Allison Creek Hydroelectric Project

Vegetation Management Plan

Draft

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Prepared By: McMillen, LLC

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TABLE OF CONTENTS

SECTION 1 INTRODUCTION ............................................................................................................... 1
1.0 Introduction .............................................................................................................................. 1
1.1 Location ................................................................................................................................... 1
1.2 Project Description ................................................................................................................... 1
1.3 Purpose ..................................................................................................................................... 1
1.4 Environmental Commitments ................................................................................................. 2

SECTION 2 VEGETATION MANAGEMENT .......................................................................................... 3
2.0 Approach .................................................................................................................................. 3
2.1 Project Features ......................................................................................................................... 3
2.1.1 Diversion Structure ............................................................................................................... 3
2.1.2 Penstock ................................................................................................................................... 3
2.1.3 Construction Access Trail ..................................................................................................... 3
2.1.4 Powerhouse, Tailrace and Access Road ................................................................................. 4
2.1.5 Transmission Line .................................................................................................................. 4
2.2 Avoidance of Vegetation and Habitats ....................................................................................... 4
2.2.1 Existing Vegetation and Habitats ............................................................................................ 4
2.2.2 Avoidance and Minimization Measures ................................................................................. 7
2.3 Conceptual Planting Plan ......................................................................................................... 8
2.3.1 Planting Materials and Methods ............................................................................................ 8
2.4 Invasive Species Control ......................................................................................................... 8
2.5 Vegetation Monitoring and Maintenance .................................................................................. 9
2.5.1 Walking Survey Monitoring ................................................................................................. 10
2.6 Contingency Measures .............................................................................................................. 10

SECTION 3 COMMUNICATIONS ....................................................................................................... 12
3.0 Coordination & Documentation .................................................................................................. 12
3.1 Coordination ............................................................................................................................. 12
3.2 Reporting .................................................................................................................................... 12
3.3 Record of Consultation .............................................................................................................. 12

SECTION 4 REFERENCES ................................................................................................................. 13

LIST OF TABLES

Table 2-1. Wildlife habitat types in the Allison Creek Project area ....................................................... 4
Table 2-2. Wildlife habitat types in the Allison Creek Project area ....................................................... 6
Table 2-3. List of invasive plant species found approximately 5 miles east of the Allison Creek Project along the Richardson Highway .......................................................................................... 7

FIGURES

Figure 1 Location Map
Figure 2 Project Overview

APPENDICES
Appendix A  Drawings
Appendix B  Record of Consultation
SECTION 1
INTRODUCTION

1.0 Introduction

Land disturbing activities associated with the proposed construction and operation of the Allison Creek Hydroelectric Project, FERC No. 13124 (Project) would include the construction of a powerhouse, tailrace channel, switchyard connection, penstock, temporary construction staging areas, diversion structure, temporary coffer dam and bypass pipe, and overhead transmission line. The construction of the facilities may alter the vegetation in the project area and has the potential to introduce noxious plants to the vicinity. The Project is being developed by the Copper Valley Electric Association (CVEA).

1.1 Location

The Project consists of the installation of a 6.5 megawatt (MW) run-of-river hydroelectric generation plant located on the south side of Port Valdez, near Alyeska's Valdez Marine Terminal for the Trans-Alaska Pipeline. The Allison Lake watershed includes approximately 6.2 square miles and occupies approximately 130 acres. A map showing the location of the Project is provided on Figure 1.

1.2 Project Description

The Project would divert water from Allison Creek at an elevation of approximately 1,300 feet (ft) into a penstock which would convey water to a powerhouse located approximately 2,000 ft upstream of the mouth of Allison Creek. The new hydroelectric plant (producing up to 24 gigawatt-hours (GWhrs) annually) would enable CVEA to reduce its dependence on diesel generation. The Project is located on Allison Creek, which flows into Port Valdez, and consists of the following major components starting upstream to downstream, followed by the transmission line:

