Unique History … Vibrant Future

CITY OF DUPONT

Department of Community Development
1700 Civic Drive, DuPont, WA 98327
Telephone: (253) 964-8121
www.dupontwa.gov

WITHDRAWAL OF NOTICE ISSUED AUGUST 22ND AND REISSUANCE OF REVISED NOTICE TO INCLUDE SEPA REVIEW AGENCIES/PARTIES

NOTICE OF APPLICATION WITH OPTIONAL DNS

DuPont Industrial Park at 1700 Center Drive
City File Nos. PLNG 2018-008, -009 and -047

The City of DuPont has received a permit application for the following proposal that may be of interest to you. You are invited to comment on this proposal.

Date of Complete Application: August 20, 2018
Date of Notice of Application: August 22, 2018
Comment Due Date: September 12, 2018
Location of Proposal: 1700 Center Drive, tax parcel no. 011926-2019, in the NW ¼ of Sec. 26, Twn. 19N, Rg 1E, W.M. in Pierce County, Washington.

Description of Proposal: Construct two office/warehouse buildings totaling approximately 258,400 square feet on an approximate 21-acre vacant parcel of land located on the west side of Sequalitchew Drive. The project will include grading, paved truck maneuvering and truck and vehicular parking areas, landscaping, water and sanitary sewer extensions, stormwater collection and infiltration facility, dedications of public right-of-way and extension of Sequalitchew Drive and franchise utility improvements. The proposal includes expanded public right-of-way dedication to create a public plaza for historical makers as part of the development. The project will include the improvement of the existing public trail easement as part of the Sequalitchew Creek Trail. Tree removal will be required including removal of one landmark Oregon white oak tree located within the proposed right of way of Sequalitchew Drive. The property is subject to the terms of a Consent Decree between Washington State Dept. of Ecology and Weyerhaeuser Company and DuPont Company entered by Thurston County Superior Court on July 22, 1991.

Applicant: Eric Cederstrand, DuPont Industrial Partners, LLC

Applicant's Agent: Barghausen Consulting Engineers

Environmental Review: The City of DuPont has reviewed the proposed project for probable adverse environmental impacts and expects to issue a Mitigated Determination of Non-significance (MDNS) for this project. The optional DNS process in WAC 197-11-355 is being used. **This may be your only opportunity to comment on the environmental impacts of the proposed project**. The following measures may be required to mitigate for the potential adverse environmental impacts of the proposal: measures for the protection of cultural resources, steep slopes, Sequalitchew Creek, landmark and specimen trees, traffic volumes and intersection safety improvements at Sequalitchew Drive and Center Drive. (Note: These potential mitigation measures are in addition to conditions required by the development regulations listed below.)

City Permits and Approvals: SEPA Environmental Determination (PLNG2018-008), Type III Site Plan Approval (PLNG2018-009), Type III Tree Modification Approval (PLNG2018-047), Site Development and Grading Permit, Possible Short Plat Approval or Right of Way Dedication, Fire Suppression/Fire Alarm Permits, and Building Permits.

Other Permits and Approvals: Sanitary Sewer Permit by Pierce County, NPDES Permit by Dept. of Ecology

Required Studies: Environmental Checklist, Traffic Impact Analysis, Cultural Resources Study, Geotechnical Engineer Report, Technical Information Report, Tree Retention Plan and analysis of soil contamination.

The project will be evaluated for consistency with the City development regulations, including Title 12, Buildings & Construction; Title 21 Water and Sewer Utilities, Title 22 Stormwater Utility, Title 23, Environment, and Title 25 Land Use Code.

Public Comment: Agencies, tribes, and the public are encouraged to review and comment on the proposed project and its probable environmental impacts by submitting **written comments to the City of DuPont by 5 p.m. September 12, 2018**. The City intends to issue the SEPA MDNS with a 14-day appeal period and will accept comments on the Type III application up to the close of the Public Hearing before the Hearing Examiner. Copies of all application plans and documents may be viewed at City Hall.

Comments must be submitted by the date noted above to:

Jeff Wilson, AICP
Community Development Director and City SEPA Official
City of DuPont
1700 Civic Drive
DuPont, WA 98327
(253) 912-5393 / jwilson@dupontwa.gov

Public Hearing: Tentatively scheduled for 1:00 pm on October 17, 2018 before the Cities Hearing Examiner. A notice of public hearing will be issued in accordance with DMC 25.175.030.

SEPA Distribution List

XX Indicates notice mailed to the following: PLNG2018-008,009 & 047 8/27/2018

Dist.	Agency/Contact		Dist.	Agency/Contact
XX	WA State Dept. of Archaeology & Historic Preservation Gretchen Kaehler Gretchen.Kaehler@DAHP.wa.gov			WA State Dept. of Labor and Industries PO Box 44000 Olympia, WA 98504
	WA State Dept. of Commerce Anne Fritzel, AICP Anne.fritzel@commerce.wa.gov		XX	WA State Dept. of Natural Resources SEPA Center SEPACENTER@dnr.wa.gov
XX	WA State Dept. of Ecology SEPA Unit Separegister@ecy.wa.gov		XX	WA State Dept. of Natural Resources South Puget Sound Region Southpuget.region@dnr.wa.gov
XX	WA State Dept. of Ecology Environmental Review Section SEPAunit@ecy.wa.gov		XX	WA State Dept. of Social and Health Services Lands & Bldg Div Elizabeth McNagny PO Box 45848 Olympia, WA 98504-5848
	WA State Dept. of Ecology SW Regional Office 1/9/18-just use SEPA Register			WA State Dept. of Social and Health Services Robert J. Hubenthal hubenbj@dshs.wa.gov
XX	WA State Dept. of Ecology SW Regional Office Toxic Clean-up Program Marian Abbett Marian.abbett@ecy.wa.gov		XX	WA State Dept. of Transportation OR-SEPA-REVIEW@wsdot.wa.gov
XX	WA. State Dept. of Ecology SW Regional Office Toxic Clean-up Program Eva Barber Evba461@ECY.WA.GOV			WA State Parks and Recreation Commission PO Box 42650 Olympia, WA 98504
XX	WA State Dept. of Ecology SW Regional Office Shorelands & Environmental Assistance Zachary Meyer ZMEY461@ECY.WA.GOV		XX	Puget Sound Partnership Heather Saunders Benson Environmental Planner Heather.benson@psp.wa.gov
XX	WA State Dept. of Ecology SW Regional Office Shorelands & Environmental Assistance Donna Joblonski dmca461@ECY.WA.GOV		XX	Puget Sound Clean Air Agency 1904 3rd Ave #105 Seattle, WA 98101 SEPA@pscleanair.org
XX	WA State Dept. of Fish & Wildlife(WDFW) SEPA Coordinator SEPAdesk@dfw.wa.gov			BNSF Railway General Manager 2454 Occidental Ave. South, Ste 1A Seattle, WA 98134-1451
	WA State Dept. of Fish & Wildlife (WDFW) Michele Culver Regional Director Teammontesano@dfw.wa.gov			FEMA John Graves John.graves1@dhs.gov
	WA State Dept. of Health Division of Drinking Water PO Box 47822 Olympia, WA 98504-7822		XX	DuPont City Clerk Karri Muir Kmuir@dupontwa.gov

XX	JBLM Public Works Charles Markham Deputy for Programs and Operations Charles.s.markham2.civ@mail.mil		XX	Nisqually Indian Tribe Joe Cushman Cushman.joe@nisqually-nsn.gov
XX	JBLM Steven Perrenot Director Public Works Steven.t.perrenot.civ@mail.mil		XX	Yakama Nation Elizabeth Sanchey Elizabeth_sanchey@yakama.com
	US Army Corps of Engineers (Regulatory Branch) Suzanne Anderson Suzanne.l.anderson@usace.army.mil		XX	Lakewood Community & Economic Development Frank Fiori Planning Manager ffiori@cityoflakewood.us
XX	USDA-Natural Resources Conservation Service 941 Powell Ave SW. Ste 102 Renton, WA 98057		XX	Steilacoom Community Development Doug Fortner Town Planner Doug.fortner@ci.steilacoom.wa.us
	DuPont Post Office Attn: Post Master 1313 Thompson Circle DuPont, WA 98327			Clover Park School District 10903 Gravelly Lake Dr. SW Lakewood, WA 98499
	National Marine Fisheries Service Northwest Regional Office 7600 Sand Point Way NE Seattle, WA 98115-0070			Steilacoom Historical School District Celeste Johnston cjohnston@steilacoom.k12.wa.us
XX	Nisqually Nat'l Wildlife Refuge Glynnis Nakai Glynnis Nakai@fws.gov		XX	LeMay Cust2180@wcnx.org
XX	Environmental Official-Pierce County Kathleen Larrabee Klarrab@co.pierce.wa.us		XX	PSE Jeff Payne Jeff.payne@pse.com
	Land Use Review Capital Development-Pierce Transit PO Box 99070 Lakewood, WA 98499-0070		XX	AHBL Lisa Klein Lklein@AHBL.com
XX	Pierce Co. Assessor/Treasurer-Commercial Dept. Darci Brandvold dbrand@co.pierce.wa.us		XX	Gray & Osborne Dominic Miller, PE dmiller@g-o.com
XX	Pierce Co. Environmental Services Bldg Public Works Kip Julin 9850 64th St. West University Place, WA 98467		XX	Geri Reinart, P.E. greinart@msn.com
XX	Pierce Co. PALS Adonais Clark aclark@co.pierce.wa.us		XX	CalPortland Pete Stoltz Pstoltz@calportland.com
XX	Pierce Co. Public Works Debbie Germer dgermer@co.pierce.wa.us		XX	NWL Association Emily Griffith nwlassistdirector@reachone.com
XX	Tacoma Pierce Co. Health Dept. Sara Bird SEPA@tpchd.org		XX	NWL Associates Larry Ackerman nwldirector@reachone.com

XX	Nisqually Indian Tribe Annette Bullchild, THPO Bullchild.annette@nisqually-nsn.gov		**XX**	Nisqually Indian Tribe Jackie Wall, THPO Wall.jackie@nisqually-nsn.gov
XX	Carol Estep President, DuPont Historical Society estepcarol@gmail.com			
	Name Title Address Address Email			Name Title Address Address Email

Permit Applicant Information

XX	Barghausen Consulting Engineers, Inc. Dan Balmelli, Executive Vice President dbalmelli@barghausen.com		**XX**	DuPont Industrial Partners, LLC Eric Cederstrand Ecederstrand@neilwalter.com
	Name Title Address Address Email			Name Title Address Address Email

SEPA ENVIRONMENTAL CHECKLIST

Purpose of checklist:

Governmental agencies use this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

***Instructions for applicants*:**

This environmental checklist asks you to describe some basic information about your proposal. Please answer each question accurately and carefully, to the best of your knowledge. You may need to consult with an agency specialist or private consultant for some questions. You may use "not applicable" or "does not apply" only when you can explain why it does not apply and not when the answer is unknown. You may also attach or incorporate by reference additional studies reports. Complete and accurate answers to these questions often avoid delays with the SEPA process as well as later in the decision- making process.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Instructions for Lead Agencies:

Please adjust the format of this template as needed. Additional information may be necessary to evaluate the existing environment, all interrelated aspects of the proposal and an analysis of adverse impacts. The checklist is considered the first but not necessarily the only source of information needed to make an adequate threshold determination. Once a threshold determination is made, the lead agency is responsible for the completeness and accuracy of the checklist and other supporting documents.

Use of checklist for nonproject proposals: [help]

For nonproject proposals (such as ordinances, regulations, plans and programs), complete the applicable parts of sections A and B plus the SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS (part D). Please completely answer all questions that apply and note that the words "project," "applicant," and "property or site" should be read as "proposal," "proponent," and "affected geographic area," respectively. The lead agency may exclude (for non-projects) questions in Part B - Environmental Elements –that do not contribute meaningfully to the analysis of the proposal.

A. BACKGROUND

1. Name of proposed project, if applicable:

   Creekside Industrial Park

2. Name of applicant:

   Eric Cederstrand
   DuPont Industrial Partners, LLC

3. Address and phone number of applicant and contact person:

   1201 Pacific Avenue, Suite 1501
   Tacoma, WA 98402
   (253) 396-4860

4. Date checklist prepared:

   January 25, 2018
   Revised May 22, 2018
   Revised July 13, 2018

5. Agency requesting checklist:

   City of DuPont

6. Proposed timing or schedule (including phasing, if applicable):

   Project is anticipated to start Spring of 2018 or as soon as applicable permits are issued.

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.

   There are no plans for future additions or expansions beyond the scope of work identified in this application.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

   Environmental Checklist
   Cultural Resources Study
   Geotechnical Engineering Report
   Geotechnical Engineering Addendum Letter
   Technical Information Report
   Traffic Impact Analysis
   Tree Retention Plan / ***Arborist Report***
   Consent Decree between Washington State DOE and Weyerhaeuser Company and DuPont Company

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.

There are not pending applications to our knowledge.

10. List any government approvals or permits that will be needed for your proposal, if known.

Building Permit by City of DuPont
Plumbing/Electrical/Mechanical Permits by City of DuPont
Fire Suppression and Alarm Permits by City of DuPont
Environmental Determination by City of DuPont
Type III Site Plan Approval by City of DuPont
Short Plat Approval by City of DuPont
Site Work Permit by City of DuPont
Grading Permit by City of DuPont
Water Main Extension by City of DuPont
Pre-Treatment Approval by Pierce County Utilities
Sanitary Sewer Extension by Pierce County Utilities
NPDES Permit by Department of Ecology
Trash Location Approval by LeMay, Inc.
Tree Permit Application

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)

The project proposes to construct two office/warehouse buildings totaling approximately 258,400 square feet 268,400 square feet on an approximate 21-acre vacant parcel of land located on the west side of Sequalitchew Drive. In addition to construction of the new buildings, the project will include grading activities, paved truck maneuvering and truck and vehicular parking areas, landscaping, water and sanitary sewer extensions, stormwater collection and infiltration facility, extension of Sequalitchew Drive and franchise utility improvements. The construction of a public park is also proposed as part of the development.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site. Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.

The site is located to the west of Center Drive and to the west of the proposed extension of Sequalitchew Drive and is a portion of the NW 1/4 of Section 26, Township 19 North, Range 1 East, W.M.

Site Address: 1700 Center Drive

Tax Parcel No: 011926-2019

B. ENVIRONMENTAL ELEMENTS

1. Earth

a. General description of the site:

(circle one): Flat, rolling, hilly, steep slopes, mountainous, other _____

b. What is the steepest slope on the site (approximate percent slope)?

The site is predominantly flat however, an area classified as slopes greater than 40% is located at the southern edge of the site.

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils.

The soil type is Spanaway (41a) according to the Soil Survey of Pierce County.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

None are known to exist to our knowledge.

e. Describe the purpose, type, total area, and approximate quantities and total area of any filling, excavation, and grading proposed. Indicate source of fill.

*Approximately **9,800** cubic yards of cut and **42,000** cubic yards of fill will be used to prepare the site for building construction. Approximately **24,000** cubic yards of stripping material will be removed from the site.*

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

Yes, erosion could occur as a result of construction activities, however a temporary erosion and sedimentation control plan will be designed and implemented according to city of DuPont standards to control erosion on the site.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

Approximately 70 to 75 percent of the site will be impervious surface upon project completion.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

A temporary erosion and sedimentation control plan will be implemented during construction to reduce and control erosion impacts.

2. **Air**

a. What types of emissions to the air would result from the proposal (i.e. dust, automobile, odors, industrial wood smoke) during construction and when the project is completed? If any, generally describe and give approximate quantities, if known.

During construction, emissions from construction equipment would be present After construction, emissions from truck and vehicular traffic to and from the site would be present.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

Emissions from vehicular traffic on area roadways could be present but would not be anticipated to affect the project.

c. Proposed measures to reduce or control emissions or other impacts to air, if any:

Construction equipment will be maintained to be in good working condition. No other specific measures are proposed.

3. **Water**

a. Surface Water:

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

Yes, Sequalitchew Creek is located to the south of the site and flows to the west to discharge to Puget Sound.

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

Yes, work will be conducted within 200 feet of Sequalitchew Creek.

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

No fill of dredge material will be placed in or removed from surface waters.

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities, if known.

No surface water withdrawals or diversions are proposed.

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.

The site is not located within a 100-year flood plain.

6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

No waste materials will be discharged to surface water under this proposal.

b. Ground Water:

1) Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximately quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known.

No groundwater will be withdrawn or water discharged to groundwater under this proposal.

2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.

No waste material will be discharged to the ground. All sanitary sewer effluent will be collected and conveyed via tightline pipe to the existing sanitary sewer system.

c. Water Runoff (including storm water):

1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

The source of runoff will be rainfall from building roof tops and pavement areas. Stormwater will be collected and conveyed through catch basins and storm pipe for water quality treatment prior to entering the proposed infiltration system.

2) Could waste materials enter ground or surface waters? If so, generally describe.

No waste materials would enter groundwater under this proposal. All sanitary sewer effluent will be collected and conveyed to the existing sanitary sewer system.

3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.

Infiltration is proposed for the site and will not alter the current drainage pattern of the area.

d. Proposed measures to reduce or control surface, ground, and runoff water impacts, if any:

A storm drainage system will be designed and constructed per city of DuPont standards to control runoff from the proposed project.

4. **Plants**

a. Check or circle types of vegetation found on the site:

__X__ deciduous tree: Alder, Maple, Oregon White Oaks, Apple, Plum, Pear
__X__ evergreen tree: Fir, Cedar, Pine
_____ Shrubs
__X__ Grass
_____ pasture
_____ crop or grain
_____ wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other
_____ water plants: water lily, eelgrass, milfoil, other
_____ other types of vegetation

b. What kind and amount of vegetation will be removed or altered?

The majority of the vegetation on the site will be removed and the new development will be landscaped in accordance with city of DuPont standards. The site does contain landmark Oregon White Oak and fir trees and the city's tree retention requirement will pertain to the proposed development. ***Based on the results of the Arborist Report/Tree Retention Plan by Washington Forestry Consultants dated April 24, 2018, there are 76 landmark trees in the area of the project site. A total of 27 healthy landmark trees can be retained on the site and 49 landmark trees will need to be removed because they are unhealthy or located within the proposed development area or roadways. The DuPont Municipal Code requires a minimum of 1.5 trees to be retained on 19.38 acres of the 25.29 acre site resulting in a minimum of 29 healthy trees to be retained. One of the 49 landmark trees is an Oregon white oak tree which will need to be removed due to its location in or near the proposed right-of-way of the Y Road extension. The following is a summary of the proposed tree retention from the Arborist Report.***

Total project site area:	***19.38 acres***
Tree retention requirement:	***29 trees***
Total number of healthy trees:	***682 trees***
Total projected trees in tree retention areas A, B and C;	***327 trees***
Excess of tree retention over the tree requirement:	***298 trees***
Projected number of healthy trees to be removed:	***384 trees***
Projected number of landmark Oregon white oak trees to be removed:	***1 tree***

(Please refer to the Arborist Report/Tree Retention Plan prepared by Washington Forestry Consultants included in this submittal.)

c. List threatened or endangered species known to be on or near the site.

None are known to exist to our knowledge.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

*Landscaping and tree retention plans will be prepared per city of DuPont standards and **as recommended in the arborist's Tree Retention Plan will be** implemented to preserve and enhance vegetation.*

e) List all noxious weeds and invasive species known to be on or near the site.

None are known to exist to our knowledge.

5. **Animals**

a. Circle any birds or other animals which have been observed on or near the site or are known to be on or near the site:

Examples include:

birds: hawk, heron, eagle, songbirds, other:
mammals: deer, bear, elk, beaver, other:
fish: bass, salmon, trout, herring, shellfish, other:

b. List any threatened or endangered species known to be on or near the site.

None are known to be on or near the site to our knowledge.

c. Is the site part of a migration route? If so, explain.

Yes, the site is part of the Pacific Flyway for Migratory Birds.

d. Proposed measures to preserve or enhance wildlife, if any:

Landscaping plan will be designed and implemented per city of DuPont standards to preserve and enhance wildlife.

e. List any invasive species known to be on or near the site.

None are known to exist on or near the site to our knowledge.

6. **Energy and Natural Resources**

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

Natural gas will be used for heating and electricity will be used for lighting and overall energy needs.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe:

It is not anticipated that the project could affect the use of solar energy by an adjacent site and the height of the proposed buildings will not exceed the maximum height designed by current zoning.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:

The project will comply with all state energy code requirements. No other specific measures are proposed.

7. **Environmental Health**

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.

1) Describe any known or possible contamination at the site from present or past users.

There are no contaminates at the site to our knowledge, however the site is located within the Asarco plume boundary.

2) Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.:

Other than a minor potential for arsenic from the Asarco plume, none are known to exist on or near the site.

3) Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project.

During construction, chemicals associated with construction equipment would be on the site. Upon project completion, it is not anticipated that hazardous materials would be present.

4) Describe special emergency services that might be required.

Other than normal fire, medical and police services already available in the area, no special services are anticipated.

5) Proposed measures to reduce or control environments health hazards, if any:

No specific measures are proposed.

b. Noise

1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?

Noise from Center Drive to the east and from surrounding businesses would exist but would not be anticipated to affect the proposed development.

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.

On a short term basis, noise from construction equipment would be present from approximately 6 am to 6 pm, Monday through Friday. On a long term basis, noise from vehicular traffic to and from the site would be present with possible operating hours of 24 hours a day / 7 days a week.

3) Proposed measures to reduce or control noise impacts, if any:

During the construction phase of the project, construction equipment will be maintained and meet noise ordinance. The use of on-site and perimeter landscaping will help to reduce and control noise created by the proposed development.

8. **Land and Shoreline Use**

a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe.

The site is undeveloped. Property to the east is a multi-family complex. Property to the north is undeveloped. South the west of the site is a golf course and an office building development.

b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if an? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use?

To our knowledge, the site has not been used as working farm lands or forest lands and no lands of commercial significance will be converted to other uses.

1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how:

There are no working farm or forest lands near the site.

c. Describe any structures on the site.

There are no structures on the site

d. Will any structures be demolished? If so, what?

No structures will be demolished.

e. What is the current zoning classification of the site?

The current zoning designation is Manufacturing Research Park (MRP).

f. What is the current comprehensive plan designation of the site?

The current comprehensive plan designation is Sequalitchew Village Planning Area.

g. If applicable, what is the current shoreline master program designation of the site?

N/A

h. Has any part of the site been classified as a critical area by the city or county? If so, specify.

An area of steep slopes has been identified on the southern portion of the site per city of DuPont classification.

i. Approximately how many people would reside or work in the completed project?

Approximately 90 persons will work at the completed development.

j. Approximately how many people would the completed project displace?

No persons will be displaced.

k. Proposed measures to avoid or reduce displacement impacts, if any:

No specific measures are proposed.

l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

The project will be designed to comply with current city of DuPont code and design standards.

m. Proposed measures to ensure the proposal is compatible with nearby agricultural and forest lands of long term commercial significance, if any:

There are no farms or forest lands near the site.

9. **Housing**

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

N/A

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

N/A

c. Proposed measures to reduce or control housing impacts, if any:

N/A

10. **Aesthetics**

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

The tallest height of any building structure will be no taller than 65 to 70-foot as allowed in the MRP zone.

b. What views in the immediate vicinity would be altered or obstructed?

Views from east of the site looking to the west would be altered but it is not anticipated that any views would be obstructed.

c. Proposed measures to reduce or control aesthetic impacts, if any:

The project will be designed to meet current city of DuPont design standards. The use architectural detailing on the buildings and the use of on-site and perimeter landscaping will reduce and control aesthetic impacts of the development.

11. **Light and Glare**

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

Glare from building window glass could be present during daylight hours and light and glare from building and parking lot lighting and vehicular traffic to and from the site could be present in early morning and evening hours.

b. Could light or glare from the finished project be a safety hazard or interfere with views?

It is not anticipated that light or glare created by the proposed project would create safety hazards or interfere with views.

c. What existing off-site sources of light or glare may affect your proposal?

Lot and building lights from the developments to the east of the site would be present but not anticipated to affect the proposed development.

d. Proposed measures to reduce or control light and glare impacts, if any:

Building glass will be non-glare and lighting will be directed appropriately. The use of perimeter landscaping and the retention of trees where possible will help to contain any light or glare created to within the site.

12. **Recreation**

a. What designated and informal recreational opportunities are in the immediate vicinity?

The Home Course Golf Course is located adjacent to the site to the south and west and the Sequalitchew Creek Trail is located to the south.

b. Would the proposed project displace any existing recreational uses? If so, describe.

The project will not displace any recreational uses.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

A portion of the property at the southeastern boundary is proposed for a park. No other specific measures are proposed.

13. **Historic and Cultural Preservation**

a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers located on or near the site? If so, specifically describe.

There are no structures located on the site. There are known historic archeological sites in the vicinity of the proposal and ***a Cultural Resource Study and Unanticipated Cultural Resource Discovery Plan prepared in 2011 by Parus Consulting*** *have been completed for this site. (A copy is included in this application.)*

b. Are there any landmarks, features or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources.

The Cultural Resource Report including Archeological Survey, Monitoring and Testing work completed by Parus Consulting concluded that there was no evidence of two previously recorded archaeological sites 1) the Methodist Episcopal Missions Site and the 9th U.S. Cavalry Bivouac site and 2) one flaked stone isolate except for two brick fragments. There was also no evidence of two other archaeological site including railroad dump #3 site and Burning Ground Dump site that were removed a decade ago. Two surface historic archaeological sites 1) railroad track segment and concrete platform and 2) one isolated kerosene can were identified during the fieldwork. In addition, one set of bridge fragments were identified during the fieldwork. The study concluded that no significant cultural properties will be affected by the proposed project and no further cultural resource action is warranted. Should any cultural resources be discovered during the project construction an Unanticipated Cultural Resources Discovery Plan has also been prepared and will be followed. (Please refer to the Cultural Resource Study and Unanticipated Cultural Resource Discovery Plan documents included with this application.)

c. Describe the methods used to access the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archaeology and historic preservation, archaeological surveys, historic maps, GIS data, etc.

Methods used to access the potential impacts to cultural and historic resources included fieldwork consisting of a pedestrian survey and examination of subsurface sediments in a series of 125 shovel probes and 22 geotechnical test pits. The work was monitored by a member of the Nisqually Tribe. The work also included consultation with DAHP and the Nisqually, Puyallup and Squaxin Tribes and research of archaeological surveys, maps and GIS information.

d) Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required.

*The proposed development will comply **with the Unanticipated Cultural Resources Discovery Plan and Consent Decree**. If any artifacts were uncovered on the site, work would be halted and any discovery would comply with the Unanticipated Cultural Resources Discovery Plan.*

14. **Transportation**

a. Identify public streets and highways serving the site, and describe proposed access to the existing street system. Show on site plans, if any.

Access to the site will be via Sequalitchew Road from Center Drive.

b. Is the site or affected geographic area currently served by public transit? If not, what is the approximate distance to the nearest transit stop?

No. The nearest transit stop is located at DuPont Station.

c. How many additional parking spaces would the completed project have? How many would the project eliminate?

The proposed development will provide 99 parking stalls. No parking will be eliminated.

d. Will the proposal require any new improvements to existing roads or streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private).

The extension of Sequalitchew Drive as a public road will be constructed as part of the proposed development

e. Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

No.

f. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates?

Approximately 444 total daily trips are expected to be generated on a typical weekday with 43 trips during the AM peak hour and 49 trips during the PM peak hour. Please refer to the Traffic Impact Analysis for additional information.

g) Will the proposal interfere with, affect, or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe.

There are no working farms or forest lands near the site.

h. Proposed measures to reduce or control transportation impacts, if any:

The proposed extension of Sequalitchew Drive to include new pavement, stormwater system, curb, gutter and sidewalk will reduce and control impacts to transportation.

15. **Public Services**

a. Would the project result in an increase need for public services (for example, fire protection, police protection, health care, schools, other)? If so, generally describe.

Yes, the proposed development will increase the need for public services.

b. Proposed measures to reduce or control direct impacts on public services, if any.

Payment of city of DuPont fire impact fees, stormwater and water system development charges, construction of the extension of Sequalitchew Drive and the addition of new fire hydrants are all measures that will reduce and control impacts to public services.

16. Utilities

a. Circle utilities currently available at the site: electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other.

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

Electricity:	*Puget Sound Energy*
Natural Gas:	*Puget Sound Energy*
Water:	*City of DuPont*
Sanitary Sewer:	*Pierce County Public Works and Utilities*
Telephone:	*CenturyLink*
Cable:	*Comcast*
Refuse Service:	*LeMay, Inc.*

C. SIGNATURE

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: Daniel K. Balmelli _____

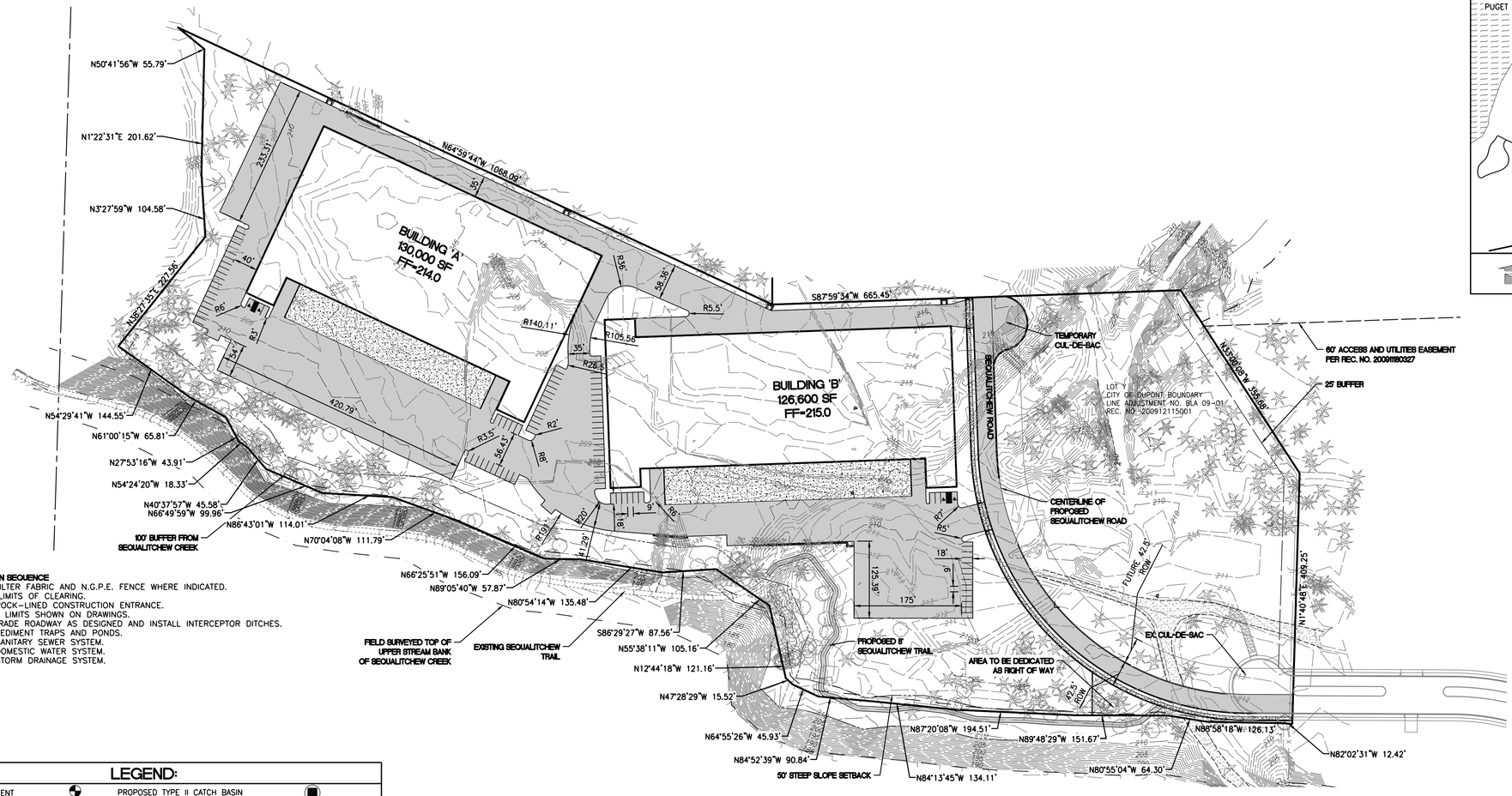
Print your name: Daniel K. Balmelli _____ __

Date Submitted: January 26, 2018, Revised May 22, 2018, **Revised July 13, 2018**

PRELIMINARY COVER SHEET
FOR
DUPONT INDUSTRIAL WAREHOUSE
A PORTION OF THE NW 1/4 OF SECTION 26, TOWNSHIP 19N, RANGE 01E, W.M.
CITY OF DUPONT, PIERCE COUNTY, WASHINGTON

1"=100'

0 50 100 200



CONSTRUCTION SEQUENCE
1. INSTALL FILTER FABRIC AND N.G.P.E. FENCE WHERE INDICATED.
2. IDENTIFY LIMITS OF CLEARING.
3. INSTALL ROCK-LINED CONSTRUCTION ENTRANCE.
4. CLEAR TO LIMITS SHOWN ON DRAWINGS.
5. ROUGH GRADE ROADWAY AS DESIGNED AND INSTALL INTERCEPTOR DITCHES.
6. INSTALL SEDIMENT TRAPS AND PONDS.
7. INSTALL SANITARY SEWER SYSTEM.
8. INSTALL DOMESTIC WATER SYSTEM.
9. INSTALL STORM DRAINAGE SYSTEM.

LEGEND:

SURVEY MONUMENT	PROPOSED TYPE II CATCH BASIN
EX. POWER VAULT	PROPOSED TYPE I CATCH BASIN
EX. LUMINAIRE (LUM.)	PROPOSED STORM DRAIN FLOW ARROW
EX. LOT LIGHT	PROPOSED STORM DRAINAGE LINE
EX. POWER POLE	PROPOSED TRENCH DRAIN
EX. JUNCTION BOX	PROPOSED SANITARY SEWER LINE
EX. CATCH BASIN (CB)	PROPOSED SANITARY SEWER CLEANOUT
EX. CATCH BASIN (CB) TYPE 2	PROPOSED WATERMAIN (W)
EX. SANITARY SEWER MANHOLE (SSMH)	PROPOSED FIRE HYDRANT
EX. GAS METER	PROPOSED WATER VALVE
EX. GAS VALVE	PROPOSED CONCRETE BLOCKING
EX. WATER VALVE (WV)	PROPOSED 90° BEND
EX. FIRE HYDRANT (FH)	PROPOSED SPOT ELEVATIONS (23.20)
MAIL BOX	MATCH EXISTING ELEVATION (23.20± ME)
EX. WATER METER	TOP OF WALL ELEVATION (TW=23.20)
EX. SIGN	MATCH EXISTING ELEVATION (BW=23.20)
EX. WATER LINE	MATCH EXISTING ELEVATION (23.20± ME)
EX. SANITARY SEWER LINE	PROPOSED CONTOURS (220)
EX. STORM DRAINAGE LINE	PROPOSED PAVEMENT
EX. POWER UNDERGROUND (P(UG))	PROPOSED CONCRETE
EX. POWER OVERHEAD (P(OH))	
EX. METAL FENCE	
EX. WOOD FENCE	
EXISTING SPOT ELEVATIONS (+100.0)	
EXISTING CONTOURS (220)	

PROJECT INFORMATION

USABLE AREA= 710,080 SQ. FT. ≈16.30 ACRES

LANDSCAPING AREA=53,353 SQ. FT. ≈1.22 ACRES

TOTAL IMPERVIOUS AREA = 13.48 ACRES

INDEX TO SHEETS:

ENGINEER/SURVEYOR
BARGHAUSEN CONSULTING ENGINEERS, INC.
18215 72ND AVENUE SOUTH
KENT, WA 98032
PHONE: (425) 251-6222
FAX: (425) 251-8782
CONTACT: COSTA PHILIPPIDES, P.E.

ARCHITECT
HELIX DESIGN GROUP, INC.
6021 12TH STREET EAST SUITE 201
TACOMA, WA 98424
PHONE: (253) 922-6499
FAX: (253) 922-6499
CONTACT: Bruce MCKEAN

811 Know what's **below.** **Call** before you dig.

CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR OBTAINING PERMITS FROM THE WASHINGTON STATE DEPARTMENT OF NATURAL RESOURCES FOR REMOVING AND REPLACING ALL SURVEY MONUMENTATION THAT MAY BE AFFECTED BY CONSTRUCTION ACTIVITY, PURSUANT TO WAC 332-120. APPLICATIONS MUST BE COMPLETED BY A REGISTERED LAND SURVEYOR. APPLICATIONS FOR PERMITS TO REMOVE MONUMENTS MAY BE OBTAINED FROM THE WASHINGTON STATE DEPARTMENT OF NATURAL RESOURCES, OR BY CONTACTING THEIR OFFICE BY TELEPHONE AT (206) 902-1190.

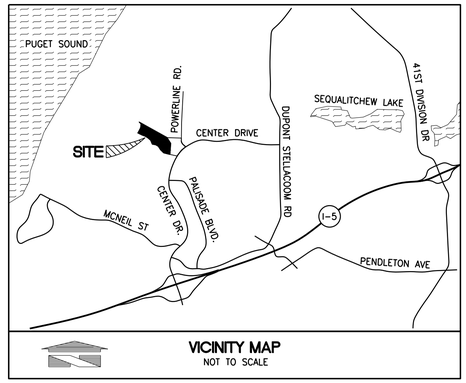
WASHINGTON STATE DEPARTMENT OF NATURAL
RESOURCES PUBLIC LAND SURVEY OFFICE
1111 WASHINGTON STREET S.E. P.O. BOX 47060
OLYMPIA, WASHINGTON 98504-7060

UPON COMPLETION OF CONSTRUCTION, ALL MONUMENTS DISPLACED, REMOVED, OR DESTROYED SHALL BE REPLACED BY A REGISTERED LAND SURVEYOR, AT THE COST AND AT THE DIRECTION OF THE CONTRACTOR, PURSUANT TO THESE REGULATIONS. THE APPROPRIATE FORMS FOR REPLACEMENT OF SAID MONUMENTATION SHALL ALSO BE THE RESPONSIBILITY OF THE CONTRACTOR.

APPROVED FOR CONSTRUCTION

BY: _____ DATE: _____
CITY OF DUPONT

THESE DRAWINGS ARE APPROVED FOR CONSTRUCTION FOR A PERIOD OF 12 MONTHS FROM THE DATE SHOWN HEREON. THE CITY RESERVES THE RIGHT TO MAKE REVISIONS, ADDITIONS, DELETIONS, OR MODIFICATIONS SHOULD CONSTRUCTION BE DELAYED BEYOND THIS TIME LIMITATION. THE CITY, BY APPROVING THESE DRAWINGS, ASSUMES NO LIABILITY IN REGARDS TO THEIR ACCURACY OR OMISSIONS.



VICINITY MAP
NOT TO SCALE

SITE ADDRESS
1700 CENTER DRIVE DUPONT, WA 98327

PARCEL NUMBER
0119262019

PARCEL LEGAL DESCRIPTION:
(PER CITY OF DUPONT BLA 09-01 REC. NO. 200912115001)

LOT Y OF CITY OF DUPONT BOUNDARY LINE ADJUSTMENT BLA. NUMBER 09-01, RECORDED UNDER RECORDING NUMBER 200912115001, PIERCE COUNTY, WASHINGTON, BEING A PORTION OF THE NORTHWEST QUARTER OF SECTION 26, TOWNSHIP 19 NORTH, RANGE 01 EAST.

TITLE INFORMATION:

FIDELITY NATIONAL TITLE INSURANCE COMPANY, ORDER NO. 12906626 DATED JULY 15, 2011, AT 8:00 AM, WAS RELIED UPON FOR TITLE INFORMATION AND SUPPORTING DOCUMENTS. PLEASE REFER TO THAT REPORT FOR FURTHER INFORMATION REGARDING FINANCIAL MATTERS BEYOND THE SCOPE OF THIS SURVEY.

PROCEDURE / NARRATIVE

A FIELD TRAVERSE USING A "TRIMBLE S6" ROBOTIC TOTAL STATION, AND "TRIMBLE TSC2" DATA COLLECTOR SUPPLEMENTED WITH FIELD NOTES WAS PERFORMED, ESTABLISHING THE ANGULAR, DISTANCE, AND VERTICAL RELATIONSHIPS BETWEEN THE MONUMENTS, PROPERTY LINES, AND TOPOGRAPHIC FEATURES AS SHOWN HEREON. A "TOPCON GR3" GPS ROVER AND BASE WAS USED TO CHECK AND ESTABLISH THE ELEVATION OF BENCHMARKS AND CONTROL POINTS. THE RESULTING DATA MEETS OR EXCEEDS THE STANDARDS FOR LAND BOUNDARY SURVEYS AS SET FORTH IN WAC 332-130-090.

DATES OF SURVEYS

FIELD SURVEYS BY BARGHAUSEN CONSULTING ENGINEERS, INC. CONDUCTED MAY, 2011 AND ALL MONUMENTS SHOWN AS FOUND WERE VISITED AT THAT TIME.

HORIZONTAL DATUM - BASIS OF BEARINGS

THE BEARING OF THE LINE BETWEEN THE FOUND MONUMENT ID'S WSDOT 5552-WSDOT 776 BEARING TAKEN AS SOUTH 73° 08' 35" WEST

VERTICAL DATUM - NGVD29

PROJECT BENCHMARK
WSDOT MONUMENT DESIGNATION 5552 APPROXIMATELY 300' EAST OF THE SOUTHWEST CORNER OF SITE. NGVD29 ELEVATION WAS DERIVED BY CONVERTING PUBLISHED WSDOT NAVD88 ELEVATION USING CORPSCON SOFTWARE. (NAVD88= NGVD+3.44')
NGVD29 ELEV. = 259.173 FEET

HORIZONTAL DATUM - BASIS OF BEARINGS

THE BEARING OF THE LINE BETWEEN THE FOUND MONUMENT ID'S WSDOT 5552-WSDOT 776 BEARING TAKEN AS SOUTH 73° 08' 35" WEST

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NGVD29 ELEV. = 259.173 FEET

UTILITY CONFLICT NOTE:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION, DIMENSION, AND DEPTH OF ALL EXISTING UTILITIES WHETHER SHOWN ON THESE PLANS OR NOT BY POTHOLING THE UTILITIES AND SURVEYING THE HORIZONTAL AND VERTICAL LOCATION PRIOR TO CONSTRUCTION. THIS SHALL INCLUDE CALLING UTILITY LOCATE @ 811 AND THEN POTHOLING ALL OF THE EXISTING UTILITIES AT LOCATIONS OF NEW UTILITY CROSSINGS TO PHYSICALLY VERIFY WHETHER OR NOT CONFLICTS EXIST. LOCATIONS OF SAID UTILITIES AS SHOWN ON THESE PLANS ARE BASED UPON THE UNVERIFIED PUBLIC INFORMATION AND ARE SUBJECT TO VARIATION. IF CONFLICTS SHOULD OCCUR, THE CONTRACTOR SHALL CONSULT BARGHAUSEN CONSULTING ENGINEERS, INC. TO RESOLVE ALL PROBLEMS PRIOR TO PROCEEDING WITH CONSTRUCTION.

