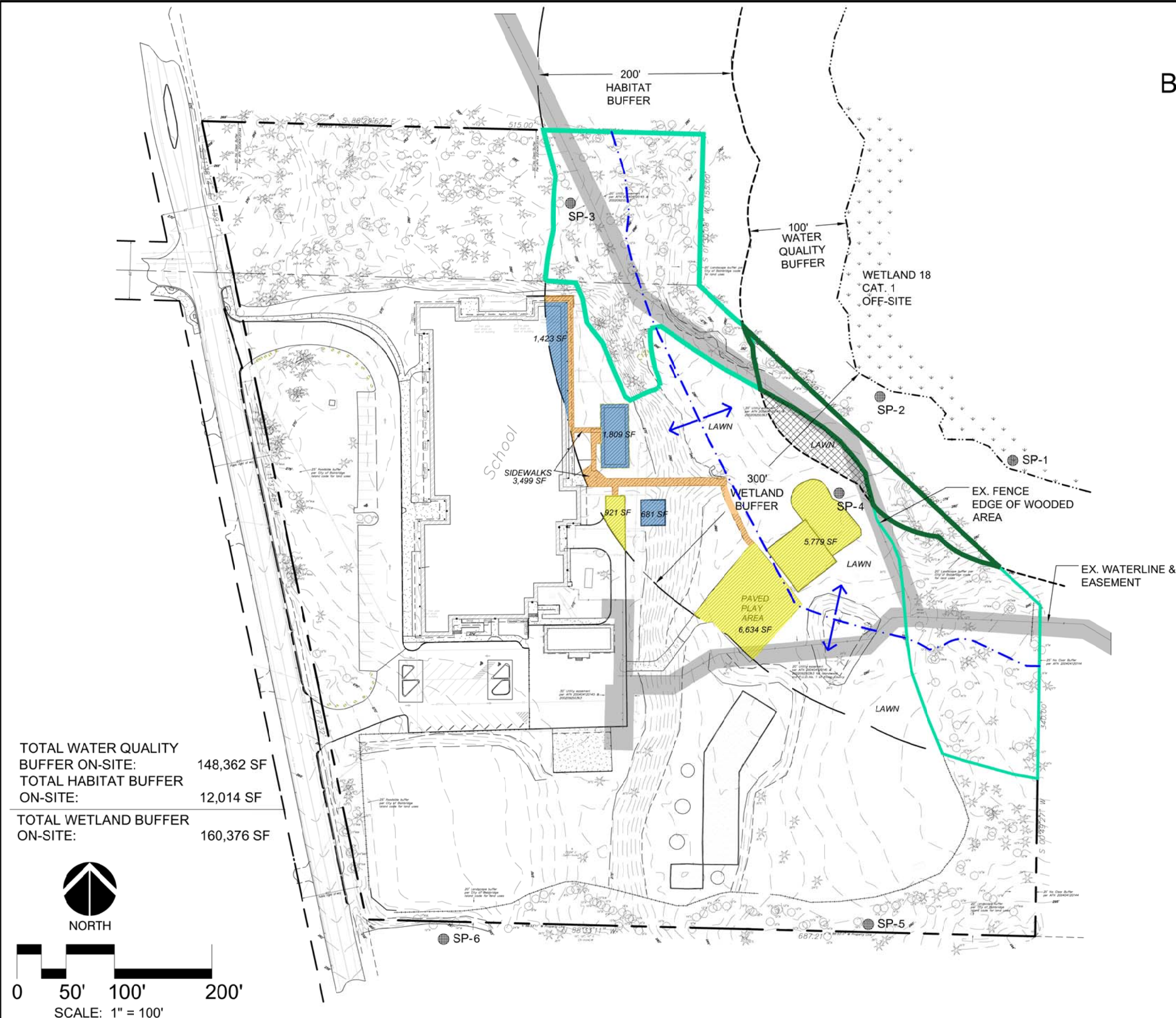
Attachments

Attachment A: Revised HMP Figure 5 – Existing Conditions (dated 10/24/17)