- 16-ft high diversion structure spanning approximately 90 ft across Allison Creek. The structure would include a 56-ft wide spillway and sluicing channel.
- Intake structure fitted with two 5-ft tall by 8-ft long trashracks, sluicing gate, and penstock intake.
- Penstock over 7,000 ft long ranging in size from 40-inch diameter at the intake to 36-inch diameter at the powerhouse.
- 900-ft long tunnel housing the 36-inch diameter penstock.
- 66 ft by 60 ft powerhouse with a cast-in-place concrete foundation, pre-engineered metal building, and a concrete tailrace channel extending from the powerhouse back to Allison Creek.
- Single 6.5 MW Pelton turbine/generator package.
- Permanent access road approximately 650 ft in length to the powerhouse.
- Substation located adjacent to the powerhouse.
- 3.8 mile long 25 kilovolt (kV) transmission line to the existing CVEA switching station near the Petro Star facility along Dayville Road.

The general locations of these major components are illustrated on Figure 2.

1.3 Purpose

Project construction may alter old growth forest and wetlands along penstock and transmission line corridors and at access routes (permanent or temporary); this plan was prepared to summarize the provisions
for noxious weed prevention and control, revegetation of disturbed areas, and vegetation monitoring and contingency measures.

Appendix A contains the erosion and sediment control drawings, illustrating the vegetation clearing limits and locations of final stabilization and seeding measures.

1.4 Environmental Commitments

CVEA will file with the Commission, for approval, a final Vegetation Management Plan to ensure that construction activities have a limited impact on natural vegetation, wetlands, and downstream aquatic resources. This plan includes: (1) a description of proposed Project activities, (2) a summary of current vegetation and wetland communities, and (3) a Conceptual Planting Plan, including planting specifications and invasive species management. CVEA will prepare this plan consultation with the U.S. Fish and Wildlife Service (USFWS), Alaska Department of Natural Resources (ADNR), the Alaska Department of Fish and Game (ADFg) and Alyeska’s Valdez Marine Terminal representatives.
SECTION 2
VEGETATION MANAGEMENT

2.0 Approach

This Vegetation Management Plan has been prepared to conform with recommended best management practices (BMPs) for preventing the introduction and spread of invasive plant species. Project construction may alter old growth forest and wetlands along penstock and transmission line corridors and at access routes (permanent or temporary); this plan was prepared to summarize the provisions for noxious weed prevention and control, revegetation of disturbed areas, and vegetation monitoring and contingency measures. This site-specific plan is presented based on baseline vegetation and wetlands data, preliminary Project design plans, and agency comments, and will incorporate the Final Terms and Conditions (Section 4(e) of the Federal Power Act) of the FERC License (FERC 20xx). The purpose of the Plan is to provide CVEA and its Contractors with construction methods that minimize vegetation removal and the recruitment of invasive plant species, and promote the vegetation recovery of disturbed areas by native species, including methods for controlling invasive species that may become established in disturbed areas associated with the Project.

2.1 Project Features

2.1.1 Diversion Structure

The diversion structure would be located approximately 9,000 feet upstream of the mouth of Allison Creek and 1,000 feet downstream from the outlet of Allison Lake. The conceptual design for the diversion structure consists of a 90-foot-wide concrete gravity structure with a maximum height of 16 feet above a glacial moraine foundation that will back up a small pool with a surface area of 0.6 acres containing approximately 3.3 acre-feet of water. The structure incorporates a 56-foot-wide spillway section at 1,310 feet elevation that has a crest height of 13 feet above the glacial moraine foundation. The diversion and spillway, as well as cleared and excavated areas adjacent to the structure, are shown in the drawings in Appendix A.

2.1.2 Penstock

A steel penstock ranging in size from 40-inch to 36-inch diameter would be underground for its entire 7,000 foot length. To the extent possible, the top layer of vegetation and underlying organic soil disturbed during excavation of the penstock trench will be stockpiled separate from the mineral overburden, to be used as a top dressing when the trench is backfilled. Although grass seed and a geotextile fabric may be needed to stabilize the soil used to backfill the trench, topdressing the trench with the original vegetative mat will promote more rapid vegetation recovery.