No.	Date	By	Ckd.	Appr.	Revision
3	8/13/18	TAL	CP	CP	REVISED PER CITY COMMENTS

Title: PRELIMINARY COVER SHEET FOR DUPONT INDUSTRIAL WAREHOUSE

For: DUPONT INDUSTRIAL PARTNERS, LLC
1940 EAST D STREET, SUITE 108
TACOMA, WA 98421
(253) 396-4860

COSTA PHILIPPIDES STATE OF WASHINGTON 38375 REGISTERED PROFESSIONAL ENGINEER
08/13/18

Scale: Horizontal 1"=100' Vertical N/A

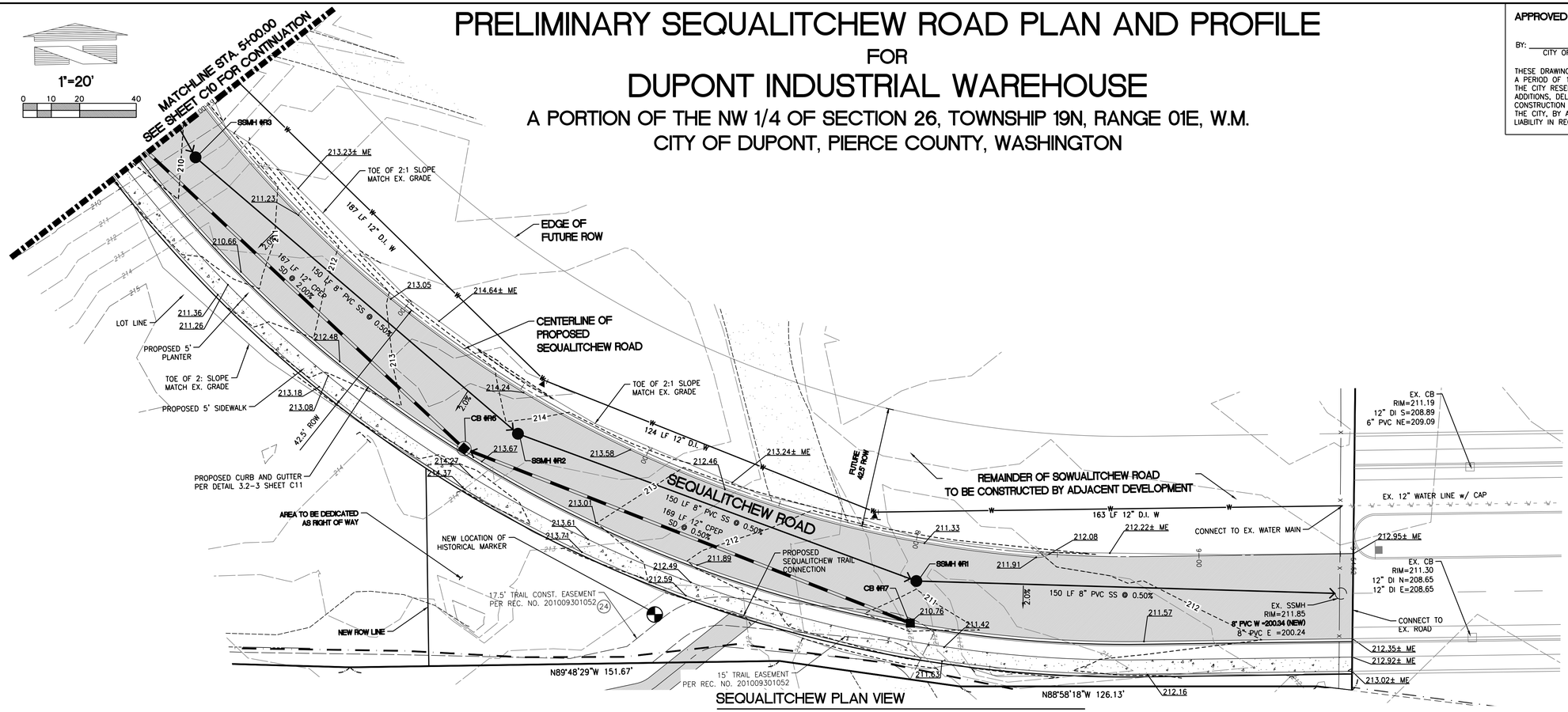
Designed CP Drawn TAL Checked CP Approved CP Date 09/17/17

BARGHAUSEN CONSULTING ENGINEERS, INC.
18215 72ND AVENUE SOUTH
KENT, WA 98032
(425)251-6222
(425)251-8782 FAX
CIVIL ENGINEERING, LAND PLANNING, SURVEYING, ENVIRONMENTAL SERVICES

Job Number 18666

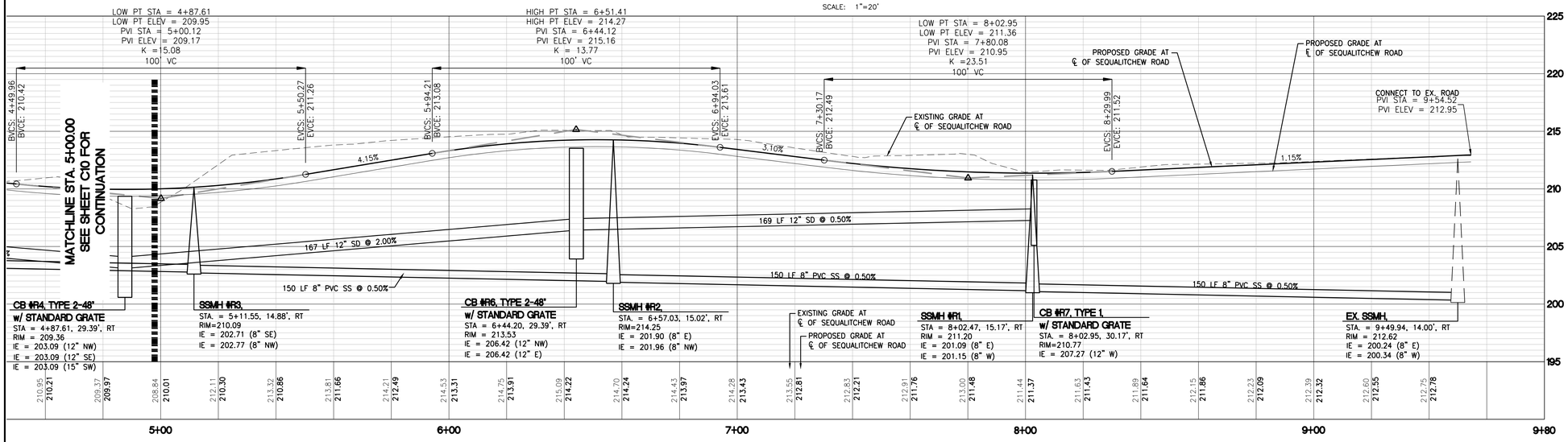
Sheet C1 of 13

PRELIMINARY SEQUALITCHEW ROAD PLAN AND PROFILE
FOR
DUPONT INDUSTRIAL WAREHOUSE
A PORTION OF THE NW 1/4 OF SECTION 26, TOWNSHIP 19N, RANGE 01E, W.M.
CITY OF DUPONT, PIERCE COUNTY, WASHINGTON



SEQUALITCHEW PLAN VIEW

SCALE: 1"=20'



SEQUALITCHEW PROFILE VIEW

SCALE: 1"=20' HORIZONTAL 1"=5' VERTICAL

APPROVED FOR CONSTRUCTION

BY: ______________________ DATE: ______________
CITY OF DUPONT

THESE DRAWINGS ARE APPROVED FOR CONSTRUCTION FOR A PERIOD OF 12 MONTHS FROM THE DATE SHOWN HEREON. THE CITY RESERVES THE RIGHT TO MAKE REVISIONS, ADDITIONS, DELETIONS, OR MODIFICATIONS SHOULD CONSTRUCTION BE DELAYED BEYOND THIS TIME LIMITATION. THE CITY, BY APPROVING THESE DRAWINGS, ASSUMES NO LIABILITY IN REGARDS TO THEIR ACCURACY OR OMISSIONS.

No.	Date	By	Ckd.	Appr.	Revision
3	8/13/18	TAL	CP	CP	REVISED PER CITY COMMENTS

Title:
PRELIMINARY
SEQUALITCHEW ROAD PLAN AND PROFILE
FOR
DUPONT INDUSTRIAL WAREHOUSE

For:
DUPONT INDUSTRIAL PARTNERS, LLC
1940 EAST D STREET, SUITE 108
TACOMA, WA 98421
(253) 396-4860

COSTA PHILIPPIDES
38375
08/13/18

Scale: Horizontal 1"=20'
Vertical AS NOTED

Designed CP
Drawn TAL
Checked CP
Approved CP
Date 09/17/17

BARGHAUSEN CONSULTING ENGINEERS, INC.

18215 72ND AVENUE SOUTH
KENT, WA 98032
(425)251-6222
(425)251-8782 FAX

CIVIL ENGINEERING, LAND PLANNING, SURVEYING, ENVIRONMENTAL SERVICES

Job Number
18666

Sheet
C9 of 13

File:P:\18000s\18666\preliminary\18666-pr.dwg Date/Time:8/13/2018 2:00 PM Scale:1" = 1' TLOUDON Xref: ----

CULTURAL RESOURCES REPORT COVER SHEET

Author: N. Sikes and C. Arrington
Title of Report: Archaeological Survey, Testing, and Monitoring at 45PI66, 45PI455, and 45PI773, DuPont Industrial Partners, LLC, Lot Y Project, DuPont, Washington

Date of Report: 4-14-2011

County(ies): Pierce Section: 26 Township: 19 N Range: 01E

Quad: Nisqually (1981) Acres: 25.3

PDF of report submitted (REQUIRED) ☒ Yes

Historic Property Export Files submitted? ☐ Yes ☒ No

Archaeological Site(s)/Isolate(s) Found or Amended? ☒ Yes ☐ No

TCP(s) found? ☐ Yes ☒ No

Replace a draft? ☒ Yes ☐ No

Satisfy a DAHP Archaeological Excavation Permit requirement? ☒ Yes # ☐ No

DAHP Archaeological Site #:

_____
_____
_____
_____
_____
_____
_____
_____
_____

- Submission of paper copy is required.
- Please submit paper copies of reports ***unbound.***
- Submission of PDFs is required.
- Please be sure that any PDF submitted to DAHP has its cover sheet, figures, graphics, appendices, attachments, correspondence, etc., compiled into one single PDF file.
- Please check that the PDF displays correctly when opened.

ARCHEOLOGICAL SURVEY, TESTING AND MONITORING AT 45PI66, 45PI455 AND 45PI773, DUPONT INDUSTRIAL PARTNERS, LLC, LOT Y PROJECT

CITY OF DUPONT, PIERCE COUNTY, WASHINGTON

Prepared For:

DuPont Industrial Partners, LLC

1201 Pacific Avenue, Suite 1501

Tacoma, Washington 98402

Prepared By:

Nancy E. Sikes, Ph.D., RPA
Cindy J. Arrington, M.S., RPA

PARUS CONSULTING, INC.

1508 Eureka Road, Suite 170

Roseville, CA 95661

Final – April 14, 2011

ABSTRACT

This cultural resources investigation was conducted where DuPont Industrial Partners, LLC plans to develop a multi-building industrial park on Lot Y in the City of DuPont, Pierce County, Washington. The approximately 25.3-acre project is located on private land known as Lot Y (Assessor's Property Tax Parcel No. 0119262019) situated within the city limits west of Center Drive and north of Sequalitchew Creek. The work was conducted under an Archaeological Excavation Permit approved by the Washington State Department of Archaeology & Historic Preservation (DAHP) on February 7, 2011 (Permit No. 2010-54). The fieldwork included a pedestrian survey and examination of subsurface sediments in a series of 125 shovel test probes and 22 geotechnical exploration pits placed within Lot Y. The work was monitored by a member of the Nisqually Tribe.

No evidence was found of two previously recorded historic archaeological sites (45PI66 Methodist Episcopal Mission site and 45PI455 9th U.S. Cavalry Bivouac site) and one flaked stone isolate (45PI773), except for two brick fragments within the boundaries of 45PI66. Nor was there any evidence of two other archaeological sites (45PI63 Railroad Dump #3 site and 45PI64 Burning Ground Dump site) formerly located within Lot Y that were completely removed a decade ago during hazardous materials remediation. Two surface historic archaeological sites (45PI01224 railroad track segment and 45PI01225 concrete platform) and one isolated kerosene can were identified during the fieldwork within Lot Y, but they are not considered significant. One additional archaeological site (45PI01226 set of bridge abutments) located north of Sequalitchew Creek but immediately outside of Lot Y was also recorded. Except for two brick fragments, one flat iron bar and one can, no portable artifacts were identified; no artifacts were collected.

No significant cultural properties will be affected by the project, and no further cultural resource action is warranted at this time. Should cultural resources be discovered during project implementation, an Unanticipated Cultural Resources Discovery Plan is attached as an appendix to this report. This report will be filed with the DAHP and a copy provided to affected Tribes.

TABLE OF CONTENTS

List of Tables

List of Figures

List of Photographs

Appendices

INTRODUCTION

Parus Consulting, Inc. (PCI) was retained by DuPont Industrial Partners, LLC to provide cultural clearance in accordance with prevailing Washington state laws for the proposed Lot Y project in the City of DuPont. An Archaeological Excavation Permit (Permit) was approved by the Washington State Department of Archaeology & Historic Preservation (DAHP) on February 7, 2011 (Permit No. 2010-54) (Appendix A).

The Permit was required because two historic archaeological sites (45PI66 Methodist Episcopal Mission site and 45PI455 9th U.S. Cavalry Bivouac site) and one prehistoric isolate (45PI773) are located within the Lot Y project area (Figures 1 and 2). In 1993, site 45PI66 was determined eligible for listing on the National Register of Historic Places (NRHP) under Criterion A. Site 45PI455 is considered potentially eligible for NRHP listing. Both sites are considered contributing elements to a proposed Nisqually-Sequalitchew Historic District. Prior archaeological investigations of sites 45PI66 and 45PI455 in 1989 and 2000 included backhoe peels, shovel tests, and block and unit excavations. In addition, a portion of 45PI455 was monitored during a hazardous materials remediation program. No surface evidence of these two sites or the isolate remained within Lot Y.

Two additional historic sites (45PI63 Railroad Dump #3 site and 45PI64 Burning Ground Dump site) located within Lot Y were determined not eligible for NRHP listing in 1993. Both sites were completely removed during hazardous materials remediation in 2000.

The services completed by PCI under the Permit include intensive-level pedestrian survey, subsurface testing, monitoring of geotechnical exploration pits, preparation of this report summarizing the cultural resources investigation and related forms recording newly identified resources, and completion of an Unanticipated Cultural Resources Discovery Plan.

PROJECT LOCATION AND DESCRIPTION

The project encompasses approximately 25.3 acres on private land known as Lot Y (Assessor's Property Tax Parcel No. 0119262019) located in the City of DuPont, Pierce County, Washington. Lot Y is located within the city limits west of Center Drive and north of Sequalitchew Creek. The Lot Y project area is situated within Section 26, Township 19 North, Range 01 East on the Nisqually 1981 USGS 7.5-minute topographic map (Willamette Meridian) (Figure 1).

The cultural resources excavations were conducted where the private landowner, DuPont Industrial Partners, LLC plans to develop a multi-building industrial park on Lot Y. The complex would include up to 12 buildings totaling approximately 340,000 square feet of building area, roadways, loading areas, approximately 650 parking spaces, and installation of underground utilities. Plans also include construction of a trail along the creek to the southwest of the industrial park.

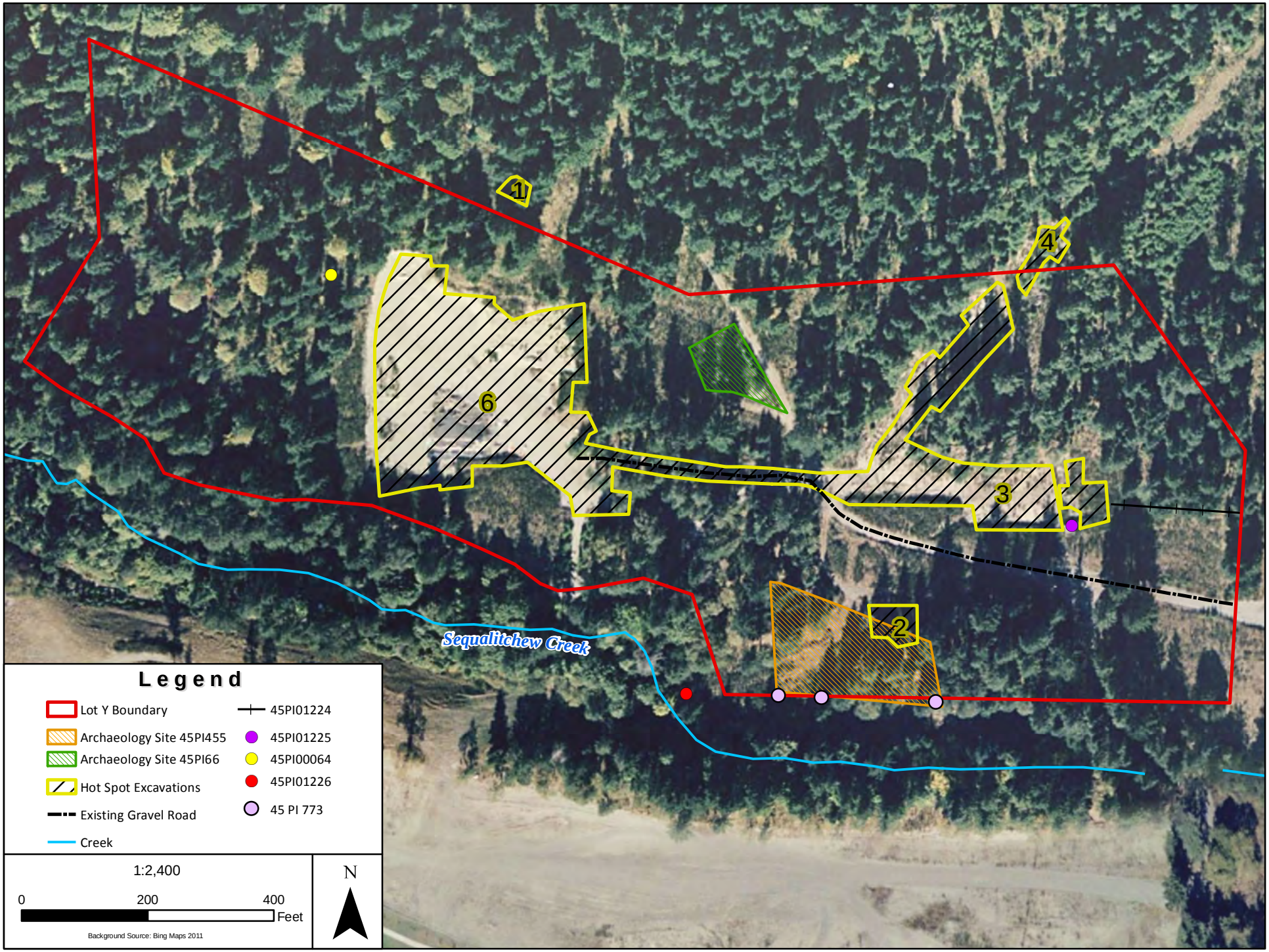
Plans for public access along the creekside trail to be constructed to the south of the industrial park include erection of an interpretive sign explaining the history of the temporary encampment within Lot Y of the 9th U.S. Cavalry Buffalo Soldiers. The content of the sign will include reference to the war games enacted by the large contingent of Buffalo Soldiers from Fort Walla Walla in 1904, and the discovery of the stables area at 45PI455, the 9th U.S. Cavalry Bivouac site along Sequalitchew Creek.

In addition, the existing the historical marker erected by the DuPont Company in 1927 at the site of the former Methodist Episcopal Mission (45PI66) will be retained on the property. The marker will be moved to the trailhead area where the public will have continued access to read about the history of the Mission, the first religious institution on Puget Sound, established in 1840.

Quad Name: Nisqually PR 1981
T19N, R 1E, Section 26
DuPont Lot Y: Location Map

PARUS CONSULTING, INC.

Figure 1



Quad Name: Nisqually PR 1981

T19N, R 1E, Section 26

DuPont Lot Y: Archaeological Resource and Remediation Location Map

PARUS CONSULTING, INC.

Figure 2

REGULATORY SETTING

The Permit was completed pursuant to permit requirements found in the Washington Administrative Code (WAC) 25-48-060. There is no federal involvement in this project. The cultural resources investigation for the proposed project was conducted under prevailing Washington state laws, which serve to protect from known disturbance archaeological sites and Native American graves on both public and private lands. These laws include Executive Order 05-05, Indian Graves and Records (Revised Code of Washington [RCW] 27.44), Archaeological Sites and Resources (RCW 27.53), Archaeological Excavation and Removal Permit (WAC 25-48), and Discovery of Human Remains (RCW 27.44).

PROJECT SETTING

ENVIRONMENTAL SETTING AND DEPOSITIONAL CONTEXT

The project area is situated within the Puget Trough physiographic province (Franklin and Dyrness 1973) approximately 0.8 mile east of the southern part of Puget Sound shoreline and north of Sequalitchew Creek. Sequalitchew Creek drains the Edmond's Marsh area about 0.3 mile southeast of the project, and empties into Puget Sound approximately 1.5 miles northwest of the marsh. The Puget Trough is a basin that lies between the Coast Range to the west and the Cascade Range to the east.

The geomorphology of the project area is largely the result of Pleistocene glaciations. The last advance of a continental glacier through the Puget Trough began approximately 20,000 years ago when the Cordilleran Ice Sheet moved south from British Columbia. By 15,000 years ago, the Puget Lobe of this ice sheet extended some 19 miles south of the present city of Olympia (Orr and Orr 1996). Similar to other southern Puget Sound lowlands, glacial outwash deposits comprise the area in and around the project region.

Over time, soils forms on the glacial outwash sediments, with the addition of wind-blown volcanic ash. Within the project area are the deep, somewhat excessively drained Spanaway gravelly sandy loam soils (41A), which formed on the gravelly outwash deposits on terraces and plains (Soil Survey Staff 2009). A typical soil profile for this series is an A horizon of gravelly sandy loam (0-14 inches), a B horizon of very gravelly sandy loam (14-18 inches), above a C horizon of extremely gravelly sand (18-60 inches), with the cobble content increasing down profile.

Puget Sound and the Cascade Range, west and east of the project, influence the regional climate. Characteristic climatic conditions for this region include wet, mild winters and warm, dry summers, with the majority of annual precipitation falling as rain between October and March (Franklin and Dyrness 1988). Native vegetation found throughout much of the Puget Trough province is the *Tsuga heterophylla* (western hemlock) forest (Franklin and Dyrness 1973:16–17, 88). In addition to western hemlock, forest trees include Douglas fir (*Pseudotsuga menziesii*), cedar (*Thuja plicata*), and alder (*Alnus rubra*), along with other species in valley bottoms or forest margins and a variety of understory plants, ferns, and mosses. Prairie and marsh vegetation was historically recorded in the project vicinity near Sequalitchew Creek and Edmond's Marsh.

The saltwater and freshwater resources of the Puget Sound, its bays and inlets attracted exploitation and settlement prior to historic logging and development of this rich, ecologically diverse region. Among the wildlife once common to the region are black bear, bobcat, cougar, deer, elk, raccoon, red fox, and snowshoe hare, as well as a variety of waterfowl, fish, and shellfish.

CULTURAL SETTING

Prehistoric Overview

Occupation in western Washington during the prehistoric period is estimated to have occurred as early as 12,000 years ago (Ames and Maschner 1999). Prehistoric material culture in western Washington has been categorized according to "horizons" or "periods" that define technological, economic, social and ideological elements (Ames and Maschner 1999). During the Paleoindian Period (dating to 12,500 BP and earlier), people are thought to have been highly mobile hunter-gatherers whose toolkit included fluted Clovis projectile points.

The Archaic or Early Period (12,500–5,000 BP) saw an increase in sedentism reflected in more kinds of stone tool types and evidence of permanent villages. Within the Puget Sound and Strait of Juan de Fuca, artifacts from this period are referred to as "Olcott" after the type site in Snohomish County (Nelson 1990). Increasing populations, an increase in reliance on marine resources, and more complex socio-economic organization, as well as the appearance of ground stone and bone tools in the archaeological record, characterizes the Middle Period (5,000–2,500 BP) in the Puget Sound (Ames and Maschner 1999; Matson and Coupland 1995). During the last 2,500 years, the Late Period is characterized by the development of craft specialization and social stratification, establishment of permanent winter villages, and an increased reliance on marine resources.

Ethnographic Overview

The project area is located in the traditional territory of the Puyallup Tribe who spoke the Puyallup Nisqually language of the Southern Coastal Salish language family. Their territory encompassed the Puyallup River drainage from Mount Rainier to Commencement Bay, and the uplands east of the Tacoma Narrows (Suttles and Lane 1990). Ethnographies indicate that the Puyallup relied on salmon as a dietary staple and secured additional natural resources from the surrounding saltwater, riverine and upland environmental settings. Their multi-family, plank-house villages were occupied during the winter months and typically situated adjacent to waterways. Smaller, seasonal camps were associated with hunting and gathering a variety of resources, including deer, elk, berries, and roots.

Ethnographic data indicate the Nisqually inhabited the area along the upper part of Sequalitchew Creek (Wessen et al. 2005, 2008). Sequalitchew Village was located at the mouth of the creek and described by the ethnographer as "where Dupont Creek enters the Sequalitcu River" (Smith 1940:8, 13). The village inhabitants would have pursued fishing, hunting and gathering from this winter village and from seasonal camps during the remainder of the year.

As part of the Medicine Creek Treaty of 1854, the Puyallup received a 1,280-acre tract extending along the high bluff from Commencement Bay to Point Defiance. By 1873, the reservation lands had been enlarged to 18,062 acres, and included lands on the southern and eastern side of Commencement Bay (Harmon 1995; Ruby and Brown 1986). Congress later established a commission to authorize sale of tracts with the Puyallup reservation, and by 1895 nearly half the acreage had been sold, including the waterfront properties.

Historic Overview

Euro-American history began in western Washington with the coming of explorers as early as the 16th century. In 1792, the expedition by British explorer George Vancouver first encountered Twana and other Southern Coast Salish when sailing up Hood Canal and Puget Sound. U.S. Navy Lt. Charles Wilkes explored Hood Canal in 1841, and named Suquamish Harbor (later Squamish Harbor) as well as Pit Passage (now Pitt Passage). By 1846, the United States owned what is now western Washington as the U.S.–British boundary was moved north to the 49th parallel. American settlers poured into the area that

was then known as the Oregon Territory, established in 1848, and the Donation Land Claim Act was passed in 1850. The arrival of the first transcontinental railroad in the 1880s served to fuel settlement and economic development.

In the project vicinity, the Hudson's Bay Company (HBC) established a small storehouse for their fur trade near the mouth of Sequalitchew Creek as early as 1832 (Carpenter 1986). The following year they erected a small fort immediately east, and 10 years later in 1843, a much larger fort complex was established approximately 0.75 miles farther east (known as Fort Nisqually). To meet the demands for export of agricultural and dairy products, the company had established the Puget's Sound Agricultural Company (PSAC) by 1838. The 1843 fort was constructed near the buildings and structures comprising this enterprise. Although the treaty with Great Britain had required the removal of the HBC from United States territory, HBC/PSAC traders, farmers and dairymen continued to occupy the 1843 Fort Nisqually complex, to raise crops and to produce dairy products until compensation was received from the U.S. government in 1869. The lands were then titled to the last clerk of the company, Edward Huggins.

During the years between the departure of HBC/PSAC in 1869 and the development of the DuPont Powder Works in 1906, the area was populated by American settlers. The homesteaders used the land for farming and livestock grazing. In 1904, the 9th U.S. Cavalry camped, stabled their horses, and conducted war games near and within the project area on the prairies between Sequalitchew and Steilacoom Creeks (see Moura 1991a:8-9). The troops camped within the project area along Sequalitchew Creek were designated the Second Brigade, Camp Nisqually. Under the command of Colonel Charles H. Noble, the camp contained about 2,000 soldiers from Fort Walla Walla. The 9th U.S. Cavalry troops were African-American, referred to as Buffalo Soldiers.

Two years later, the DuPont Powder Works was established on the land by the E.I. DuPont de Nemours Company (Munyan 1972). In addition to an explosives manufacturing plant, the DuPont facilities included a company town, docks along the Puget Sound shoreline, and a narrow-gauge railroad used to transport their products. The "Old Town" period represents the time of the construction and early operation of the DuPont Powder Works (1906 into the early 1920s). During this period, buildings were frequently constructed and demolished. The construction of roads and the railway network, the annual clearing and burning of underbrush, as well as relatively frequent explosions, resulted in extensive land disturbance.

When DuPont Powder Works closed in 1976, it was purchased by the Weyerhaeuser Company. Many of the production buildings were burned prior to release of the property to Weyerhaeuser to prevent detonation of undetected explosives. During the last 20 years, Quadrant Corporation (formerly Weyerhaeuser Real Estate Company) has developed the planned community known as Northwest Landing in the project vicinity.

Photograph 1 shows the narrow-gauge railroad built by the DuPont Powder Works above the south side of Sequalitchew Creek (outside and south of Lot Y). The train is moving the last load of black powder that had been manufactured by the plant and subsequently stored in a warehouse rented by the city. This last powder run occurred circa 1990 (personal communication, Fred Foreman).

Photograph 1. Last powder run on narrow-gauge (south side of Sequalitchew Creek)

PREVIOUS ARCHAEOLOGIAL RESEARCH

RESEARCH METHODS

A cultural resources search was performed for the project on October 21, 2010 using the DAHP electronic GIS database to gather archaeological information relative to reports and sites within and in the vicinity of the project area. This information was supplemented with archival research into the history of this region and of archaeological investigations in the immediate project vicinity. This assessment considered previous studies, the magnitude and nature of the undertaking, the nature and extent of potential effects on historic properties, and the likely nature and location of currently unknown archaeological resources within the project area.

During the fieldwork program between February 17 and March 4, 2011, PCI archaeologist Cindy Arrington conducted additional archival and oral history research. Archival research at the City of DuPont History Museum included discussions with Museum Director Johanna Jones on the area's history and review of numerous documents and photographs. A map of the DuPont Works drawn by E. Davies and dated March 15, 1955 shows the "Burning Ground" within the Lot Y project area and the system of roads and narrow-gauge and standard-gauge railroad tracks crisscrossing within the plant boundaries. The map also shows two bridges on Sequalitchew Creek immediately south of the project area, which were used by the company's narrow- and standard-gauge railroads. A digital version of this map was provided by Fred Foreman, a lifetime resident of the City of DuPont and a former part-time, summer DuPont Powder Works employee. Mr. Foreman gladly conveyed his enthusiasm and knowledge of the history of this region, and spent time with Ms. Arrington. In addition to the Davies map, Mr. Foreman also provided DVDs of archaeological investigations in 1989 of 1833 Fort Nisqually and of an informal visit to the Methodist Episcopal Mission site (45PI66) during removal of contaminated soil at nearby site 45PI64 (Burning Ground Dump site). Along with photographs obtained from DAHP of the hot spot archaeological monitoring program carried out a decade ago by Daugherty and Condon (2000), the video of hazardous waste removal provided a clearer picture of the landscape within Lot Y prior to re-shaping by heavy mechanical equipment while removing contaminated topsoil.

LOCAL ARCHAEOLOGICAL INVESTIGATIONS

The project vicinity is part of a complex cultural landscape with cultural resources dating from occupation of the area by Native Americans to historic period settlement—beginning in 1832 by the HBC with related agricultural activities started by the PSAC by 1838, and continuing through 70 years of industrial

development by the DuPont Company between 1906 and 1976. The following discussion focuses on studies within the former DuPont Powder Works property, which was acquired in 1976 by the Weyerhaeuser Company from E.I. DuPont de Nemours Company. As indicated in Table 1, several of these prior archaeological investigations have included all or portions of the current project area.

Table 1. Prior Cultural Resources Investigations within or near Project Area

Year	Author(s)	Report Title	Proximity to project
1977	Onat, A.R., Lee A. Bennett, and Timothy Riordan	Cultural Resources Survey: DuPont Site, Volume I, Survey of Archaeological and Ethnographical Resources at the DuPont Site	Within and near Lot Y
1977	Stratton, David H., and Glen W Lindeman	Cultural Resource Survey, DuPont Site, Volume II: Survey of Historical Resources at the DuPont Site	Within and near Lot Y
1989	Welch, Jeanne	A Cultural Overview and Comprehensive Management Plan for the DuPont Property, Pierce County, Washington	Within and near Lot Y
1990	Stilson, M. Leland	A Data Recovery Study of 45PI401, Hudson's Bay Dwellings at Northwest Landing, Pierce County, Washington	0.1 mile east
1991	Moura, Guy F.	Missions, War Games, and Railroad Dumps: 1989 Explorations and Excavations, Northwest Landing, DuPont, Washington	Within
1991	Stilson, M. Leland	A Data Recovery Study of 45PI405, the 1843 Fort Nisqually Village at Northwest Landing, Pierce County, Washington	0.1 mile east
2000	Daugherty, Richard, and Mary Condon	Archaeological Monitoring of the "Hot Spot" Removal Program, the Hazardous Waste Stockpile Areas, and Sand Stockpile Laydown Areas at the Former DuPont Works Site, DuPont, Washington	Within
2001	Daugherty, Richard, and Mary Condon	An Update on the Archaeological Status of Sites 45PI63 (A Trash Dump Located Along a Railroad Spur), 45PI64 (Burning Ground Dump), 45PI66 (Methodist Episcopal Mission), and 45PI455 (Part of the 9th Cavalry Bivouac Area)	Within and near Lot Y
2002	Maass, Alex	Interim Archaeological Monitoring Report for the Former DuPont Works Site, Parcel 1	Adjacent (to west)
2003	Maass, Alex	2002 Field Season Archaeological Monitoring Report for the Former DuPont Works Site, Parcel 1	Adjacent (to west)
2003	Wessen, Gary	Exploring the Boundary and Possible Interpretation of 45PI485	South of creek
2004	Wessen, Gary	Archaeological Testing at 45PI576, Former DuPont Works Site, City of DuPont, Pierce County, Washington	South of creek
2005	Dampf, Steven	Archaeological Monitoring Report for the 2003 and 2004 Field Seasons at the Former Dupont Works Site Parcel 1, City of DuPont, Pierce County, Washington	Adjacent (to west)
2005	Wessen, Gary, Cathy Bialas and Gail Thompson	Cultural Resources Assessment for the Glacier Northwest North Sequalitchew Creek SEIS Project, City of DuPont, Pierce County, Washington	Within and near Lot Y
2006	Thompson, Gail	Archaeological Implementation Report for Remediation of Soils at the Former DuPont Works Site Parcel 1, City of DuPont, Pierce County, Washington	Adjacent (to west)
2008	Wessen, Gary, Cathy Bialas, Derek Shaw and Gail Thompson	Revised Cultural Resources Assessment for the Glacier Northwest North Sequalitchew Creek SEIS Project, City of DuPont, Pierce County, Washington	Within and near Lot Y

The first intensive survey of the 3,000 acres comprising the former DuPont Powder Works property was completed over 30 years ago. A total of 26 cultural resources were identified during the survey, including 8 prehistoric and 18 historic sites (Blukis Onat et al. 1977). Blukis Onat and others (1977) studied the prehistoric and ethnohistoric sites identified within the surveyed area, while Stratton and Lindeman (1977) completed archival research on the historic period resources. The 26 sites include 1833 Fort Nisqually (45PI55), 1843 Fort Nisqually (45PI56), and the Sequalitchew Village site (45PI54). The 1833 Fort Nisqually site, located slightly more than 0.5 mile west of Lot Y, was listed on the NRHP in 1974 and is also listed in the Washington Heritage Register (WHR). Located approximately 0.2 mile southeast of Lot Y, the 1843 Fort Nisqually site (45PI56) is considered eligible for NRHP listing. The Sequalitchew

Village site, a historic property, is located at the mouth of Sequalitchew Creek approximately 1.5 miles west of Lot Y and contains remnants of a shell midden. Burials associated with the village were recorded as a separate site (45PI76), since they are located on the opposite, north side of the creek from the village.

As discussed further below, of the 26 sites recorded by Blukis Onat et al. (1977), three are located within Lot Y (45PI63 Railroad Dump #3, 45PI64 Burning Ground Dump, and 45PI66 Methodist Episcopal Mission Site). An additional 12 sites (2 prehistoric and 10 historic) of those identified during the 1977 survey are located within 0.5 mile of but outside Lot Y.

The extensive disturbance of the entire DuPont property by construction of numerous roadways and narrow-gauge railroad tracks, as well as the operations of the explosives manufacturing plant, was discussed in the report by Blukis Onat et al. (1977:57) and they recommended a more intensive survey might identify additional archaeological sites. Over ten years later, the former DuPont property was resurveyed again as part of the development of a Cultural Resources Management Plan for the Weyerhaeuser Company by Jeanne Welch (Welch 1989a). Each of the archaeological sites identified during the survey by Blukis Onat et al. (1977) was relocated, including the three within Lot Y (45PI63, 45PI64, and 45PI66). More intensive survey was accomplished in 1988 in areas planned by Weyerhaeuser for well or reservoir construction, or for logging, and the work included a testing and evaluation program developed to determine the significance of known cultural resources. Backhoes were used for sod removal in vegetated areas and for exploratory trenching.

The archaeologists also completed a testing program to identify significant cultural resources within the planned corridor for construction of Center Drive (Welch 1989a:4.2, 4.4). Center Drive trends north-south and is located 0.1 mile east of Lot Y. Two sites within the right-of-way of Center Drive on the north and south sides of Sequalitchew Creek were identified (45PI401 and 45PI405) (Welch 1989a, 1989b, 1989c). The sites are located just outside the west palisade wall of 1843 Fort Nisqually (45PI56). Each site contains the remains of HBC/PSAC dwellings, and a large number of historic as well as prehistoric artifacts were recovered from 45PI401 and 45PI405 during initial testing and subsequent data recovery excavations (Welch 1989a; Stilson 1990, 1991). The two sites are located only a short distance from Lot Y, approximately 0.1 mile to the east, and are discussed in more detail below.

Archaeological test excavations within Lot Y were conducted in 1989 by Guy Moura to identify the precise location of the buildings within the Methodist Episcopal Mission Site (45PI66), and to test the significance of Railroad Dump #3 (45PI63) (Moura 1991a; also see Daugherty and Condon 2001:Part I). He was also hired to investigate a third area within Lot Y where historic accounts indicated the 9th U.S. Cavalry had camped during military maneuvers in 1904 (later designated 45PI455) (Moura 1991a, 1991b; also see Daugherty and Condon 2001:Part I). Moura completed a series of backhoe peels, shovel test probes, and block and unit excavations within and near the boundaries of 45PI63, 45PI66, and 45PI455.

Under a Consent Decree signed in 1991 by the Washington State Department of Ecology, E.I. DuPont de Nemours Company and Weyerhaeuser Company, DuPont and Weyerhaeuser were jointly responsible for cleaning up an 841-acre tract, which had been contaminated by the former industrial explosives manufacturing facility (Thompson 2006:4). Archaeological monitoring of soil remediation activities and related archaeological investigations were carried out between 2001 and 2004. Detailed information on the monitoring is contained in reports by Alex Maass (2002, 2003) and Steven Dampf (2005). A large prehistoric chipped stone scatter (45PI576) was identified south of Sequalitchew Creek and south of Lot Y (Thompson 2006:21, 32). Two small projectile points suggest the site was occupied during the past 2,000 years, although the overall assemblage indicates there may be an older component. Because of the low density of artifacts recovered from testing in a highly disturbed setting, the site was recommended ineligible for NRHP listing. Two prehistoric isolates were also recorded south of the creek and

approximately 50 meters east of 45PI576. HRA 30a-d included one core, one flake, and two edge-modified flakes; HRA 31a-d included four basalt flakes (Thompson 2006:22).

Lot Y was included within the acreage under the Consent Decree requiring remediation of hazardous materials (mainly lead and arsenic contaminated soil) contained within the former DuPont property, and additional archaeological investigations revolved around remedial activities. The removal of contaminated soil in "hot spot" areas within Lot Y was monitored by archaeologists in 1999 and 2000, and included segments of the narrow gauge railroad tracks, Railroad Dump #3 (45PI63), the Burning Ground Dump site (45PI64), and a portion of the 9th U.S. Cavalry Bivouac site (45PI455) (Daugherty and Condon 2000:7) (Figure 2). After clearing and grubbing, excavation of the hot spots generally achieved a depth of 46 centimeters below surface (cmbs) (18 inches). The area around removal of a designated hot spot was expanded by 25 feet in each cardinal direction so the initial excavation area around a hot spot measured at least 50x50 feet.

During remediation activities, a historic debris deposit associated with the 1843 Fort Nisqually complex was identified to the south of Sequalitchew Creek. Southeast of Lot Y and near the two previously recorded HBS/PSAC dwelling sites (45PI401 and 45PI405), the deposit was recorded as 45PI485 (Daugherty and Condon 2000).

A comprehensive document reporting on the subsurface testing or hot spot monitoring at the four known sites within Lot Y (45PI63, 45PI64, 45PI66, and 45PI455) was completed the following year (Daugherty and Condon 2001:Parts I and II). Part I of that document is Moura's report on the test excavations completed in 1989 at 45PI63, 45PI66, and 45PI455 (also see Moura 1991a, 1991b). Part II of that document reproduced and updated the information at all four sites from the hot spot removal program reported by Daugherty and Condon (2000).

Beginning in 1993, Richard Daugherty evaluated the significance of a number of the archaeological sites within the former DuPont Powder Works property and prepared National Register nomination forms for them. These included the four sites within Lot Y (45PI63, 45PI64, 45PI66, and 45PI455), as well as the two HBC/PSAC dwelling sites east of Lot Y (45PI401 and 45PI405), discussed below.

In January 2005, during a survey for the proposed expansion of an existing gravel mine, the four sites (45PI63, 45PI64, 45PI66, and 45PI455) previously recorded in the project area were relocated, but no effort was made to further investigate them since each had been previously evaluated (Wessen et al. 2005:15). No potentially significant archaeological sites were newly identified during the surface survey, and it was decided to investigate the areas close to Sequalitchew Creek by subsurface testing. The subsequent recovery of four pieces of chipped stone debitage from a series of shovel test probes was recorded as a prehistoric isolate (45PI773) (Wessen et al. 2005, 2008) (Figure 2).

PREVIOUSLY RECORDED CULTURAL RESOURCES NEAR PROJECT AREA

As noted above, 12 (2 prehistoric and 10 historic) of the 26 sites recorded by Blukis Onat et al. (1977) are located within 0.5 mile of but outside Lot Y (Table 2). As shown in the table, an additional 13 sites (2 prehistoric and 11 historic) and 5 isolates (2 prehistoric and 3 historic) have been previously recorded within 0.5 mile of but outside Lot Y. According to the records, one historic (45PI58) and one prehistoric site (45PI75) may have never existed. The three remaining pre-Contact sites include two burial sites (45PI77, 45PI404) and a chipped stone scatter (45PI576).