Attachment B: Revised HMP Figure 6 – Proposed Site Plan (dated 10/25/17)

Attachment C: Exhibit 1 - HMP Restoration Planting Plan (Mithun Inc. dated 10/25/17)

FIGURE 5
BAINBRIDGE ISLAND SCHOOL DISTRICT
BLAKELY ELEMENTARY SCHOOL
BAINBRIDGE ISLAND, WA
CRITICAL AREAS REPORT
EXISTING CONDITIONS



LEGEND

- PROJECT BOUNDARY
- EXISTING CONTOURS
- EXISTING WETLAND
- 100' WATER QUALITY BUFFER
- 300' WETLAND BUFFER
- DRAINAGE DIVIDE
- DIRECTION OF SURFACE WATER DRAINAGE
- SP-# SAMPLE PLOT LOCATIONS (APPROX.)
- EXISTING TREES

EXISTING USES WITHIN THE WATER QUALITY BUFFER ON PROPERTY

FORESTED (EXISTING NATURAL GROWTH AREA)	8,420 SF
LAWN	3,595 SF

EXISTING USES WITHIN THE HABITAT BUFFER ON PROPERTY

FORESTED (EXISTING NATURAL GROWTH AREA)	65,088 SF
BUILDINGS & HARDSCAPE	20,746 SF
LAWN	LAWN & PLAY AREAS 65,528 SF

NOTE: AREA CALCULATIONS PROVIDED BY MITHUN INC. ON OCTOBER 11, 2017

Raedeke Associates, Inc.
2111 N. Northgate Way, Ste 219
Seattle, WA 98133

TOTAL WATER QUALITY BUFFER ON-SITE: 148,362 SF
TOTAL HABITAT BUFFER ON-SITE: 12,014 SF
TOTAL WETLAND BUFFER ON-SITE: 160,376 SF