2.1.3 Construction Access Trail

A temporary, construction only, access trail would be pioneered near the penstock alignment approximately 1,200 feet above the powerhouse area. The purpose of the trail would be to transport light duty construction equipment and some materials for penstock construction from staging areas at the powerhouse site.
2.1.4 Powerhouse, Tailrace and Access Road

The powerhouse would include: a concrete/rock filled foundation; a steel moment frame prefabricated metal building with either steel framed or precast concrete wall panels. The powerhouse and foundation would be 65 feet wide and 65 feet long with a floor slab to peak roof height of 48 feet, pitched to guide snow away from parking and entrance to the building. The tailrace would extend from the west side of the powerhouse to Allison Creek via a concrete channel and the existing creek bed. The tailrace would be located about 2,000 feet upstream of the mouth of Allison Creek.

The powerhouse would be accessed by a proposed 550-foot-long, 24-foot-wide access road from the Alyeska Pipeline Loop Road. Cleared and excavated areas in the powerhouse and access road area are shown on drawings in Appendix A.

2.1.5 Transmission Line

Power output from the units would be transmitted via buried cables to the transformer located in the switchyard adjacent to the powerhouse parking area. Power would be transmitted from the switchyard, via overhead, wood pole mounted power cables, to the existing substation near the Petro Star facility on Dayville Road. The alignment for the 25 kV transmission line would be a cleared path, 3.8 miles long, south and uphill from the existing TAPS right-of-way. Other than the initial brush clearing, no access trail will be constructed in association with the transmission line.

2.2 Avoidance of Vegetation and Habitats

2.2.1 Existing Vegetation and Habitats

This section summarizes habitats and vegetation observed in the Project area and lists invasive plant species of potential concern in the Project area. A survey of vegetation in the Project area was conducted in 2009 by ABR as part of a wetlands and wildlife habitat assessment (ABR, Inc. 2011). A total of 23 wildlife habitats were identified in the Project area (Table 2-1). See also Figure 3, Wildlife habitats in the Allison Creek Hydroelectric Project area.

<table>
<thead>
<tr>
<th>Table 2-1. Wildlife habitat types in the Allison Creek Project area</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HABITAT TYPE (area)</strong></td>
</tr>
<tr>
<td><strong>Description</strong></td>
</tr>
<tr>
<td>LAKES (248.1 acres)</td>
</tr>
<tr>
<td>Deep lake in valley floor basin (&gt;100ft deep, &gt;20 acres). Unvegetated with no floating or emergent vegetation borders. Allison Lake is the only mapped lake in the area.</td>
</tr>
<tr>
<td>PONDS (1.32 acres)</td>
</tr>
<tr>
<td>Shallow unvegetated ponds (&lt; 10 ft) forming in shallow basins along stream courses. Unvegetated with no floating or emergent vegetation borders. Uncommon within impact assessment area</td>
</tr>
<tr>
<td>COASTAL HUMAN-MODIFIED GRAMINOID MEADOW (1.84 acres)</td>
</tr>
<tr>
<td>Fill, or recently modified surfaces near the coast that have been modified by human activity and are partially vegetated. Vegetation may include a mixture of indigenous and introduced species.</td>
</tr>
<tr>
<td>RIVERS AND STREAMS (High Gradient–High Flow) (9.92 acres)</td>
</tr>
<tr>
<td>Permanently flooded channels of freshwater where gradient and flow are relatively high. Sources of water are glacial meltwater, glacial lakes and surface water runoff. Water levels fluctuate rapidly but experience peak levels during spring melt and rainy periods.</td>
</tr>
<tr>
<td>RIVERS AND STREAMS (Low Gradient–High Flow) (11.94 acres)</td>
</tr>
</tbody>
</table>