The previously recorded historic sites are mainly associated with the HBC/PSAC era and the Old Town period. The Old Town period represents the time of the construction and early operation of the DuPont Powder Works (1906 into the early 1920s). Eight of the historic-era sites are associated with the earlier HBC/PSAC period (1832–1869). These include 1843 Fort Nisqually (45PI56), the remains of

ethnohistoric men's dwelling houses (45PI74), three burial sites (45PI78, 45PI413, 45PI451), two sites with house foundations and artifacts (45PI401, 45PI405), and a debris deposit (45PI485). The artifacts from one site (45PI563) date from both the HBC/PSAC and Old Town periods.

Seven of the previously recorded sites are attributed to the DuPont Powder Works Old Town period. These include a men's boarding house (45PI57), the Old Town dump (45PI59), a domestic trash dump (45PI60), two debris deposits or scatters associated with the narrow gauge railroad that transported the explosives (45PI61, 45PI62), the munitions plant (45PI70), a remnant of a dirt road (45PI441), and a recently recorded non-functional segment of narrow-gauge railroad track and berm (45PI01224). 45PI01224 was identified during survey in 2010 of the 12.8-acre property (known as Lot X) adjacent to the eastern edge of Lot Y (Sikes and Arrington 2010). The narrow-gauge track and berm continue to the west beneath a chain-link fence into Lot Y.

One of the historic period sites is the garbage dump (45PI448) used by the city of DuPont from 1927 to 1946. The two remaining historic-era sites include one with 100 to 200-year old human skeletal fragments (45PI712) and a debris scatter with artifacts ranging in age from 1916 to the mid-1960s (45PI783).

The two prehistoric isolates identified within the 0.5 mile radius were recorded south of Sequalitchew Creek during archaeological monitoring of soil remediation activities within the Consent Decree area (Thompson 2006:22). The isolates are located approximately 50 meters east of 45PI576, a large prehistoric chipped stone scatter south of the creek and south of Lot Y. HRA 30a-d included one core, one flake, and two edge-modified flakes; HRA 31a-d included four basalt flakes.

The three historic-era isolates were identified recently during the recent survey of Lot X (Sikes and Arrington 2010). The isolates are located approximately 400 feet east of Lot Y. GEO Isolate #1 is a surface pile of 51 railroad spikes; GEO Isolate #2 is a pile of broken, formed aggregate concrete chunks; and GEO Isolate #3 is a scatter of milled lumber.

Of the previously recorded sites within the 0.5 mile radius outside Lot Y, three are considered eligible for NRHP listing: the 1843 Fort Nisqually site (45PI56) and the two HBC/PSAC dwelling sites (45PI401, 45PI405). The latter two sites are also considered contributing elements to the proposed Nisqually-Sequalitchew Historic District (Point Nisqually Defense Fund 2003) (see discussion below).

Outside the 0.5 mile radius, nearby historic properties include 1833 Fort Nisqually (45PI55), the Sequalitchew Village Site (45PI54), the DuPont Village Historic District, and Fort Lewis. Throughout its period of significance (1917–1948), Fort Lewis was one of the preeminent U.S. Army training posts. The DuPont Village Historic District encompasses the 43-acre company town developed by E.I. DuPont de Nemours Company between 1906 and 1915. The district is located less than 1 mile southeast of Lot Y.

Table 2. Previously Recorded Resources within 0.5 Mile of Project Area

Site No.	Brief Description	Historic Period	Recorded by and year	NRHP Eligibility
45PI00056	Historic 1843 Fort Nisqually (1832-1869)	HBC/PSAC	Riordan 1977; Daugherty 1993 NRHP form	Eligible
45PI00057	Historic men's boarding house, DuPont era; destroyed	Old Town	Riordan 1977; Daugherty 1993 NRHP form	Not eligible
45PI00058	Site recorded as historic brick yard dump but it never existed	n/a	Riordan 1977; Daugherty 1993 NRHP form	Not eligible
45PI00059	Historic Old Town dump, 1906-1909	Old Town	Riordan 1977; Daugherty 1993 NRHP form	Not eligible

Site No.	Brief Description	Historic Period	Recorded by and year	NRHP Eligibility
45PI00060	Historic domestic trash dump, DuPont Powder Works, 1906-1909	Old Town	Riordan 1977; Daugherty 1993 NRHP form	Not eligible
45PI00061	Historic railroad or domestic debris deposit	Old Town	Riordan 1977; Daugherty 1993 NRHP form	Not eligible
45PI00062	Historic railroad debris deposit, ca. 1906-1909	Old Town	Riordan 1977; Daugherty 1993 NRHP form	Not eligible
45PI00070	Historic DuPont munitions plant, ca. 1906	Old Town	Riordan 1977	Not determined
45PI00074	Ethnographic men's dwelling houses, 1844-1869, Fort Nisqually	HBC/PSAC	Blukis Onat 1977; Daugherty 1992; Daugherty 1993 NRHP form	Not determined
45PI00075	Site recorded as a prehistoric midden at DuPont crystallizer but it never existed	n/a	Blukis Onat 1977; Daugherty 1993 NRHP form	Not eligible
45PI00077	Old Fort Lake Graves	Pre-Contact	Blukis Onat 1977	Not determined
45PI00078	Historic 1843 Fort Nisqually burial	HBC/PSAC	Blukis Onat 1977	Not determined
45PI00401	Historic Hudson's Bay house; historic and prehistoric artifacts; ca. 1845-1869	HBC/PSAC	Welch 1988; Daugherty 1993 NRHP form	Eligible, included in proposed Nisqually-Sequalitchew Historic District
45PI00404	Pre-Contact Nisqually Indian Burial Site	Pre-Contact	Welch 1988; Daughtery and Wessen 1988	Not determined
45PI00405	Historic Hudson's Bay house foundations, historic and prehistoric artifacts, ca. 1845-1869	HBC/PSAC	Welch 1988; Daugherty 1993 NRHP form	Eligible, included in proposed Nisqually-Sequalitchew Historic District
45PI00413	Historic Native American cemetery, 1840-1870	HBC/PSAC	Daugherty 1991	Not determined
45PI00441	Historic dirt road remnant, 1846	Old Town	Solimano 1996	Recommended not eligible
45PI00448	Historic City of DuPont garbage dump, 1927-1946	DuPont	Daugherty 1996; Daugherty 1996 NRHP form	Not eligible
45PI00451	Historic Lone Fir grave site, 1850	HBC/PSAC	Daugherty 1997	Not determined
45PI00485	Historic debris deposit, ca. 1840-1870	HBC/PSAC	Daugherty 2000; Wessen 2002	Not determined
45PI00563	Historic debris scatter, 1843-1930s	HBC/PSAC and Old Town	Chesmore 2001, 2002; Wilson 2002 NRHP form	Not eligible
45PI00576	Prehistoric chipped stone scatter	prehistoric	Wessen 2004	Recommended not eligible
45PI00712	Human skeletal fragments, ca. 100-200 yrs old		Wessen 2003	Not determined
45PI00783	Historic debris scatter, 1916-1964		McKillop 2007	Not eligible
45PI1224	Historic railroad track and berm, 1906-1920s	Old Town	Arrington 2010	Not eligible
GEO Isolate #1	Historic isolate (railroad spikes)		Arrington 2010	Not eligible
GEO Isolate #2	Historic isolate (concrete chunks)		Arrington 2010	Not eligible

Site No.	Brief Description	Historic Period	Recorded by and year	NRHP Eligibility
GEO Isolate #3	Historic isolate (milled lumber)		Arrington 2010	Not eligible
HRA 30a-d	Prehistoric isolate (core, 3 flakes)		Thompson 2006	Not eligible
HRA 31a-d	Prehistoric isolate (4 flakes)		Thompson 2006	Not eligible

PREVIOUSLY RECORDED SITES AND ISOLATE WITHIN PROJECT AREA

One prehistoric isolate (45PI773) and four historic archaeological sites (45PI63 Railroad Dump #3, 45PI64 Burning Ground Dump, 45PI66 Methodist Episcopal Mission Site, and 45PI455 9th U.S. Cavalry Bivouac site) have been previously recorded within the project area (Table 3; Figure 2). One of the historic sites (45PI66) is associated with the HBC/PSAC era (1832-1869) and one (45PI63) with the Old Town period (1906–early 1920s). Site 45PI64 is associated with later operation of the explosives manufacturing plant from the 1930s until the plant closed in 1945. Temporary occupation by the 9th U.S. Cavalry (45PI455) occurred in 1904 between the HBC/PSAC and Old Town periods.

Site 45PI66 has been determined eligible for listing on the NRHP, and site 45PI455 is potentially eligible. These two sites are also encompassed within the proposed Nisqually-Sequalitchew Historic District as contributing elements. The district is still pending approval.

Of the four previously recorded sites within Lot Y, two (45PI63 Railroad Dump #3 site and 45PI64 Burning Ground Dump site) had been determined not eligible for NRHP listing and were completely removed during hazardous materials remediation in 1999 and 2000 (Daugherty and Condon 2000, 2001). These former sites were located within two of the cleared hot spots (HS-4 and HS-6) shown on Figure 2.

Although not located within Lot Y, this section and Table 3 include discussion of two additional sites that contain artifacts or features representing former HBC/PSAC dwellings associated with 1843 Fort Nisqually. The two sites, 45PI401 and 45PI405, are located on the north and south banks of Sequalitchew Creek approximately 0.1 mile east of Lot Y. The sites also contain a large number of chipped stone artifacts.

The history of archaeological investigations at each of these resources within and near Lot Y is presented below.

Table 3. Previously Recorded Cultural Resources within and near Project Area

Site No.	Brief Description	Historic Period	Recorded by and year	Prior Reports	NRHP Eligibility
Sites and Isolate Recorded within Project Area					
45PI00063	Historic debris deposit, two loci along railroad, 1910-1930; removed during soil remediation	Old Town	Riordan, 1977; Daugherty, 1993 NRHP form	Blukis Onat et al., 1977; Welch, 1989a; Moura, 1991a; Daugherty and Condon, 2001	Not eligible
45PI00064	Historic DuPont Powder Works burning ground dump, 1930s-1945; removed during soil remediation	DuPont	Riordan, 1977; Daugherty, 1993 NRHP form	Blukis Onat et al., 1977; Welch, 1989a; Daugherty and Condon, 2000, 2001	Not eligible

Site No.	Brief Description	Historic Period	Recorded by and year	Prior Reports	NRHP Eligibility
45PI00066	Historic 1840-1842 Methodist Episcopal Mission	HBC/PSAC	Riordan, 1977; Daugherty, 1993 NRHP form	Blukis Onat et al. , 1977; Welch, 1989a; Moura, 1991a; Daugherty and Condon, 2000, 2001	Eligible, included in proposed Nisqually-Sequalitchew Historic District
45PI00455	Historic 9th U.S. Cavalry Bivouac, Camp Nisqually, 1904;partially removed during soil remediation	Between HBC/PSAC and DuPont	Daugherty, 1997; Daugherty, 1997 NRHP form	Moura, 1991a, 1991b; Daugherty and Condon, 2000, 2001	Potentially eligible, included in proposed Nisqually-Sequalitchew Historic District
45PI00773	Prehistoric chipped stone isolate	n/a	Wessen, 2005	Wessen et al., 2005, 2008	Not eligible
Sites Recorded near Project Area					
45PI00401	Historic Hudson's Bay house; historic and prehistoric artifacts; ca. 1845-1869; destroyed during bridge construction	HBC/PSAC	Welch, 1988; Daugherty, 1993 NRHP form	Welch, 1989a; Stilson, 1990	Eligible, included in proposed Nisqually-Sequalitchew Historic District
45PI00405	Historic Hudson's Bay house foundations, historic and prehistoric artifacts, ca. 1845-1869; destroyed during road partially construction	HBC/PSAC	Welch, 1988; Daugherty, 1993 NRHP form	Welch, 1989a; Stilson, 1991	Eligible, included in proposed Nisqually-Sequalitchew Historic District

45PI63 Railroad Dump Site

This site was initially recorded by Timothy Riordan as Railroad Dump #3 during the survey of the former DuPont Powder Works property by Blukis Onat et al. (1977). The dump is located at the junction of two narrow-gauge railroad tracks from the DuPont Powder Works Old Town period. Recorded in two distinct loci (A and B, each of which was approximately 10 meters in diameter), a dirt road developed after the track was abandoned may have split the debris deposit.

Material from the site mainly dates between 1910 and 1930 (the Old Town period) and includes mainly domestic ceramic and glass fragments, with a few nails and fabric remnants (Daugherty and Condon 2001; Moura 1991a; Daugherty 1993a). Over 260 artifacts were collected in 1989, mainly from the ground surface along the tracks, with only a single 1x1 meter test unit excavated in Area B (Moura 1991a:13-17). Additional artifacts were recovered during subsequent soil remediation activities in loci A and B (Daugherty and Condon 2001:32-46). The recovery of mainly domestic items led Daugherty and Condon (2001:46) to conclude that occupants of Old Town had used 45PI63 as a dump.

In 1993, the State Historic Preservation Officer (SHPO) determined site 45PI63 ineligible for NRHP listing (see October 19, 1993 memorandum and NRHP Determination of Eligibility Form). The site has been extensively looted (Welch 1989a:4.20; Thompson 2006:27), and prior to soil remediation, there had been extensive damage to the site by logging and railroad construction. No treatment measures were required during soil remediation, which removed the entire site (Daugherty and Condon 2001:46). Prior to removal, 45PI63 was located in the area on Figure 2 marked as HS-4.

45PI64 Burning Ground Dump Site

This site was initially recorded by Timothy Riordan during the survey of the former DuPont Powder Works property by Blukis Onat et al. (1977). At the location of a former black powder manufacture and storage building, site 45PI64 was used as a dump where hazardous and non-hazardous waste from the manufacturing plants at the DuPont Powder Works was discarded and burned. The site was used as a burning ground dump from the 1930s until the black powder mill was closed in 1945. The “Burning

Ground" is clearly shown on the 1955 map of the DuPont Works drawn by E. Davies. Prior to turning the property over to Weyerhaeuser, DuPont systematically dynamited this site to prevent detonation of undetected explosives (Thompson 2006:30).

Due to contamination by hazardous waste, archaeological work within site 45PI64 was not permitted. In 1993, the SHPO determined the site ineligible for NRHP listing (see October 19, 1993 memorandum and NRHP Determination of Eligibility Form). Archaeological monitoring during a program to remove "hot spots" or contaminated soils was conducted at the site in 2000 (Daugherty and Condon 2000), and the entire area (approximately 3,000 square feet) was removed during the subsequent hot-spot treatment program (Daugherty and Condon 2001:47, 50). Prior to removal, 45PI64 was located in the large cleared area marked as HS-6 on Figure 2.

Although former site 45PI64 was near the historical marker for the Methodist Episcopal Mission (45PI66), no evidence of the Mission building or stockade or of prehistoric or historic cultural materials were identified during hot spot removal, with the exception of contaminated, broken tools and hardware from the DuPont operation.

45PI66 Methodist Episcopal Mission Site

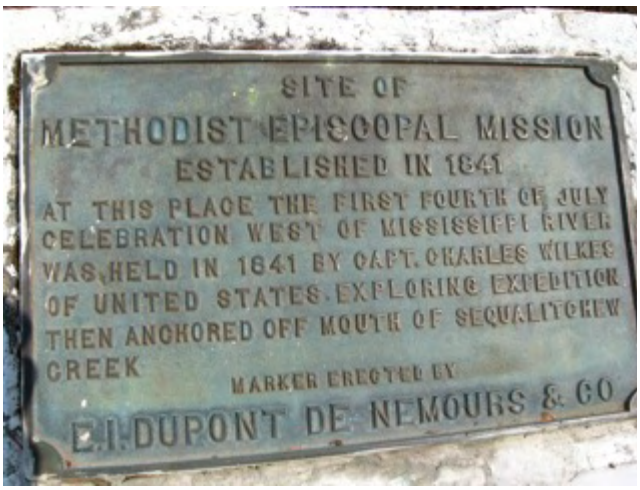
Initially recorded during the survey by Blukis Onat et al. (1977), this site has been determined eligible for NRHP listing under Criterion A (association with significant events) (NRHP Determination of Eligibility Form dated September 29, 1993). The site is not considered eligible under Criterion D (data potential) because it has been extensively disturbed by road and railroad construction and there has been little recovery of archaeological material during testing. Site 45PI66 also contributes to the proposed Nisqually-Sequalitchew Historic District (see below).

The Methodist-Episcopal Mission and associated school were founded in 1834 on land provided by the HBC. The goal was to convert and educate the Native Americans camping at Fort Nisqually (Carpenter 1986:98-99). Construction of the Mission buildings began in 1839 and a missionary group began services the following year. Several outbuildings and a garden were contained within the Mission grounds, which were surrounded by a stockade and located approximately 0.5 mile from the fort. The Mission building measured 18 feet wide by 32 feet long and 9 feet high, and an addition was constructed on the west side. The Mission was not successful, was abandoned in 1842, and later destroyed by fire. The land was also used for agriculture and in 1904 it was temporarily occupied by the military on training maneuvers. In 1927, the DuPont Company erected a historical marker at the site of the former Mission—the first religious institution on Puget Sound (Photographs 2 and 3).

Archaeological investigations (backhoe peels, shovel tests, 1x2 meter units) around the historical marker were conducted in 1989 (Welch 1989a; Moura 1991a). Some 29 backhoe peels were made in the area surrounding the bronze marker, but no evidence of the former Mission building was uncovered and additional testing was recommended (Welch 1989a:4.1, 4.22). Moura's team recovered chimney stones, 2 square nails, 3 window glass and 9 bottle glass fragments, and a couple pieces of ceramic (Moura 1991a:6-8). Excavation efforts (55 shovel tests and four 1x2 meter units) were stopped by 25 cmbs (0.8 feet) when sterile gravels were encountered, similar to other sites in this vicinity.

Moura (1991a:8) considered the accumulated evidence supported his contention that the Methodist-Episcopal Mission had been found. He also noted that the ashy matrix with brick, bone, and charcoal flecks in the excavation units above 25 cmbs (0.8 feet) at 45PI66 mimics that identified at the nearby HBC/PSAC dwellings site (45PI405) as hearth and chimney remnants, as discussed in the data recovery report on that site by Stilson (1991). Site 45PI405 is associated with the 1843 Fort Nisqually.

Photograph 2. Marker at Methodist-Episcopal Mission Site (45PI66)



Photograph 3. Text of 1927 marker erected by the DuPont Company (plan view)

Eleven years later, contrary to expectations, no evidence of the Mission building or stockade was identified during archaeological monitoring of contaminated soil removal at nearby site 45PI64 (Burning Ground Dump site) (Daugherty and Condon 2000; Daugherty and Condon 2001:47-48). Although chimney stones were identified at 45PI66 during the testing by Moura in 1989, archaeologists have debated about whether the stones and other artifacts identify the exact location of the Mission building. Daugherty and Condon (2001:48), for example, believe Moura's results are equivocal, although they do state "there appears to be little question that the actual location of the Mission is within a few hundred yards or so of the monument" erected by the DuPont Company.

45PI455 9th U.S. Cavalry Bivouac Site

Historic records indicate about 2,000 men were bivouacked at "Camp Nisqually" for a few months in 1904. The 9th U.S. Cavalry (also known as Buffalo Soldiers) practiced mock battles at the edge of the prairie north of Sequalitchew Creek. After the mock battles ended, the camp and surrounding area were cleared and the refuse burned before the troops departed for return to Fort Walla Walla.

Archaeological investigations (backhoe peels, block and unit excavations) within a 120 square meter area conducted by Moura in 1989 recovered over 800 artifacts and 170 small, burned animal bone fragments (deer, sheep/goat food remains) below the surface (Moura 1991a, 1991b). The artifacts include horseshoes, horseshoe nails, horse teeth, harness tackle, square and wire nails, burned bone fragments, a 1901 dime, and a 1903 rifle cartridge, all associated with the cavalry encampment. Liquor bottles and shotgun shells date to late 19th century use of the area, while prehistoric occupation is evidenced by chipped stone tools (2 knives) and debitage (5 flakes) made from a variety of toolstone (petrified wood, chert, and basalt). Two railroad spikes date to after the DuPont Powder Works was established in 1906. Similar to other sites in this vicinity, sterile gravels were encountered within 30 cmbs (1 foot) (Moura 1991a:9, 1991b:1). There was no surface evidence of the site.

A site number (45PI455) was assigned to the 9th U.S. Cavalry Bivouac area following the test excavations completed by Moura in 1989. The site measures approximately 225 by 100 meters (738 by 328 feet), and historic documentation indicates the artifact assemblage represents the temporary stable area (Moura 1991a:12, 1991b:5). In 1998, State Archaeologist Robert Whitlam indicated this site is potentially eligible for NRHP listing and recommended further work to define the boundaries of the Native American and Buffalo Soldier occupations (letter to Richard Daugherty dated February 17, 1998). Site 45PI455 is also

considered potentially eligible for NRHP inclusion as part of the proposed Nisqually-Sequalitchew Historic District (see below).

Additional work at site 45PI455 during archaeological monitoring of contaminated soil removal uncovered no further evidence of this brief occupation by the Buffalo Soldiers (Daugherty and Condon 2000, 2001). Although the bivouac area was encompassed within the targeted hot spots (HS-2 on Figure 2), the remediation program did not include the "stable" area excavated by Moura in 1989 (Moura 1991a, 1991b).

45PI773 Prehistoric Chipped Stone Isolate

This chipped stone isolate was recorded in 2005 by Gary Wessen during survey and excavation of subsurface shovel test probes along Sequalitchew Creek for the proposed expansion of an existing gravel mine (Wessen et al. 2005, 2008). The isolate consists of a total of four pieces of debitage (one complete secondary flake and three flake fragments) manufactured from basalt or dacite. The material was encountered within an approximately 40 x 30 meter area, with one artifact close to the surface in a previously disturbed, very dark brown gravelly sandy loam. The remaining three artifacts were recovered potentially in situ between 30 and 50 cmbs (1-1.6 feet) in a dark yellowish brown gravelly sandy loam.

The archaeologists had placed a series of 31 shovel test probes in this area, 26 of which were arranged at 10-meter intervals along a single east-west trending line located approximately 5 meters north of the northern edge of the creek (Wessen et al. 2008:29). The four pieces of chipped stone were recovered from a section of the test line that was approximately 40 meters long. Of the five probes in the section, four contained a flake or flake fragment. None of the four probes contained more than one artifact. Five additional shovel test probes were excavated in three lines extending northward away from the creek, but no artifacts were recovered. Each probe measured approximately 30 to 38 cm in diameter.

The soil profile in the vicinity of the chipped stone isolate is described as having three strata (Wessen et al. 2008:30). The upper stratum is a very dark brown (10YR 2/2) gravelly sandy loam ranging in thickness from 8 to 25 cm. Next is a dark yellowish brown (10YR 3/4) gravelly sandy loam with a thickness of 40 to 50 cm, followed by a dark yellowish brown gravelly sand with cobbles. Small charcoal fragments were recovered from the two sandy loam horizons. In addition to one piece of debitage, the upper horizon contained a small quantity of concrete rubble, one square nail, and a mammal bone fragment, which suggested the stratum had been previously disturbed.

Isolate 45PI773 is located near site 45PI455, the 9th U.S. Cavalry Bivouac site, along the north side of the upper edge of Sequalitchew Creek. It is unknown if the four pieces of debitage recovered at 45PI773 are related to the prehistoric chipped stone artifacts (2 knives and 5 flakes) recovered during the 1989 test excavations at 45PI455 (Moura 1991a, 1991b; Wessen et al. 2008:30). Since little information on prehistoric occupation of this area can be provided by the few pieces of debitage recovered from the discontinuous subsurface probes, isolate 45PI773 was recommended ineligible for NRHP listing (Wessen et al. 2008:32).

Nisqually-Sequalitchew Historic District (proposed)

Proposed by the Point Nisqually Defense Fund (2003), this historic district would cover approximately 360 acres along both sides of Sequalitchew Creek. Thirteen archaeological sites are identified in the NRHP nomination form as contributing elements. These include 45PI66 and 45PI455 within Lot Y, as well as 45PI401 near Lot Y, in the northern extent of the proposed district. The district has not yet been approved. The nomination assumes undisturbed deposits remain at the sites in sufficient quantity and diversity to address research questions related to the history of the district. It is unclear if intact remains

exist at the sites and if so, whether the deposits would contain the data required to address the research questions.

45PI401 HBC/PSAC Dwelling Site

Located approximately 0.1 mile east of Lot Y, site 45PI401 was identified in 1988 on the north bank of Sequalitchew Creek during survey of the right-of-way for then-planned Center Drive (Welch 1989a:4.28). The site had been previously disturbed by DuPont Company development, including the Old Town complex and railroad, and cattle grazing. Data recovery investigations at the site ensued and 5,000 historic and 100 prehistoric artifacts, foundation remains, a shell concentration, and fire pits were identified (Stilson 1990, 1991; Daugherty 1993b). The lithic assemblage includes 10 projectile points, 6 utilized flakes, 1 scraper, 1 ground stone adze blade, and 82 modified or non-utilized flakes (Stilson 1990:47). The investigation covered 450 square feet and included shovel test probes, backhoe peels and trenches, 1x2 meter units, and 1x1 meter units. There was a rapid decrease in the frequency of artifacts as the distance of the shovel test probes, which extended 30 meters to the west, increased away from the site.

Site 45PI401 is the location of former HBC/PSAC dwellings associated with 1843 Fort Nisqually (45PI56). The site is located just outside the west palisade wall of the fort. The two dwellings date from the 1840s to 1850s, and may have been that of a dairyman and of a Nisqually tribal member who was in charge of the dairy after ca. 1850 (Stilson 1990:121). In Stilson's view (1990:119), the large number of lithic artifacts is associated with the Nisqually tribesman employed by PSAC. It is also feasible, however, that the material represents Native American occupation of the area prior to nonindigenous settlement. The site is considered eligible for NRHP inclusion and contributes to the proposed Nisqually-Sequalitchew Historic District. It was destroyed during construction of a bridge over Sequalitchew Creek.

45PI405 HBC/PSAC Dwelling Site

Located approximately 0.1 mile east of Lot Y, site 45PI405 was identified in 1988 on the south bank of Sequalitchew Creek during survey of the right-of-way for Center Drive (Welch 1989a:4.28). The site was also located at the junction of two DuPont Company access roads, and had been previously disturbed by DuPont Company development, including the Old Town complex and railroad, and cattle grazing. Similar to site 45PI401, this site also contains HBC/PSAC structural remains associated with 1843 Fort Nisqually as well as over 53,000 artifacts, including Native American lithics, which were recovered during data recovery investigations (Stilson 1991; Daugherty 1993c). The area investigated totaled 2,756 square feet. The lithic assemblage includes 52 tools/tool fragments and 89 pieces of debitage. Similar to the chipped stone found at 45PI401, the lithics may have been associated with the historic period or perhaps earlier.

Site 45PI405 is located just outside the west palisade wall of 1843 Fort Nisqually (45PI56). It is considered eligible for NRHP inclusion and contributes to the proposed Nisqually-Sequalitchew Historic District. Situated within and straddling Center Drive, the majority of the site was destroyed during construction of the roadway.

TRIBAL CONSULTATION

The inventory for the Permit involved correspondence with cultural representatives or Tribal Historic Preservation Officers (THPOs) for the Nisqually, Puyallup and Squaxin Tribes (see Appendix B). A phone call was received from Joe Kalama of the Nisqually Tribe expressing their desire to monitor the subsurface investigations. We contacted the Tribe again as the date for the fieldwork approached, and Kareem Gannie served as the project Native American monitor for survey and subsurface testing.

RESEARCH DESIGN

ARCHAEOLOGICAL EXPECTATIONS

Based on the literature review and history of this region, the project area has a high sensitivity for the presence of prehistoric and historic cultural resources. Similarly, the DAHP predictive model shows the area as "Very High Risk." The project area is within the traditional territory of the Nisqually Tribe along Sequalitchew Creek and relatively near the village at the mouth of the creek. Chipped stone tools have been found within Lot Y (45PI773) and in close proximity to the project (45PI401, 45PI405, 45PI576), and Native American burials within a 0.5-mile radius of Lot Y (Tables 2 and 3). The project is also within an area that was settled in the early 1880s during the HBC/PSAC era, an area used in 1904 by the 9th U.S. Cavalry bivouac and war games, the Old Town period of the DuPont Powder Works and its railroad network, and the early years of today's city of DuPont. A variety of historic period artifacts, features or deposits have been previously identified within Lot Y (45PI63, 45PI64, 45PI66, 45PI455) and in close proximity to the project (e.g., 45PI401, 45PI405), and historic period burials found within the 0.5-mile radius (Tables 2 and 3).

The project area has been extensively disturbed throughout the historic period, beginning by construction of the Methodist Episcopal Mission (45PI66) during the HBC/PSAC era and related removal of old growth trees, agricultural practices and cattle grazing, and by construction of the DuPont plant facilities and railroad network (45PI63, 45PI64). Extensive land disturbance during DuPont's Old Town period in the early 1900s resulted from logging, land leveling, the frequent construction and demolition of buildings, road and railway network construction, annual clearing and burning of underbrush, and relatively frequent explosions. Site 45PI64 was the location of a former black powder manufacture and storage building, and the site was also used as a dump where hazardous and non-hazardous waste from the DuPont Powder Works plants was discarded and burned. In addition, many of the production buildings were burned prior to release of the property to Weyerhaeuser after the DuPont Powder Works closed in 1976.

More recently, contaminated soil remediation activities resulted in extensive damage to the landscape within the project area and included complete removal of two of the archaeological sites (45PI63 and 45PI64) and partial removal of a third site (45PI455). Methods used during the remediation program included clearing and grubbing of vegetation subsequent to locating and flagging each hot spot (Daugherty and Condon 2000:7). The excavations generally achieved a depth of 46 cmbs (1.5 feet), and each initial excavation area around a hot spot measured at least 50x50 feet, since the area around removal of a designated hot spot was expanded by 25 feet in each cardinal direction. Figure 2 illustrates the extent of hot spot removal within Lot Y.

Based on existing archaeological data for this area, the types of archaeological materials that might be present in the general vicinity could potentially include the remains of artifacts (e.g., flaked stone tools, tool-making debris, ground stone tools, fire-affected rock), soil discoloration or shell that might indicate the presence of a cultural midden, fire pits, soil depressions, and features indicative of the former presence of structures or buildings (e.g., postholes, foundations) or historic debris (e.g., horse paraphernalia, railroad ties, concrete blocks, metal, glass, ceramics). Chipped stone tools, if present, may be related to either the prehistoric or ethnohistoric periods. Historic-period cultural resources, if present, would most likely be related to settlement in the early 1800s during the HBC/PSAC era, the 9th U.S. Cavalry bivouac and war games of 1904, the early years of the DuPont Powder Works (Old Town period), including construction of the narrow-gauge railroad, and the early years of today's city of DuPont.

Considering the gravelly nature of the Spanaway soils and the history of disturbance, it is expected that cultural material, if present, would be discovered above a depth of 25 to 30 cmbs (0.8-1 foot). As discussed above, sterile gravels have been encountered at shallow depths (25-30 cmbs) at archaeological sites in this vicinity, including 45PI66 and 45PI455 within the project area.

OBJECTIVES

As presented in the Permit, the goals of this investigation are to determine if any intact subsurface archaeological deposits from the prehistoric, ethnohistoric, or historic periods remain within the project area, to document them, to add important information to the sites determined eligible (45PI66 Methodist Episcopal Mission site) or considered potentially eligible (45PI455 9th U.S. Cavalry Bivouac site) for NRHP listing, and to assess the potential eligibility for listing on the NRHP of any newly discovered sites. More specifically, based on our knowledge of the prehistory, ethnography, and history of the project vicinity and the results of the prior local archaeological investigations, the following research questions guided the investigation:

1. Is there evidence for the exact location of the 1840–1842 Methodist Episcopal Mission building? Although extensive investigations have taken place within site 45PI66 and chimney stones were recovered, the opinion that the precise location of the Mission was identified is considered equivocal (compare Moura 1991a:8; Daugherty and Condon 2001:48). This site has been determined eligible for NRHP listing under Criterion A, and such evidence (i.e., postholes) would contribute additional important information about the location of the Mission building.

2. Is there additional evidence preserved of the 9th U.S. Cavalry 1904 encampment? Investigation extending outward from the backhoe peels completed in 1989 (Moura 1991a, 1991b) and the soil remediation program in 2000 (Daugherty and Condon 2000, 2001) within site 45PI455 may uncover further evidence of this brief occupation by the Buffalo Soldiers, such as privy holes or trash pits. Such evidence would contribute important information to the potential eligibility of this site for NRHP listing.

3. Is there evidence of an intact continuous chipped stone scatter along the northern side of Sequalitchew Creek that indicates Native Americans repeatedly occupied the area prior to Euro-American settlement during the historic period, and does the evidence indicate a firm link between previously recorded resources? Such evidence may connect the four pieces of debitage recorded as isolate 45PI773 and recovered from a series of discontinuous subsurface probes (Wessen et al. 2008) to the seven chipped stone artifacts recovered during the 1989 test excavations at site 45PI455, the 9th U.S. Cavalry Bivouac site (Moura 1991a, 1991b).

4. Is there additional evidence for HBC-PSAC activities outside of and not related to previously recorded site 45PI66? If undisturbed deposits or features from this mid-1800s period exist, the newly discovered sites may be eligible for listing on the NRHP, depending on the nature of the discovery (e.g., post holes, privy holes, wells, trash pits, burials, etc.).

5. Is there additional evidence for Old Town period activities outside of and not related to previously recorded site 45PI63 (Railroad Dump)? If undisturbed deposits or features from this early 1900s period exist, the newly discovered sites may be eligible for listing on the NRHP, depending on the nature of the discovery (e.g., trash pits, privy holes, wells, burials, etc.).

6. Is there additional evidence for DuPont period activities outside of and not related to previously recorded site 45PI64 (Burning Ground Dump)? If undisturbed deposits or features dating to this period from the 1920s to 1945 exist, the newly discovered sites may be eligible for listing on the NRHP, depending on the nature of the discovery (e.g., burials, trash pits, wells, privy holes, etc.).

FIELD METHODS AND PERSONNEL

All work by PCI for this investigation was conducted by professional archaeologists as defined under RCW 27.53.030(8) and who meet the Secretary of the Interior's Standards (National Park Service [NPS], 1983). PCI archaeologists Cindy Arrington, M.S., and Peter Morris completed the fieldwork, and Dr. Nancy Sikes served as the cultural resources Principal Investigator for the project. Kareem Gannie of the Nisqually Tribe served as the project Native American monitor for survey and subsurface testing.

Field methods approved for this project included intensive-level pedestrian survey followed by subsurface testing, and then monitoring of geotechnical subsurface exploration in the project area. These three phases of fieldwork were conducted by PCI archaeologists on the dates in February and March 2011 shown in Table 4. The methods employed for each field phase are presented separately below.

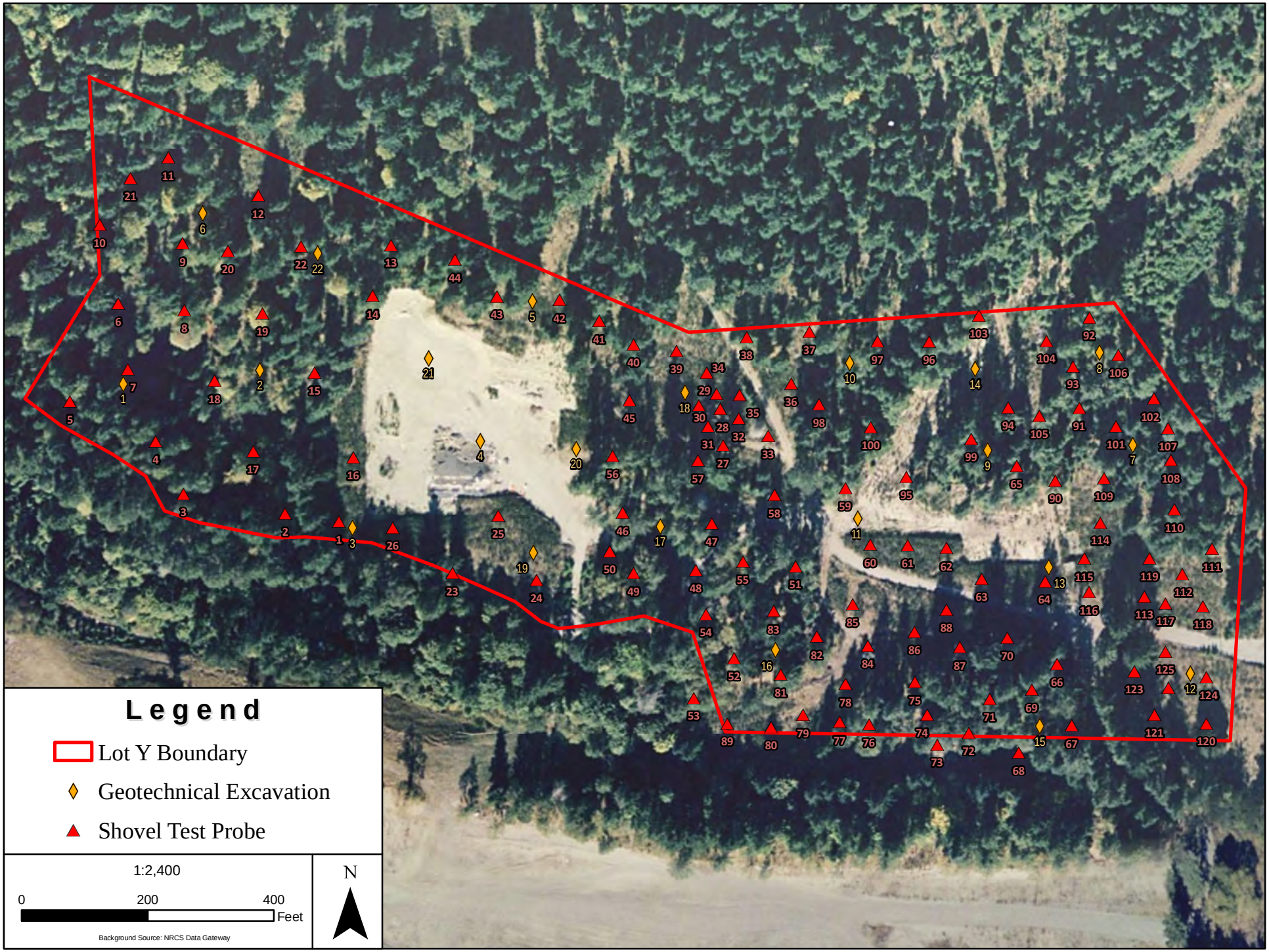
Table 4. Project Field Phase Dates and Personnel

Field Phase	Archaeologist (s)	Date of Fieldwork
Survey	Cindy Arrington and Peter Morris	February 17–18, 2011
Subsurface testing	Cindy Arrington	February 21-28 and March 1-2 2011
Monitoring of geotechnical subsurface exploration	Cindy Arrington	March 3-4, 2011

The pedestrian survey was conducted prior to any subsurface excavations to identify any previously unrecorded archaeological material from the prehistoric, ethnohistoric or historic periods that could potentially be present on the surface of the project area. The intensive-level pedestrian survey encompassed the entire 25.3-acre project area. Transect spacing within the project area was no greater than 15 meters apart and was accomplished on an east-to-west bearing. The 25.3-acres surveyed by PCI archaeologists comprise the maximum physical footprint of potential ground-disturbing activities associated with the proposed construction (Figure 1).

Following the pedestrian survey, a series of 125 shovel test probes (STPs) and 22 geotechnical excavations (GTEs) were excavated within the project area at random intervals as shown on Figure 3. At the request of the City of DuPont and DAHP, no STPs were placed in existing trails, pedestrian paths, or gravel roadways. Additionally, all STPs were backfilled and compacted daily. The STPs and GTEs were accomplished by mechanical excavation using a backhoe with a 2-foot bucket attachment and smooth plate. Dan Andreas of Miles Resources operated the mechanical equipment. PCI archaeologists remained at a safe distance from all mechanical equipment, while continuing to examine the sides of the trenches for cultural resources. All field personnel were aware of prior soil contamination within Lot Y (mainly lead and arsenic) and related remediation completed in 1999 and 2000, and observed standard safety protocols.

Each of the 125 STPs measured 3 feet in length and 2.5 feet in width. STP levels were dug in 7-cm (3-inch) increments or until sterile gravels were encountered. Soils taken from the STPs were screened through 1/8-inch hardware cloth. No STPs were placed in three hot spots (HS-3, HS-4 and HS-6, which include the former locations of 45PI63A, 45PI63B, and 45PI64) where the prior remediation efforts 11 years ago removed contaminated soils and where sterile gravel is now exposed throughout these portions of the project area, as clearly visible on the aerial photograph (compare Figures 2 and 3). Sterile gravel was encountered in 123 of 125 STPs between 35 and 130 cmbs (1.1-4.3 feet); mixed stratigraphy or fill was present in two STPs. Records for the individual STPs, detailing levels, soil texture, color, and comments, are located in Appendix C.



Quad Name: Nisqually PR 1981
T19N, R 1E, Section 26
DuPont Lot Y: Subsurface Testing Map

PARUS CONSULTING, INC.

Figure 3

Each of the 22 GTEs measured 3 feet wide by 5 feet long. GTE upper levels were dug in 3-inch (7-centimeter) increments or until sterile gravels were encountered, while lower levels, after encountering sterile gravels, were dug in1-foot increments. Four of the GTEs were excavated within the hot spot removal areas (Figures 2 and 3). Soils taken from the GTEs at 4 feet, 6 feet, and 10 feet were screened through 1/8-inch hardware cloth. Twenty GTEs were excavated to 305 cmbs (10 feet); one GTE with mixed stratigraphy was terminated at 250 cmbs (8.2 feet); one GTE filled with water at 244 cmbs (8 feet). Records for the individual GTEs, detailing levels, soil texture, color, and comments, are located in Appendix C.

All undeveloped ground surface areas within the current project limits were examined for artifacts (e.g., flaked stone tools, tool-making debris, stone milling tools, fire-affected rock), soil discoloration that might indicate the presence of a cultural midden, fire pits, soil depressions, and features indicative of the former presence of structures or buildings (e.g., postholes, foundations), or historic debris (e.g., metal, glass, ceramics). Ground disturbances, including a graveled dirt road and dirt two-track, were visually inspected. Climatic conditions varied from sunshine during the first three days of fieldwork to inclement weather (rain, snow, sleet, or hail) during part or all of each succeeding day.

Photographs of the current project area, ground surface visibility, STPs, GTEs, and items of interest were taken with a digital camera. Soil color was recorded using a Munsell© Soil Color Chart. The surveyed acreage and location of the STPs and GTEs were recorded with a handheld Trimble® GeoXT global positioning system (GPS) unit. Field notes and photographs are on file at PCI.