NORTH

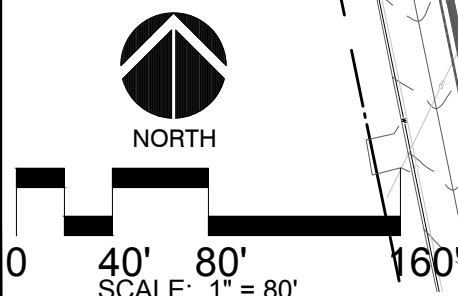
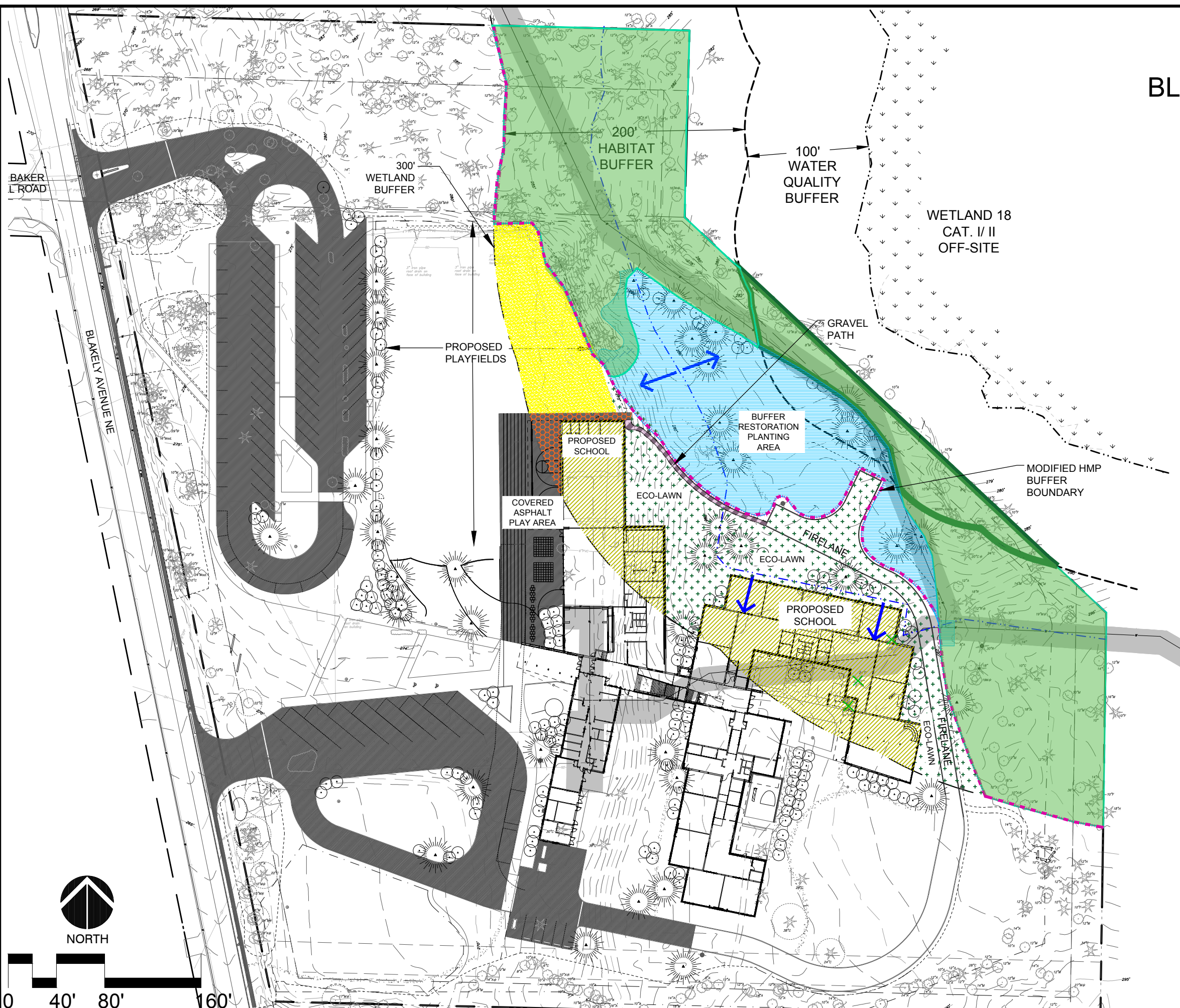
0 50' 100' 200'

SCALE: 1" = 100'