Draft Vegetation Management Plan Page 4 May 7, 2013
<table>
<thead>
<tr>
<th>HABITAT TYPE (area)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RIVERS AND STREAMS (Mixed Gradient–Low Flow)</strong> (11.74 acres)</td>
<td>Permanently flooded channels of freshwater where gradient ranges from low to high and flow is relatively low. Sources of water may be groundwater but dominated by surface water runoff. Water levels fluctuate rapidly but experience peak levels during spring melt and rainy periods.</td>
</tr>
<tr>
<td><strong>RIVERINE BARRENS</strong> (36.91 acres)</td>
<td>Steep drainageways (&gt;30% slope) draining hillsides above Allison Lake. Substrate is unvegetated composed of colluvium. Drainageways typically support intermittent streams fed by surface water.</td>
</tr>
<tr>
<td><strong>RIVERINE BARRENS (Outwash)</strong> (56.47 acres)</td>
<td>Flat gravel bars on active glacial outwash deposits with vegetation cover &lt;30%. Substrates are extremely well drained composed of sands and gravels. Where present vegetation cover includes <em>Alnus tenuifolia</em>, <em>Salix stitcensis</em>, <em>Epilobium latifolium</em> and <em>Arctagrostis latifolia</em>.</td>
</tr>
<tr>
<td><strong>RIVERINE GRAMINOID MEADOW</strong> (7.78 acres)</td>
<td>Flat areas on active glacial outwash deposits. Substrates are less well drained than partially vegetated gravel bars and are composed of finer grained materials. Organic horizon development is limited. Dominant species include <em>Calamagrostis canadensis</em>, <em>Epilobium latifolium</em>, <em>Sanguisorba stipulata</em>, <em>Petasites frigidus</em>.</td>
</tr>
<tr>
<td><strong>RIVERINE LOW AND TALL WILLOW</strong> (28.16 acres)</td>
<td>Flat areas on active glacial outwash deposits. Substrates are less well drained than partially vegetated gravel bars and are composed of finer grained materials. Organic horizon development is limited. Dominated by deciduous shrubs including <em>Salix barclayi</em>, <em>S. arctica</em> with an understory including <em>Calamagrostis canadensis</em>, <em>Epilobium latifolium</em> and <em>Sanguisorba stipulata</em>.</td>
</tr>
<tr>
<td><strong>UPLAND WET GRAMINOID MOSS BOG</strong> (5.50 acres)</td>
<td>Shallow basins along stream-courses within upland forested slopes with deep accumulation of organic material. Dominated by sphagnum moss species with graminoid and herb species assemblages including <em>Carex aquatilis</em>, <em>C. limosa</em>, <em>Eriophorum gracile</em>, <em>Lysichiton americanum</em> and <em>Sanguisorba stipulata</em>.</td>
</tr>
<tr>
<td><strong>UPLAND HERB MEADOW</strong> (3.3 acres)</td>
<td>Relatively small forest clearings within the Upland physiographic area dominated largely by herbaceous plant species. Soils well drained with deep organics. Dominant herb species include <em>Athyrium felix-femina</em>, <em>Heracleum lanatum</em>, <em>Veratrum viride</em> with a significant shrub component including <em>Rubus spectabilis</em> and <em>Menziesia ferruginea</em>.</td>
</tr>
<tr>
<td><strong>UPLAND DWARF ERICACEOUS SCRUB</strong> (0.98 acres)</td>
<td>Sloping concave areas on upland forested slopes supporting dwarf shrub plant communities. Relatively rare occurrence within the study area. Substrates are well drained material with little organic matter accumulation. Common species included <em>Luetkea pectinata</em>, <em>Rubus stellatus</em>, <em>Empetrum nigrum</em> and <em>Geum calthifolium</em>.</td>
</tr>
<tr>
<td><strong>UPLAND HUMAN-MODIFIED GRAMINOID MEADOW</strong> (16.92 acres)</td>
<td>Fill, or recently modified surfaces along the pipeline corridor and Solomon gulch. Vegetation may include a mixture of indigenous and introduced species.</td>
</tr>
<tr>
<td><strong>UPLAND AND SUBALPINE TALL WILLOW SCRUB</strong> (5.43 acres)</td>
<td>Drainage basins or drainageways in stream headwaters or along stream courses occupied primarily by willow species. Substrates are saturated, and poorly drained. Common species may include <em>Salix barclayi</em> and <em>S. stitcensis</em>.</td>
</tr>
<tr>
<td><strong>UPLAND AND SUBALPINE TALL ALDER SCRUB</strong> (1,637.98 acres)</td>
<td>Moderate to steep slopes throughout the upland and subalpine zones. Substrates are well drained and range from rocky with very little organic accumulation to deep organic deposits on more moderate slopes. Dominated by shrub species including <em>Alnus sinuata</em>, <em>Alnus crispa</em>, <em>Sambucus racemosa</em>, <em>Rubus spectabilis</em> and <em>Oplopanax horridum</em>. Understory species include <em>Cornus suecica</em>, <em>Dryopteris diliatata</em>, and <em>Geum macrophyllum</em>.</td>
</tr>
</tbody>
</table>
HABITAT TYPE (area)
Description