Except for two brick fragments, one flat iron bar and one can, no portable artifacts were identified; no artifacts were collected. For all archaeological materials identified during the fieldwork, PCI archaeologists completed the appropriate Washington Archaeological Site Inventory and Isolate forms.

FIELD RESULTS

GENERAL DESCRIPTION AND SUMMARY

The northern, eastern and western sides of the project area are immediately bordered by dense conifer forest (Photograph 4). Elevation within Lot Y increases from 64 meters above mean sea level (msl) by approximately 1 to 3 meters from east to west, and from 61 to 68 meters above msl from south to north. Sequalitchew Creek is located approximately 50 feet outside the entire Lot Y southern boundary at the bottom of a steep embankment. At the time of the pedestrian survey, the creek had a generous water flow.

Photograph 4. Forest to north, east, and west of Lot Y (view to southwest)

The project area contains four cleared hot spots (HS) where the contaminated topsoil was removed during remediation efforts in 1999 and 2000 (Figure 2). HS-6 is a large semi-square clearing that lacks vegetation, and is currently used as a gravel pit. As shown on the figure, a narrow linear extension of HS-6 extends eastward to meet the western extent of HS-3 south of the recorded boundaries of site 45PI66. Vegetation is re-establishing within the HS-2, HS-3, and HS-4 remediation clearings, and includes mostly small conifers, scotch broom and grasses.

A paved walking trail maintained by the City of DuPont and situated outside the southern border of Lot Y parallels the northern side of Sequalitchew Creek. As shown on Figure 2, a dirt road transects a portion of the project area, running east to west, starting at a chain-link fence on the eastern boundary and ending at the eastern edge of HS-6. The road is approximately 1,067 feet long and has a thin gravel coating. An approximately 460-foot long area devoid of vegetation, the previous location of a narrow-gauge railroad track, leads northeast from HS-3 to HS-4. All railroad tracks were removed from the project area between 1995 and 2000 (personal communication, Fred Foreman).

A non-functional segment of a narrow-gauge railroad track bisects the eastern edge of the project area. There is also a concrete loading platform in the eastern portion of the project area. The platform is located approximately where the former sets of narrow gauge and standard gauge railroad tracks crossed each other as shown on the March 15, 1955 map of the DuPont Works drawn by E. Davies. To the south and immediately outside of the current project area is a set of concrete bridge abutments near Sequalitchew Creek. These are the remnants of a narrow-gauge railroad bridge shown on the 1955 map. The track segment, concrete platform, and set of bridge abutments were recorded as archaeological sites (see below).

As detailed below, except for two brick fragments located on the surface and at depth within the boundaries of 45PI66 (Methodist Episcopal Mission site), no evidence was found during this investigation within Lot Y of the previously recorded sites and isolate covered by the excavation permit.

Vegetation within the project area perimeter consists of open, second growth conifer forest dominated by Douglas fir, sword fern, and scotch broom, and includes red alder, elderberry, and grasses. Visibility on the ground in the majority of the project area is very poor, near zero percent, due to a dense coverage of grass, moss, and forest duff (Photograph 5). In the open ground areas in HS-6 and HS-3, visibility is good to excellent, ranging between 30 and 100 percent (Photograph 6).

Photograph 5. Visibility at 0% (view to northeast)

Photograph 6. Visibility at 30-100% (view to northeast)

SUBSURFACE TESTING RESULTS

The subsurface stratigraphy was consistent within 123 of the 125 STPs and all 22 GTEs excavated within the project area (Figure 3). The soil throughout the project area is consistent with the description for the Spanaway series developed on glacial outwash sediments (Soil Survey Staff 2009). There are three soil horizons, though horizon 2 is not present in all STPs or GTEs. The depth of the horizons varies across the Lot Y landscape in relation to the topography and prior human disturbance. Horizon 1 is a moist, very dark brown (10 YR 2/2) gravelly sandy loam with weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots with a very high organic matter content. Horizon 2 is a moist very fine crumb dark gray brown (10 YR 3/2) gravelly sandy loam with little distinction in texture from horizon 1. Horizon 3 is moist and fluctuates between a dark gray brown (2 YR 4/2) and an olive brown (2YR 4/4) gravelly sand with no soil matrix. The single grained, loose sand is the prominent content with some rounded to sub-rounded cobbles; it is also very compact.

Only two of the subsurface units (STPs 28 and 115) contained cultural material. A brick fragment, measuring 3x4x2 inches, was located at 20 cmbs (8 inches) in STP 28 within site 45PI66 (Methodist Episcopal Mission). The brick was not handmade and no maker's marks were located on the fragment. Additionally, a smaller brick fragment was located at ground level within inches of STP 35 (also within 45PI66). STP 115 is located 18.5 feet due east of a concrete platform and the soil is entirely mixed down to a level of 200 cmbs (6.6 feet). A flat iron bar with four bolts protruding was located at 160 cmbs (5.2 feet). The iron bar measured 24 inches long by 3 inches wide and 1/8th inch thick, and has four 3.5-inch metal bolts spaced roughly 7 to 8 inches apart (Photograph 7). The iron bar appears to be associated with the concrete platform, given its close proximity and the paint on the bolt heads matches the metal on the platform.

Photograph 7. Flat iron bar in STP 115 (plan view)

All but two of the 125 STPs (STP 89 and 115) were excavated until sterile gravel was encountered. Although the presence of the Spanaway series soil horizons was consistent, the depth of sterile gravel varied from 35 cmbs to 130 cmbs (1.1-4.3 feet) across the project area. STP 115 had mixed stratigraphy and was excavated to a depth of 200 cmbs (6.6 feet). The soil in STP 89 is a moist, brown (7.5 YR 4/4) silty loam until the typical underlying horizon appears at 110 cmbs (3.6 feet) as a moist, dark green brown (2.5 YR 4/4) gravelly sand. The typical upper horizon of gravelly sandy loam appears to have been removed near STP 89 and replaced with imported soil. The STP was placed 66 feet northeast of the set of bridge abutments. It seems likely that more stable soil was imported for the approach to the narrow-gauge bridge that once crossed Sequalitchew Creek.

Six of the STPs located in the eastern portion of the project (STPs 113, 116-119) near the gravel road each display a gray upper horizon not noted in any other portion of the project area (Photograph 8). The moist, dark gray (2.5 YR 3/1) soil is similar in structure to the typical horizon 1, but is noticeably different in color and is relatively thin (0-25 cm [0-9.8 inches]), and is likely related to prior disturbance.

STPs 120 through 125, located in the southeastern portion of the project area, all show evidence of a grass fire. Small flecks of charcoal are noted in the upper 5 cm of each unit. Of these six STPs, only STP 120—with a total depth of 95 cmbs (3.1 feet) and nearest the creek—contained horizon 2. The profiles in STPs 121 through 125 are restricted to horizon 1 (0-60 cmbs [0-23.6 inches]) and horizon 3 (60-80 cmbs [23.6-31.5 inches]).

With the exception of the brick fragment in STP 28 and the iron bar in STP 115, no cultural material was located in the series of 125 STPs excavated within the project area.

Photograph 8. Upper gray horizon in eastern STPs near gravel road (view to west)

GEOTECHNICAL SUBSURFACE EXPLORATION RESULTS

Of the 22 GTEs placed in the project area (Figure 3), all but two (GTEs 9 and 14) were taken to a depth of 305 cmbs (10 feet). The soils throughout the GTEs are relatively consistent with the Spanaway series (Photograph 9), although only five (GTEs 1, 3, 5, 12, 13, and 15) contain horizon 2.

In the eastern sector of the project area, GTE 9 has mixed stratigraphy and was excavated to a depth of 250 cmbs (8.2 feet). The upper horizon is a thin layer of sand (0-20 cmbs [0-8 inches]) followed by a mix of horizon 1 very dark brown (10 YR 2/2) gravelly sandy loam and sand with very few cobbles. It appears to be imported fill material. This unit is in close proximity to two of the hot spots (HS-3 and HS-4) cleared for soil contamination (compare Figures 2 and 3). In the northeastern sector, GTE 14 was terminated at 244 cmbs (8 feet) when water entered the unit and began to fill rapidly.

No cultural material was located in any of the 22 GTEs excavated within Lot Y.

Photograph 9. Sediments within GTE 16 (plan view)

PREVIOUSLY RECORDED RESOURCES WITHIN PROJECT AREA

The only evidence found during this investigation within Lot Y of the two previously recorded historic archaeological sites (45PI66 and 45PI455) and one prehistoric isolate (45PI773) was the two brick fragments located within the boundaries of 45PI66, the Methodist Episcopal Mission site. In addition, there was no evidence of the two archaeological sites (45PI63 and 45PI64) formerly located within Lot Y that were completely removed during hazardous materials remediation in 2000.

45PI66 Methodist Episcopal Mission Site

During this field investigation, eight STPs (STPs 28-35) were placed within the previously identified boundary of 45PI66. Two fragmented red brick pieces were located: one fragmented piece in STP 28 at 20 cmbs (8 inches) (Photograph 10) and one at ground level within inches of STP 35. The larger of the two brick fragments (3x4x2 inches in STP 28) was not handmade and had no maker's marks. No other cultural artifacts were identified within the site boundary.

Photograph 10. Brick fragment in STP 28 (plan view)

The soil within the STPs placed within the site boundaries is a shallow (0-25 cm [0-9.8 inch]) moist, very dark brown (10 YR 2/2) gravelly sandy loam with a weak fine granular structure; soft, very friable, nonsticky and nonplastic; with many fine roots and a very high organic matter content. Below the single soil horizon is a moist, dark gray brown (2.5 YR R 4/2) gravelly sand with no soil matrix. Within the single-grained, loose sand are some medium to large rounded to sub-rounded cobbles. This profile description is consistent with that described during the archaeological excavations conducted in 1989 within 45PI66 (Welch 1989a; Moura 1991a). Those excavations were stopped when sterile gravels were encountered at 25 cmbs (0.8 feet).

No evidence was discovered during this investigation of the exact location of the 1840–1842 Methodist Episcopal Mission building or of any undisturbed archaeological deposits or features related to the mission, the HBC/PSAC era, or any other archaeological period. The work further substantiates the opinion that site 45PI66 is not eligible under Criterion D (data potential). The Methodist Episcopal Mission site has, however, been determined eligible for NRHP listing under Criterion A for its association with significant events.

45PI455 9th U.S. Cavalry Bivouac Site

There was no surface evidence of site 45PI455 during this investigation and no cultural material or deposits within a series of 12 STPs (STPs 72-82 and 84) placed within or adjacent to the recorded site boundaries. The soil horizons within the STPs are consistent with the Spanaway series, with the lower gravelly sand horizon encountered between 35 and 70 cmbs (1.1-2.3 feet). During test excavations in 1989 when nearly 1,000 artifacts and animal bone fragments were collected, sterile gravels were encountered within 30 cmbs (1 foot) (Moura 1991a:9, 1991b:1).

No additional evidence of the 9th U.S. Cavalry 1904 encampment or of any undisturbed archaeological deposits or features was discovered during this investigation. Since 1998 when State Archaeologist Robert Whitlam indicated this site is potentially eligible for NRHP listing and recommended further work to define the boundaries of the Native American and Buffalo Soldier occupations, no further evidence of site 45PI455 was uncovered during the remediation program a decade ago (Daugherty and Condon 2000, 2001) or during the current endeavor. Site 45PI455 is thus not considered eligible for NRHP listing under Criterion D (data potential). The 9th U.S. Cavalry Bivouac site is, however, considered potentially eligible for NRHP inclusion as part of the proposed Nisqually-Sequalitchew Historic District.

45PI773 Prehistoric Chipped Stone Isolate

No cultural material was identified on the surface of 45PI773 or within three STPs (STPs 72, 77, 80) placed during this field investigation within or adjacent to the locations of the shovel test probes excavated in 2005 (Wessen et al. 2005, 2008). The soil horizons within the three STPs are consistent with the Spanaway series, with the lower gravelly sand horizon encountered between 22 and 70 cmbs (0.7-2.3 feet). The soil profile in the vicinity of where the four pieces of debitage were encountered in the series of discontinuous subsurface probes was described by Wessen et al. as having three strata (2008:30) with the lower gravelly sand horizon with cobbles at 50 cmbs (1.6 feet).

No evidence was discovered during this investigation of any undisturbed archaeological deposits or features, including no sign of an intact continuous chipped stone scatter along the northern side of Sequalitchew Creek that might have linked the four pieces of debitage recorded as isolate 45PI773 to the seven chipped stone artifacts recovered during the 1989 test excavations at nearby 45PI455 (9th U.S. Cavalry Bivouac site). PCI agrees with the prior recommendation that isolate 45PI773 is ineligible for NRHP listing.

NEWLY IDENTIFIED RESOURCES WITHIN PROJECT AREA

Four historic period resources were newly identified during the pedestrian survey: three archaeological sites and one isolate (Figure 2). The three sites include a segment of a previously identified narrow-gauge railroad track and grade (45PI01224), a railroad concrete loading platform (45PI01225), and a set of railroad bridge abutments (45PI01226). The isolate (45PI00064) is one galvanized kerosene can. A brief description of the newly identified historic period resources is presented below. Detailed information can be found in the State of Washington Archaeological Site Inventory and Isolate Forms, attached as Appendix D.

No prehistoric or ethnohistoric period resources were newly identified during pedestrian survey of the surface or within the subsurface excavations.

45PI01224 Narrow Gauge Railroad Track

This site was originally recorded by Arrington during survey in 2010 of the 12.8-acre property (known as Lot X) adjacent to the eastern edge of Lot Y (Sikes and Arrington 2010). It is a non-functional segment of a narrow-gauge railroad track situated on an earthen berm; it extends into both Lots X and Y beneath a chain-link fence marking the property boundaries. The track and berm bisect the eastern edge of the Lot Y project area (Figure 2; Photograph 11). The earthen berm is approximately 20 inches high and 20 feet wide. The narrow gauge track extends 207 feet west from the eastern project area boundary. The site is covered with forest duff, lichen, and scotch broom. The narrow-gauge track and berm continue east into Lot X beneath the chain-link fence for approximately 98 feet.

The short abandoned track and berm segment are attributed to construction by the DuPont Powder Works; the narrow-gauge railroad was used to transport their products during the Old Town period (1906-1920s). This site is recommended ineligible for listing on the NRHP or WHR. The segment is in poor condition with no evidence of associated artifacts or cultural deposits and has no potential to yield additional information. The eastern end of the spur was truncated presumably after DuPont Powder Works closed in 1976.

Photograph 11. 45PI01224 segment of narrow-gauge track (view to east)

45PI01225 Concrete Loading Platform

A concrete loading platform is located approximately where the standard-gauge and one of the narrow-gauge tracks previously crossed near the eastern edge of Lot Y. The platform is visible on satellite imagery, but was previously unrecorded. During the functional period of the platform, it likely was used

for loading or unloading materials onto DuPont Powder Works trains that would have moved east to west and north to south past the platform.

The platform is primarily concrete, with a steel railing as a perimeter of the upper platform surface. The platform is 192 inches square and 77 inches tall. The surface perimeter has a 3-inch concrete lip with occasional breaks to permit loading access. There is an arrangement of 2-inch by 6-inch wood boards bolted to the interior surface of the concrete lip, with a steel railing situated along the perimeter lip of the platform (Photograph 12). The railing is painted yellow and is 39.5 inches tall, with a lower bar and upper bar. The lower bar is 19.5 inches high, and the upper bar is 39 inches high. There are openings in the rail with steel chains stretched across on the south and east sides of the platform; one opening is 55 inches wide, and the other is 51 inches wide.

On the north side of the platform there is a 30-inch wide opening that appears to be a person-access stepping platform, with vertical handrails and a swinging safety bar (non-operational). On the east of the platform is a small debris pile consisting of heavy-gauge sheet metal, milled lumber, crushed pipe (1.5-inch diameter), and steel railing segment with chain. The platform is built with well sorted aggregate, form poured concrete. It does not appear on the very detailed 1955 map drawn by E. Davies. Locals recall the platform was not built until the early 1960s and then it was seldom used (personal communication, Fred Foreman). This site has no potential to yield additional information and is recommended ineligible for listing on the NRHP or WHR.

Photograph 12. Concrete loading platform (view to east)

45PI01226 Railroad Bridge Abutments

This site is comprised of the remnants of a narrow-gauge railroad bridge that traversed Sequalitchew Creek from north to south. This bridge crossing is shown on the 1955 map drawn by E. Davies. The remains include two concrete abutments that have a 165-inch horizontal separation (Photograph 13). Both abutments have a poured-form aggregate concrete construction, with a smooth finished top. The lower abutment is 150 inches long, 32 inches high from the ground, and 12 inches wide at the top. The upper abutment is 128 inches long, 51 inches high from the ground, with the base at 20 inches wide, and the top of the abutment 12.5 inches wide. The abutments are covered with moss and are surrounded by decomposing forest duff and vegetation, including ferns, conifers, deciduous trees, and grasses.

The set of abutments is immediately outside of the Lot Y project area, and 35 feet north of Sequalitchew Creek (Figure 2). There are two pieces of milled lumber located between the abutments; they are each 6 by 6 inches, but vary in length. One piece is 45 inches long, and the other is 60 inches long. The longer

piece is intact, and has a 5-inch by 8.5-inch metal cleat with spikes on one side (Photograph 14). An identical set of concrete abutments is visible on the south side of the creek outside the project area.

This bridge was the only narrow-gauge railroad bridge within the DuPont Powder Works to cross Sequalitchew Creek, and is shown on the 1955 map drawn by E. Davies. It was used for transport of material by train from the plant to the burning ground (later recorded as 45PI64) and then proceeding further north to the storage area (personal communication, Fred Foreman and Johanna Jones). The bridge was removed in the late 1990s. The remaining set of abutments has no potential to yield additional information and is recommended ineligible for listing on the NRHP or WHR.

Photograph 13. Bridge abutment (view to north)

Photograph 14. Wood debris showing cleat (plan view)

45PI00064 Parus Isolate #1 Kerosene Can

A galvanized kerosene can was located near the edge of the northwest corner of the area known locally as the "gravel pit" (HS-6 on Figure 2) and formerly the burning ground (45PI64). The sides of the can are dented and it exhibits some oxidation. It is missing the pour spout and wire handle, but is mostly intact (Photograph 15). The top is domed and ribbed, and the base diameter is 11 inches, with a height of 14 inches. The dimensions suggest the volume of this can was approximately 5 gallons. Considering the lengthy range of manufacture, the age of the can is undeterminable.

Photograph 15. Kerosene can (plan view)

PROJECT CONCLUSIONS, FINDINGS AND RECOMMENDATIONS

No evidence was found during this investigation within Lot Y of 45PI66 (Methodist Episcopal Mission site), 45PI455 (9th U.S. Cavalry Bivouac site) or 45PI773 (chipped stone isolate), except for two brick fragments located on the surface and at depth within the boundaries of 45PI66. Nor was there any surface or subsurface evidence of the two archaeological sites (45PI63 and 45PI64) formerly located within Lot Y that were completely removed a decade ago during hazardous materials remediation.

No historic properties will be affected by implementation of the Lot Y project. Although the Methodist Episcopal Mission site has been determined eligible for NRHP listing under Criterion A for its association with significant events and also contributes to the proposed Nisqually-Sequalitchew Historic District, site 45PI66 is not eligible under Criterion D (data potential). Similarly, although the location of the brief occupation by the 9th U.S. Cavalry Buffalo Soldiers is potentially eligible for NRHP inclusion as a contributing element of the proposed Nisqually-Sequalitchew Historic District under Criterion A, site 45PI455 is not considered eligible for NRHP listing under Criterion D. Isolate 45PI773 is considered ineligible for NRHP listing.

The two newly identified sites within Lot Y, 45PI1224 (railroad track segment) and 45PI01225 (concrete platform), and are recommended ineligible for listing on the NRHP or WHR. The kerosene can isolate (45PI00064) is considered ineligible for listing. The third newly identified site, 45PI01226 (bridge abutments; also recommended ineligible for listing on the NRHP or WHR), is located immediately outside the Lot Y project area.

Considering the results of the literature search, local ethnographic settlement and subsistence patterns, the prehistory and history of the vicinity, and DAHP's predictive model, the project area is considered highly sensitive for prehistoric, ethnohistoric, and historic-era cultural resources. On the other hand, Lot Y has been extensively disturbed beginning with historic period settlement in the early 1880s, then operation of the DuPont Powder Works in the early to mid-1900s (including use of part of Lot Y as a burning ground dump from the 1930s until 1945), followed by subsurface archaeological investigations and related artifact collection between 1989 and 2005 and by environmental remediation activities in 1999 and 2000. Based on the lack of cultural deposits in the gravelly sandy loam and gravelly sand subsurface sediments exposed in the series of 125 STPs and 22 GTEs excavated to depths between 35 and 305 cmbs (1.1-10

feet), the potential for discovery of buried archaeological materials, features or deposits by implementation of this project is considered low. Therefore, no further cultural resource action is warranted.

There is always the potential for the existence of buried archaeological materials within the project area, mostly likely restricted to shallow depths above the outwash gravels, and an Unanticipated Cultural Resources Discovery Plan has been prepared for the project and is attached to this report as Appendix E. Pursuant to the Discovery Plan, should cultural resources be encountered during construction or ground-disturbing activities connected with this project, work in the area must be halted and a professional archaeologist, who meets the definition under RCW 27.53.030(8), should be notified immediately to evaluate the resource(s) encountered. Should human skeletal remains be encountered, all activity in the area must halt, the remains protected from further disturbance, and the county coroner and local law enforcement notified immediately (RCW 27.44, 68.50, 68.60).

Resources within this area that might be encountered might include prehistoric and ethnohistoric materials such as flaked stone tools, tool-making debris, stone milling tools, fire-affected rock, basketry, culturally modified animal bone, fishing implements or soil darkened by cultural activities (midden). Historic materials might include remnants of railroad or roadway construction activities or other industry or commerce (e.g., railroad ties, concrete blocks, machinery parts), building remains, metal, glass, cans, ceramic artifacts, or other debris older than 50 years.

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Thompson, Gail
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United States Geological Survey (USGS)
1981 Nisqually, Washington. 7.5-minute topographic map.

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1989a *A Cultural Overview and Comprehensive Management Plan for the DuPont Property, Pierce County, Washington*. Report prepared by Western Heritage for Weyerhaeuser Real Estate Company. On file at Washington State Department of Archaeology and Historic Preservation, Olympia.

1989b 45PI401 State of Washington Archaeological Site Inventory Form. On file at Washington State Department of Archaeology and Historic Preservation, Olympia.

1989c 45PI405 State of Washington Archaeological Site Inventory Form. On file at Washington State Department of Archaeology and Historic Preservation, Olympia.

Wessen, Gary
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2003 *Exploring the Boundary and Possible Interpretation of 45PI485*. Prepared by Wessen & Associates for Weyerhaeuser Corporation. On file at Washington State Department of Archaeology and Historic Preservation, Olympia.

Wessen, Gary, Cathy Bialas, Derek Shaw, and Gail Thompson
2008 *Revised Cultural Resources Assessment for the Glacier Northwest North Sequalitchew Creek SEIS Project, City of DuPont, Pierce County, Washington*. Report prepared by Historical Research Associates, Inc. for Glacier Northwest, Inc. On file at Washington State Department of Archaeology and Historic Preservation, Olympia.

Wessen, Gary, Cathy Bialas, and Gail Thompson
2005 *Cultural Resources Assessment for the Glacier Northwest North Sequalitchew Creek SEIS Project, City of DuPont, Pierce County, Washington*. Report prepared by Historical Research Associates, Inc. for Huckell/Weinman Associates, Inc. On file at Washington State Department of Archaeology and Historic Preservation, Olympia.

APPENDIX A:
Archaeological Excavation Permit No. 2010-54

STATE OF WASHINGTON
DEPARTMENT OF ARCHAEOLOGY AND HISTORIC PRESERVATION
1063 S. Capitol Way, Suite 106 • Olympia, Washington 98501
Mailing address: PO Box 48343 • Olympia, Washington 98504-8343
(360) 586-3065 • Fax Number (360) 586-3067 • Website: www.dahp.wa.gov

February 7, 2011

Ms. Lia Estigoy
DuPont Industrial Partners, LLC
1201 Pacific Avenue, Suite 1501
Tacoma, WA 98402

Nancy E. Sikes and Cindy Arrington
GeoEngineers, Inc.
1101 S. Fawcett Avenue, Suite 200
Tacoma, WA 98402

Dear Ms. Estigoy, Ms. Sikes and Ms. Arrington:

I have reviewed the application you submitted for archaeological excavations at 45PI00066. It is my intention to grant the permit application for excavations at 45PI00066. Please take note of the Special Conditions on the permit.

If you feel aggrieved by this decision you may request an administrative hearing within twenty-one days after receipt of this notice. Your request should be sent to the address listed below.

Director
Department of Archaeology and Historic Preservation
PO Box 48343
Olympia, WA 98504-8343

Sincerely,

Stephenie Kramer
Assistant State Archaeologist
(360) 586-3083
Email: stephenie.kramer@dahp.wa.gov

Enclosure

STATE OF WASHINGTON

DEPARTMENT OF ARCHAEOLOGY & HISTORIC PRESERVATION

1063 S. Capitol Way, Suite 106 • Olympia, Washington 98501
Mailing address: PO Box 48343 • Olympia, Washington 98504-8343

ARCHAEOLOGICAL EXCAVATION PERMIT
NO: 2010-54

Archaeological sites:	45PI66, 45PI455 and 45PI773, Lot Y
Individual Responsible for carrying out the terms and conditions of the permit:	Lia Estigoy Property Owner
Individual responsible for field investigations:	Nancy Sikes & Cindy Arrington GeoEngineers, Inc.
Nature of work:	Sub-surface survey and geotechnical pits, archaeological testing
Repository in which collected records and data shall be deposited:	Nisqually Tribe & DuPont Historical Museum; cc DAHP on transfer
Date fieldwork to begin:	**Upon receipt; but notify DAHP and Tribes via email before starting**
Date fieldwork shall end:	April 31, 2011
Period of analysis:	Concurrent through May 31, 2011
Date final report due:	May 31, 2011 Per WAC 25-48-041, if the report is late, a Notice of Violation will be issued & a $5000 penalty assessed

Special Conditions:

- Follow protocols stated in permit application of 12/2/10 and email of 2/7/11
- Notify DAHP and Tribes if intact archaeological deposits are observed
- Switch to hand excavation for intact deposits
- Restore trails if units are needed in trail areas
- Be aware of City of DuPont's comments regarding arsenic
- Provide copy of report to DAHP & affected Tribes
- Report must meet DAHP's Survey and Inventory Standards
- Append catalog & BetaAnalytic sheets to report, reference permit number
- If human remains are encountered, stop work, secure the area, notify the county coroner, sheriff, DAHP, & affected Tribes per RCW 27.44.055

Issued this 7th day of February 2011.

Stephenie Kramer
Assistant State Archaeologist

APPENDIX B:
Correspondence with Local Tribes

Native American Tracking Sheet
DuPont Industrial Partners, LLC
DuPont, WA – Lot Y

GeoEngineers Project No. 16785-003-00

Contact Name	Date Letter Sent Via Email	Comments/Concerns Recommendation
Puyallup Tribe 3009 East Portland Avenue Tacoma, Washington 98404 Judy Wright, THPO Cultural Resources 253-573-7897 Judy.Wright@puyalluptribe.com	**11-8-2010**	No response
Nisqually Tribe 4820 She-Nah-num Drive SE Olympia, Washington 98513 360-456-5221 phone Thor Hoyte, Cultural Resources Hoyte.thor@nisqually-nsn.gov	**11-8-2010** **11-16-10** **12-2-10**	11-8-2010: Received a phone call from Joe Kalama in reply to the information letter sent out. The Tribe wishes to monitor subsurface disturbance. We spoke briefly regarding the proposed field schedule (February of 2011) and agreed that I will contact the Tribe in late January to review field schedule and set up a Native American monitor. I received an email from Mr. Hoyte informing me that he was no longer representing the Nisqually Tribe and that all inquires should be directed to Joe Kalama of the Tribe. I spoke with and emailed Mr. Kalama on 11-19-10 to let him know the scope and nature of the project and that our client was requesting a curation letter from the tribe for any prehistoric and/or ethnohistoric artifacts that may be identified during the field testing (a copy of this email is attached). Mr. Kalama assured me that the Tribe would accept the artifacts and that a letter stating such is currently being drafted. We have not heard from nor received the curation letter from Mr. Kalama. I have sent a second email requesting the curation letter.
Squaxin Tribe SE 70 Squaxin Lane Shelton, Washington 98584 Rhonda Foster, THPO Cultural Resources 360-432-3850 rfoster@squaxin.nsn.us	**11-8-2010**	No response

GeoEngineers
1101 S Fawcett, Suite 200
Tacoma, Washington 98402
253.383.4940

November 8, 2010

Puyallup Tribe
3009 East Portland Avenue
Tacoma, Washington 98404

Attention: Judy Wright, THPO Cultural Resources

Sent via email: Judy.Wright@puyalluptribe.com

Subject: Cultural Resources Assessment for the DuPont Industrial Partners, LLC, Lot Y DuPont Washington

Dear Ms. Wright:

I am writing to inform you of a cultural resources assessment that is planned for the above-referenced project. GeoEngineers is conducting this assessment at the request of the DuPont Industrial Partners, LLC. The project is located northwest of the town of DuPont near the intersection of Center Drive and Powerline Road in the City of DuPont, Washington (Township 19N, Range 01E, Section 26 on the Nisqually 7.5 quadrangle, Willamette Meridian). The project will consist of an intensive pedestrian survey and subsurface testing in the form of auger units for a total of approximately 26- acres (Figure 1).

Archaeologists have previously recorded and investigated four sites on Lot Y: 45PI63, the Railroad Dump #3 Site; 45PI66, the Methodist Episcopal Mission Site; 45PI455, the 9th Cavalry BivouacSite; and 45PI773, a small lithic scatter. Additionally, Site, 45PI64 The Burning Ground Dump Site, had been recorded in 1977 and additional work done in 2000. The entire site (approximately 3,000 square feet) was removed during a hot spot or contaminated soils treatment program for hazardous substances in 2001. In 1993, the SHPO determined the site ineligible for NRHP listing.

An Application for an Archaeological Excavation Permit is being completed pursuant to permit requirements found in the Washington Administrative Code [WAC] 25-48-060. There is no federal involvement in this project. The work for the proposed project will be conducted under prevailing Washington state laws, which serve to protect from known disturbance of archaeological sites and Native American graves on both public and private lands. These laws include Executive Order 05-05, Indian Graves and Records (Revised Code of Washington [RCW] 27.44), Archaeological Sites and Resources (RCW 27.53), Archaeological Excavation and Removal Permit (WAC 25-48), and Discovery of Human Remains (RCW 27.44).

GeoEngineers is in the process of reviewing available background information. Background research will include a site files search at the Washington State Department of Archaeology and Historic Preservation, review of previously recorded cultural resource sites, reports, and review pertinent published literature and ethnographies. Results of our investigation will be presented in a technical report.

We are aware that all information regarding cultural resources is within published sources. Should the Tribe have additional information concerning cultural resources, we would like to include it in our study. Please contact me should you wish to provide any comments or additional information. I appreciate your assistance in this matter and look forward to hearing from you. If I can answer any questions you may have, please do not hesitate to contact me at Carrington@geoengineers.com or at 916-765-9381.

Best Regards,

Cindy Arrington
Cultural Resource Specialist

Attachment:
Figure 1

GeoEngineers
1101 S Fawcett, Suite 200
Tacoma, Washington 98402
253.383.4940

November 8, 2010

Nisqually Tribe
4820 She-Nah-num Drive SE
Olympia, Washington 98513

Attention: Thor Hoyte, Cultural Resources

Sent via email: Hoyte.thor@nisqually-nsn.gov

Subject: Cultural Resources Assessment for the DuPont Industrial Partners, LLC, Lot Y DuPont Washington

Dear Mr. Hoyte:

I am writing to inform you of a cultural resources assessment that is planned for the above-referenced project. GeoEngineers is conducting this assessment at the request of the DuPont Industrial Partners, LLC. The project is located northwest of the town of DuPont near the intersection of Center Drive and Powerline Road in the City of DuPont, Washington (Township 19N, Range 01E, Section 26 on the Nisqually 7.5 quadrangle, Willamette Meridian). The project will consist of an intensive pedestrian survey and subsurface testing in the form of auger units for a total of approximately 26- acres (Figure 1).

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Best Regards,

Cindy Arrington
Cultural Resource Specialist

Attachment:
Figure 1

GeoEngineers
1101 S Fawcett, Suite 200
Tacoma, Washington 98402
253.383.4940

November 8, 2010

Squaxin Tribe
SE 70 Squaxin Lane
Shelton, Washington 98584

Attention: Rhonda Foster, THPO Cultural Resources

Sent via email: rfoster@squaxin.nsn.us

Subject: Cultural Resources Assessment for the DuPont Industrial Partners, LLC, Lot Y DuPont Washington

Dear Ms. Foster:

I am writing to inform you of a cultural resources assessment that is planned for the above-referenced project. GeoEngineers is conducting this assessment at the request of the DuPont Industrial Partners, LLC. The project is located northwest of the town of DuPont near the intersection of Center Drive and Powerline Road in the City of DuPont, Washington (Township 19N, Range 01E, Section 26 on the Nisqually 7.5 quadrangle, Willamette Meridian). The project will consist of an intensive pedestrian survey and subsurface testing in the form of auger units for a total of approximately 26- acres (Figure 1).

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Best Regards,

Cindy Arrington
Cultural Resource Specialist

Attachment:
Figure 1

Lot Y

T19N, R 1E, Section 26
USGS 7.5' Topographic Map Series, Nisqually (1981) Quad.

1:24,000

2,000 0 2,000

Feet

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: ESRI Data & Maps, Street Maps 2005

Transverse Mercator, Zone 10 N North, North American Datum 1983
North arrow oriented to grid north

Location of Lot Y

DuPont Industrial Partners, LLC
Dupont, Washington

GeoEngineers

Figure 1

Office: Tacoma Path: W:\Tacoma\Projects\16\16785003\GIS\1678500300_F1_LocationMap.mxd Map Revised: November 8, 2010 CRC

From: Cindy J. Arrington
To: kalama.joe@nisqually-nsn.gov
Subject: RE: Requested information
Date: Friday, November 19, 2010 7:55:00 AM

Good Morning Joe:

I have an upcoming project in DuPont and which requires a Washington Archaeological Excavation permit. It is my clients intention to donate to the Nisqually Tribe ("Tribe") and/or DuPont Historical Museum ("Museum") any archaeological materials collected during the subsurface archaeological excavations planned on their private land ("Lot Y") in the City of DuPont, Pierce County, Washington. The project comprises approximately 26 acres, the property is located west of Center Drive and north of Sequalitchew Creek. It is situated in Section 26 of Township 19 North Range 1 East, on the 1981 Nisqually 7.5-minute USGS topographic map (Willamette Meridian).

Permission for excavation and related removal of archaeological material from Lot Y is being requested in an Archaeological Excavation Permit filed with the Department of Archaeology and Historic Preservation (DAHP) pursuant to permit requirements found in the Washington Administrative Code 25-48-060. As part of that permit, I need to secure curation letters from those individuals we seek to donate the artifacts to, should any artifacts be located/identified. Please note that subsurface testing will not begin until February 2011.

It is our intention that archaeological materials associated with the prehistoric or ethnohistoric periods will be donated to the Tribe for curation, and that historic period archaeological materials will be donated to the Museum for curation. A catalog and copies of records, data, photographs, and other documents derived from the excavation process will accompany any collection donated to either the Tribe or Museum.

If you could please contact me at your earliest convenience so that we may discuss the project.

Cindy J. Arrington, M.S., RPA
Associate
Cultural Resource Specialist

GeoEngineers
t: 916.444.5825
f: 916.441.2532
c 916.765.9381
e: carrington@geoengineers.com

3301 C Street, Suite 200 A
Sacramento, California 95816
www.geoengineers.com

From: Thor Hoyte [mailto:hoyte.thor@nisqually-nsn.gov]
Sent: Wednesday, November 17, 2010 1:59 PM
To: Cindy J. Arrington
Cc: kalama.joe@nisqually-nsn.gov
Subject: Re: Requested information

Sorry. Please contact Joe Kalama, who is on this email.

On Nov 16, 2010, at 12:24 PM, "Cindy J. Arrington" <carrington@geoengineers.com>

wrote:

> Good Afternoon Mr. Hoyte: On November 5, I sent an email requesting your assistance with a project in DuPont, WA. I have not received a reply and have been unable to reach you by phone. If you could contact me at your earliest convenience.
>
> Best regards,

Cindy J. Arrington, M.S., RPA
Associate
Cultural Resource Specialist

GeoEngineers
t: 916.444.5825
f: 916.441.2532
c 916.765.9381
e: carrington@geoengineers.com

3301 C Street, Suite 200 A
Sacramento, California 95816
www.geoengineers.com

APPENDIX C:
Detailed Subsurface Excavation Records

Subsurface Testing Record

Project: DuPont Industrial Partners, LLC, Lot Y **Recorder: C. Arrington**

Unit #	Date	Level cmbs	Cultural Materials	Soil Type	Munsell	Comments
STP 1- 5	2/21/2011	0-17	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; very high in organic matter content, has mellow, sooty feel; gravelly sandy loam
		18-60	None	Moist/VFC/SL/DGB	10 YR 3/2	Little distinction between this layer and the previous one, expect for color.
		60-78	None	Moist/VFC/SL/DYB	10 YR 3/4	Small charcoal flecks, not in situ. Rounded to sub-rounded cobbles, increasing in density. Cobbles 60% of matrix
		78-85	None	Moist/VFC/SL/DYB	10 YR 4/4	Gravelly sand with no soil matrix. Rounded to sub-rounded cobbles, very compact. Some large cobbles measuring over 18cm in width.
STP 6-9	2/21/2011	0-20	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots and some large (1/4 inch) roots; very high in organic matter content, has mellow, sooty feel; gravelly sandy loam
		20-49	None	Moist/VFC/SL/DGB	10 YR 3/2	Little distinction between this layer and the previous one, expect for color. Medium to large cobbles start in this layer and become increasingly more compact.
		49-77		Moist/VFC/SL/DYB	10 YR 3/4	Small charcoal flecks, not in situ. Rounded to sub-rounded cobbles, increasing in density. Cobbles 60% of matrix
		77-90	None	Moist/GS/DYB	10 YR 4/4	Gravelly sand with no soil matrix. Rounded to sub-rounded cobbles, very compact.

KEY: FC = Fine crumb, VFC = Very fine crumb, SL = Sandy loam, B = Brown, DB = Dark brown, DGB = Dark gray brown
SPI = Small pebble inclusion, YB = Yellow brown, SC = Silty clay, GS = Gravelly Sand, DYB = Dark yellow brown

Subsurface Testing Record

Project: DuPont Industrial Partners, LLC, Lot Y **Recorder: C. Arrington**

Unit #	Date	Level cmbs	Cultural Materials	Soil Type	Munsell	Comments
STP 10 - 12	2/21/2011	0-18	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots and some large (1/4 inch) roots; very high in organic matter content, has mellow, sooty feel; gravelly sandy loam
		20-90	None	Moist/VFC/SL/DYB	10 YR 3/4	Little distinction between this layer and the previous one, expect for color. Medium to large cobbles start in this layer and become increasingly more compact.
		90-110	None	Moist/GS/DGB	2.5Y 4/2	Rounded to sub-rounded cobbles, very compact and increased density.
STP 13 - 16	2/21/2011	0-40	None	Moist/SL/VDB	10 YR 2/3	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; very high in organic matter content, has mellow, sooty feel; gravelly sandy loam
		40-60	None	Moist/SL/DGB	10 YR 3/2	Very high in organic matter content, has mellow, sooty feel; gravelly sandy loam with larger cobbles appearing around 45-49cmbs than decreasing by 60cmbs.
		60-85	None	Moist/GS/OB	2.5 Y 5/3	Gravelly sand with no soil matrix. More sand; single grained; loose, than cobbles. Cobbles are rounded to sub-rounded and low density.
STP 17 - 19	2/22/2011	0-70	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; very high in organic matter content, has mellow, sooty feel; gravelly sandy loam
		70-90	None	Moist/GS/DYB	10 YR 4/6	Gravelly sand with no soil matrix. Rounded to sub-rounded cobbles, very compact.

KEY: FC = Fine crumb, VFC = Very fine crumb, SL = Sandy loam, B = Brown, DB = Dark brown, DGB = Dark gray brown
SPI = Small pebble inclusion, YB = Yellow brown, GS = Gravelly Sand, OB = Olive brown, DYB = Dark yellow brown

Subsurface Testing Record

Project: DuPont Industrial Partners, LLC, Lot Y Recorder: C. Arrington

Unit #	Date	Level cmbs	Cultural Materials	Soil Type	Munsell	Comments
STP 20-22	2/22/2011	0-45	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; very high in organic matter content, has mellow, sooty feel; gravelly sandy loam
		45-80	None	Moist/GS/DYB	10 YR 4/6	Gravelly sand with no soil matrix. Rounded to sub-rounded cobbles, very compact.
STP 23-27	2/22/2011	0-60	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; very high in organic matter content, has mellow, sooty feel; gravelly sandy loam
		60-80	None	Moist/GS/DGB	2.5Y 4/2	Gravelly sand with no soil matrix. Rounded to sub-rounded cobbles, very compact.
***STP 27-36**	2/22/2011	0-25	Yes	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; very high in organic matter content, has mellow, sooty feel; gravelly sandy loam
		25-50	None	Moist/GS/DGB	2.5Y 4/2	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with few rounded to sub-rounded cobbles.
STP 37-44	2/23/2011	0-70	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; very high in organic matter content, has mellow, sooty feel; gravelly sandy loam
		70-90	None	Moist/GS/DGB	2.5Y 4/2	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles.
STP 45	2/23/2011	0-40	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; very high in organic matter content, has mellow, sooty feel; gravelly sandy loam
		40-50	None	Moist/GS/OB	2.5Y 4/4	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles.

KEY: FC = Fine crumb, VFC = Very fine crumb, SL = Sandy loam, B = Brown, DB = Dark brown, DGB = Dark gray brown
SPI = Small pebble inclusion, YB = Yellow brown, GS = Gravelly Sand, OB = Olive brown, DYB = Dark yellow brown

***Note:** STPs 28-35 were placed within the recorded location of Site 45PI66 (Methodist Episcopal Mission). One piece of fragmented red brick was located at 20cmbs in STP 28. A second red brick fragment was located at ground surface in STP 35.