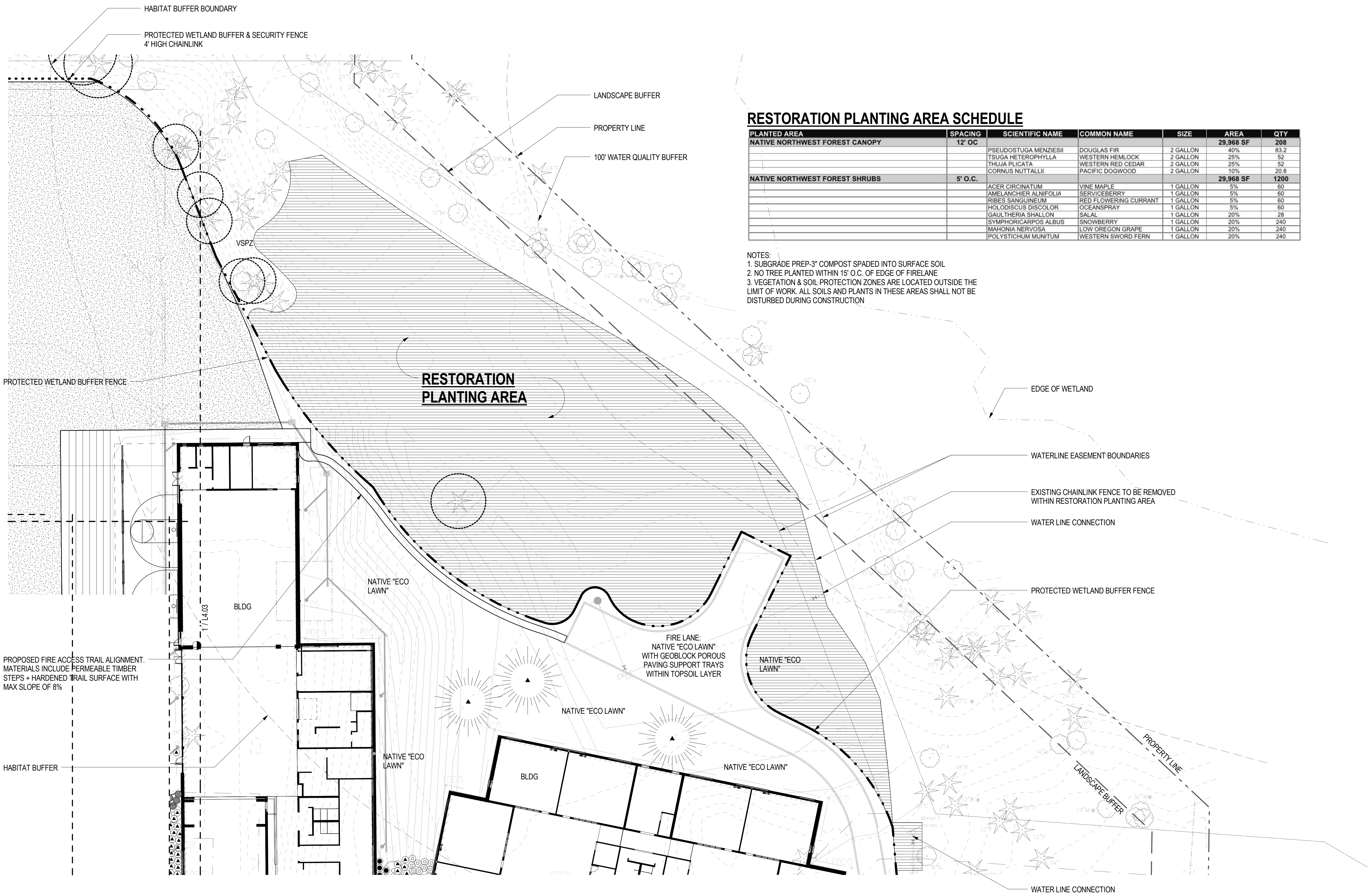
RAI PROJECT: 2017-014	
DATE: 10/24/17	
DRAWN BY: AC	PM: WH
BASE INFORMATION:	
Mithun/Pier 56 1201 Alaskan Way #200 Seattle, WA 98101	LPD Engineering 1932 First Avenue, Suite 201 Seattle, WA 98101

FIGURE 6
 BAINBRIDGE ISLAND SCHOOL DISTRICT
 BLAKELY ELEMENTARY SCHOOL
 BAINBRIDGE ISLAND, WA
 CRITICAL AREAS REPORT
 PROPOSED SITE PLAN

- LEGEND**
- PROJECT BOUNDARY
 - - - EXISTING CONTOURS
 - - - EXISTING WETLAND
 - - - 100' WATER QUALITY BUFFER
 - - - 300' WETLAND BUFFER
 - - - WETLAND DRAINAGE DIVIDE (POST CONSTRUCTION)
 - - - PROPOSED MODIFIED BUFFER BOUNDARY



RAI PROJECT: 2017-014	
DATE: 10/25/17	
DRAWN BY: AC	PM: WH
BASE INFORMATION: Mithun/Pier 56 1201 Alaskan Way #200 Seattle, WA 98101	
LPD Engineering 1932 First Avenue, Suite 201 Seattle, WA 98101	



1 HMP RESTORATION PLANTING PLAN
1" = 20'-0"