UPLAND SITKA SPRUCE FOREST (354.17 acres)
Steep forested lower slopes above Valdez Bay. Poorly developed, well drained soils with very little organic layer accumulation overlying rocky parent material. Species assemblages include *Picea sitchensis*, *Tsuga heterophylla*, *Oplopanax horridum*, *Rubus stellatus*, *Atherium felix-femina* and *Dryopteris dilatata*.

SUBALPINE WET GRAMINOID MOSS BOG (4.20 acres)
Basins along subalpine stream channels where water is perched. Soils are poorly drained and often inundated. Very little organic accumulation. Species include *Carex machrochaeta*, *C. rotundata*, *Calamagrostis canadensis*, *C. aquatilis* and *Rubus stellatus*.

SUBALPINE AND ALPINE HERB MEADOW (568.56 acres)
Steep slopes composed of unconsolidated colluvium material. Substrates are well drained with very little soil development over unweathered parent material. Plants communities are a mixture of herbs and graminoids including *Epilobium angustifolium*, *Heracleum lanatum*, *Sanguisorba stipulata*, *Valeriana sitchensis*, *Arctagrostis latifolia*, and *Vahlodea atropurpurea* at higher elevations.

SUBALPINE AND ALPINE DWARF ERICACEOUS SCRUB (616.13 acres)
Undulating terrain surrounding Allison Lake and at higher elevations above the lake. Very thick organic layers over well drained silt loam soils. Plant community is dominated by dwarf shrubs including *Cassiope stelariana*, *Phylodoce aleutica*, *Luetkea pectinata* and *Empetrum nigrum*. *Vahlodea atropurpurea* is a commonly occurring graminoid.

SUBALPINE AND ALPINE BARRENS (379.93 acres)
Barren or partially vegetated (<30% cover) areas on exposed bedrock ridges above treeline. Soils are rocky, dry, excessively drained and lacking in an organic horizon. Scattered prostrate shrubs may be present but these areas were not sampled during the 2009 field survey.

ROCKY CLIFFS (218.51 acres)
Steep, unvegetated, unweathered parent material generally found within Alpine and Subalpine zones.

ARTIFICIAL FILL (45.66 acres)
Fill, or recently modified surfaces that have been modified by human activity and are barren. Areas within the impact assessment area include gravel access roads along the pipeline corridor.

No invasive species were found in the project area, but an invasive species survey was beyond the scope of the wetlands and habitat assessment.

The Project area includes 6 types of wetland habitats (Table 2-2).

<table>
<thead>
<tr>
<th>NWICode</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Non-navigable Waters of the U.S.</strong></td>
<td></td>
</tr>
<tr>
<td>R3UBH</td>
<td>Permanently Flooded Upper Perennial River</td>
</tr>
<tr>
<td>R4SBC</td>
<td>Seasonally Flooded Intermittent Stream Bed</td>
</tr>
<tr>
<td>PUBH</td>
<td>Permanently Flooded Pond</td>
</tr>
<tr>
<td>PUBHx</td>
<td>Permanently Flooded Excavated Ditch</td>
</tr>
<tr>
<td><strong>Wetlands</strong></td>
<td></td>
</tr>
<tr>
<td>PEM1Bx</td>
<td>Saturated Emergent Meadow (disturbed)</td>
</tr>
<tr>
<td>PML1B</td>
<td>Saturated Moss Meadow</td>
</tr>
<tr>
<td>PSS/EM1B</td>
<td>Saturated Broadleaf Shrub/Emergent Scrub</td>
</tr>
</tbody>
</table>
Total acreage of wetland habitat impacted by Project construction and Project operations and maintenance was estimated based on the 90% Design drawings by McMillen, LLC (2013). Construction activities are estimated to temporarily impact 1.12 acres of wetland habitat comprised of 0.53 acres of non-navigable waters of the U.S. and 0.59 acres of wetlands. Project operations and maintenance are estimated to permanently impact 0.56 acres of wetland habitat comprised of 0.48 acres of non-navigable waters of the U.S. and .08 acres of wetlands.