Subsurface Testing Record

Project: DuPont Industrial Partners, LLC, Lot Y **Recorder: C. Arrington**

Unit #	Date	Level cmbs	Cultural Materials	Soil Type	Munsell	Comments
STP 46-51	2/25/2011	0-60	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; very high in organic matter content, has mellow, sooty feel, gravelly sandy loam
		60-70	None	Moist/GS/OB	2.5Y 4/4	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles.
STP 52-52	2/25/2011	0-70	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; very high in organic matter content, has mellow, sooty feel, gravelly sandy loam
		70-80	None	Moist/GS/OB	2.5Y 4/4	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles.
STP 54	2/25/2011	0-25	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; very high in organic matter content, has mellow, sooty feel, gravelly sandy loam
		25-35	None	Moist/GS/OB	2.5Y 4/4	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles.
STP 55-57	2/25/2011	0-40	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; very high in organic matter content, has mellow, sooty feel, gravelly sandy loam
		40-60	None	Moist/GS/OB	2.5Y 4/4	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles.
STP 58	2/25/2011	0-110	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; very high in organic matter content, has mellow, sooty feel, gravelly sandy loam
		110-120	None	Moist/GS/OB	2.5Y 4/4	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles.

KEY: FC = Fine crumb, VFC = Very fine crumb, SL = Sandy loam, B = Brown, DB = Dark brown, DGB = Dark gray brown
SPI = Small pebble inclusion, YB = Yellow brown, GS = Gravelly Sand, OB = Olive brown, DYB = Dark yellow brown

Subsurface Testing Record

Project: DuPont Industrial Partners, LLC, Lot Y **Recorder: C. Arrington** **Date:** August 26, 2010

Unit #	Date	Level cmbs	Cultural Materials	Soil Type	Munsell	Comments
STP 59-60	2/25/2011	0-40	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; very high in organic matter content, has mellow, sooty feel, gravelly sandy loam
		40-60	None	Moist/GS/OB	2.5Y 4/4	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles.
STP 61	2/25/2011	0-35	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; very high in organic matter content, has mellow, sooty feel, gravelly sandy loam
		35-55	None	Moist/GS/DYB	10 YR 4/6	Gravelly sand with no soil matrix. Rounded to sub-rounded cobbles, very compact.
		55-110	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; very high in organic matter content, has mellow, sooty feel, gravelly sandy loam
		110-130	None	Moist/GS/OB	2.5Y 4/4	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles.
STP 62	2/25/2011	0-40	None	Moist/VFC/SL/DGB	10 YR 3/2	This layer is typically seen in the second horizon, with the darker (10 YR 2/2) high in organic matter overlying it. No signs of mixing in the stratigraphy.
		40-120	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; very high in organic matter content, has mellow, sooty feel, gravelly sandy loam
		120-130	None	Moist/GS/OB	2.5Y 4/4	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles.
STP 63-65	2/25/2011	0-50	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; very high in organic matter content, has mellow, sooty feel, gravelly sandy loam
		50-70	None	Moist/GS/OB	2.5Y 4/4	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles.

KEY: FC = Fine crumb, VFC = Very fine crumb, SL = Sandy loam, B = Brown, DB = Dark brown, DGB = Dark gray brown
SPI = Small pebble inclusion, YB = Yellow brown, GS = Gravelly Sand, OB = Olive brown, DYB = Dark yellow brown

Subsurface Testing Record

Project: DuPont Industrial Partners, LLC, Lot Y **Recorder: C. Arrington**

Unit #		Level cmbs	Cultural Materials	Soil Type	Munsell	Comments
STP 66-70	2/26/2011	0-50	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; very high in organic matter content, has mellow, sooty feel, gravelly sandy loam
		50-70	None	Moist/GS/OB	2.5Y 4/4	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles.
STP 71-72	2/26/2011	0-70	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; very high in organic matter content, has mellow, sooty feel, gravelly sandy loam
		70-90	None	Moist/GS/OB	2.5Y 4/4	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles.
STP 73-75	2/26/2011	0-50	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; very high in organic matter content, has mellow, sooty feel, gravelly sandy loam
		50-70	None	Moist/GS/OB	2.5Y 4/4	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles.
STP 76	2/26/2011	0-70	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; very high in organic matter content, has mellow, sooty feel, gravelly sandy loam
		70-90	None	Moist/GS/OB	2.5Y 4/4	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles.

KEY: FC = Fine crumb, VFC = Very fine crumb, SL = Sandy loam, B = Brown, DB = Dark brown, DGB = Dark gray brown
SPI = Small pebble inclusion, YB = Yellow brown, GS = Gravelly Sand, OB = Olive brown, DYB = Dark yellow brown

Subsurface Testing Record

Project: DuPont Industrial Partners, LLC, Lot Y **Recorder: C. Arrington**

Unit #		Level cmbs	Cultural Materials	Soil Type	Munsell	Comments
STP 77	2/26/2011	0-22	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots and some large (1/4 inch) roots; very high in organic matter content, has mellow, sooty feel; gravelly sandy loam
		22-60	None	Moist/VFC/SL/DYB	10 YR 3/4	Little distinction between this layer and the previous one, expect for color. Medium to large cobbles start in this layer and become increasingly more compact.
		60-75	None	Moist/GS/DGB	2.5Y 4/2	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles
STP 78-80	2/26/2011	0-50	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; very high in organic matter content, has mellow, sooty feel, gravelly sandy loam
		50-65	None	Moist/GS/OB	2.5Y 4/4	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles.
STP 81-83	2/26/2011	0-50	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; very high in organic matter content, has mellow, sooty feel, gravelly sandy loam
		50-70	None	Moist/GS/OB	2.5Y 4/4	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles.
STP 84-85	2/26/2011	0-35	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; very high in organic matter content, has mellow, sooty feel, gravelly sandy loam
		35-45	None	Moist/GS/OB	2.5Y 4/4	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles.

KEY: FC = Fine crumb, VFC = Very fine crumb, SL = Sandy loam, B = Brown, DB = Dark brown, DGB = Dark gray brown
SPI = Small pebble inclusion, YB = Yellow brown, GS = Gravelly Sand, OB = Olive brown, DYB = Dark yellow brown

Subsurface Testing Record

Project: DuPont Industrial Partners, LLC, Lot Y **Recorder: C. Arrington**

Unit #	Date	Level cmbs	Cultural Materials	Soil Type	Munsell	Comments
STP 86-88	2/26/2011	0-60	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; very high in organic matter content, has mellow, sooty feel, gravelly sandy loam
		60-80	None	Moist/GS/OB	2.5Y 4/4	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles.
STP 89	2/26/2011	0-110	None	Moist/SL/VFC/B	7.5 Yr 4/4	Weak fine granular structure; soft, very friable, nonsticky and nonplastic, sooty feel, no cobbles or pebbles. This layer appears to be imported soil. The stratigraphy is uninterrupted until you reach 110 cmbs, where the typical underlying horizon appears. The typical upper horizon; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; very high in organic matter content, has mellow, sooty feel, gravelly sandy loam appears to have been removed and imported soil placed. This STP was placed near the (66 feet) bridge abutment and could be that more stable soil was imported for the approach to the narrow-gauge bridge.
		110-130	None	Moist/GS/OB	2.5Y 4/4	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles.
STP 90	2/28/2011	0-15	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots and some large (1/4 inch) roots; very high in organic matter content, has mellow, sooty feel; gravelly sandy loam
		15-40	None	Moist/VFC/SL/DYB	10 YR 3/4	Little distinction between this layer and the previous one, expect for color. Medium to large cobbles start in this layer and become increasingly more compact.
		40-50	None	Moist/GS/DGB	2.5Y 4/2	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles

KEY: FC = Fine crumb, VFC = Very fine crumb, SL = Sandy loam, B = Brown, DB = Dark brown, DGB = Dark gray brown
SPI = Small pebble inclusion, YB = Yellow brown, GS = Gravelly Sand, OB = Olive brown, DYB = Dark yellow brown

Subsurface Testing Record

Project: DuPont Industrial Partners, LLC, Lot Y **Recorder: C. Arrington**

Unit #	Date	Level cmbs	Cultural Materials	Soil Type	Munsell	Comments
STP 91	2/28/2011	0-7	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; very high in organic matter content, has mellow, sooty feel, gravelly sandy loam
		7-25	None	Moist/GS/OB	2.5Y 4/4	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles.
STP 92-95	2/28/2011	0-50	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; very high in organic matter content, has mellow, sooty feel, gravelly sandy loam
		50-70	None	Moist/GS/OB	2.5Y 4/4	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles.
STP 96	2/28/2011	0-40	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots and some large (1/4 inch) roots; very high in organic matter content, has mellow, sooty feel; gravelly sandy loam
		40-50	None	Moist/VFC/SL/DYB	10 YR 3/4	Little distinction between this layer and the previous one, expect for color. Medium to large cobbles start in this layer and become increasingly more compact.
		50-60	None	Moist/GS/DGB	2.5Y 4/2	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles
STP 97-98	2/28/2011	0-50	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; very high in organic matter content, has mellow, sooty feel, gravelly sandy loam
		50-70	None	Moist/GS/OB	2.5Y 4/4	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles.

KEY: FC = Fine crumb, VFC = Very fine crumb, SL = Sandy loam, B = Brown, DB = Dark brown, DGB = Dark gray brown
SPI = Small pebble inclusion, YB = Yellow brown, GS = Gravelly Sand, OB = Olive brown, DYB = Dark yellow brown

Subsurface Testing Record

Project: DuPont Industrial Partners, LLC, Lot Y **Recorder: C. Arrington**

Unit #	Date	Level cmbs	Cultural Materials	Soil Type	Munsell	Comments
STP 99	2/28/2011	0-10	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; very high in organic matter content, has mellow, sooty feel, gravelly sandy loam
		10-30	None	Moist/GS/OB	2.5Y 4/4	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles.
STP 100-101	2/28/2011	0-60	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; very high in organic matter content, has mellow, sooty feel, gravelly sandy loam
		60-75	None	Moist/GS/OB	2.5Y 4/4	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles.
STP 102	2/28/2011	0-45	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots and some large (1/4 inch) roots; very high in organic matter content, has mellow, sooty feel; gravelly sandy loam
		45-60	None	Moist/VFC/SL/DYB	10 YR 3/4	Little distinction between this layer and the previous one, expect for color. Medium to large cobbles start in this layer and become increasingly more compact.
		60-75	None	Moist/GS/DGB	2.5Y 4/2	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles
STP 103	3/1/2011	0-20	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; very high in organic matter content, has mellow, sooty feel, gravelly sandy loam
		20-30	None	Moist/GS/OB	2.5Y 4/4	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles.

KEY: FC = Fine crumb, VFC = Very fine crumb, SL = Sandy loam, B = Brown, DB = Dark brown, DGB = Dark gray brown
SPI = Small pebble inclusion, YB = Yellow brown, GS = Gravelly Sand, OB = Olive brown, DYB = Dark yellow brown

Subsurface Testing Record

Project: DuPont Industrial Partners, LLC, Lot Y **Recorder: C. Arrington**

Unit #	Date	Level cmbs	Cultural Materials	Soil Type	Munsell	Comments
STP 104	3/1/2011	0-5	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; very high in organic matter content, has mellow, sooty feel, gravelly sandy loam
		5-20	None	Moist/GS/OB	2.5Y 4/4	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles.
STP 105	3/1/2011	0-30	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots and some large (1/4 inch) roots; very high in organic matter content, has mellow, sooty feel; gravelly sandy loam
		30-45	None	Moist/VFC/SL/DYB	10 YR 3/4	Little distinction between this layer and the previous one, expect for color. Medium to large cobbles start in this layer and become increasingly more compact.
		45-60	None	Moist/GS/DGB	2.5Y 4/2	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles
STP 106	3/1/2011	0-60	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots and some large (1/4 inch) roots; very high in organic matter content, has mellow, sooty feel; gravelly sandy loam
		60-70	None	Moist/VFC/SL/DYB	10 YR 3/4	Little distinction between this layer and the previous one, expect for color. Medium to large cobbles start in this layer and become increasingly more compact.
		70-80	None	Moist/GS/DGB	2.5Y 4/2	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles

KEY: FC = Fine crumb, VFC = Very fine crumb, SL = Sandy loam, B = Brown, DB = Dark brown, DGB = Dark gray brown
SPI = Small pebble inclusion, YB = Yellow brown, GS = Gravelly Sand, OB = Olive brown, DYB = Dark yellow brown

Subsurface Testing Record

Project: DuPont Industrial Partners, LLC, Lot Y **Recorder: C. Arrington**

Unit #	Date	Level cmbs	Cultural Materials	Soil Type	Munsell	Comments
STP 107-110	3/1/2011	0-50	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; very high in organic matter content, has mellow, sooty feel, gravelly sandy loam
		50-65	None	Moist/GS/OB	2.5Y 4/4	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles.
STP 111	3/1/2011	0-65	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots and some large (1/4 inch) roots; very high in organic matter content, has mellow, sooty feel; gravelly sandy loam
		65-80	None	Moist/VFC/SL/DYB	10 YR 3/4	Little distinction between this layer and the previous one, expect for color. Medium to large cobbles start in this layer and become increasingly more compact.
		80-90	None	Moist/GS/DGB	2.5Y 4/2	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles
STP 112	3/1/2011	0-30	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots and some large (1/4 inch) roots; very high in organic matter content, has mellow, sooty feel; gravelly sandy loam
		30-45	None	Moist/GS/DGB	2.5Y 4/2	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles

KEY: FC = Fine crumb, VFC = Very fine crumb, SL = Sandy loam, B = Brown, DB = Dark brown, DGB = Dark gray brown
SPI = Small pebble inclusion, YB = Yellow brown, GS = Gravelly Sand, OB = Olive brown, DYB = Dark yellow brown

Subsurface Testing Record

Project: DuPont Industrial Partners, LLC, Lot Y **Recorder: C. Arrington**

Unit #	Date	Level cmbs	Cultural Materials	Soil Type	Munsell	Comments
STP 113	3/1/2011	0-25	None	Moist/GS/DG	2.5 Y 3.1	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; very high in organic matter content, has mellow, sooty feel, gravelly sandy loam
		25-70	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; very high in organic matter content, has mellow, sooty feel, gravelly sandy loam
		70-85	None	Moist/GS/OB	2.5Y 4/4	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles.
STP 114	3/1/2011	0-60	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots and some large (1/4 inch) roots; very high in organic matter content, has mellow, sooty feel; gravelly sandy loam
		60-75	None	Moist/VFC/SL/DYB	10 YR 3/4	Little distinction between this layer and the previous one, expect for color. Medium to large cobbles start in this layer and become increasingly more compact.
		75-85	None	Moist/GS/DGB	2.5Y 4/2	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles
STP 115	3/1/2011	0-200	Yes	Moist/GS/DG	2.5 Y 3.1	This unit is completely mixed (photo taken #58) the matrix resembles horizon 1 with Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots and some large (1/4 inch) roots; very high in organic matter content, has mellow, sooty feel; gravelly sandy loam however, there is no stratigraphic distinction between 0-200 cmbs. A metal artifact was located at 160 cmbs. The artifact is a flat metal bar with 4-bolts protruding from one side.

KEY: FC = Fine crumb, VFC = Very fine crumb, SL = Sandy loam, B = Brown, DB = Dark brown, DGB = Dark gray brown
SPI = Small pebble inclusion, YB = Yellow brown, GS = Gravelly Sand, OB = Olive brown, DYB = Dark yellow brown, DG = Dark Gray

Subsurface Testing Record

Project: DuPont Industrial Partners, LLC, Lot Y **Recorder: C. Arrington**

Unit #	Date	Level cmbs	Cultural Materials	Soil Type	Munsell	Comments
STP 116	3/2/2011	0-25	None	Moist/GS/DG	2.5 Y 3.1	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; very high in organic matter content, has mellow, sooty feel, gravelly sandy loam
		25-55	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; very high in organic matter content, has mellow, sooty feel, gravelly sandy loam
		55-75	None	Moist/GS/OB	2.5Y 4/4	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles.
STP 117-119	3/2/2011	0-10	None	Moist/GS/DG	2.5 Y 3.1	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; very high in organic matter content, has mellow, sooty feel, gravelly sandy loam
		10-50	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; very high in organic matter content, has mellow, sooty feel, gravelly sandy loam
		50-65	None	Moist/GS/OB	2.5Y 4/4	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles.
STP 120		0-20	None	Moist/VFC/SL/DYB	10 YR 3/4	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; very high in organic matter content, has mellow, sooty feel, gravelly sandy loam. Medium to small cobbles rounded and subrounded. Small flecks of charcoal, indicative of a grass fire in the area.
		20-80	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; very high in organic matter content, has mellow, sooty feel, gravelly sandy loam
		80-95	None	Moist/GS/OB	2.5Y 4/4	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles.

KEY: FC = Fine crumb, VFC = Very fine crumb, SL = Sandy loam, B = Brown, DB = Dark brown, DGB = Dark gray brown
SPI = Small pebble inclusion, YB = Yellow brown, GS = Gravelly Sand, OB = Olive brown, DYB = Dark yellow brown

Subsurface Testing Record

Project: DuPont Industrial Partners, LLC, Lot Y **Recorder: C. Arrington**

Unit #	Date	Level cmbs	Cultural Materials	Soil Type	Munsell	Comments
STP 121-125	3/2/2011	0-60	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; very high in organic matter content, has mellow, sooty feel, gravelly sandy loam. Small flecks of charcoal, indicative of a grass fire in the area.
		60-80	None	Moist/GS/OB	2.5Y 4/4	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles.
GTE 1	3/3/2011	0-30	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots and some large (1/4 inch) roots; very high in organic matter content, has mellow, sooty feel; gravelly sandy loam
		30-60	None	Moist/VFC/SL/DYB	10 YR 3/4	Little distinction between this layer and the previous one, expect for color. Medium to large cobbles start in this layer and become increasingly more compact.
		60-305	None	Moist/GS/DGB	2.5Y 4/2	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles
GTE 2	3/3/2011	0-50	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; very high in organic matter content, has mellow, sooty feel, gravelly sandy loam
		50-305	None	Moist/GS/OB	2.5Y 4/4	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles.

KEY: FC = Fine crumb, VFC = Very fine crumb, SL = Sandy loam, B = Brown, DB = Dark brown, DGB = Dark gray brown
SPI = Small pebble inclusion, YB = Yellow brown, GS = Gravelly Sand, OB = Olive brown, DYB = Dark yellow brown, GTE = Geotechnical Excavation

Subsurface Testing Record

Project: DuPont Industrial Partners, LLC, Lot Y **Recorder: C. Arrington**

Unit #	Date	Level cmbs	Cultural Materials	Soil Type	Munsell	Comments
GTE 3	3/3/2011	0-40	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots and some large (1/4 inch) roots; very high in organic matter content, has mellow, sooty feel; gravelly sandy loam
		40-80	None	Moist/VFC/SL/DYB	10 YR 3/4	Little distinction between this layer and the previous one, expect for color. Medium to large cobbles start in this layer and become increasingly more compact.
		80-305	None	Moist/GS/DGB	2.5Y 4/2	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles
GTE 4	3/3/2011	0-305	None	Moist/GS/DGB	2.5Y 4/2	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles
GTE 5	3/3/2011	0-40	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots and some large (1/4 inch) roots; very high in organic matter content, has mellow, sooty feel; gravelly sandy loam
		40-50	None	Moist/VFC/SL/DYB	10 YR 3/4	Little distinction between this layer and the previous one, expect for color. Medium to large cobbles start in this layer and become increasingly more compact.
		50-305	None	Moist/GS/DGB	2.5Y 4/2	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles
GTE 6	3/3/2011	0-60	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; very high in organic matter content, has mellow, sooty feel, gravelly sandy loam
		60-305	None	Moist/GS/OB	2.5Y 4/4	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles.

Subsurface Testing Record

KEY: FC = Fine crumb, VFC = Very fine crumb, SL = Sandy loam, B = Brown, DB = Dark brown, DGB = Dark gray brown
SPI = Small pebble inclusion, YB = Yellow brown, GS = Gravelly Sand, OB = Olive brown, DYB = Dark yellow brown, GTE = Geotechnical Excavation

Project: DuPont Industrial Partners, LLC, Lot Y Recorder: C. Arrington

Unit #	Date	Level cmbs	Cultural Materials	Soil Type	Munsell	Comments
GTE 7	3/3/2011	0-55	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots and some large (1/4 inch) roots; very high in organic matter content, has mellow, sooty feel; gravelly sandy loam
		55-305	None	Moist/GS/DGB	2.5Y 4/2	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles
GTE 8	3/3/2011	0-90	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots and some large (1/4 inch) roots; very high in organic matter content, has mellow, sooty feel; gravelly sandy loam
		90-305	None	Moist/GS/DGB	2.5Y 4/2	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles
GTE 9	3/3/2011	0-250	None	Moist/SL/VDB		This unit is completely mixed. There is a small (20cmbs) layer of sand on the surface and the rest is a mix between horizon 1 (10 YR 2/2) and sand. Very little cobbles. It appears to be fill material. This unit is in close proximity to a hot spot cleared for soil contamination.
GTE 10	3/3/2011	0-50	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; very high in organic matter content, has mellow, sooty feel, gravelly sandy loam
		50-305	None	Moist/GS/OB	2.5Y 4/4	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles.

KEY: FC = Fine crumb, VFC = Very fine crumb, SL = Sandy loam, B = Brown, DB = Dark brown, DGB = Dark gray brown
SPI = Small pebble inclusion, YB = Yellow brown, GS = Gravelly Sand, OB = Olive brown, DYB = Dark yellow brown, GTE = Geotechnical Excavation

Subsurface Testing Record

Project: DuPont Industrial Partners, LLC, Lot Y **Recorder: C. Arrington**

Unit #	Date	Level cmbs	Cultural Materials	Soil Type	Munsell	Comments
GTE 11	3/3/2011	0-5	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots and some large (1/4 inch) roots; very high in organic matter content, has mellow, sooty feel; gravelly sandy loam
		5-305	None	Moist/GS/DGB	2.5Y 4/2	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles
GTE 12-13	3/4/2011	0-65	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots and some large (1/4 inch) roots; very high in organic matter content, has mellow, sooty feel; gravelly sandy loam
		65-75	None	Moist/VFC/SL/DYB	10 YR 3/4	Little distinction between this layer and the previous one, expect for color. Medium to large cobbles start in this layer and become increasingly more compact.
		75-305	None	Moist/GS/DGB	2.5Y 4/2	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles
GTE 14	3/4/2011	0-5	None	Moist/VFC/SL/DYB	10 YR 3/4	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots and some large (1/4 inch) roots; very high in organic matter content, has mellow, sooty feel; gravelly sandy loam. Small to medium cobble and become increasingly more compact.
		5-244	None	Moist/GS/DGB	2.5Y 4/2	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles. Water hit at 244cmbs.

KEY: FC = Fine crumb, VFC = Very fine crumb, SL = Sandy loam, B = Brown, DB = Dark brown, DGB = Dark gray brown
SPI = Small pebble inclusion, YB = Yellow brown, GS = Gravelly Sand, OB = Olive brown, DYB = Dark yellow brown, GTE = Geotechnical Excavation

Subsurface Testing Record

Project: DuPont Industrial Partners, LLC, Lot Y **Recorder: C. Arrington**

Unit #	Date	Level cmbs	Cultural Materials	Soil Type	Munsell	Comments
GTE 15	3/4/2011	0-65	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots and some large (1/4 inch) roots; very high in organic matter content, has mellow, sooty feel; gravelly sandy loam
		65-80	None	Moist/VFC/SL/DYB	10 YR 3/4	Little distinction between this layer and the previous one, expect for color. Medium to large cobbles start in this layer and become increasingly more compact.
		80-305	None	Moist/GS/DGB	2.5Y 4/2	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles
GTE 16-17	3/4/2011	0-65	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots and some large (1/4 inch) roots; very high in organic matter content, has mellow, sooty feel; gravelly sandy loam
		65-305	None	Moist/GS/DGB	2.5Y 4/2	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles
GTE 18-19	3/4/2011	0-45	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots and some large (1/4 inch) roots; very high in organic matter content, has mellow, sooty feel; gravelly sandy loam
		45-305	None	Moist/GS/DGB	2.5Y 4/2	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles. Water hit at 244cmbs.

KEY: FC = Fine crumb, VFC = Very fine crumb, SL = Sandy loam, B = Brown, DB = Dark brown, DGB = Dark gray brown
SPI = Small pebble inclusion, YB = Yellow brown, GS = Gravelly Sand, OB = Olive brown, DYB = Dark yellow brown, GTE = Geotechnical Excavation

Subsurface Testing Record

Project: DuPont Industrial Partners, LLC, Lot Y **Recorder: C. Arrington**

Unit #	Date	Level cmbs	Cultural Materials	Soil Type	Munsell	Comments
GTE 20	3/4/2011	0-3	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots and some large (1/4 inch) roots; very high in organic matter content, has mellow, sooty feel; gravelly sandy loam
		3-305	None	Moist/GS/DGB	2.5Y 4/2	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles
GTE 21	3/4/2011	0-305	None	Moist/GS/DGB	2.5Y 4/2	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles
GTE 22		0-40	None	Moist/SL/VDB	10 YR 2/2	Weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots and some large (1/4 inch) roots; very high in organic matter content, has mellow, sooty feel; gravelly sandy loam
		40-305	None	Moist/GS/DGB	2.5Y 4/2	Gravelly sand with no soil matrix. The sand, single grained and loose is the prominent content with some rounded to sub-rounded cobbles.

KEY: FC = Fine crumb, VFC = Very fine crumb, SL = Sandy loam, B = Brown, DB = Dark brown, DGB = Dark gray brown
SPI = Small pebble inclusion, YB = Yellow brown, GS = Gravelly Sand, OB = Olive brown, DYB = Dark yellow brown, GTE = Geotechnical Excavation

Subsurface Testing Record

Project: DuPont Industrial Partners, LLC, Lot Y **Soils Photograph** **Recorder: C. Arrington**

Photograph 52. Showing horizon 1 (10 YR 2/2)

Photograph 53. Showing horizon 2 (10 YR 3/4)

Subsurface Testing Record

Project: DuPont Industrial Partners, LLC, Lot Y **Soils Photograph** **Recorder: C. Arrington**

Photograph 44. Showing horizon 3 (2.5Y 4/4)

Photograph 61. Showing gray horizon (2.5 Y 3.1)
Upper most layer in photograph

APPENDIX D:
Site and Isolate Record Forms

STATE OF WASHINGTON
ARCHAEOLOGICAL SITE INVENTORY FORM

Smithsonian Number: **PI01224**

***County:** Pierce

***Date:** 7-19-2011 ***Compiler:** C. Arrington

Location Information Restrictions *(Yes/No/Unknown)***:** No

SITE DESIGNATION

Site Name: Narrow gauge railroad and berm

Field/ Temporary ID: GEO-RR10 (**Update**)

***Site Type** *(Refer to the DAHP Survey and Inventory Guidelines Page 19)*: Historic Railroad Properties

SITE LOCATION

***USGS Quad Map Name:** Nisqually

***Legal Description:** **T**19N **R** 1 **E/W:** E **Section(s):** 26

Quarter Section(s): NENW

***UTM:** **Zone** 10 **Easting** 526801 **Northing** 5217214

Latitude: **Longitude:** **Elevation (FT/M):** 220ft

Other Maps: **Type:**

Scale: **Source:**

Drainage, Major: Sequalitchew Creek **Drainage, Minor:** **River Mile:**

Aspect: **Slope:** 1-3%

Location Description** *(General to Specific):** This site is located on the north side of Sequalitchew Creek, northwest of the Town of DuPont. It is situated east of the old DuPont works property. The area is disturbed and is dominated by grasses and brushy plants. The project area is situated within the Puget Trough physiographic province (Franklin and Dyrness 1973) approximately 1 mile east of the southern part of Puget Sound shoreline. Sequalitchew Creek drains the Edmond's Marsh area about 1 mile east, and empties into Puget Sound approximately 1.5 miles to the northwest. The Puget Trough is a basin that lies between the Coast Range to the west and the Cascade Range to the east.

Approach *(For Relocation Purposes)***:** From I-5 take the DuPont Center Drive exit (north) approximately 1.5 miles to Power Road, turning left, to the intersection of a gravel road (205 feet). The isolate is located on the north side of the gravel road, 736feet from the intersection of Power Road (at the end of gravel just before the chain-link fence) and approximately 22 feet due north of the gravel road.

SITE DESCRIPTION

***Narrative Description:**

This site is an extension of site GEO-RR10 recorded on September 28, 2010 for Creekside DuPont Partners. The site is a non-functional narrow-gauge railroad track situated on an earthen berm bisecting the eastern edge of the project area. The earthen berm is approximately 20 inches in height and roughly 20 feet in width. The narrow gauge tracks extend 207 feet east from the eastern project area boundary (chain link fence) running due west. The site is covered with lichen, and trees growing through the tracks and the berm. Within the project area, the tracks end at an earthen mound that appears to have been dug immediately adjacent to the southeast side of the tracks (burrow pit). The narrow-gauge track and berm continue to the east beneath a chain-link fence for a distance of 98 feet beyond the project area. The short abandoned track and berm segment within the project area are attributed to construction by the DuPont Powder Works; the narrow-gauge railroad was used to transport their products during the Old Town period (1906-1920s). There was no evidence of artifacts or cultural deposits in association with the tracks or berm, and this site is not recommended eligible for listing on the NRHP or Washington Heritage Register (WHR). The eastern end of the spur was truncated presumably after DuPont Powder Works closed in 1976.

***Site Type** *(Refer to the DAHP Survey and Inventory Guidelines Page 19)*: Historic Railroad Properties

***Site Dimensions**

***Length:** 207 feet ***Direction: E/W** x ***Width:** 20 feet ***Direction:** N/S

***Method of Horizontal Measurement:** GPS

***Depth:** Surface * **Method of Vertical Measurement:** GPS

****Vegetation** *(On Site)***:** Mostly grasses and scotch broom

Local: Douglas fir, Pacific madrone, red alder, elderberry, sword fern

Local: Glacial Plain

Water Resources *(Type)***:** Sequalitchew Creek **Distance:** 426 feet SW **Permanence:** year round

***Method of Collection(s):** No materials collected

CULTURAL MATERIALS AND FEATURES

***Narrative Description:**

This site was originally recorded by Arrington during survey in 2010 of the 12.8-acre property (known as Lot X) adjacent to the eastern edge of Lot Y (Sikes and Arrington 2010). It is a non-functional segment of a narrow-gauge railroad track situated on an earthen berm; it extends into both Lots X and Y beneath a chain-link fence marking the property boundaries. The track and berm bisect the eastern edge of the Lot Y project area. The earthen berm is approximately 20 inches high and 20 feet wide. The narrow gauge track extends 207 feet west from the eastern project area boundary. The site is covered with forest duff, lichen, and scotch broom. The narrow-gauge track and berm continue east into Lot X beneath the chain-link fence for approximately 98 feet.

The short abandoned track and berm segment are attributed to construction by the DuPont Powder Works; the narrow-gauge railroad was used to transport their products during the Old Town period (1906-1920s). This site is recommended ineligible for listing on the NRHP or WHR. The segment is in poor condition with no evidence of associated artifacts or cultural deposits and has no potential to yield additional information. The eastern end of the spur was truncated presumably after DuPont Powder Works closed in 1976.

***Method of Collection(s):** None

Location of Artifacts** *(Temporary/Permanent):** N/A

SITE AGE

***Component:** ***Dates:** 1906-1920s ***Dating Method:**

Phase: **Basis for Phase Designation:**

The short abandoned track and berm segment within the project area are attributed to construction by the DuPont Powder Works; the narrow-gauge railroad was used to transport their products during the Old Town period (1906-1920s).

SITE RECORDERS

Observed by: C. Arrington and Pete Morris

***Date Recorded:** February 17, 2011

Recorded by** *(Professional Archaeologist):** Cindy Arrington

***Affiliation:** Parus Consulting, Inc. ***Affiliation Phone Number:** 916-782-5818

***Affiliation Address:** 1508 Eureka Road, Suite 170, Roseville, CA 95661

***Affiliation E-mail:** cindy@parusconsulting.com

Date Revisited: **Revisited By:**

SITE HISTORY

Previous Work *(Done on Archaeological Site)***:**

Year	Author(s)	Report Title	Proximity to project
1977	Onat, A.R., Lee A. Bennett, and Timothy Riorda	Cultural Resources Survey: DuPont Site, Volume I Survey of Archaeological and Ethnographical Resources at the DuPont Site	Within and near project area
1977	Stratton, David H., and Glen W Lindeman	Cultural Resource Survey, DuPont Site, Volume II: Survey of Historical Resources at the DuPont Site.	Within and near project area
1989	Welch, Jeanne	A Cultural Overview and Comprehensive Management Plan for the DuPont Property, Pierce County, Washington	Within and near project area
1991	Moura, Guy F.	Missions, War Games, and Railroad Dumps: 1989 Explorations and Excavations, Northwest Landing, DuPont, Washington	Within project area
2000	Daugherty, Richard, and Mary Condon	Archaeological Monitoring of the "Hot Spot" Removal Program, the Hazardous Waste Stockpile Areas, and Sand Stockpile Laydown Areas at the Former DuPont Works Site, DuPont, Washington	Within project area
2001	Daugherty, Richard, and Mary Condon	An Update on the Archaeological Status of Sites 45PI63 (A Trash Dump Located Along a Railroad Spur), 45PI64 (Burning Ground Dump), 45PI66 (Methodist Episcopal Mission), and 45PI455 (Part of the 9th Cavalry Bivouac Area)	Within and near project area
2005	Wessen, Gary, Cathy Bialas and Gail Thompson	Cultural Resources Assessment for the Glacier Northwest North Sequalitchew Creek SEIS Project, City of DuPont, Pierce County, Washington	Within and near project area
2008	Wessen, Gary, Cathy Bialas, Derek Shaw and Gail Thompson	Revised Cultural Resources Assessment for the Glacier Northwest North Sequalitchew Creek SEIS Project, City of DuPont, Pierce County, Washington	Within and near project area

LAND OWNERSHIP

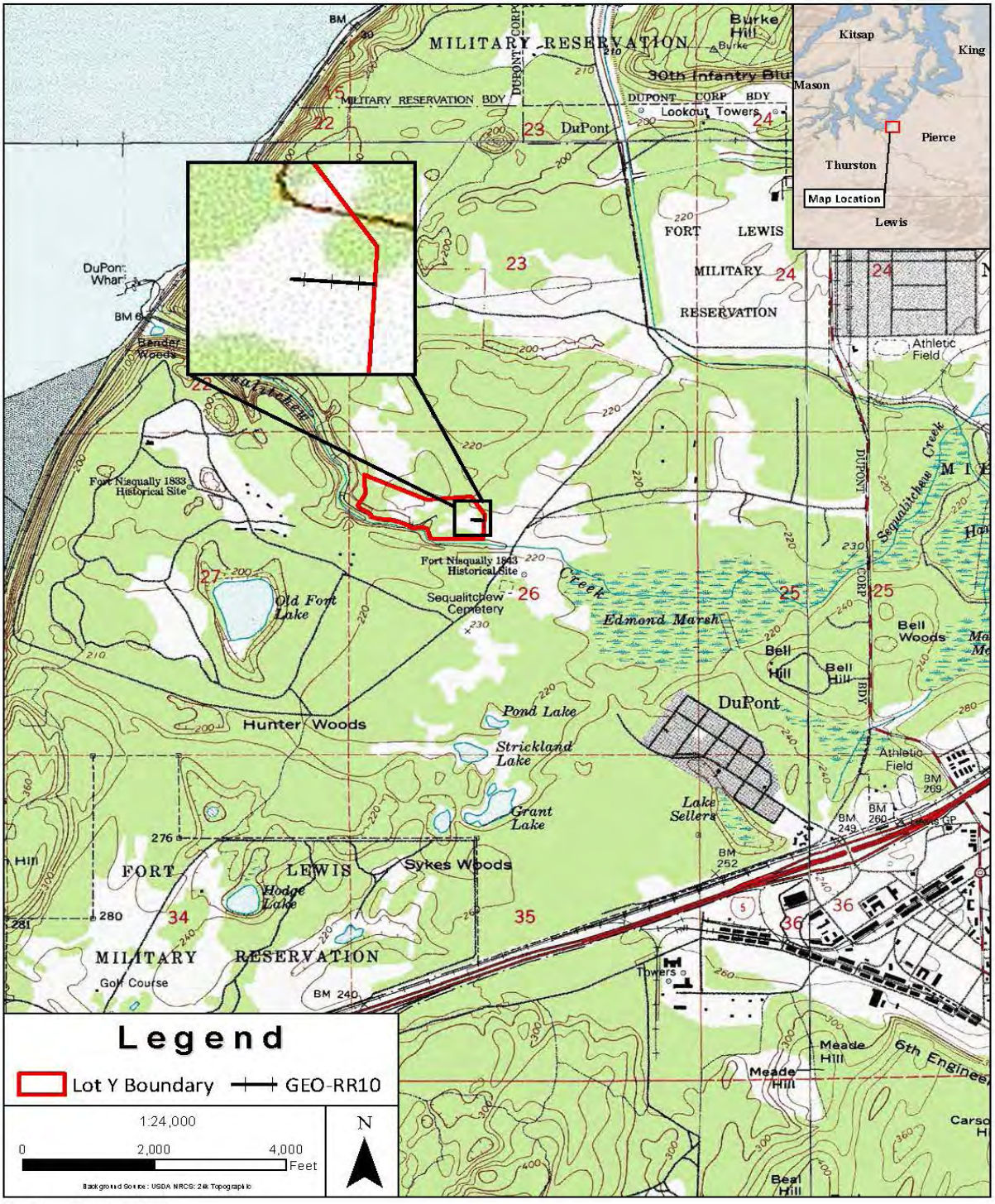
***Owner:** DuPont Industrial Partners, LLC
Address: 1201 Pacific Avenue, Suite 1501
Tacoma, WA 98402

***Tax Lot/ Parcel No:**

RESEARCH REFERENCES

***Items/Documents Used In Research** *(Specify)*:** 1973 Franklin, Jerry F., and C. T. Dyrness *Natural Vegetation of Oregon and Washington*. Pacific Northwest Forest and Range Experiment Station, U.S. Forest Service, Portland, Oregon.

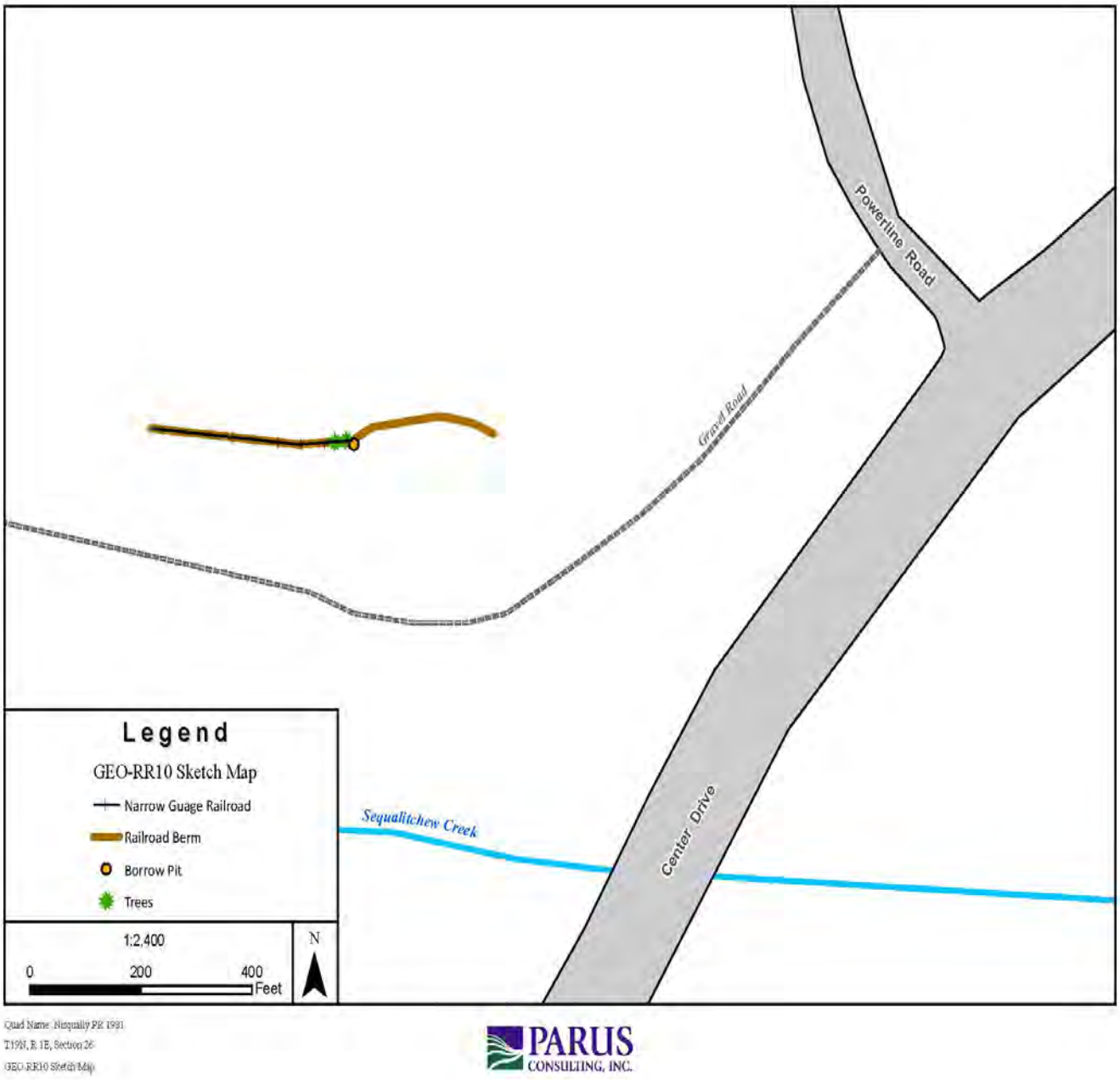
USGS MAP



Quad Name: Nisqually PR 1981
T19N, R 1E, Section 26
DuPont Lot Y: GEO-RR10 Location Map

PARUS CONSULTING, INC.

SKETCH MAP


Powerline Road
Gravel Road
Sequalitchew Creek
Center Drive
Legend
GEO-RR10 Sketch Map
Narrow Guage Railroad
Railroad Berm
Borrow Pit
Trees
1:2,400
0
200
400
Feet
N
Quad Name: Nisqually RE 1981
T19N, R 1E, Section 26
GEO-RR10 Sketch Map
PARUS
CONSULTING, INC.

PHOTOGRAPH(S)

Figure 1: Geo RR10 extension (view to east)

STATE OF WASHINGTON
ARCHAEOLOGICAL SITE INVENTORY FORM

Smithsonian Number: PI01225

***County:** Pierce

***Date:** 7-19-2011 ***Compiler:** C. Arrington

Location Information Restrictions *(Yes/No/Unknown)***:** No

SITE DESIGNATION

Site Name: Concrete Platform

Field/ Temporary ID: Parus-01-11

Site Type** *(Refer to the DAHP Survey and Inventory Guidelines Page 19):** Historic Railroad Properties

SITE LOCATION

***USGS Quad Map Name:** Nisqually

***Legal Description: T**19N **R** 1 **E/W:** E **Section(s):** 26

Quarter Section(s): NENW

***UTM: Zone** 10 **Easting** 526780 **Northing** 5217203

Latitude: **Longitude:** **Elevation (FT/M):** 220ft

Other Maps: **Type:**

Scale: **Source:**

Drainage, Major: Sequalitchew Creek **Drainage, Minor:** **River Mile:**

Aspect: **Slope:** 1-3%

Location Description** *(General to Specific):** This site is located on the north side of Sequalitchew Creek, northwest of the Town of DuPont. It is situated east of the old DuPont works property. The area is disturbed and is dominated by grasses and brushy plants. The project area is situated within the Puget Trough physiographic province (Franklin and Dyrness 1973) approximately 1 mile east of the southern part of Puget Sound shoreline. Sequalitchew Creek drains the Edmond's Marsh area about 1 mile east, and empties into Puget Sound approximately 1.5 miles to the northwest. The Puget Trough is a basin that lies between the Coast Range to the west and the Cascade Range to the east.