An invasive species survey has not been conducted in the study area, as it is largely remote and not readily accessible by the public. Surveys conducted in Valdez in 2004 and 2005 (approximately 5 miles from the project area), however, identified 8 invasive species (Alaska Exotic Plants Information Clearinghouse [AKEPIC] database) (Table 2-3) that had established primarily along the Richardson Highway and other disturbed sites nearby. The species *Hieracium caespitosum* Dumort (meadow hawkweed) is considered highly invasive and 2 others have moderately invasive rankings (Carlson et al. 2008). The remaining species are considered to be weakly or very weakly invasive.

**Table 2-3. List of invasive plant species found approximately 5 miles east of the Allison Creek Project along the Richardson Highway**

<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common Name</th>
<th>Invasiveness Rank&lt;sup&gt;a, b, c, d, e&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Hieracium caespitosum</em> Dumort.</td>
<td>meadow hawkweed</td>
<td>29, 23, 19, 8 = 79</td>
</tr>
<tr>
<td><em>Matricaria discoidea</em></td>
<td>pineapple weed</td>
<td>5, 9, 15, 3 = 33</td>
</tr>
<tr>
<td><em>Phleum pratense</em></td>
<td>timothy</td>
<td>14, 14, 19, 7 = 54</td>
</tr>
<tr>
<td><em>Plantago major</em></td>
<td>common plantain</td>
<td>8, 13, 16, 7 = 44</td>
</tr>
<tr>
<td><em>Poa annua</em> L.</td>
<td>annual bluegrass</td>
<td>8, 13, 18, 7 = 46</td>
</tr>
<tr>
<td><em>Taraxacum officinale</em> ssp. officinale</td>
<td>common dandelion</td>
<td>18, 14, 18, 8 = 58</td>
</tr>
<tr>
<td><em>Tanacetum vulgare</em> L.</td>
<td>common tansy</td>
<td>20, 15, 15, 8 = 57</td>
</tr>
<tr>
<td><em>Trifolium repens</em></td>
<td>white clover</td>
<td>22, 12, 18, 5 = 57</td>
</tr>
</tbody>
</table>

<sup>a</sup> Ecological impact  
<sup>b</sup> Biological characteristics  
<sup>c</sup> Distribution  
<sup>d</sup> Control  
<sup>e</sup> Overall ranking

### 2.2.2 Avoidance and Minimization Measures

The existing habitat within the Project boundary consists of sensitive areas including old growth forest and wetland habitat that will be impacted during construction. These habitats are extensive in the vicinity of the Project, so some disturbance will be required to meet Project goals. During planning and construction of the Project, specific elements will be considered to avoid and minimize the disturbance of sensitive habitats. The following is a conceptual list of avoidance and minimization measures:

- Large old growth trees and other significant vegetation will be avoided where feasible and considered during layout of access roads and stockpile areas;
• Currently disturbed areas will be considered for staging areas where feasible;
• Clearing within old growth and wetland habitat will be minimized to areas necessary for construction and maintenance;
• Wetland impacts will be minimized by the siting of certain features where feasible;
• The clearing limits of the Project will be clearly marked in the field prior to construction; and
• The schedule for clearing will consider maintaining protective vegetation screening during certain construction activities such as blasting.

2.3 Conceptual Planting Plan

This section presents the materials and methods for planting including the source of plant material, the proposed locations for planting (e.g., inadequately vegetated areas and newly cleared areas) and planting species lists for each habitat type in the Project boundary. The baseline information regarding existing habitats and plants at the site will be used to develop habitat-specific planting plans and control methods for invasive species. The following section presents a conceptual planting plan that relies primarily on the use of native plant material and natural recovery.