Approach *(For Relocation Purposes)***:** From I-5 take the DuPont Center Drive exit (north) approximately 1.5 miles to Power Road, turning left, to the intersection of a gravel road (205 feet). The isolate is located on the north side of the gravel road, 979 feet from the intersection of Power Road and approximately 76 feet due north of the gravel road.

SITE DESCRIPTION

***Narrative Description:**

The loading platform is located 233 feet west of the eastern boundary of the project area, 76 feet due north of the existing gravel road. The platform is situated in hot spot #3 where the area was cleared of topsoil, using a mechanical backhoe in 2001 due to soil contamination and remediation efforts.

Vegetation within the site area consists of open second growth conifer forest dominated by Douglas fir, sword fern, and scotch broom, and includes red alder, elderberry, and grasses. Visibility on the surrounding ground surface is poor ranging from 10-30 percent.

***Site Type** *(Refer to the DAHP Survey and Inventory Guidelines Page 19)*: Historic Railroad Properties

***Site Dimensions**

***Length:** 16 feet ***Direction: E/W** x ***Width:** 16 feet ***Direction:** N/S

***Method of Horizontal Measurement:** Tapped

***Depth:** 6’ 5” above ground surface * **Method of Vertical Measurement:** Tapped

****Vegetation** *(On Site)***:** Mostly grasses and scotch broom

Local: Douglas fir, Pacific madrone, red alder, elderberry, sword fern

Local: Glacial Plain

Water Resources *(Type)***:** Sequalitchew Creek **Distance:** 384 feet south **Permanence:** year round

***Method of Collection(s):** No materials collected

CULTURAL MATERIALS AND FEATURES

***Narrative Description:**

A concrete loading platform is located approximately where the standard-gauge and one of the narrow-gauge tracks previously crossed near the eastern edge of Lot Y. The platform is visible on satellite imagery, but was previously unrecorded. During the functional period of the platform, it likely was used for loading or unloading materials onto DuPont Powder Works trains that would have moved east to west and north to south past the platform.

The platform is primarily concrete, with a steel railing as a perimeter of the upper platform surface. The platform is 192 inches square and 77 inches tall. The surface perimeter has a 3-inch concrete lip with occasional breaks to permit loading access. There is an arrangement of 2-inch by 6-inch wood boards bolted to the interior surface of the concrete lip, with a steel railing situated along the perimeter lip of the platform. The railing is painted yellow and is 39.5 inches tall, with a lower bar and upper bar. The lower bar is 19.5 inches high, and the upper bar is 39 inches high. There are openings in the rail with steel chains stretched across on the south and east sides of the platform; one opening is 55 inches wide, and the other is 51 inches wide.

On the north side of the platform there is a 30-inch wide opening that appears to be a person-access stepping platform, with vertical handrails and a swinging safety bar (non-operational). On the east of the platform is a small debris pile consisting of heavy-gauge sheet metal, milled lumber, crushed pipe (1.5-inch diameter), and steel railing segment with chain. The platform is built with well sorted aggregate, form poured concrete. It does not appear on the very detailed 1955 map drawn by E. Davies. Locals recall the platform was not built until the early 1960s and then it was seldom used (personal communication, Fred Foreman). This site has no potential to yield additional information and is recommended ineligible for listing on the NRHP or WHR.

***Method of Collection(s):** None

Location of Artifacts** *(Temporary/Permanent):** N/A

SITE AGE

***Component:** ***Dates:** 1960s ***Dating Method:**

Phase: **Basis for Phase Designation:**

SITE RECORDERS

Observed by: C. Arrington and Pete Morris

***Date Recorded:** February 17, 2011

Recorded by** *(Professional Archaeologist):** Cindy Arrington

***Affiliation:** Parus Consulting, Inc. ***Affiliation Phone Number:** 916-782-5818

***Affiliation Address:** 1508 Eureka Road, Suite 170, Roseville, CA 95661

***Affiliation E-mail:** cindy@parusconsulting.com

Date Revisited: **Revisited By:**

SITE HISTORY

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1977	Stratton, David H., and Glen W Lindeman	Cultural Resource Survey, DuPont Site, Volume II: Survey of Historical Resources at the DuPont Site.	Within and near project area
1989	Welch, Jeanne	A Cultural Overview and Comprehensive Management Plan for the DuPont Property, Pierce County, Washington	Within and near project area
1991	Moura, Guy F.	Missions, War Games, and Railroad Dumps: 1989 Explorations and Excavations, Northwest Landing, DuPont, Washington	Within project area
2000	Daugherty, Richard, and Mary Condon	Archaeological Monitoring of the "Hot Spot" Removal Program, the Hazardous Waste Stockpile Areas, and Sand Stockpile Laydown Areas at the Former DuPont Works Site, DuPont, Washington	Within project area
2001	Daugherty, Richard, and Mary Condon	An Update on the Archaeological Status of Sites 45PI63 (A Trash Dump Located Along a Railroad Spur), 45PI64 (Burning Ground Dump), 45PI66 (Methodist Episcopal Mission), and 45PI455 (Part of the 9th Cavalry Bivouac Area)	Within and near project area
2005	Wessen, Gary, Cathy Bialas and Gail Thompson	Cultural Resources Assessment for the Glacier Northwest North Sequalitchew Creek SEIS Project, City of DuPont, Pierce County, Washington	Within and near project area
2008	Wessen, Gary, Cathy Bialas, Derek Shaw and Gail Thompson	Revised Cultural Resources Assessment for the Glacier Northwest North Sequalitchew Creek SEIS Project, City of DuPont, Pierce County, Washington	Within and near project area

LAND OWNERSHIP

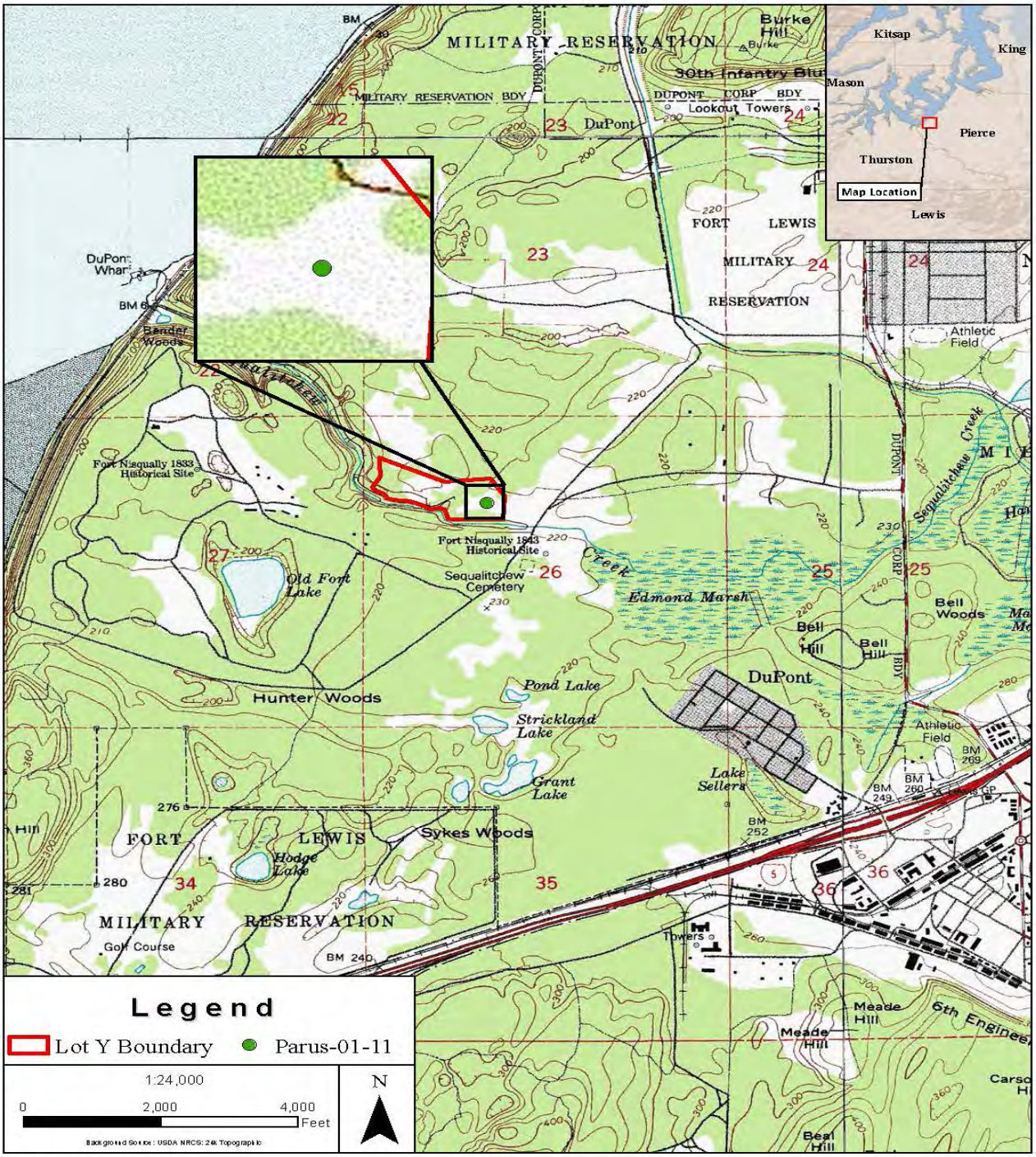
***Owner:** DuPont Industrial Partners, LLC
Address: 1201 Pacific Avenue, Suite 1501
Tacoma, WA 98402

***Tax Lot/ Parcel No:**

RESEARCH REFERENCES

***Items/Documents Used In Research** *(Specify)*:** 1973 Franklin, Jerry F., and C. T. Dyrness *Natural Vegetation of Oregon and Washington*. Pacific Northwest Forest and Range Experiment Station, U.S. Forest Service, Portland, Oregon.

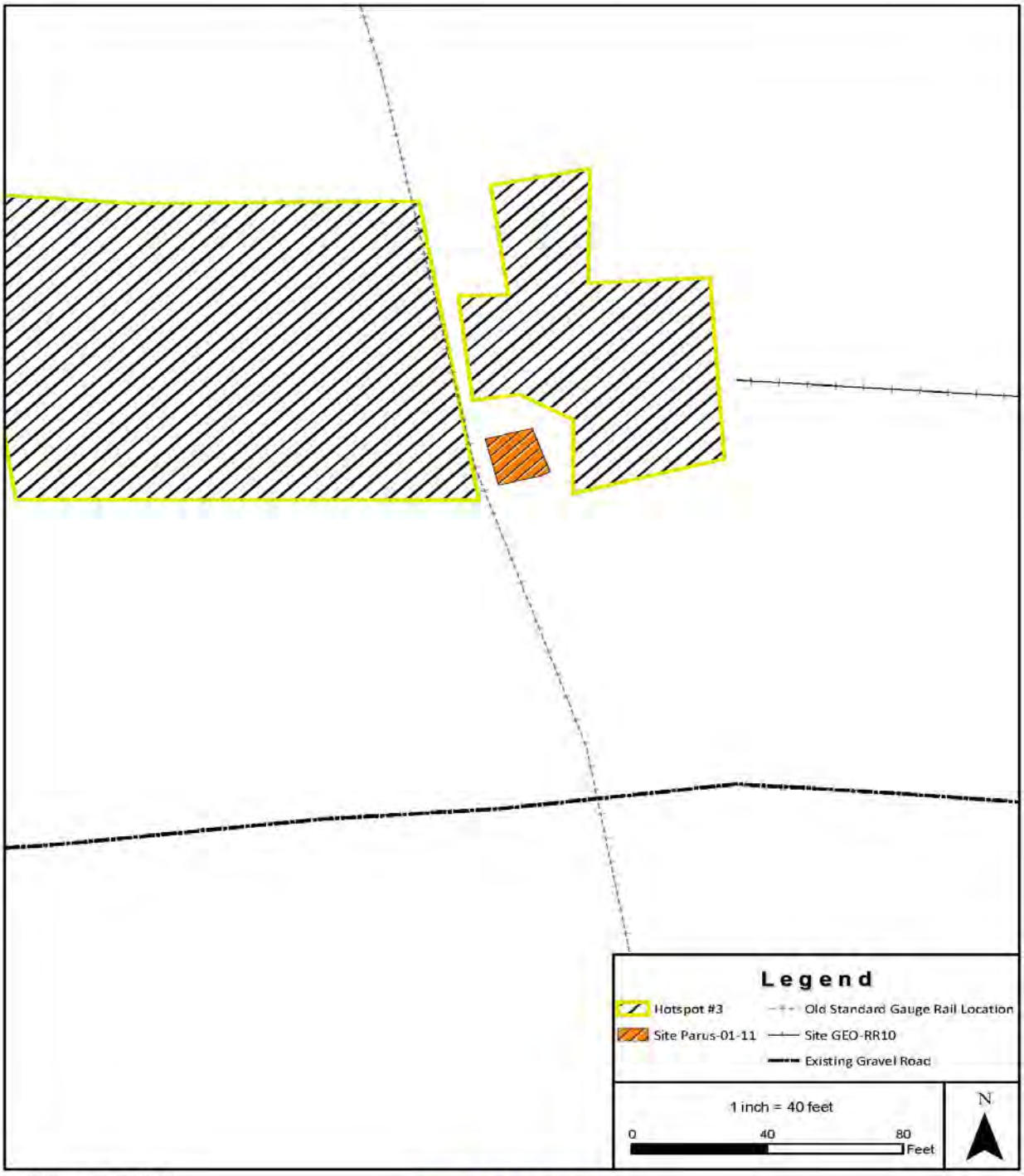
USGS MAP



Quad Name: Nisqually PR 1981
T19N, R 1E, Section 26
DuPont Lot Y: Parus-01-11 Location Map

PARUS CONSULTING, INC.

SKETCH MAP



Quad Name: Nisqually PR 1981
T19N, R 1E, Section 26
DuPont Lot Y: Parus-01-11 Sketch Map

PARUS CONSULTING, INC.

PHOTOGRAPH(S)

Figure 1: East side of platform (view to west)

Figure 2: North side of platform (view to southwest)

PHOTOGRAPH(S)

Figure 3: West side of platform (view to northeast)

Figure 4: Debris pile on east side of platform (view to north)

STATE OF WASHINGTON
ARCHAEOLOGICAL SITE INVENTORY FORM

Smithsonian Number:PI01226

***County:** Pierce

***Date:** 7-19-2011 ***Compiler:** C. Arrington

Location Information Restrictions *(Yes/No/Unknown)***:** No

SITE DESIGNATION

Site Name: Bridge Abutment – Narrow-Gauge Railroad

Field/ Temporary ID: Parus-02-11

Site Type** *(Refer to the DAHP Survey and Inventory Guidelines Page 19):** Historic Railroad Properties

SITE LOCATION

***USGS Quad Map Name:** Nisqually

***Legal Description: T**19N **R** 1 **E/W:** E **Section(s):** 26

Quarter Section(s): SWNW

***UTM: Zone** 10 **Easting** 526592 **Northing** 5217123

Latitude: **Longitude:** **Elevation (FT/M):** 222ft

Other Maps: **Type:**

Scale: **Source:**

Drainage, Major: Sequalitchew Creek **Drainage, Minor:** **River Mile:**

Aspect: **Slope:** 1-3%

Location Description** *(General to Specific):** This site is located on the north side of Sequalitchew Creek, northwest of the Town of DuPont. It is situated east of the old DuPont works property. The area is disturbed and is dominated by grasses and brushy plants. The project area is situated within the Puget Trough physiographic province (Franklin and Dyrness 1973) approximately 1 mile east of the southern part of Puget Sound shoreline. Sequalitchew Creek drains the Edmond's Marsh area about 1 mile east, and empties into Puget Sound approximately 1.5 miles to the northwest. The Puget Trough is a basin that lies between the Coast Range to the west and the Cascade Range to the east.

Approach *(For Relocation Purposes)***:** From I-5 take the DuPont Center Drive exit (north) approximately 1.5 miles to Power Road, turning left, to the intersection of a gravel road (205 feet). The site is located on the south side of the gravel road, 1,348 feet from the intersection of Power Road and approximately 467 feet due south of the gravel road.

SITE DESCRIPTION

***Narrative Description:**

The site, a narrow-gauge railroad bridge (depicted on the E. Davies 1955 map), is located on the north bank of Sequalitchew Creek, 467 feet due south of the gravel road. There are two additional abutments, both an upper and lower, on the south bank of the creek and look to be identical to those located on the north bank.

The abutments are covered with moss, and is surrounded by decomposing forest duff and vegetation, including ferns, conifers, deciduous trees, and grasses. Visibility on the surrounding ground surface is poor ranging from 0-10 percent.

Site Type** *(Refer to the DAHP Survey and Inventory Guidelines Page 19):** Historic Railroad Properties

***Site Dimensions**

Upper abutment ***Length:** 128 inches ***Direction: E/W** x ***Width:** 12.5 inches ***Direction:** E/W

Lower abutment ***Length:** 150 inches ***Direction: E/W** x ***Width:** 12 inches ***Direction:** E/W

***Method of Horizontal Measurement:** Tapped

***Depth:** 51 inches for upper and 32 inches for lower above ground surface

* **Method of Vertical Measurement:** Tapped

****Vegetation** *(On Site)***:** The abutment is covered with moss, and is surrounded by decomposing forest duff and vegetation, including ferns, conifers, deciduous trees, and grasses.

Local: Douglas fir, Pacific madrone, red alder, elderberry, sword fern

Local: Glacial Plain

Water Resources *(Type)***:** Sequalitchew Creek **Distance:** 35 feet south **Permanence:** year round

***Method of Collection(s):** No materials collected

CULTURAL MATERIALS AND FEATURES

***Narrative Description:**

This site is comprised of the remnants of a narrow-gauge railroad bridge that traversed Sequalitchew Creek from north to south. This bridge crossing is shown on the 1955 map drawn by E. Davies. The remains include two concrete abutments that have a 165-inch horizontal separation. Both abutments have a poured-form aggregate concrete construction, with a smooth finished top. The lower abutment is 150 inches long, 32 inches high from the ground, and 12 inches wide at the top. The upper abutment is 128 inches long, 51 inches high from the ground, with the base at 20 inches wide, and the top of the abutment 12.5 inches wide. The abutments are covered with moss and are surrounded by decomposing forest duff and vegetation, including ferns, conifers, deciduous trees, and grasses.

The set of abutments is immediately outside of the Lot Y project area, and 35 feet north of Sequalitchew Creek. There are two pieces of milled lumber located between the abutments; they are each 6 by 6 inches, but vary in length. One piece is 45 inches long, and the other is 60 inches long. The longer piece is intact, and has a 5-inch by 8.5-inch metal cleat with spikes on one side. An identical set of concrete abutments is visible on the south side of the creek outside the project area.

This bridge was the only narrow-gauge railroad bridge within the DuPont Powder Works to cross Sequalitchew Creek, and is shown on the 1955 map drawn by E. Davies. It was used for transport of material by train from the plant to the burning ground (later recorded as 45PI64) and then proceeding further north to the storage area (personal communication, Fred Foreman and Johanna Jones). The bridge was removed in the late 1990s. The remaining set of abutments has no potential to yield additional information and is recommended ineligible for listing on the NRHP or WHR.

***Method of Collection(s):** None

***Location of Artifacts** *(Temporary/Permanent)*: N/A

SITE AGE

***Component:** *Dates:** 1906-1920s ***Dating Method:**

Phase: **Basis for Phase Designation:**

The narrow-gauge bridge is attributed to construction by the DuPont Powder Works; the narrow-gauge railroad was used to transport their products during the Old Town period (1906-1920s).

SITE RECORDERS

Observed by: C. Arrington and P. Morris

***Date Recorded:** February 17, 2011

Recorded by** *(Professional Archaeologist):** Cindy Arrington

***Affiliation:** Parus Consulting, Inc. ***Affiliation Phone Number:** 916-782-5818

***Affiliation Address:** 1508 Eureka Road, Suite 170, Roseville, CA 95661

***Affiliation E-mail:** cindy@parusconsulting.com

Date Revisited: **Revisited By:**

SITE HISTORY

Previous Work *(Done on Archaeological Site)***:**

Year	Author(s)	Report Title	Proximity to project
1977	Onat, A.R., Lee A. Bennett, and Timothy Riordan	Cultural Resources Survey: DuPont Site, Volume I Survey of Archaeological and Ethnographical Resources at the DuPont Site	Within and near project area
1977	Stratton, David H., and Glen W Lindeman	Cultural Resource Survey, DuPont Site, Volume II: Survey of Historical Resources at the DuPont Site.	Within and near project area
1989	Welch, Jeanne	A Cultural Overview and Comprehensive Management Plan for the DuPont Property, Pierce County, Washington	Within and near project area
1991	Moura, Guy F.	Missions, War Games, and Railroad Dumps: 1989 Explorations and Excavations, Northwest Landing, DuPont, Washington	Within project area
2000	Daugherty, Richard, and Mary Condon	Archaeological Monitoring of the "Hot Spot" Removal Program, the Hazardous Waste Stockpile Areas, and Sand Stockpile Laydown Areas at the Former DuPont Works Site, DuPont, Washington	Within project area
2001	Daugherty, Richard, and Mary Condon	An Update on the Archaeological Status of Sites 45PI63 (A Trash Dump Located Along a Railroad Spur), 45PI64 (Burning Ground Dump), 45PI66 (Methodist Episcopal Mission), and 45PI455 (Part of the 9th Cavalry Bivouac Area)	Within and near project area
2005	Wessen, Gary, Cathy Bialas and Gail Thompson	Cultural Resources Assessment for the Glacier Northwest North Sequalitchew Creek SEIS Project, City of DuPont, Pierce County, Washington	Within and near project area
2008	Wessen, Gary, Cathy Bialas, Derek Shaw and Gail Thompson	Revised Cultural Resources Assessment for the Glacier Northwest North Sequalitchew Creek SEIS Project, City of DuPont, Pierce County, Washington	Within and near project area

LAND OWNERSHIP

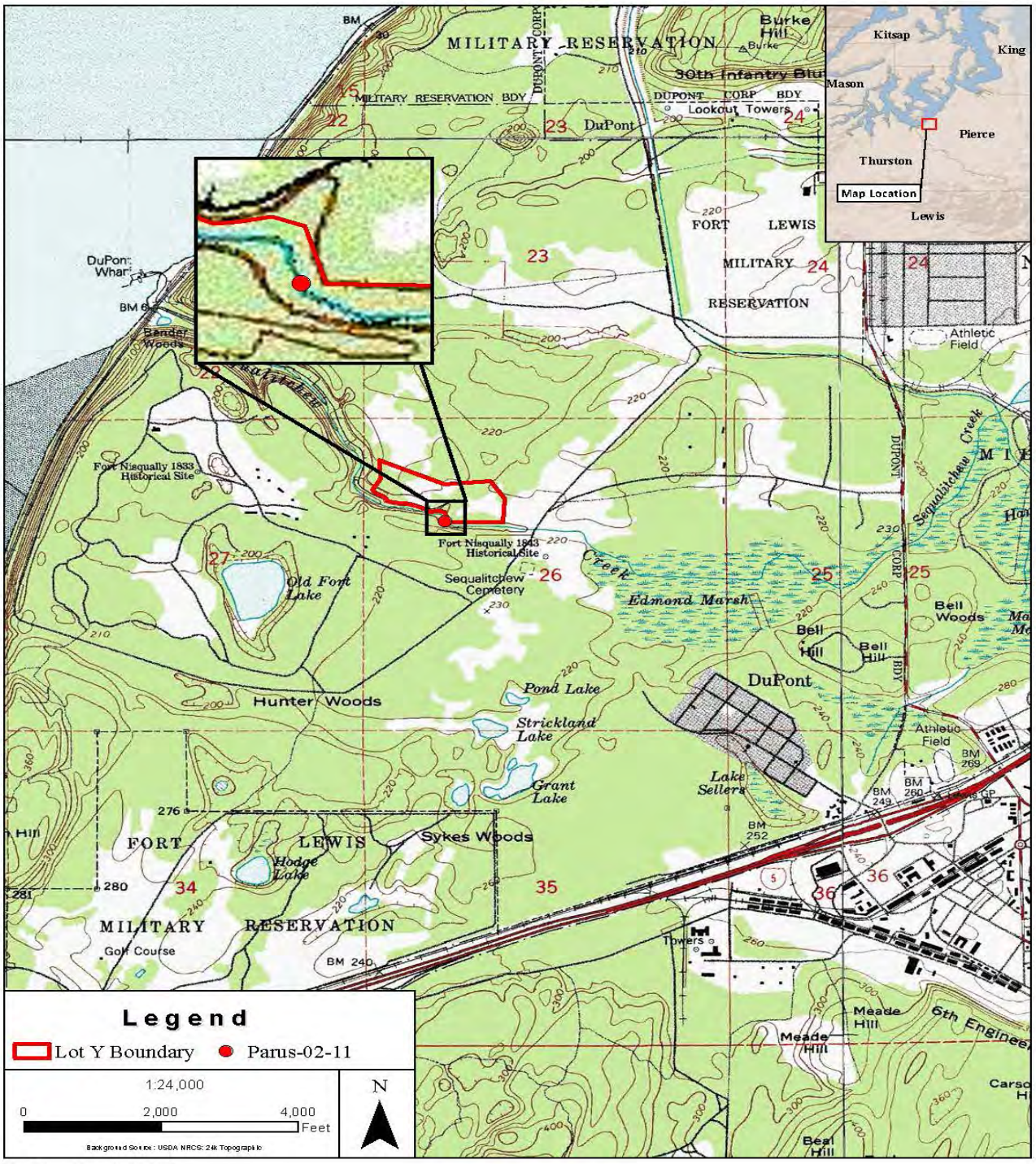
***Owner:** DuPont Industrial Partners, LLC
Address: 1201 Pacific Avenue, Suite 1501
Tacoma, WA 98402

***Tax Lot/ Parcel No:**

RESEARCH REFERENCES

***Items/Documents Used In Research** *(Specify)*:** 1973 Franklin, Jerry F., and C. T. Dyrness *Natural Vegetation of Oregon and Washington*. Pacific Northwest Forest and Range Experiment Station, U.S. Forest Service, Portland, Oregon.

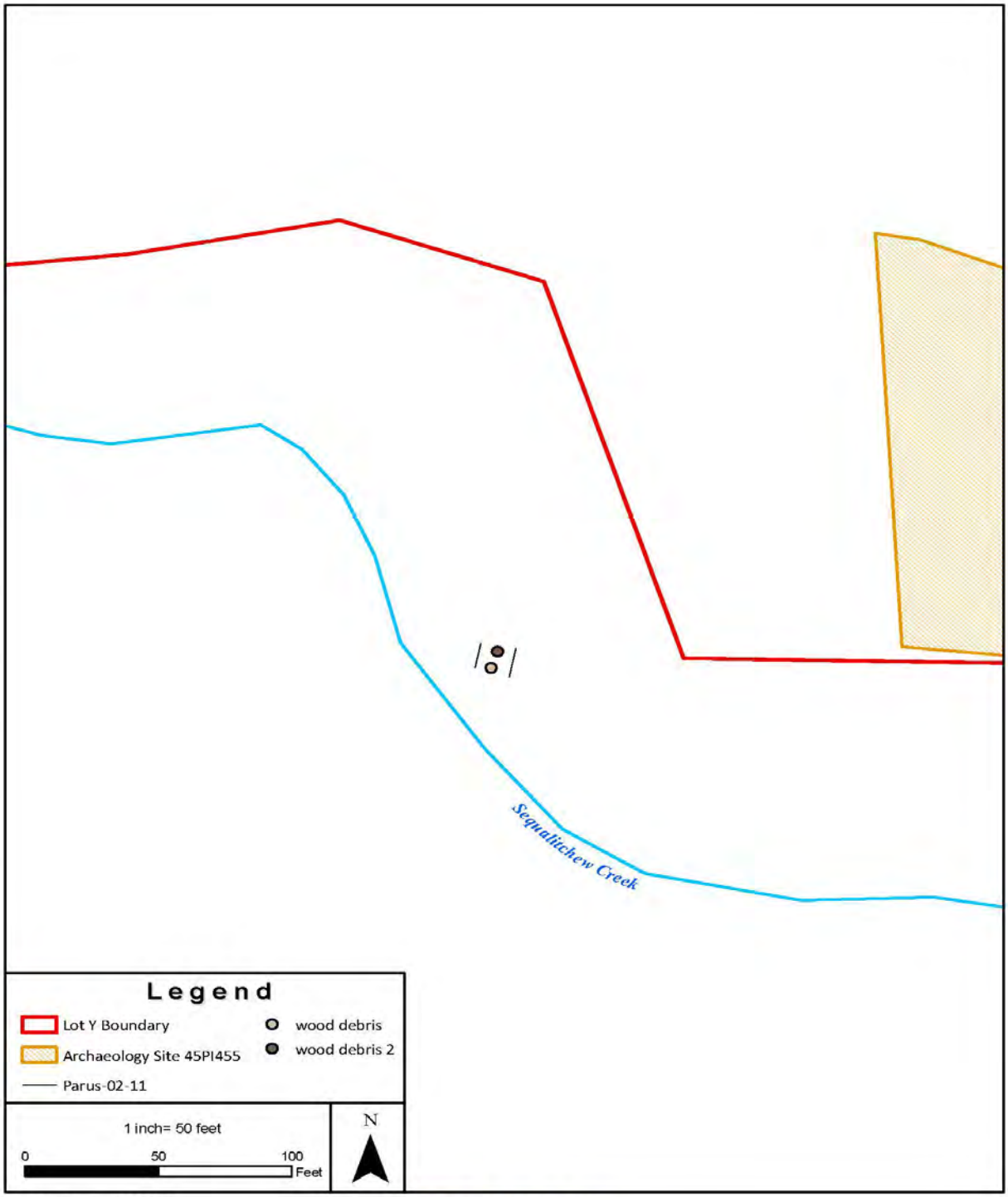
USGS MAP



Quad Name: Nisqually PR 1981
T19N, R 1E, Section 26
DuPont Lot Y: Parus-02-11 Location Map

PARUS CONSULTING, INC.

SKETCH MAP



Quad Name: Nisqually PR 1981
T19N, R 1E, Section 26
DuPont Lot Y: Parus-02-11 Sketch Map

PARUS CONSULTING, INC.

PHOTOGRAPH(S)

Figure 1: Upper and lower abutments (view to north)

Figure 2: South face of lower abutment (view to north)

PHOTOGRAPH(S)

Figure 3: East side of upper abutment (view to west)

PHOTOGRAPH(S)

Figure 4: Wood debris near lower abutment (plan view)

Figure 5: Wood debris with metal cleat near lower abutment (plan view)

STATE OF WASHINGTON
ARCHAEOLOGICAL ISOLATE INVENTORY FORM

Smithsonian Number: PI00064

***County:** Pierce

***Date:** 2-17-2011 ***Compiler:** C. Arrington

ISOLATE DESIGNATION

Isolate Name: Kerosene Can

Field/ Temporary ID: Parus Isolate #1

Site Type** *(Refer to the DAHP Survey and Inventory Guidelines Pages 19-23):** Historic isolate

ISOLATE LOCATION

***USGS Quad Map Name:** Nisqually

***Legal Description: T**19N **R** 1 **E/W:** E **Section(s):** 26

Quarter Section(s): NWNW

***UTM: Zone** 10 **Easting** 526413 **Northing** 5217323

Latitude: **Longitude:** **Elevation (FT/M):** 220ft

Other Maps: **Type:**

Scale: **Source:**

Drainage, Major: Sequalitchew Creek **Drainage, Minor:** **River Mile:**

Aspect: **Slope:** 1-3%

Location Description** *(General to Specific):** This isolate is located on the north side of Sequalitchew Creek, northwest of the Town of DuPont. It is situated east of the old DuPont works property. The area is disturbed and is dominated by grasses and brushy plants. The project area is situated within the Puget Trough physiographic province (Franklin and Dyrness 1973) approximately 1 mile east of the southern part of Puget Sound shoreline. Sequalitchew Creek drains the Edmond's Marsh area about 1 mile east, and empties into Puget Sound approximately 1.5 miles to the northwest. The Puget Trough is a basin that lies between the Coast Range to the west and the Cascade Range to the east.

ISOLATE DESCRIPTION

***Narrative Description:** A galvanized kerosene can was located near the edge of the northwest corner of the area known locally as the “gravel pit” (HS-6 on Figure 2) and formerly the burning ground (45PI64). The sides of the can are dented and it exhibits some oxidation. It is missing the pour spout and wire handle, but is mostly intact. The top is domed and ribbed, and the base diameter is 11 inches, with a height of 14 inches. The dimensions suggest the volume of this can was approximately 5 gallons. Considering the lengthy range of manufacture, the age of the can is undeterminable.

Vegetation** *(On Site):** Mostly grasses, deciduous and conifer trees, and scotch broom
Local: Douglas fir, Pacific madrone, red alder, elderberry, sword fern
Local: Glacial Plain
Water Resources *(Type)***:** Sequalitchew Creek **Distance:** 474 feet South **Permanence:** year round
***Method of Collection(s):** No materials collected

ISOLATE AGE

***Component:** None *__Dates:__ None ***Dating Method:** None
Phase: None **Basis for Phase Designation:** None

ISOLATE RECORDERS

Observed by: C. Arrington & Pete Morris

***Date Recorded:** February 17, 2011

Recorded by** *(Professional Archaeologist):** Cindy Arrington

***Affiliation:** Parus Consulting, Inc ***Affiliation Phone Number:** 916-765-9381

***Affiliation Address:** 1508 Eureka Road, Suite 170, Roseville, CA

***Affiliation E-mail:** Cindy@parusconsulting.com

Date Revisited: **Revisited By:**

ISOLATE HISTORY

Previous Work *(Done on Area Where Isolate was Found)***:**

Year	Author(s)	Report Title	Proximity to project
1977	Onat, A.R., Lee A. Bennett, and Timothy Riordan	Cultural Resources Survey: DuPont Site, Volum I, Survey of Archaeological and Ethnographical Resources at the DuPont Site	Within and near project area
1977	Stratton, David H., and Glen W Lindeman	Cultural Resource Survey, DuPont Site, Volume II: Survey of Historical Resources at the DuPont Site.	Within and near project area
1989	Welch, Jeanne	A Cultural Overview and Comprehensive Management Plan for the DuPont Property, Pierce County, Washington	Within and near project area
1991	Moura, Guy F.	Missions, War Games, and Railroad Dumps: 1989 Explorations and Excavations, Northwest Landing, DuPont, Washington	Within project area
2000	Daugherty, Richard, and Mary Condon	Archaeological Monitoring of the "Hot Spot" Removal Program, the Hazardous Waste Stockpile Areas, and Sand Stockpile Laydown Areas at the Former DuPont Works Site, DuPont, Washington	Within project area
2001	Daugherty, Richard, and Mary Condon	An Update on the Archaeological Status of Sites 45PI63 (A Trash Dump Located Along a Railroad Spur), 45PI64 (Burning Ground Dump), 45PI66 (Methodist Episcopal Mission), and 45PI455 (Part of the 9th Cavalry Bivouac Area)	Within and near project area
2005	Wessen, Gary, Cathy Bialas and Gail Thompson	Cultural Resources Assessment for the Glacier Northwest North Sequalitchew Creek SEIS Project, City of DuPont, Pierce County, Washington	Within and near project area
2008	Wessen, Gary, Cathy Bialas, Derek Shaw and Gail Thompson	Revised Cultural Resources Assessment for the Glacier Northwest North Sequalitchew Creek SEIS Project, City of DuPont, Pierce County, Washington	Within and near project area

LAND OWNERSHIP

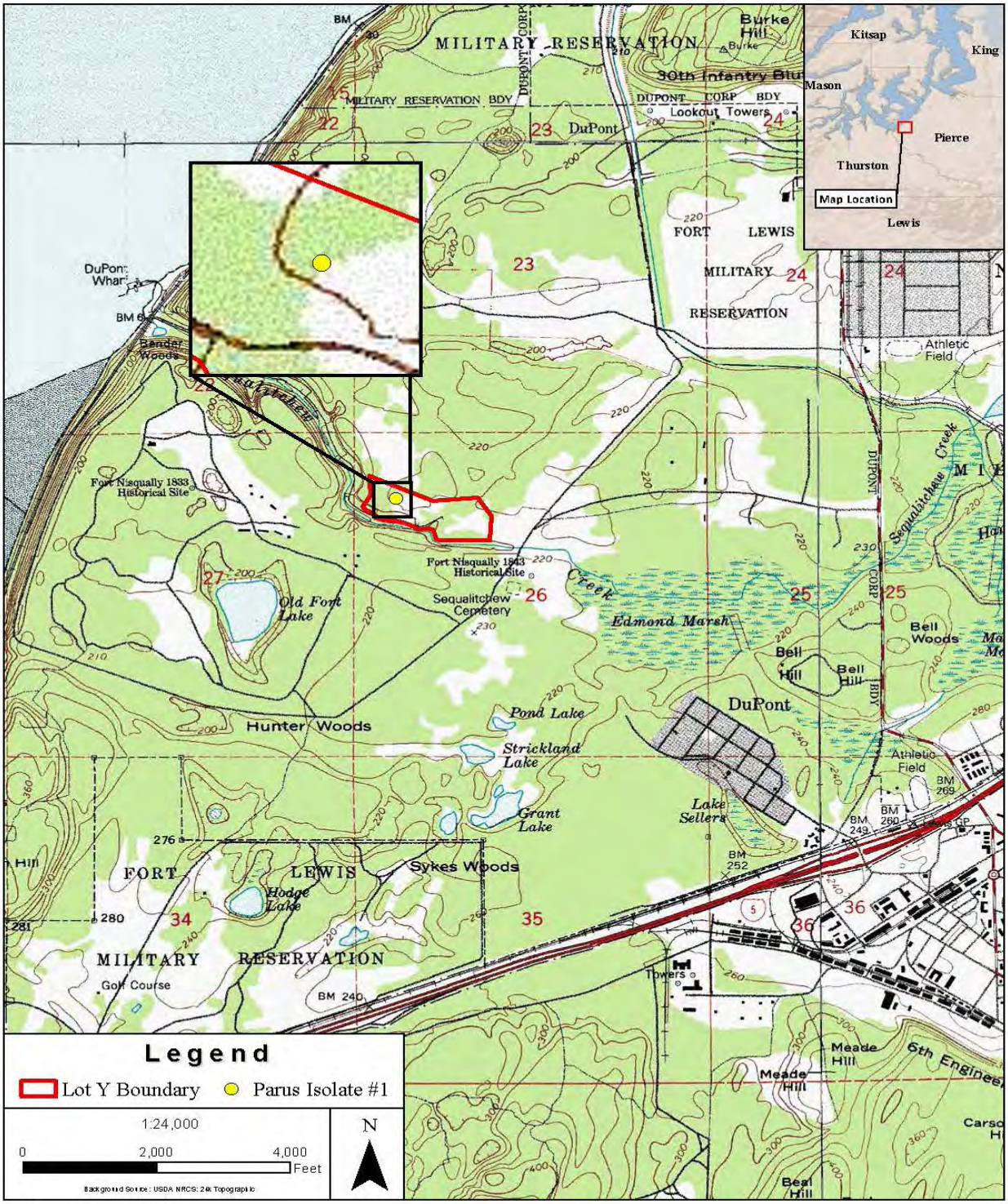
***Owner:** DuPont Industrial Partners, LLC
Address: 1201 Pacific Avenue, Suite 1501, Tacoma, WA 98402

***Tax Lot/ Parcel No:**

RESEARCH REFERENCES

***Items/Documents Used In Research** *(Specify)*:** 1973 Franklin, Jerry F., and C. T. Dyrness *Natural Vegetation of Oregon and Washington*. Pacific Northwest Forest and Range Experiment Station, U.S. Forest Service, Portland, Oregon.

USGS MAP



Quad Name: Nisqually PR 1981
T19N, R 1E, Section 26
DuPont Lot Y: Parus Isolate #1 Location Map

PARUS CONSULTING, INC.

Mandatory Information for Official Smithsonian Number designation.

Revised 2/2010

PHOTOGRAPH(S)

Figure 1 Kerosene can (in situ)

Figure 2 Kerosene can (top missing spout and handle)

PHOTOGRAPH(S)

Figure 3 Kerosene can (side view)

Figure 4 Kerosene can (side view)

APPENDIX E:
Unanticipated Cultural Resources Discovery Plan

UNANTICIPATED CULTURAL RESOURCES DISCOVERY PLAN

FOR

DUPONT INDUSTRIAL PARTNERS, LLC, LOT Y PROJECT

CITY OF DUPONT, PIERCE COUNTY, WASHINGTON

Prepared For:

DuPont Industrial Partners, LLC
1201 Pacific Avenue, Suite 1501
Tacoma, Washington 98402

Prepared By:

Nancy E. Sikes, Ph.D., RPA

PARUS CONSULTING, INC.
1508 Eureka Road, Suite 170
Roseville, CA 95661

Final– April 14, 2011

TABLE OF CONTENTS

INTRODUCTION

DuPont Industrial Partners, LLC (Partners) plans to undertake various ground-disturbing activities during planned construction of a multi-building industrial park on Lot Y in the City of DuPont in Pierce County. This Discovery Plan presents the approach that Partners will use to ensure the protection of cultural resources and describes the steps and actions that must be taken should cultural resources, including human remains, be discovered during ground-disturbing or construction activities for the proposed Lot Y project. This plan provides a brief description of the project, the location of the project, the potential for encountering cultural resources materials or deposits, the discovery procedures that will be employed, and who will be notified if archaeological materials or deposits, or human skeletal remains, are exposed during project implementation.

PROJECT DESCRIPTION, LOCATION AND HISTORY

The project encompasses approximately 25.3 acres on private land known as Lot Y (Assessor's Property Tax Parcel No. 0119262019) located in the City of DuPont, Pierce County, Washington. Lot Y is located within the city limits west of Center Drive and north of Sequalitchew Creek. Partners plans to develop a multi-building industrial park on Lot Y. The complex would include up to 12 buildings totaling approximately 340,000 square feet of building area, roadways, loading areas, approximately 650 parking spaces, and installation of underground utilities.

Plans also include construction of a trail along the creek to the southwest of the industrial park. The existing historical marker erected by the DuPont Company in 1927 at the site of the former Methodist Episcopal Mission (45PI66) will be moved to the trailhead area where the public will have continued access. An interpretive sign explaining the history of the temporary encampment of the 9th U.S. Cavalry Buffalo Soldiers (45PI455) within Lot Y will also be erected.