2.3.1 Planting Materials and Methods

Sources of native plant material may include salvage from on-site, commercial nurseries (stock or contract grown) and a standard seed mix. Salvaged plant material will be from areas on or near the Project site that will be disturbed during construction (e.g., gravel access routes). To minimize stress to plants, the following methods will be followed during salvage of plant material. Small plants (4 feet tall or less) will be selected to minimize root disturbance. As much soil as possible will be kept associated with the roots, and plant roots will be kept moist.

• Will use native plants and seed to the extent possible, depending on revegetation goals (wildlife habitat, erosion control, sediment control)
• Other plant materials may include willow cuttings
• Will salvage native soils and surface vegetative mat where possible for use in revegetation efforts (e.g., backfilled pipeline trench)
• In some cases promoting natural recovery with fertilizer addition may be the most appropriate

Natural recovery will be the preferred source of native plant material and method of revegetation for most disturbed locations. Sites that meet the following criteria will be left to recovery naturally:

• small areas of disturbance (e.g., 100 square feet of disturbed ground)
• narrow bands of disturbance (e.g., areas adjacent to a new gravel access route)
• areas where soil disturbance is minimal (e.g., plants have been driven over a few times or plants have been cut back for access purposes)

Use of native seed for re-vegetation will only be considered in areas that contain sensitive native species (especially if those species do not transplant well) and/or in areas that are sensitive to invasive species colonization.

2.4 Invasive Species Control

This section presents proposed methods for the prevention, control, and eradication of invasive species. Methods will include initial invasive plant species identification and assessment of risk, proposed construction materials, and methods that minimize the potential for the introduction of invasive species.
seed or propagative plant parts. Planting materials and methods for rapidly establishing native plants within disturbed areas of the Project are discussed in Section 2.3 above.

A vegetation site reconnaissance will be performed before construction to determine the level of risk of invasive plant species establishing at the site focusing on areas more likely to harbor invasive plant species, including existing disturbed sites within the Project boundary, material site sources and travel routes to the Project site. Very few invasive species have established in Alaska that are shade-tolerant, and most forested areas are protected from the influence of flowing water, wind, and roads that serve as pathways for invasive weed seed.

For the invasive plant survey, a botanist will assess target areas with a Global Positioning System (GPS) unit and record the location of each patch of invasive plant species. Alternatively, the Environmental Compliance Monitor (ECM) may be trained to perform these surveys. Information gathered at each patch of invasive plant species will include:

- Invasive plant species in the patch
- Qualitative assessment of level of invasiveness (low, moderate, high)
- Adjacent habitat (forest series, wetland vs. upland, dominant native species)
- Approximate size of the patch

Data and information from the reconnaissance survey will be used to develop a baseline map of the distribution of invasive plants in the Project boundary.

Patches of invasive weeds identified before construction may be treated (controlled) where practical before construction starts using the most effective technique for each invasive plant patch. However, CVEA is not responsible for the eradication of invasive plants determined through the survey to exist in the Project boundary pre-construction.

If invasive species become a concern in the Project boundary because of the Project, control at the site will proceed until the end of a 3-year monitoring term. Methods for on-going invasive plant control are discussed in Section 2.5. To prevent the introduction of invasive species to the site from construction materials, all materials used at the site will be confirmed to be weed- and weed-seed-free, including but not limited to plant material, gravel for the road, fill material, and erosion control mulch or fabric (e.g., straw, wood chips, coir fabric). Plant material grown off-site will be inspected for invasive weeds growing in their containers. Gravel will be acquired from weed free on-site borrow pits or a botanist (or ECM) will inspect the off-site gravel pit for an acceptable area that is weed free. Erosion control material (e.g., straw, mulch, coir fabric) will be certified weed-free or created from material on-site (e.g., felled tree chips).

To prevent the introduction of invasive species to the site from seeds or plant parts adhering to construction equipment the Contractor will wash down all equipment (especially tires, stabilizers, shovels/buckets, and the undercarriage area) before mobilizing the equipment to the site. The Contractor will confirm that the equipment is free of soil and plant parts before construction begins.