The Lot Y project area is located within Section 26, Township 19 North, Range 01 East on the Nisqually 1981 USGS 7.5-minute topographic map (Willamette Meridian). Elevation within Lot Y ranges from 64 to 68 meters (210-223 feet) above mean sea level.

A cultural resources investigation for the Lot Y project was conducted for Partners by Parus Consulting, Inc. (PCI) (Sikes and Arrington 2011). The work was conducted under an Archaeological Excavation Permit approved by the Washington State Department of Archaeology & Historic Preservation (DAHP) on February 7, 2011 (Permit No. 2010-54). The study included background research, correspondence with cultural resources staff or Tribal Historic Preservation Officers (THPOs) for the Nisqually, Puyallup and Squaxin Tribes, and archaeological survey and excavation. The fieldwork was conducted in February and March 2011 and included examination of the surface and subsurface sediments in a series of shovel test probes and geotechnical exploration pits.

Monitoring of construction activities during project implementation was not recommended. Lot Y has been extensively disturbed beginning with historic period settlement in the early 1880s, then operation of the DuPont Powder Works in the early to mid-1900s (including use of part of Lot Y as a burning ground dump from the 1930s until 1945), followed by subsurface archaeological investigations and related artifact collection between 1989 and 2005 and by environmental remediation activities in 1999 and 2000. No evidence was found during the 2011 investigation of two previously recorded historic archaeological sites (45PI66 Methodist Episcopal Mission site and 45PI455 9th U.S. Cavalry Bivouac site) and one flaked stone isolate (45PI773), except for two brick fragments within the boundaries of 45PI66. Nor was there any evidence of two other archaeological sites (45PI63 Railroad Dump #3 site and 45PI64 Burning Ground Dump site) formerly located within Lot Y that were completely removed during hazardous

materials remediation. Two surface historic archaeological sites (GEO RR10 railroad track segment and Parus-01-11 concrete platform) were identified within Lot Y during the fieldwork in 2011, but they are not considered significant.

POTENTIAL FOR DISCOVERY

The potential for discovery of buried archaeological materials, features or deposits, or of buried human remains, by implementation of this project is considered low. No significant cultural/archaeological sites are known to remain within the project area, and there has been extensive disturbance to the Lot Y landscape. The nearest known archaeological sites are located on the north bank of Sequalitchew Creek immediately outside of the Lot Y project area (set of concrete bridge abutments) and approximately 0.1 mile east of Lot Y near Center Drive on the north and south banks of the creek (flaked stone artifacts and locations of mid-1850s dwellings near the west palisade wall of 1843 Fort Nisqually).

No significant cultural resources were identified on the surface or within the subsurface sediments exposed in a series of 125 shovel test probes and 22 geotechnical exploration pits placed within Lot Y. Excavated in February and March 2011, the 2.5 foot-wide, 3-foot long shovel test probes ranged from 1.1 to 4.3 feet in depth. The geotechnical exploration pits averaged 10 feet deep, 3 feet wide, and 5 feet long. The subsurface sediments are gravelly sandy loam over gravelly sand with no soil matrix. Except for one brick fragment and a flat iron bar, there was no indication of a midden or other cultural deposits, artifacts or features within the 147 excavation units.

DISCOVERY PROCEDURES

INADVERTENT DISCOVERY OF ARCHAEOLOGICAL DEPOSITS

Archaeological deposits within the proposed Lot Y project are protected by Washington State law: Indian Graves and Records (Revised Code of Washington [RCW] 27.44), Archaeological Sites and Resources (RCW 27.53), and Archaeological Excavation and Removal Permit (WAC 25-48). Failure to comply with these could constitute a Class C Felony.

If any Partners employee, its contractors or subcontractors believes that he or she has inadvertently uncovered any cultural resource, then all work adjacent to the discovery shall cease, and he or she shall immediately notify the construction foreman, inspector, or on-site Partners representative who shall immediately notify the contact at Partners responsible for on-site activities:

DuPont Industrial Partners, LLC
Lia Estigoy
(253) 396-4860

A cultural resource discovery could consist of:

- Prehistoric and ethnohistoric materials such as flaked stone tools, tool-making debris, stone milling tools, fire-affected rock, basketry, culturally modified animal bone, fishing implements or soil darkened by cultural activities (midden).

- Historic materials might include remnants of railroad or roadway construction activities or other industry or commerce (e.g., railroad ties, concrete blocks, machinery parts), building remains, metal, glass, cans, or ceramic artifacts or debris older than 50 years.

For all types and classes of cultural/archaeological material other than human remains (see below), the person responsible for on-site activities shall immediately call the Washington State Department of Archaeology and Historic Preservation (DAHP), which is the state agency with jurisdiction over archaeological discoveries:

Department of Archaeology and Historic Preservation (DAHP)
Gretchen Kaehler, Local Government Archaeologist
Direct line: (360) 586-3083
Cell: (360) 628-2755

The DAHP representative, Ms. Kaehler, will advise Partners (represented by Lia Estigoy) of the specific course of action following the discovery of archaeological materials, deposits or features. For the discovery of human remains, see below. Such actions specified by the DAHP representative could include avoidance of the finds with protection in place, or an archaeological assessment and recovery if avoidance is unfeasible, among other options. Ground-disturbing activity in the vicinity of the find(s) cannot resume until it has been approved by the DAHP representative.

INADVERTENT DISCOVERY OF HUMAN SKELETAL REMAINS

For this project on non-federal and non-tribal lands in the State of Washington, procedures and actions for the inadvertent discovery of human skeletal remains or suspected human remains must comply with RCW 27.44, RCW 68.50 and RCW 68.60. If ground disturbing activities encounter human skeletal remains during the course of construction, then all activity **must** cease that may cause further disturbance to those remains and the area of the find must be secured and protected from further disturbance. In addition, the finding of human skeletal remains **must** be reported to the County Coroner and local law enforcement in the most expeditious manner possible. The remains should not be touched, moved, or further disturbed.

Immediate notification by phone shall be made to the County Coroner, local law enforcement and DAHP:

Pierce County Coroner
Dr. Thomas B. Clark III
3619 Pacific Avenue
Tacoma, Washington 98418
Telephone: (253) 798-6494

DuPont Police Department
1780 Civic Drive, Ste. 100
DuPont, Washington 98327
Telephone: 911 or (253) 964-7060

The Pierce County Coroner will assume jurisdiction over the human skeletal remains and make a determination of whether those remains are forensic or non-forensic. If the County Coroner determines the remains are non-forensic, then he or she will report that finding to DAHP who will then take jurisdiction over those remains and report them to the appropriate cemeteries or affected tribes.

The State Physical Anthropologist will make a determination of whether the remains are Indian or Non-Indian and report that finding to the affected parties. The DAHP will then handle all consultation with the affected parties as to the future preservation, excavation, and disposition of the remains. Ground-disturbing activity near the human remains may not resume until permission to resume work has been received by Partners from DAHP.

Department of Archaeology and Historic Preservation (DAHP)
Guy Tasa, State Physical Anthropologist
1063 South Capital Way, Suite 106
Olympia, WA 98501
Direct line: (360) 586-3535

SUMMARY

Following the procedures presented in the Discovery Plan will ensure that ground-disturbing and construction activities for implementation of the proposed Lot Y project are in compliance with state and local laws that protect archaeological resources on public lands.

REFERENCES

Sikes, Nancy E., and Cindy J. Arrington
2011 *Archaeological Survey, Testing and Monitoring at 45PI66, 45PI455 and 45PI773, DuPont Industrial Partners, LLC, Lot Y Project, City of DuPont, Pierce County, Washington*. Report prepared by Parus Consulting, Inc. for DuPont Industrial Partners, LLC.

June 8, 2011

Ms. Stephenie Kramer, Assistant State Archaeologist
Department of Archaeology & Historic Preservation, (DAHP)
P.O. Box 48343
Olympia, WA 98504-8343

RE: Lot Y Archaeological Survey, DuPont, WA

Dear Ms. Kramer:

We are in receipt of your comment letter dated May 4, 2011, regarding the Lot Y Archaeological Survey. We have a couple of questions and comments regarding the letter:

1. We will definitely provide you with the project plans when we have them for this site.

2. We were under the assumption that moving The Methodist Mission Marker was something that DAHP was in agreement with during our meetings with you. We will consult and provide DAHP with a plan of action as to where we will relocate this marker and the signage to accompany it, or if we intend to leave it in place.

3. The narrow gauge railroad that was found on site is the same as product that the DuPont Museum has in storage. We were informed that they have several hundred feet in storage; and it was taken from this same site earlier. We have taken every opportunity to ensure the integrity of this site, but feel it could be a potential safety hazard to leave this one piece in place. Lot Y is being developed as an industrial piece of property and once developed, it will not be reasonable for people to come and view this one piece of track. We appreciate the efforts of preservation and presentation of the DuPont Power Works Area, but would like to be able move forward with our design of Lot Y without incorporating the narrow gauge railroad. We would gladly donate it to the DuPont Museum if they would like to add it to their collection.

Please feel free to contact myself at (253)377-0989, or by email if you have any further questions or comments.

Sincerely,

Lia Estigoy – Owner's Representative
DuPont Industrial Partners, LLC
1201 Pacific Ave., Suite 1501
Tacoma, WA 98402
lia@combaydev.com

cc: Eric Cederstrand
Cindy Arrrington
DJ Thompson
Bill Kingman

STATE OF WASHINGTON

DEPARTMENT OF ARCHAEOLOGY & HISTORIC PRESERVATION

1063 S. Capitol Way, Suite 106 • Olympia, Washington 98501
Mailing address: PO Box 48343 • Olympia, Washington 98504-8343
(360) 586-3065 • Fax Number (360) 586-3067 • Website: www.dahp.wa.gov

May 4, 2011

Mr. Bill Kingman, Planning Manager
City of Dupont
1700 Civic Drive
Dupont, WA 98237

Re: Lot Y

Dear Mr. Kingman:

We are in receipt of an archaeological survey report entitled *Archaeological Survey, Testing, and Monitoring at 45PI66, 45PI455 and 45PI773, DuPont Industrial Partners, LLC, Lot Y Project, DuPont, Washington* authored by Sikes and Arrington.

We have the following comments and questions:

1. We would like to see and have the opportunity to comment on the project plans when they are submitted. At that time, we will be able to make more substantive comments on the report and the project when we can compare the proposed disturbance areas with the archaeological work that was done.

2. We understand a proposal to move the Methodist Mission marker is a possibility. We will need to discuss that with the Proponents when they have more information about where it will be moved and the interpretive plans they have for it.

3. Sikes and Arrington did find a section of the narrow gauge railroad, which is a historical period archaeological resource. While the segment is recommended as not National Register eligible, further evaluation and context development is needed before we would agree with that recommendation. In view of its association with the historically significant DuPont Works, when site plans are being drafted, we recommend that this track segment (or portions of it) be retained in place and incorporated as project green space and/or as a landscape feature. We would also advise obtaining comments and recommendations by the DuPont Historical Society.

Please feel free to contact me at (360) 586-3083 or by email if you have any questions. We look forward to working further on this project.

Sincerely,

Stephenie Kramer
Assistant State Archaeologist
Email: stephenie.kramer@dahp.wa.gov

cc: Eric Cederstrand
Cindy Arrington
Joe Kalama

Dupont Wey.
FS 1260
Panel 1

FILED
JUL 17 1991
SUPERIOR COURT
BETTY J. GOULD
THURSTON COUNTY CLERK

IN THE SUPERIOR COURT OF THE STATE OF WASHINGTON
FOR THURSTON COUNTY

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY,

v.

WEYERHAEUSER COMPANY and
DUPONT COMPANY

No. ~~91 2 0~~1703 1

CONSENT DECREE

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EXHIBITS

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INTRODUCTION

A. In entering into this Decree (Decree), the mutual objective of the Washington State Department of Ecology and Weyerhaeuser Company and DuPont Company is to provide for remedial action at a facility where hazardous substances have been deposited, placed, stored, or otherwise disposed of. This Decree requires Weyerhaeuser and DuPont (Defendants) to undertake remedial action which includes completion of a Remedial Investigation (RI), Health Risk Assessment (HRA) and Feasibility Study (FS), with the intent of determining a permanent cleanup option for the entire Site. An interim action will also be completed under this Decree.

B. The Complaint in this action is being filed simultaneously with this Decree. An answer has not been filed, and there has not been a trial on any issue of fact or law in this case. However, the parties wish to resolve the issues raised by Ecology's complaint. In addition, the parties agree that settlement of these matters without litigation is reasonable and in the public interest and that entry of this Decree is the most appropriate means of resolving these matters.

C. In signing this Decree, Defendants agree to its entry and agrees to be bound by its terms.

D. By entering into this Decree, the parties do not intend to discharge nonsettling parties from any liability

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they may have with respect to matters alleged in the complaint. Defendants and Ecology retain the right to seek to recover response costs expended pursuant to this Decree from any other responsible parties.

E. The Court is fully advised of the reasons for entry of this Decree, and good cause having been shown: IT IS HEREBY ORDERED, ADJUDGED, AND DECREED AS FOLLOWS:

I. JURISDICTION

A. This Court has jurisdiction over the subject matter and over the parties pursuant to chapter 90.48 RCW; chapter 70.105 RCW; chapter 70.105D RCW; and the Comprehensive Environmental sponse, Compensation and Liability Act (CERCLA), 42 U.S.C. § 9601 et seq.

B. Under chapter 70.105D RCW, the Model Toxics Control Act (MTCA), and CERCLA, whenever Ecology has reason to believe that a release or threatened release of a hazardous substance will require remedial action, it shall notify potentially liable persons with respect to the release or threatened release. Pursuant to RCW 70.105D.040(4), where Ecology and a potentially liable person reach such a settlement regarding appropriate remedial action, the settlement shall be filed with the appropriate superior court as a consent decree, after public notice and hearing.

C. On the basis of the testing and analysis described in the Statement of Facts, Section IV, and Ecology files and

records, Ecology has determined that past disposal or management practices at the Site have given rise to a release of hazardous substances.

D. Defendants are liable parties for the Site pursuant to RCW 70.105D.040(1) and 42 U.S.C. § 9607 and have been given notice of the release of hazardous substances at the Site and Ecology has determined that they are both liable parties under the MTCA.

E. The actions to be taken pursuant to this Decree are necessary to protect the public health, welfare and the environment, and are consistent with requirements of the MTCA and the National Contingency Plan, 40 CFR Part 300 et seq.

II. PARTIES BOUND

This Decree shall apply to and be binding upon the signatories to this Decree (parties), their successors and assigns. The undersigned representative of each party hereby certifies that he or she is fully authorized to enter into this Decree and to execute and legally bind such party to comply with the Decree. Defendants agree to undertake all actions required by the terms and conditions of this Decree and not to contest state jurisdiction regarding this Decree. No change in ownership or corporate status shall alter the responsibility of Defendants under this Decree. Defendants shall provide a copy of this Decree to each of their agents, including all contractors and subcontractors retained to

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perform work contemplated by this Decree, and shall condition any contract for such work on compliance with this Decree.

III. DEFINITIONS

A. Site: The Site covers that portion of the former DuPont Works production area located south of Sequalitchew Creek and that portion of the former DuPont Works production area located north of the Creek that includes the former "Burn Area," as shown on the site map (Exhibit C), and the former "Black Powder Area," as shown on the Black Powder Area site map (Exhibit D).

B. Days: Refer to calendar days unless specified otherwise.

C. Parties: Refers to the Weyerhaeuser Company, DuPont Company and the Department of Ecology.

IV. STATEMENT OF FACTS

A. Site Location and Status

The Site is a portion of the former DuPont Works property. The DuPont property (which includes the DuPont Works and adjacent property) covers approximately 3,200 acres located in the southwest corner of Pierce County, Washington, in the City of DuPont. Studies conducted to date by Weyerhaeuser under the supervision of Ecology indicate that 25 areas on the Site, as shown on Exhibits C and D, contain hazardous substances or hazardous waste constituents. DuPont began operations on the property in 1909, and produced a

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variety of commercial explosive materials. The plant was purchased by Weyerhaeuser in 1976 and was closed in 1977. Weyerhaeuser has conducted no manufacturing activities at the Site which involved the generation, use, treatment, storage, disposal or transportation of hazardous substances or dangerous wastes, although the DuPont Company, Southwest Explosives Company and Oriard Powder Company, as lessees of Weyerhaeuser, used certain areas of the Site for the storage and transportation of explosives. Weyerhaeuser has conducted site work consisting of building demolition of former explosives laboratories, removal of above ground and underground storage tanks, and disposal of construction debris.

B. Previous Site Investigations

In 1985, Weyerhaeuser began evaluating 37 potential hazardous waste areas identified by Hart Crowser under contract to Weyerhaeuser on the property. These studies led to the collection in 1986-1987 of soil and waste samples from each area, and extensive analyses of chemical constituent levels (Hart Crowser, 1987). These data revealed that 25 areas on the Site contained elevated levels of at least one hazardous substance or hazardous waste constituent. Identified hazardous substances or hazardous waste constituents present on the property included lead, zinc, nitroglycerine, 2,4,6-trinitrotoluene, 2,4-dinitrotoluene, 2,6-dinitrotolune, monomethylamine nitrate, PCBs, DDT, several

polynuclear aromatic hydrocarbons (PAH) and volatile organic compounds, and oily substances. Hazardous substances and hazardous wastes appeared to be generally restricted to near-surface soils, with lower concentrations reported at depth.

In an effort to determine potential impacts from hazardous substances and hazardous waste releases at the Site, between November 1987 and February 1988, seventeen (17) soil borings were drilled within the former production area and completed as groundwater monitoring wells (Hart Crowser, 1988). The soil borings and associated hydraulic data collected during this effort formed the basis for an assessment of geologic and hydrogeologic conditions at the Site which may control both surface and subsurface contaminant transport.

In March 1988, groundwater and surface water samples were collected from a total of 28 monitoring areas on and adjacent to the Site (Hart Crowser, 1988). These samples were analyzed for a variety of field parameters, including inorganics, metals, oil and grease, explosives, PAHs, PCBs, DDT, and volatile organic constituents identified previously in the soil sampling effort (Hart Crowser, 1987). Some of the monitoring areas were resampled in April 1988 to confirm selected analytical data.

The results of this first round of sampling suggested that local concentrations of nitrate and possibly

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also oil and grease constituents were elevated above local background levels. Additionally, lower than normal Ph levels were found in several wells downgradient from identified waste areas on the property. Levels of nitrate in two of the monitoring wells exceeded primary drinking water standards, although existing water supplies did not appear to be affected. No other elevated concentrations of constituents were detected. Groundwater and surface water quality monitoring continued at quarterly intervals for a period of one year on or about 6/88, 9/88, and 12/88 samplings to assess possible seasonal variations in the principal water quality characteristics of concern (i.e., field parameters, nitrates, nitrogen, dissolved solids, lead, oil and grease, and explosives). This quarterly groundwater sampling revealed the presence of those contaminants noted above and the presence of low levels of explosive compounds, e.g., dinitrotoluene.

With the exception of possible contamination of the sediments at the Site, data collected to date (Hart Crowser 1987 and 1988) are generally sufficient to describe the nature and likely extent of hazardous substances present in the soils and groundwater at the Site. Certain additional remedial investigations, as more particularly described in Exhibits A, B, C, and D (attached), are necessary to complete Site investigations.

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C. Black Powder Area

Recently, data collected pertaining to the Black Powder Area (see Ex. D) reveal that near surface soils in the area contain lead at levels exceeding cleanup standards. Further site investigation is occurring to define the nature and extent of hazardous substances in the Black Powder Area.

D. Independent Cleanups

Prior to entry of this Consent Decree, Weyerhaeuser conducted investigations and cleanup actions at Areas 21, 27, 28, and 29 (formerly referred to as "Sites"). The investigations revealed elevated levels of lead, zinc, and total petroleum hydrocarbons in the soil. Cleanups were conducted by Weyerhaeuser with Ecology oversight, using cleanup guidelines in effect at the time. Ecology will provide a formal review of the independent cleanups conducted to determine if any further action is needed at these sites, based on MTCA cleanup standards in effect, on the effective date of this Decree.

Weyerhaeuser and Dupont are currently engaged in voluntary cleanups of Areas 5 and 6, involving, primarily, the removal of abandoned drums. These cleanups were initiated after work plans describing the work to be performed were approved by Ecology, and will be completed under the Consent Decree.

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E. Conclusion

Based on the facts set forth herein, Ecology has determined that the release and potential release of hazardous substances from the Site requires remedial action to protect the public health and welfare and the environment. This Decree requires remedial actions, including a remedial investigation, feasibility study, and interim action, necessary to protect public health, welfare and the environment.

V. WORK TO BE PERFORMED

This Decree contains a program designed to protect the public health and welfare and the environment from the known release, or threatened release, of hazardous substances or contaminants at, on, or from the Site, and includes contingency measures. This program is set forth in Exhibits A, B, C, and D to this Decree, which are collectively titled and constitute the Remedial Investigation/Feasibility Study Plan (RI/FS). Exhibit A sets forth the work to be performed to accomplish the RI/FS (including an environmental and human health risk assessment). Exhibit B sets forth the schedule for implementing this work (Schedule). Exhibit C is a map of the Site, excluding the Black Powder Area. Exhibit D is a map of the Black Powder Area. Exhibits A, B, C, and D are integral and enforceable parts of this Decree, and the work to be performed pursuant to such Exhibits is consistent with all

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requirements of state and federal laws and regulations, including, without limitation, the MTCA and the National Contingency Plan, 40 CFR Part 300. The terms "Consent Decree" or "Decree" shall include Exhibits A-D whenever used in this document. Except where performance by another party is expressly provided in the exhibits, Defendants hereby commit to perform the work described in Exhibits A, B, C, and D.

A. Work Plan. Pursuant to Ecology's requirements Weyerhaeuser has completed certain remedial investigation and baseline risk assessment work as of the dates set forth in Exhibit B. Defendants shall submit to Ecology additional remedial investigation and feasibility study work by the dates provided in Exhibit B. Any field work conducted by Defendants must include and be consistent with the following plans:

1. Quality Assurance/Quality Control Plan
2. Health and Safety Plan
3. Data Management Plan
4. Sampling and Analysis Plan
5. Community Relations Plan
6. Cultural Resources Comprehensive Management Plan and Cultural Resources Protection Plan
7. Sediment Sampling Plan

The above enumerated plans shall be submitted to Ecology for review, comment, and approval.

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B. Scope of Remedial Investigation. Through previous Site investigation, documented in a Phase I Site Survey and Review Report (Hart Crowser, 1986), a Phase II Site Characterization Report (Hart Crowser, 1987), and a Hydrologic and Water Quality Assessment Report (Hart Crowser, 1988) the vertical and horizontal extent of contamination at the DuPont Site has, for the most part, been determined. To complete the remedial investigation (RI), Defendants shall perform the work plan tasks set forth in Exhibits A, B, C, and D hereto.

C. Scope of Feasibility Study. Based on the results of the remedial investigation and the risk assessment, completed per the requirements of Exhibits A, B, C, and D, a feasibility study of alternative remediation options at the Site shall be conducted. Only those areas within the Site which may exceed an acceptable level of risk to human health or the environment or where levels of hazardous substances exceed cleanup levels will be considered during this effort.

The feasibility study shall be performed in accordance with WAC 173-340-350 and in general accordance with the draft EPA guidelines for Remedial Investigations and Feasibility Studies (EPA, 1988). The feasibility study shall include an initial identification and screening of potential remediation alternatives based on preliminary evaluations of permanence, effectiveness, implementability, and cost. Based on the preliminary screening, a minimum of three (3)

alternatives for each contaminated area shall be selected for more detailed analyses. Areas with identical contaminants may be grouped and treated together. These more detailed evaluations will address in greater detail the use of permanent solutions, short-term and long-term effectiveness, implementability, and cost of each of the final alternatives.

The purpose of the feasibility study is to identify, develop, evaluate, and recommend remedial action alternatives which are consistent with a permanent remedy and which are available to prevent or minimize the release or threatened release of hazardous substances or pollutants or contaminants from the Site, as identified through the remedial investigation and the risk assessment. The feasibility study shall be conducted in accordance with all federal and state laws and regulations, and generally in accordance with all applicable EPA guidance documents relating to feasibility studies.

The remedial investigation and feasibility study for the 25 areas of the Site identified on Exhibits C and D shall be presented in a draft report submitted to Ecology on or before the date 24 months following the effective date of this Decree, depending on the timeliness of Ecology's prior response to the risk assessment. Ecology will provide a final written response to the draft remedial investigation and feasibility study report within 90 days of receipt of the document. Defendants shall submit a final report for the

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remedial investigation and feasibility study no later than 60 days following the receipt of Ecology's final written response.

D. Black Powder Area Interim Action. Within 90 days of the effective date of this Decree, Defendants shall submit a work plan and schedule for an interim action at the Black Powder Area. As stated above, preliminary investigations have revealed that soils in the Black Powder Area are contaminated with lead. This interim action will be designed to define the nature and extent of contamination of the Black Powder Area, and to recommend an appropriate interim action for the area. Ecology will then select the interim action to be implemented. The Defendants will then implement the selected interim action unless Dispute Resolution is invoked, in which case the dispute resolution process set forth in Section XIII of this Decree shall be utilized to resolve the dispute. The interim action will be the subject of threshold determination under the State Environmental Policy Act, Ch. 43.21C RCW.

Upon Ecology's determination that the interim action for the black powder area has been completed in compliance with the approved interim action work plan, that no further remedial action is necessary at the black powder area, and that applicable cleanup standards have been met, Ecology may delete the black powder area from the coverage of this Consent

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Decree. Ecology will only make this determination after public notice and an opportunity to comment.

E. Other Interim Actions. Ecology may, during the term of this Consent Decree, determine that additional interim actions are necessary at the Site under WAC 173-340-430. Likewise, Defendants may, during the term of this Consent Decree, propose additional interim actions.

Upon receipt of notification from Ecology that an interim action is required, Defendants shall plan, propose, initiate, complete, and report upon the required interim action for the Site. Such plans, proposals, and reports shall be subject to review, comment, and approval by Ecology. If Defendants fail to undertake an interim action required by Ecology in a proper and prompt manner, Ecology reserves the right to perform the required interim action and to recover all costs incurred in doing so from Defendants. Defendants may dispute the necessity or appropriateness of any interim action required by Ecology.

F. Future Negotiations Regarding Remedial Action. If the feasibility study, performed pursuant to Section C above, indicates the need for remedial action, as defined by the MTCA or CERCLA, Defendants and Ecology will enter into negotiations regarding such remediation; this will include the design, construction, operation, maintenance, and monitoring phases of such remedial action. The parties recognize and agree that,

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if a remedial action is necessary, it would be beneficial to commence the remedial action during the construction season (Spring, Summer and early Fall). Ecology and Defendants will exercise their good faith efforts to agree upon any necessary remedial action as promptly as possible following submission of the final report due under this Decree. Neither Ecology nor Defendants shall have any obligation pursuant to this Decree to agree upon the terms of any such remedial action, nor shall Defendants have any obligation under this Decree to perform any such remedial action. If the parties do agree upon the terms of a remedial action those terms and the performance of the remedial action shall be the subject of a separate consent decree or an amendment to this Decree.

G. Consistency with Cultural Resources Comprehensive Management Plan. The parties to this Decree recognize the historical and archaeological significance of the Site. Every reasonable effort will be made to ensure that area investigation and remediation will be conducted in a manner consistent with protection of these values. As soon as practicable after execution of this Decree, Defendants shall, in consultation with the State Office of Archaeology and Historic Preservation, prepare a Cultural Resources Comprehensive Management Plan. The Plan shall detail the steps which will be taken, including dispute resolution processes, to protect the archaeological and historical values of the Site. The

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Defendants shall also prepare and submit a Cultural Resources Protection Plan which will ensure that work performed under this Decree will be completed in a manner consistent with the Cultural Resources Comprehensive Management Plan. These plans will be subject to Ecology approval.

VI. DESIGNATED PROJECT COORDINATORS

On or before the entry of this Decree, Ecology, Weyerhaeuser and DuPont shall each designate a project coordinator. Each project coordinator shall be responsible for overseeing the implementation of this Decree. The Ecology project coordinator will be Ecology's designated representative at the Site. To the maximum extent possible, communications between Ecology and Defendants and all documents, including reports, approvals, and other correspondence concerning the activities performed pursuant to the terms and conditions of this Decree, shall be directed through the project coordinators. The project coordinators may designate working level staff contacts for all or portions of the implementation of the remedial work required by this Decree. The project coordinators may agree to minor modifications to the work to be performed without a formal amendment to this Decree.

Any party may change its respective project coordinator. To the extent possible, written notification shall be given to

the other party, in writing, at least ten (10) calendar days prior to the change.

The project coordinator for Ecology is:

Mike Blum
7272 Cleanwater Lane
Mail Stop: LU-11
Olympia, WA 98504-6811

The project coordinator for Weyerhaeuser is:

Vern Moore
Weyerhaeuser Company
P.O. Box 100
Dupont, WA 98327

The project coordinators for DuPont are:

John B. Frazier
Chemicals & Pigments Dept. BOD 918
DuPont Company
1007 Market Street
Wilmington, DL 19898

Chuck Crittenden
DuPont Environmental Remedial Services
P.O. Box 100
DuPont, WA 98327

VII. PERFORMANCE

All response work performed pursuant to this Decree shall be under the direction and supervision, as necessary, of a professional engineer or certified hydrogeologist, or equivalent, with experience and expertise in hazardous waste area investigation and cleanup. Defendants shall notify Ecology as to the identity of such engineer(s) or hydrogeologist(s), and of any contractors and subcontractors

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to be used in carrying out the terms of this Decree, in advance of their involvement at the Site.

VIII. ACCESS

Ecology or any Ecology authorized representative shall have the authority to enter and freely move about all property at the Site at all reasonable times for the purposes of, inter alia: inspecting records, operation logs, and contracts related to the work being performed pursuant to this Decree; reviewing the progress in carrying out the terms of this Decree; conducting such tests or collecting samples as Ecology or the project coordinator may deem necessary; using a camera, video and/or sound recording, or other documentary type equipment to record work done pursuant to this Decree; and verifying the data submitted to Ecology by Defendants. While Ecology reserves its right to enter and inspect the Site, as set forth above, without providing advance notice, Ecology will, in most cases, provide 48-hour advance notice of any Site inspection. Ecology shall, upon request, split any samples with Defendants taken by Ecology during an inspection unless Defendants fail to make available a representative for the purpose of splitting samples. All parties with access to the Site pursuant to this paragraph shall comply with approved health and safety plans.

IX. SAMPLING, DATA REPORTING AND AVAILABILITY

With respect to the implementation of this Decree, Defendants shall make the quality-assured results of all sampling, laboratory reports, and/or test results generated by them, or on their behalf available to Ecology and shall submit these quality-assured results in progress reports submitted in accordance with paragraph X herein. At the request of Ecology, Defendants shall allow split or duplicate samples to be taken by Ecology and/or its authorized representatives of any samples collected by Defendants pursuant to the implementation of this Decree. Defendants shall notify Ecology five (5) working days in advance of any sample collection activity. To the extent practicable, and without limitation on Ecology's rights under Section VIII, Ecology will provide the same five (5) day notice to Defendants and shall, upon request, allow split or duplicate samples to be taken by Defendants or their authorized representatives of any samples collected by Ecology pursuant to the implementation of this Decree.

In addition, Ecology may require Defendants to split any samples collected on their behalf, and thereafter send such samples to different laboratories for analyses in an effort to ensure accurate laboratory results.

X. PROGRESS REPORTS

Defendants shall submit to Ecology written monthly progress reports which describe the actions they have taken during the previous month to implement the requirements of this Decree. Progress reports shall also describe the activities scheduled to be taken during the next month. All progress reports shall be submitted by the tenth day of the month in which they are due after the effective date of this Decree. The progress reports shall include a detailed statement of the manner and extent to which the requirements and time schedules set out in the Decree are being met. Unless otherwise specified, progress reports and any other documents submitted pursuant to this Decree shall be sent by United States mail, to Ecology's project coordinator.

XI. RETENTION OF RECORDS

Defendants shall preserve, during the pendency of this Decree and for ten (10) years from the date of issuance of the Certificate of Completion (Section XXVII) all records, reports, documents, and underlying data in its possession relevant to the implementation of this Decree, or, in the alternative may furnish to Ecology copies of all such records, reports and documents, and shall insert in contracts with project contractors a similar record retention requirements. Upon request of Ecology, Defendants shall make all non-privileged non-archived records available to Ecology and allow

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access for review. All non-privileged archived records shall be made available to Ecology within a reasonable period of time. Ecology agrees, to the extent permitted by law, to maintain the confidentiality of any proprietary information requested.

XII. TRANSFER OF INTEREST IN PROPERTY

No voluntary or involuntary conveyance or relinquishment of title, easement, leasehold, or other interest in any portion of the Site shall be consummated without provision for continued operation and maintenance of any containment system, treatment system, and monitoring system installed or implemented pursuant to this Decree. Prior to transfer of any legal or equitable interest in all or any portion of the Site upon which a release of hazardous substances is known to have occurred (including, without limitation, all or any portion of the precise geographic area described in Exhibit C) or upon which a containment system, treatment system or monitoring system has been installed or implemented, Weyerhaeuser shall serve a copy of this Decree and all attachments upon any prospective purchaser, lessee, transferee, assignee, or other successor in interest of the property; and, at least thirty (30) days prior to any transfer, Weyerhaeuser shall notify Ecology of said contemplated transfer.

XIII. RESOLUTION OF DISPUTES

If either Defendant objects to any Ecology disapproval, proposed modification, or decision made pursuant to this Decree, it shall notify Ecology in writing of its objections within fourteen (14) calendar days of receipt of such disapproval, proposed modification or decision. Thereafter, the parties shall confer in an effort to resolve the dispute. If agreement cannot be reached on the dispute within fourteen (14) calendar days after receipt by Ecology of such objections, Ecology shall promptly provide a written statement of its decision to Defendants.

If Ecology's final written decision is unacceptable to either Defendant, Defendant has the right to submit the dispute to the Court for resolution. The parties agree that one judge should retain jurisdiction over this case and shall, as necessary, resolve any dispute arising under this Decree. In the event Defendants present an issue to the Court for review, the Court shall review the action or decision of Ecology on the basis of whether such action or decision was arbitrary and capricious and render a decision based on such standard of review. Ecology and Defendants agree to only utilize the dispute resolution process in good faith and agree to expedite, to the extent possible, the dispute resolution process whenever it is used. Where either party utilizes the

dispute resolution in bad faith or for purposes of delay, the other party may seek sanctions.

Implementation of these dispute resolution procedures shall not provide a basis for delay of any activities required in this Decree, unless Ecology agrees in writing to a schedule extension or the Court so orders.

XIV. AMENDMENT OF CONSENT DECREE

This Decree may only be amended by a written stipulation among all the parties to this Decree that is entered by the Court, or by order of the Court. Such amendment shall become effective upon entry by the Court. Agreement to amend shall not be unreasonably withheld by any party to the Decree.

Defendants shall submit any request for an amendment to Ecology for approval. Ecology shall indicate its approval or disapproval within fifteen (15) working days after the request for amendment is received, if additional time is necessary to review the request for amendment Ecology shall notify Defendants within fifteen (15) days whether an extension of the Work Plan schedule is granted during the pendency of Ecology's review of the proposed amendment. Reasons for any disapproval shall be stated in writing. If Ecology does not agree to any proposed amendment, the disagreement may be addressed through the dispute resolution procedures described in Section XIII of this Decree.

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No guidance, suggestions, or comments by Ecology will be construed as relieving Defendants of their obligation to obtain formal approval as may be required by this Decree. No verbal communication by Ecology shall relieve Defendants of the obligation specified herein.

Ecology shall notify Defendants in writing of any Ecology proposed amendment and the basis for such proposal. Defendants shall thereafter comply with such modifications, or if either Defendant does not agree with those modifications, the disagreement shall be addressed through the dispute resolution procedures described in Section XIII of this Decree.

If Ecology adopts regulations applicable to this Decree that would require public participation in the amendment process, such regulations shall be followed in amending this Decree.

XV. EXTENSION OF SCHEDULE

A. An extension of schedule shall be granted only when a request for an extension is submitted in a timely fashion and good cause exists for granting the extension. All extensions shall be requested in writing. The request shall specify the reason(s) the extension is needed. An extension shall only be granted for such period of time is reasonable under the circumstances. A requested extension shall not be effective until approved by Ecology or the Court. Ecology

shall act upon any written request for extension in a timely fashion. It shall not be necessary to formally amend this Decree pursuant to Section XIV when a schedule extension is granted.

B. The burden shall be on Defendants to demonstrate to the satisfaction of Ecology that the request for such extension has been submitted in a timely fashion and that good cause exists for granting the extension. Good cause includes, but is not limited to, the following:

1. Circumstances beyond the reasonable control and despite the due diligence of Defendants including delays caused by unrelated third parties or Ecology, such as (but not limited to) delays by Ecology in reviewing, approving, or modifying documents submitted by Defendants.

2. Acts of God, including fire, flood, blizzard, extreme temperatures, storm, wave or water conditions, or other unavoidable casualty; or

3. Endangerment as described in Section XVII. However, neither increased costs of performance of the terms of the Decree nor changed economic circumstances shall be considered circumstances beyond the reasonable control of Defendants.

C. Ecology may extend the schedule for a period not to exceed ninety (90) days, except where an extension is needed as a result of:

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1. Delays in the issuance of a necessary permit which was timely applied for or, if necessary, to comply with permit conditions; or

2. Judicial review of the issuance, non-issuance, or reissuance of a necessary permit; or

3. Other circumstances that reasonably require an extension of more than 90 days; or

4. Endangerment as described in Section XVII; or

5. The need to protect the environment or public interest.

Ecology shall give Defendants written notice in a timely fashion of any extensions granted pursuant to the Decree.

XVI. STIPULATED PENALTIES

A. For delays by Defendants in submitting a report or document or otherwise failing to achieve on time the requirements of this Decree, Ecology may require that Defendants pay into the General Fund of the State Treasury the sum set forth below as stipulated penalties. Defendants stipulate that they shall be obligated to pay such sums as set forth below.

B. Stipulated penalties shall accrue for the following reasons and in the following amounts:

1. Failure to submit a draft environmental risk assessment and feasibility study per agreed-upon schedule: up

to $2,500 per day during the first thirty (30) days; up to $4,000 per day thereafter.

2. Failure to submit a final environmental risk assessment and feasibility study per agreed-upon schedule: up to $2,500 per day during the first thirty (30) days); up to $4,000 per day thereafter.

3. Failure to submit progress reports pursuant to Section X hereof: $500 per day.

4. Failure to provide access to Ecology pursuant to Section VIII hereof: up to $2,500 per day.

C. Defendants shall not be liable for payment under this section if they have submitted a timely request to Ecology for an extension of schedules under Section XV of this Decree and such request has been granted.

D. Upon determination by Ecology that Defendants have failed to make a submittal referenced herein or has otherwise failed to comply with this Decree, Ecology shall immediately give written notice to Defendants of the failure, specifying the provision of the Decree which has not been complied with and specifying the amount of the civil penalty due pursuant to Paragraph B, above. Defendants shall pay the civil penalty within thirty (30) days of receipt of notification from Ecology. Any disagreement over the factual basis for issuance of a penalty under this section shall first be addressed through the dispute resolution clause. In the event

Defendants disagree with the result of the dispute resolution process, Defendants may seek relief from the Court.

E. Nothing herein shall be construed to prevent Ecology from assessing or seeking to impose penalties upon Defendants for any violations of this Consent Decree additional to those specified in subsection B. above, or the Court from imposing such sanctions as it deems appropriate for violations of this Decree or any further order of the Court.

XVII. ENDANGERMENT

In the event Ecology determines or concurs in a determination by another local, state, or federal agency that activities implementing or in noncompliance with this Decree, or any other circumstances or activities, are creating or have the potential to create a danger to the health or welfare of the people on the Site or in the surrounding area or to the environment, Ecology may order Defendants to stop further implementation of this Decree for such period of time as needed to abate the danger or may petition the Court for an order as appropriate.

During any stoppage of work under this section, the obligations of Defendants with respect to the work ordered to be stopped shall be suspended and the time periods for performance of that work, as well as the time period for any other work dependent upon the work which is stopped, shall be extended, pursuant to Section XV of this Decree, for such

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period of time as Ecology determines is reasonable under the circumstances.

In the event Defendants determine that activities undertaken in furtherance of this Decree or any other circumstances or activities are creating an imminent and substantial endangerment to the people on the Site or in the surrounding area or to the environment, Defendants may stop implementation of this Decree for such periods of time necessary for Ecology to evaluate the situation and determine whether Defendants should proceed with implementation of the Decree or whether the work stoppage should be continued until the danger is abated. Defendants shall notify either Ecology field personnel on-site or the project coordinator as soon as is possible, but no later than twenty-four (24) hours after such stoppage of work, and provide Ecology with documentation of its analysis in reaching this determination. If Ecology disagrees with Defendants' determination, it may order Defendants to resume implementation of this Decree. If Ecology concurs in the work stoppage, Defendants' obligations shall be suspended and the time period for performance of that work, as well as the time period for any other work dependent upon the work which was stopped, shall be extended, pursuant to Section XV of this Decree, for such period of time as Ecology determines is reasonable under the circumstances. Any

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disagreements pursuant to this clause shall be resolved through the dispute resolution procedures in Section XIII.

XVIII. OTHER ACTIONS

Ecology reserves its rights to institute remedial action(s) at the Site and subsequently pursue cost recovery, and Ecology reserves its rights to issue orders and/or penalties pursuant to available statutory authority under the following circumstances:

1. Where Defendants fail, after notice, to adhere to any requirement of this Decree;

2. In the event or upon the discovery of a release or threatened release not addressed by this Decree which Defendant, after notice, fail to address;

3. Upon Ecology's determination that action beyond the terms of this Decree is necessary to abate an emergency situation which threatens the public health or welfare or the environment provided, however, that Ecology will first give Defendants notice and opportunity to perform such remedial action unless the threat is so immediate as to not permit the giving of notice; or

4. Upon the occurrence or discovery of a situation beyond the scope of this Decree as to which Ecology would be empowered to perform any remedial action or to issue an order and/or penalty, or to take any other enforcement action. This Decree is limited in scope to the precise geographic area

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described in Exhibit C and to those contaminants which Ecology knows to be at the Site when this Decree is entered.

XIX. INDEMNIFICATION

Defendants agree to indemnify and save and hold the State of Washington, its employees, and agents harmless from any and all claims or causes of action for death or injuries to persons or for loss or damage to property arising from or on account of acts or omissions of Defendants, their officers, employees, agents, or contractors in entering into and implementing this Decree. However, Defendants shall not indemnify the State of Washington nor save nor hold its employees and agents harmless from any claims or causes of action brought by third parties arising out of the negligent acts or omissions of the State of Washington, or the employees or agents of the State, in implementing the activities pursuant to this Decree.

XX. COMPLIANCE WITH APPLICABLE LAWS

All actions carried out by Defendants pursuant to this Decree shall be done in accordance with all applicable federal, state, and local requirements, including requirements to obtain necessary permits.

XXI. OVERSIGHT COSTS

Defendants shall reimburse Ecology for its oversight costs in implementing this Decree. Such oversight costs shall be in the amount of Ecology's actual costs of direct activities, support costs of direct activities, and interest

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charges for delayed payments. Defendants and Ecology will consult on a quarterly basis with respect to the oversight costs incurred by Ecology in the prior quarter and the costs Ecology anticipates it will incur in the following quarter, however, nothing herein shall be deemed to limit Ecology's discretion regarding appropriate oversight activities. Oversight costs shall be billed by Ecology and paid by Defendants on a quarterly basis. Any disputes regarding oversight costs shall be subject to dispute resolution pursuant to Paragraph XIII hereof.

XXII. RESERVATION OF RIGHTS

By agreeing to the entry of this Decree, Defendants and Ecology agree to abide by its terms. While the parties believe that the recitals contained in this Decree are accurate, the execution and performance of the Decree do not constitute an admission by either Defendant of any fact or liability for any purpose other than as a basis for the entry of this Decree. Defendants' performance under the Decree is undertaken without waiver of or prejudice to any claims or defenses whatsoever (including, but not limited to the defenses enumerated under RCW 70.105.040, 42 U.S.C. 9607, and RCW 70.105D.040) that may be asserted in the event of further administrative proceedings or litigation about or relating to the Site. Nor is the execution or the performance of the

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Decree an agreement by Defendants to take any action at the Site other than that described in this Decree.

XXIII. CLAIMS AGAINST THE STATE

Defendants hereby agree that they will not seek to recover any costs accrued in implementing RI/FS Work Plan required by this Decree from the State of Washington or any of its agencies; and further, that Defendants will make no claim against the state toxics control account or any local toxics control account or CERCLA for any costs incurred in implementing this Decree. Defendants expressly reserve their right to seek to recover any costs incurred in implementing this Decree from any other potentially liable party, including the United States.

XXIV. IMPLEMENTATION OF REMEDIAL ACTION

If Ecology determines that Defendants have failed without good cause to implement the remedial action required by this Decree, Ecology may, after notice to Defendants, perform any or all portions of the remedial action that remain incomplete. If Ecology performs all or portions of the remedial action because of Defendants' failure to comply with its obligations under this Decree, Ecology may seek to recover from Defendants its costs of doing such work to the extent Ecology is entitled to such cost recovery under state or federal law.

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XXV. COMMUNITY RELATIONS

Ecology shall maintain the responsibility for community relations regarding matters covered by this Consent Decree at the Site, and shall provide notice to Defendants at least 48 hours in advance of giving any public notice or other release of information regarding the Site to the public. However, Defendants shall cooperate with Ecology and shall:

A. Prepare drafts of public notices and fact sheets at important stages of the RI/FS, such as the submission of work plans and the completion of engineering design. Ecology will finalize (including editing if necessary) and distribute such fact sheets and prepare and distribute public notices of Ecology's presentations and meetings;

B. Notify and coordinate with Ecology's project coordinator prior to all press releases and fact sheet preparation, and before major meetings with the interested public and local government;

C. Participate in public presentations on the progress of RI/FS at the Site. Participation may be through attendance at public meetings to assist in answering questions or as a presenter;

D. In cooperation with Ecology, arrange and/or continue information repositories located at the Lakewood Public Library, the South Puget Environmental Education Clearinghouse (SPEECH) Center, and Ecology's Southwest Regional Office. At

a minimum, copies of all public notices, fact sheets, and press releases, all quality assured groundwater, surface water, soil sediment, and air monitoring data, remedial action plans, and supplemental remedial planning documents which are submitted by Defendants to Ecology, relating to performance of the RI/FS required by this Decree, shall be promptly placed in these repositories.

E. Defendants may provide additional public information, but agree to keep Ecology informed of such public information activities.

XXVI. DURATION OF DECREE

This Decree shall remain in effect and the remedial program described in this Decree shall be maintained and continued until Defendants receive a written notice from Ecology that the remedial action plan has been satisfactorily completed, or until the Court determines that the requirements of the Decree have been completed.

XXVII. EFFECTIVE DATE

This Decree is effective upon the date it is entered by the Court.

XXVIII. PUBLIC NOTICE AND WITHDRAWAL OF CONSENT

This Decree has been subject to public notice and comment under RCW 70.105D.040(4)(a). Ecology reserves the right to withdraw or withhold its consent to the proposed final Decree if the comments received by Ecology disclose facts or

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considerations which indicate that the proposed Decree is inappropriate, improper, or inadequate.

If the Court withholds or withdraws its consent, this Decree shall be null and void at the option of any party and the accompanying Complaint shall be dismissed without costs and without prejudice. In such an event, no party shall be bound by the requirements of this Decree.

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

By: Carol L. Fleskes — July 17, 1991
Carol L. Fleskes — Date
Program Manager
Toxics Cleanup Program

By: Jay J. Manning — July 17, 1991
Jay Manning, WSBA #13579 — Date
Assistant Attorney General

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DUPONT COMPANY

By: _____ _____
Richard A. Romanelli Date
Director, Safety &
Environmental Resources
Dupont Chemicals

By: _____ _____
E. Julia Lambeth Date
Senior Counsel
DuPont Legal

WEYERHAEUSER COMPANY

By: Jack Larsen
Jack Larsen
Vice President

July 10, 1991
Date

By: Ralph H. Palumbo
Ralph H. Palumbo
Heller, Ehrman, White
& McAuliffe
Attorneys for Weyerhaeuser
Company

June 2, 91
Date

ATTORNEY GENERAL OF WASHINGTON
Ecology Division
4407 Woodview Drive S E

Having reviewed the foregoing Consent Decree, it is hereby ordered that the Consent Decree is Entered.

DATED this 22 day of July, 1991.

ROBERT J. DORAN

Superior Court Judge
Thurston County Superior Court

133/weyerhsr.csd

Dupont Way

HARTCROWSER

Earth and Environmental Technologies

Exhibit A
Final Work Plan
(Remedial Investigation, Risk Assessment, and Feasibility Study) and Exhibits B, C, and D
Former Du Pont Works Site
Dupont, Washington

Prepared for
Weyerhaeuser Company
and
Du Pont Company

July 10, 1991
J-1747-49

CONTENTS

EXHIBIT A
FINAL WORK PLAN
(REMEDIAL INVESTIGATION, RISK ASSESSMENT,
AND FEASIBILITY STUDY)
FORMER DU PONT WORKS SITE
DUPONT, WASHINGTON

1.0 INTRODUCTION

This Work Plan outlines the scope of work to complete a Remedial Investigation (RI), Health Risk Assessment, and Feasibility Study (FS) at the Former Du Pont Works Site in Dupont, Washington. The plan describes work which has been completed and reported to Weyerhaeuser Company, Du Pont Company, and the Washington State Department of Ecology (Ecology), as well as work remaining to be conducted.

1.1 RI/FS Process

The State of Washington has established guidelines under WAC 173-340-350 for RI/FSs that will be used as a framework for the development of this study. Relevant federal requirements contained in 40 CFR 300 (National Contingency Plan) will also be addressed. Primary elements of a RI/FS include:

Site Characterization. Field investigations to compile data and assess surface water and sediments, soils, geology and hydrogeology, air quality, land use, natural resources damages, and hazardous substance sources.

Risk Assessment and ARAR Analysis. Assessment of current and potential threats to human health and the environment from hazardous substances and evaluation of applicable or relevant and appropriate requirements (ARARs), with the goal of establishing remedial action objectives.

Evaluation of Cleanup Alternatives. Screening of alternatives and selection of a preferred alternative considering several enumerated factors.

As part of the RI process, detailed work plans will be prepared for the following areas:

- Sampling and Analysis Plan;
- Health and Safety Plan;
- Quality Assurance/Quality Control Plan;
- Data Management Plan; and
- Community Relations Plan.

Many elements of the RI for the Former Du Pont Works Site have been completed and are described within this chapter. Chapters 2.0, 3.0, and 4.0 describe work that is to be completed in support of the RI/FS study.

All work plans, and revisions thereto, will be submitted to Ecology for review, comment and approval per the terms of the Consent Decree between Weyerhaeuser, DuPont, and Ecology. The Health and Safety Plan will be submitted to Ecology for review and comment only. Ecology will be notified of planned field activities according to the requirements of Section IX (Sampling, Data Reporting, and Availability) of that Decree.

Throughout this document, "Site" refers to the entire Former Du Pont Works property under consideration. Specific known waste locations are called "areas." The "areas" have been called sites in the past and may be noted by the particular site name (such as "Site 5").

The RI/FS process will also incorporate sufficient information needed to fulfill requirements of the State Environmental Policy Act (SEPA), if applicable.

1.2 Site Characterization Studies Conducted from 1986 to 1989

Site characterization activities at the Former Du Pont Works Site initially included reconnaissance surveys and historical records reviews. Based on the results of these activities, a preliminary (Phase I) sampling and analysis plan was prepared to verify the presence or absence of suspected contaminants.

The Phase I investigations were initiated in December of 1986 and resulted in the collection of soil samples from test pits and surficial locations within suspected contaminant areas.

Based on the results of the Phase I analyses, further site characterization activities were recommended in areas which exhibited chemical concentrations in excess of general reference (background) levels. A Phase II sampling and analysis plan was subsequently prepared to estimate the volume of materials which exceeded such background concentrations. The Phase II effort was directed toward an impending excavation and off-site disposal remedial action planned for the site. The Phase II investigations were initiated in April of 1987 and included additional test pit, boring, surficial soil, and waste sampling. Altogether, approximately 500 soil samples were collected from the site during both phases of the investigation. Chemical analyses on the samples were performed using EPA- and/or state-approved methodologies.

Following the soil sampling activities described in Hart Crowser (1987), a hydrogeologic and water quality investigation of the site was initiated in November of 1987 to assess possible water quality impacts associated with the identified waste areas. After completion of 16 groundwater monitoring wells installed in selected locations on the property, a quarterly monitoring program of water quality within local groundwaters, springs, and surface waters was initiated. Water quality parameters included in the monitoring program were selected based on the results of the site (soil and waste) characterization efforts. Except for the additional groundwater monitoring described in Section 2.2, the hydrologic monitoring program was largely completed with the fourth quarterly sampling in January 1989. The results of these analyses are summarized in Hart Crowser (1988) and ETI/Hart Crowser (1989).

1.3 Chemical Detection Methods

Of the 141 parameters tested in soil, waste, and/or water samples collected from the property, 38 were detected in at least one sample, and 34 of these analytes were present in at least one sample at levels above background concentrations. The detected chemicals included

four screening parameters (e.g., total oil and grease), five explosive compounds (e.g., 2,6-Dinitrotoluene [2,6-DNT]), five metals (e.g., lead), six volatile organics (e.g., tetrachloroethene), 11 semivolatile organics (e.g., high molecular weight aromatic hydrocarbons [HPAHs] such as chrysene), three pesticides (e.g., 4,4'-DDT), and four PCBs (e.g., Aroclor 1242).

An additional 20 parameters, primarily semivolatile compounds and pesticides, were reported by the laboratory at concentrations below the analytical detection limit ('J' flagged based on CLP protocols) but above estimated background. The presence of these 'J-flag' constituents in the waste areas is suspected, but not confirmed.

The samples with the 'J' flag were included in the risk assessment in accordance with EPA Risk Assessment Guidance for Superfund projects. In those cases where a compound with a 'J' flag was identified (and unqualified) in other areas of the Site in the same media, the estimated concentration was used in the risk assessment. In those cases where the compound with a 'J' was not identified in other areas of the Site, the concentrations were not considered in the risk assessment.

In the FS, the 'J' values will be handled in the same way as in the risk assessment. In those cases where the compound was identified without qualification in other areas, or when there is other evidence that the compound may have been released on the site, the FS alternative evaluation will consider that the 'J' compounds are present in the estimated concentrations. If there is no other evidence that the compound may have been released, then they will not be considered in the FS alternatives.

2.0 ADDITIONAL REMEDIAL INVESTIGATION

The work elements described below were added to the site characterization studies presented in Chapter 1.0.

One of the first tasks that will be conducted during the RI process is compilation of the extensive site characterization work that has been performed for the site. This summary will consolidate all available information on the property and enable analysis of the planned investigative work to determine if further site characterization may be necessary. This summary will be submitted to Ecology for review and comment.

2.1 Surveying and Additional Sampling/Analysis

Additional limited data collection is necessary at the site to complete site characterization and develop remediation alternatives for the identified waste areas. These activities include the following:

- **Surveying.** To the extent practicable, establish the coordinates of previous soil and waste sampling locations utilized in the Phase I and Phase II efforts.

- **TCLP Testing.** Assess those areas containing total lead in excess of applicable cleanup criteria to determine if they exhibit dangerous and/or hazardous waste characteristics based on the TCLP test.

- **Lead and Mercury Boundaries.** Assess the areal and vertical extent of lead at areas which exceed the applicable cleanup standards. In order to support the FS, the estimated boundaries of the lead should be accurate within the range of -20 percent to +50 percent. Only those areas where existing boundary uncertainties exceed this range will be sampled. In addition, ten selected samples collected during the above Lead Boundaries Study will be analyzed for mercury and the site-wide distribution of this contaminant will be characterized.

Each of the additional sampling and analysis tasks is outlined below.

Surveying

As discussed above, the previous Phase I and Phase II site characterization efforts were performed under the assumption that site remediation would proceed immediately thereafter. Consistent with this assumption, only temporary field markers were placed to locate the field positions. However, over the two to three years which have elapsed since sampling, many of these markers have begun to deteriorate. A survey of these positions would ensure the long-term utility of the existing data.

At each of the areas where soil and/or waste sampling was performed during Phases I or II, or subsequent efforts, sampling locations will be surveyed to the extent practicable to establish positions relative to state plane coordinates. For each of the areas which may require subsequent remediation (based on the risk assessment), a semipermanent local benchmark will be established to facilitate activities of the cleanup contractor. A map will be prepared for each area. The survey will locate marks to an accuracy of ± 0.1 foot. The actual sample locations will be located with an accuracy of ± 1 foot by hand taping from markers in each area. In some cases, it may be difficult to locate previous sample locations. In those cases, the reconstructed sample location may be ± 50 feet from the actual location. The accuracy of each reconstructed sample location will be documented.

TCLP Testing

Currently, only areas which contain elevated concentrations of total lead (greater than the applicable cleanup standard) in soils have been tested for EP Tox lead. No samples have yet been tested using TCLP. Based on an analysis of the EP Tox data, the ratio of potentially leachable (EP Tox and/or TCLP) lead to total lead is expected to vary widely, spanning more than two orders of magnitude within one area alone (Hart Crowser, 1987). For this reason, additional sampling is necessary to determine which of the identified lead areas may need to be addressed under the dangerous or hazardous waste regulations (WAC 173-303, 40 CFR Part 261).

At the identified lead areas which have not yet been characterized for TCLP or EP Tox, representative soil samples will be collected and analyzed for TCLP lead and total lead using standard EPA protocols.

Depending upon the size of the area, one to five samples will be collected from each area for analysis. An estimated 37 soil samples (including QC samples) will be collected at these areas. An additional 5 samples from these areas will also be tested using EP Tox procedures to assess the general relationship between these two testing procedures.

Lead and Mercury Boundaries

A number of the areas sampled during the Phase I and Phase II investigations exhibited concentrations of lead which exceeded the applicable cleanup standards for lead. The extent of soil contamination in these areas has not yet been characterized to the desired accuracy of -20 percent to +50 percent stated above.

During or immediately following the surveying conducted under the remedial investigation, soil sampling grids will be established at Sites 2, 4, 7, 16, 18, 25, 26, 30, 31, 36, and 38. Grid spacing will be approximately 30 feet on center or as appropriate for the individual site. Soil samples will be obtained within each grid as surficial (0 to 0.5-foot) five-spot equidistant composites. The soil samples will be analyzed for total lead using the same EPA-approved methodologies used previously. The sampling will continue until the samples around the area boundary meet applicable cleanup standards. This will provide data to determine the cleanup standard isopleth line. An estimated 80 soil samples will be collected at these areas. Mercury analyses will also be performed on ten selected samples to assess the site-wide distribution of this contaminant.

2.2 Additional Groundwater Monitoring Wells

In October 1989, two additional groundwater monitoring wells (MW-18 and MW-19) were installed. MW-19 was drilled midway between existing wells MW-15 and MW-16, and MW-18 was drilled adjacent to well MW-10. The purpose of this task was to obtain groundwater samples from the sea level aquifer at these locations. A staff gage was also installed in Old Fort Lake. The horizontal and vertical location of the new wells and staff gage were surveyed.

Additional groundwater wells will be installed and sampled to permit better definition of the site hydrogeology and to better characterize the extent and magnitude of groundwater contaminants in both the shallow

and, if necessary, deep aquifers. A detailed work plan for installation of additional monitoring wells will be submitted to Ecology for review, comment, and approval.

The procedure used to install and sample the wells and the methods/analyses used to analyze the samples will be presented in detailed work plans.

2.3 Additional Groundwater and Surface Water Sampling

In November 1989 and after the two additional wells were installed, a set of groundwater and surface water samples was obtained and analyzed from the new wells and selected other locations including two "sea level" seeps (Seep 1 and Seep 2) located on the shoreline south of MW-15 and north of Sequalitchew Creek. The sampling locations included:

- Wells MW-1, MW-15, MW-16, MW-17, MW-18, and MW-19; and
- SW-1, Seep 1, and Seep 2.

Samples from these locations were analyzed for the constituents listed below:

- Electrical conductivity;
- Nitrate plus nitrite (EPA Method 353.2);
- Ammonia (EPA Method 350.1);
- Oil and grease (EPA Method 413.2);
- Total dissolved solids (EPA Method 160.1);
- Dissolved organic compounds (VOCs) (Method SW 8240);
- Polynuclear aromatic hydrocarbons (PAHs) (Method SW 8100);
- Explosive compounds - nitroglycerine, trinitrotoluene, and dinitrotoluene (2,4-and 2,6-) (Method SW 8080); and
- Monomethylamine nitrate.

During two interim sampling rounds a series of water level measurements were made in the existing wells which were sampled and the newly installed staff gage in Old Fort Lake. The results of these interim sampling rounds are summarized in a January 18, 1990, and April 3, 1991, reports which present the results of the analyses and have been provided to Ecology.

The specific scope of work for monitoring during the time between execution of the Consent Decree and the start of remediation has not been determined. The scope will be prepared after analysis of the sampling and testing described above. The scope for ongoing sampling may cover groundwater, seeps, surface water, and sediments. The scope will be submitted to Ecology for review, comment, and approval prior to implementing the work.

2.4 Sediment Study

The extent and concentration of metal and petroleum hydrocarbon contamination in the intertidal sediments immediately off-shore of the Site have been assessed by reviewing the 1978 water and sediment quality report for the Nisqually Reach in southern Puget Sound. Results of this assessment are documented in a Hart Crowser letter dated January 24, 1989, which has been reviewed by Ecology.

An additional sediment study will be conducted as part of the RI for the Site. This new study will include sampling and analyses for a wider range of constituents than in the 1978 study, including but not limited to the explosive compounds, monomethylamine nitrate, metals, and petroleum hydrocarbons (PAHs and TPH). An appropriate number of quality control samples will also be collected. The sediment study will include both surficial and core sampling. A sufficient number of samples will be collected at or near the wharf, the sea level seep areas, in the delta formed by Sequalitchew Creek, and at background locations. If there is a need for fish and/or shellfish tissue sampling, it will be addressed in the draft work plan submitted to Ecology. A draft sediment sampling work plan will be submitted to Ecology for review, comment, and approval before the field work is implemented.

2.5 Mercury Investigation at Area 39

Mercury droplets were observed inside the perimeter foundation wall of the Former Du Pont Works laboratory building. A field sampling program was initiated to assess the extent of mercury present around the former laboratory. Surface soil samples were taken inside and outside the foundation walls, and subsurface samples were taken from hand-auger explorations inside the building.

The samples were analyzed for mercury and the results reported in a Hart Crowser letter report dated November 20, 1989.

2.6 Additional Mercury Investigations

Additional work on mercury use, extent, and risk will be performed. The following activities will be accomplished:

- A human health and ecological risk assessment using the existing and additional mercury data to evaluate potential risks due to mercury, and to determine risk-based remedial action concentrations;
- Sampling and analyzing soil around the laboratory to determine areas that exceed the risk-based concentration; and
- Sampling and analysis for mercury at other locations on the site, including other production areas with lead contamination and background locations.

The specific sampling and analysis plan(s) for this work will be submitted to Ecology for review, comment, and approval prior to implementing the work.

2.7 Site Characterization of Areas 5 and 6

Areas 5 and 6 cannot be characterized until drums and other debris have been removed from the steep slopes at these two locations. Weyerhaeuser and DuPont intend to conduct this source removal action during 1990 and 1991. A draft work plan that presents a detailed description of procedures for removal, survey, and segregation of the wastes was prepared by DuPont Environmental and Remediation Services and submitted to Ecology in July 1990. Weyerhaeuser and DuPont also provided Ecology with a work plan for independent oversight by Hart Crowser (including quality assurance of the field chemical testing, documentation of field screening test data, and weekly reporting to Ecology). Ecology has provided comments on these plans, and revisions have been made.

Concurrent with the source removal actions at Areas 5 and 6, a draft work plan for site characterization of the two areas will be prepared

and submitted to Ecology for review, comment, and approval. This plan will be submitted at least 30 days prior to the planned field sampling program and a final work plan incorporating Ecology's comments will be provided prior to any field work.

2.8 Other Investigations

Other investigations may be required based on the results of the remedial investigation, risk assessment, preliminary feasibility studies, and initial cleanup activities. Sampling and analysis of other areas may also be conducted if more refined definitions of the lateral and vertical extent of the contaminants are necessary for the FS. Sampling and analysis plans for other investigations will be submitted to Ecology at least 30 days prior to their respective field sampling program for review, comment, and approval.

As part of the RI/FS process, environmental resources at the site will be described and impacts to the resources will be analyzed.

To ensure that the intent of 43 CFR Part 11, Natural Resource Damage Assessment, will be addressed, a preassessment screening of all site resources will be conducted to analyze potential environmental sensitivities. The process will include preassessment screening, development and review of an assessment plan, quantification of effects, damage determination, and documentation of assessment results. Assessment results will be included in the FS report.

2.9 Former Black Powder Area Investigations

Detailed work plans will be developed to address lead concentrations in the Former Black Powder Area and concentrations of lead in surficial soils in areas outside the Former Black Powder Area. In such areas, appropriate remediation will be proposed if soil concentrations are determined to exceed potentially applicable cleanup standards.

A detailed work plan and schedule for interim action in the Former Black Powder Area will be submitted to Ecology for review, comment, and approval as required by the Consent Decree.1

3.0 RISK ASSESSMENT

A baseline risk assessment was performed for each of the 38 identified waste areas on the Former Du Pont Works Site to assess which areas require remediation and to develop cleanup levels appropriate for each area. The baseline risk assessment was performed in general accordance with EPA's 1989 Risk Assessment Guidance for Superfund, Human Health Evaluation Manual, and Environmental Evaluation Manual, using the five basic interrelated steps:

- Select indicator constituents;
- Estimate exposure point concentrations of indicators;
- Estimate potential human intake of indicators;
- Assess environmental and human health toxicity; and
- Characterize environmental and human health risk.

Based on the results of the site characterization, the indicator constituents were limited to six compounds or compound groupings; lead, monomethylamine nitrate (MMAN), trinitrotoluene and dinitrotoluene (TNT/DNT), nitroglycerine, PCBs, and carcinogenic and total polynuclear aromatic hydrocarbons (PAHs).

The baseline risk assessment considered several different types of potential future land uses at each of the areas, and their impact on the risk evaluation. The land use types considered included open space (e.g., existing conditions), and residential and industrial uses.

The Baseline Risk Assessment report has been submitted to Ecology. A summary of that report is presented below.

Baseline Risk Assessment Summary

In order to evaluate the potential human health and ecological risk posed by the identified contaminants, a risk assessment was conducted for each area on the property. The methodology utilized to perform the risk assessment was based on EPA and Ecology guidance, and combined scientific facts and assumptions to determine the likelihood that people may be sufficiently exposed to the identified chemicals to result in illness. The risk assessment considered the range of potential future land uses at the identified waste areas, including residential, commercial, and open space.

Based on the risk assessment, the chemicals which pose the greatest risks to public health and local ecology are HPAHs and lead. Potential risks from HPAHs and/or lead are primarily via direct soil ingestion exposure routes. HPAHs also exhibited a potential for risk via groundwater exposure, although the analytical basis for this conclusion is considered tenuous (based on limited chemical detections). Five areas contained detectable levels of 2,6-DNT.

Terrestrial and aquatic life ecological risks were qualitatively evaluated at the waste areas. Aquatic life risks were found to be minimal. Those areas that exceeded general public health risks, however, also exhibited a potential for limited wildlife impacts. As discussed in the baseline risk assessment, remediation of the areas to minimize human health risks should also be sufficiently protective of ecological risks.

Additional Risk Assessment

Future work will include a reevaluation of baseline risks throughout the entire site, consistent with current (i.e., 1991) Ecology and EPA guidelines and/or regulations under the MTCA and NCP.

4.0 FEASIBILITY STUDY

4.1 Purpose of this Feasibility Study Work Plan

This chapter of the Work Plan presents the rationale and scope of work for a feasibility study (FS) of identified waste areas located within the Former Du Pont Works Site. The purpose of the FS is to identify, develop, evaluate, and recommend appropriate remediation alternatives which will be protective of human health and the environment and meet applicable laws and regulations. Appropriate remediation objectives will be based on the results of the remedial investigation (RI) of the areas, including the baseline public health and ecological risk assessment. Remediation alternatives will also address Applicable or Relevant and Appropriate requirements (ARARs).

The FS Work Plan will be consistent with the Model Toxics Control Act (MTCA), WAC 173-340, and applicable U.S. Environmental Protection Agency (EPA) guidance documents relating to feasibility studies under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), the Superfund Amendments and Reauthorization Act (SARA), and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

Since 1985, the Weyerhaeuser Company and their consultant, Hart Crowser, have identified a total of 39 areas on the property which could have received hazardous waste releases from previous uses. Each individual area ranges in size from less than one to several acres. Following site history reviews and field reconnaissance activities, a total of 33 areas were selected for site characterization studies, as described by Hart Crowser (1987) and ETI/Hart Crowser (1989). Evidence for the presence of hazardous wastes at the remaining five areas was lacking, and did not warrant further investigation. Supplemental investigations were conducted at Sites 38 and 39 in 1989.

4.2 Feasibility Study Scope of Work

The FS for the Former Du Pont Works property will include the following steps:

- Identification of remedial action objectives including:

- A risk assessment for the entire site, including risks to the largest exposure population;
- Objectives based on risk assessment; and
- Objectives based on ARARs.

▸ Development of alternatives including:

- Definition of areas and volumes requiring treatment;
- Summarizing RI data and preparing isopleth maps of key contaminants;
- Identification and screening of potential technologies; and
- Assembling various technologies into specific alternatives.

▸ Screening of specific alternatives including:

- Screening evaluation; and
- Selection of alternatives for detailed analysis.

▸ Detailed analysis of selected alternatives.

Each of these steps is discussed below. As per the terms of the Consent Decree, Ecology will be notified of all sampling and analysis activities and plans in advance, to allow Ecology to review, comment, and approve applicable plans and reports.

Task 1 - Treatability Studies

Representative soil materials will be collected from areas of the property which exhibit dangerous waste properties based on the TCLP lead determination. Based on existing data, and depending upon the outcome of additional data analyses, some areas may contain dangerous waste soils. Considering that many of these areas will exhibit similar chemical properties, several areas will be studied for treatability characteristics.

At each area, representative soils will be collected for testing. The samples will be prepared for compaction and chemical testing with varying mixtures of cement and silica-based additions, as well as untreated controls. Chemical testing will include TCLP lead and total lead analyses. The results of these evaluations will enable an assessment of alternative remediation designs.

A review of the treatability of HPAHs using bioremediation/landfarming techniques will also be performed during this task. Using data available in the literature on the degradation of individual HPAH compounds, predicted area-specific HPAH decay rates will be generated for standard landfarming conditions. These data will assist in the assessment of remedial alternatives at the areas.

Task 2 - Remedial Action Objectives

The identification of remedial action objectives (RAOs) will include an assessment of target contaminant concentrations in soil, water, sediments, and biological tissue necessary to achieve various levels of "acceptable" risk and to assure compliance with ARARs. Remediation goals given various individual routes of possible contaminant exposure will also be considered, including direct soil contact and ingestion, dust and vapor inhalation, drinking water consumption, fish and shellfish consumption, and wildlife impacts. Contaminant transport models developed in the RI will be utilized to link on-site soil quality with all exposure routes, since remediation of the soil medium may form the basis of many remedial alternatives.

Another important component in establishing RAOs at the Former Du Pont Works property is land use and its relationship to remediation objectives. The baseline risk assessment identified different exposure conditions for residential, open space, and commercial/industrial uses of the sites. The FS will consider future land uses of the property.

As discussed above, the RAOs are expected to develop directly from the results of the baseline risk assessment, as supplemented by additional evaluations of potential mercury risks. However, the process will also address ARARs and additional concerns communicated by the regulatory agencies (Ecology and DOH). The product of Task 2 will be a technical memorandum which presents preliminary RAOs based on the results of the site characterization work, risk assessment, and ARAR screening. After review and approval by Weyerhaeuser and Du Pont, the memorandum will be submitted to Ecology for review and comment. This task includes one interim meeting with Ecology to discuss RAOs prior to submittal of a Draft Feasibility Study Report. The remedial action objectives will also be an important factor considered in the screening of alternatives, as discussed below.

Task 3 - Identify Possible Remedial Action Technologies

The first step in the task is to define the areas and volume that require remediation. For each area a map will be prepared showing the distribution of key contaminants and the area requiring remediation. Isopleths (showing lines of equal contaminant contamination) will be drawn where possible.

The development of alternatives will include actions from relevant technologies and will include:

- Surface Treatment Technologies;
- Soil and Groundwater Treatment Technologies;
- Disposal Options;
- Institutional Controls;

- Sediment Remediation Technologies, if applicable; and
- No Action.

Due to the characteristics of the sites and the contaminants, certain technologies listed below warrant a close examination. These technologies will include but not be limited to the following:

- Groundwater Pumping/Water Treatment;
- Bioremediation/Landfarming of HPAHs;
- Incineration of Explosives;
- Waste and Debris Removal and Disposal (e.g., Site 5);
- Solidification/Stabilization of Lead; and
- Remediation of Sediments, if applicable.

In most cases, any given technology will not solely meet the ARARs or other remediation objectives. The assemblage of technologies into alternatives will combine those technologies necessary to meet the remediation objectives. Some alternatives, such as no action, are not expected to wholly meet the remediation objectives but are required by the process and will be considered throughout the process. The product of Task 3 will be a technologies table listing possible remediation technologies.

Task 4 - Screening of Technologies

The screening of technologies will produce a set of technologies that are potentially applicable to site remediation. Technologies will be screened based on their technical feasibility and implementability. That is, technologies that are not technically feasible -- usually because they either do not address the site contaminant or are not suitable for the site subsurface conditions -- will be eliminated. For the technology screening, relative cost will be used to distinguish between similar technologies. The product of Task 4 will be a table which lists and provides a basis for including the technologies to develop remedial alternatives.

Task 5 - Identify Possible Remedial Action Alternatives

Applicable remedial technologies screened in Task 4 will be used to develop a list of possible remedial action alternatives. The product of Task 5 will be a table which summarizes the alternatives and their application to the site conditions. Preference shall be given to permanent solutions to the maximum extent practicable, as defined in Chapter 173-340-360 WAC.

Task 6 - Screening of Specific Alternatives

The screening of specific alternatives will produce a subset of specific alternatives deemed suitable for further detailed analysis. The screening process will include a qualitative evaluation of alternative permanence, effectiveness, implementability, and cost. (In general, technically infeasible alternatives will have been eliminated by screening out technically infeasible technologies.) The most important criteria will be permanence, effectiveness, and implementability. Cost will be considered at this stage only if there is a clear disadvantage.

The alternatives with the highest qualitative evaluations will be considered for further analyses. The no action alternative will be continued to the detailed analysis stage.

An interim technical memorandum discussing the alternative screening will be prepared for review which includes the tables and appropriate discussion to support the alternatives proposed for detailed evaluation in Task 7. In addition, at least one interim meeting with the regulatory

agency review group will be scheduled to discuss the alternative screening prior to submittal of the Draft Feasibility Study Report.

Task 7 - Detailed Analysis of Selected Alternatives

The detailed analysis of the selected alternatives will address conceptual engineering of the alternatives, and will also consider the permanence, effectiveness, implementability, and cost of the alternatives. In addition, the anticipated state and community acceptance of the alternatives will be considered. This evaluation will be qualitative although some quantification is necessary (e.g., costs). A recommended alternative for each site will be selected at the completion of this detailed analysis.

Task 8 - Feasibility Study Report

The results of the FS will be summarized in a report that will include the following sections:

- Nature and Extent of Problem (based on risk assessment);
- Objectives of Remedial Action;
- Identification of Technologies;
- Technology Screening Methods and Criteria;
- Summary of Technology Screening;
- Assembled Technologies (Alternatives);
- Alternative Screening Methods and Criteria;
- Summary of Alternative Screening;
- Detailed Analysis Methods and Criteria; and
- Summary of Detailed Analysis.

A Draft Report will be submitted to Ecology for review and comment. After receipt of the agency comments, the draft Final Report suitable for public distribution, review, and comment will be prepared.

5.0 COMMUNITY RELATIONS

Community relations activities will include the following elements:

- Detailed Fact Sheet describing the alternatives studied and the evaluation process;
- Public Notice describing the alternatives and announcing the availability of the draft final feasibility study;
- Informal meetings (if necessary);
- Public meeting (if necessary);
- Fact sheets describing activities occurring at the site during the remedial investigation and feasibility study phases.
- Public Notice via the Site Register of major activities and completion of documents which are available for public review; and
- Development of a site-specific Public Participation Plan.

REFERENCES

ETI/Hart Crowser, 1989, Baseline Risk Assessment, Dupont Works Property.

Hart Crowser, 1987, Site Characterization Report, Phase II Sampling and Analysis, Former Du Pont Works, Dupont, Washington, prepared for Weyerhaeuser Company and Du Pont Company, J-1747-28, August 10, 1987.

Hart Crowser, 1988, Hydrogeologic and Water Quality Assessment, Former Du Pont Works, Dupont, Washington, J-1747-40, May 13, 1988.

EXHIBIT B - SCHEDULE

Work Element	Completion Date[1]
Phase I - Remedial Investigation (RI) Site Survey and Review	September 1986
Phase II - RI Site Characterization Report	August 10, 1987
Hydrologic and Water Quality Assessment	May 13, 1988
Results of Second Quarterly Groundwater Sampling	September 9, 1988
Results of Third Quarterly Groundwater Sampling	November 18, 1988
Results of Fourth Quarterly Groundwater Sampling	February 28, 1989
Results of First Interim Groundwater Sampling	January 18, 1990
Results of Second Interim Groundwater Sampling	April 3, 1991
Baseline Risk Assessment	May 1989
Draft Remedial Investigation/Feasibility Study (RI/FS)	24 months after effective date of Consent Decree
Ecology's comments on Draft RI/FS	90 days after submittal of Draft RI/FS
Draft Final RI/FS	60 days after receipt of Ecology's comments

[1]Dates denote when the particular element was actually completed.

hibit C

e Map (excluding Black Powder Area)

cel 1

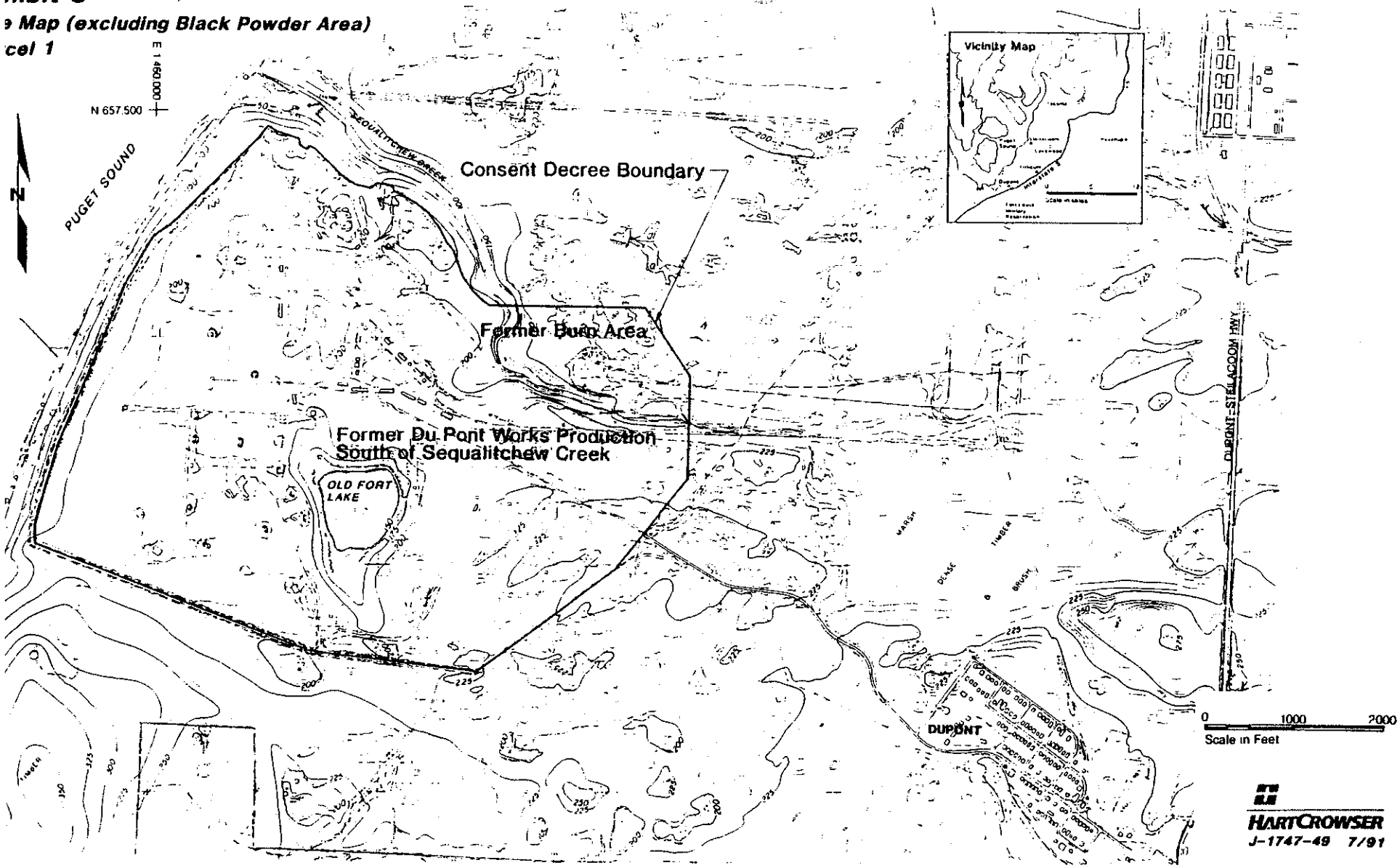

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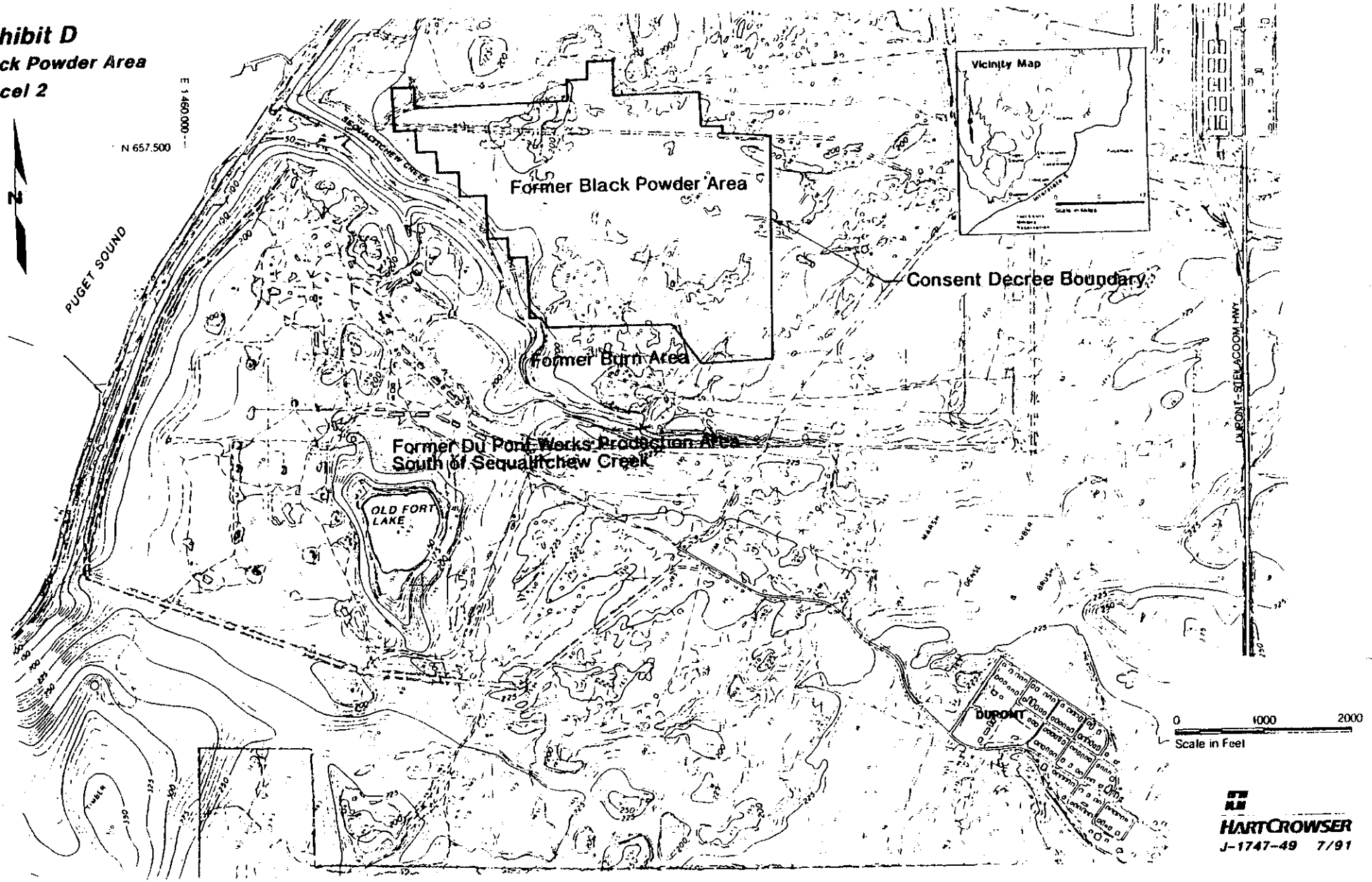
Exhibit D
Black Powder Area
Parcel 2



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