2.5 Vegetation Monitoring and Maintenance

This section presents the method for the monitoring of vegetation (native and invasive plants) and areas of disturbance at the Project site. Maintenance actions outlined in this section are part of the contingency measures if performance standards are not met. Monitoring and maintenance of the site will continue for 3 years post-construction. After a baseline monitoring survey and any associated maintenance;
monitoring and maintenance will occur at years 1, 2, and 3 post-construction. Vegetation monitoring will occur during the growing season (June–August) to optimize plant identification.

Control of invasive plants will occur at different times of year depending on the methods used and the species being controlled. Small infestations may take only one or two chemical or mechanical treatments. For mechanical treatments the entire plant, including all roots, will be removed. Eradicating a large and well-established patch can be difficult due to the abundance and longevity of the seeds and the ability of their rhizomes to re-sprout. Large and well-established patches may be spot-sprayed with herbicide as they re-sprout. CVEA will notify requesting agencies of any use of herbicides for control of undesirable woody or herbaceous vegetation. After removal of the plants (including grubbing out of the roots) in the patch, the area will be seeded. If the area is extensive, planting of native plants may be considered.

### 2.5.1 Walking Survey Monitoring

The walking survey method will consist of a botanist (or ECM) walking the pipeline route and identifying the location of invasive plant patches and areas of disturbance using a GPS unit. The botanist/ECM will walk both sides of the pipeline corridors, along the new gravel access road and along the corridor on opposite side of the pipeline from the gravel road. The walking survey method will be performed immediately after construction and re-vegetation measures (e.g., grass seeding, native plantings, and native seeding) and in years 1 and 3 after construction is complete. Information gathered at each patch of invasive plants or disturbed area will include:

- Patch designated number
- Type of patch: Invasive plant, disturbed soil, disturbed vegetation
- Approximate dimensions/surface area of the patch and degree of infestation (low, medium, high)
- If the patch contains multiples patch “types” approximate the dimensions/surface area of invasive plants, disturbed plants and/or disturbed/bare ground within the patch
- Invasive plant species present
- Dominant native plant species in and/or adjacent to the patch (plus other habitat information such as forest series, wetland vs. upland)

Results from these surveys will be used to create baseline and on-going monitoring maps (that show locations of invasive plant patches in previously disturbed areas) for the pipeline corridors to guide invasive plant control measures (described above in Section 2.4) and any on-going revegetation actions (described in Section 2.3).

### 2.6 Contingency Measures

During post-construction monitoring, existing site conditions will be evaluated relative to invasive species encroachment, bare ground, and planted vegetation in the Project boundary. If performance standards identified below are not being met, then specific contingency measures will be developed and outlined in the subsequent monitoring report. The following is a partial list of performance standard thresholds that will initiate contingency measures:

- For the 3-year monitoring period any observation of an invasive plant will initiate a control action as described in Sections 2.3 and 2.5, above
- Disturbed, bare areas that are not reduced in size by approximately 60% (due to natural regeneration or growth of salvaged plants) by year 3 will be revegetated using salvaged plant materials or nursery stock
Plant cover will be measured using the point intercept method, with the number of points sampled contingent on the size of the assessment area. Monitoring will occur over a 3-year period, commencing the year following completion of construction. Brief monitoring reports will be prepared by CVEA after the completion of each monitoring event and will be submitted to the appropriate federal and state agencies, including USFWS, ADNR, and ADFG, and, to document current vegetation conditions at the site. CVEA will consult with the agencies if contingency actions are necessary utilizing the monitoring reports, phone consultations, and possible on-site visits. Contingency actions will be summarized in the monitoring report and implemented in the next subsequent monitoring event.
SECTION 3
COMMUNICATIONS

3.0 Coordination & Documentation

3.1 Coordination
Site preparation activities such as clearing and grubbing would be performed in conjunction with the Environmental Compliance Monitoring Plan, Erosion and Sediment Control Plan and Penstock Location and Grade Plan.

3.2 Reporting
The pre-construction survey would be performed under the direction of or by the Environmental Compliance Monitor. The baseline map will be provided to agencies and filed with the FERC within 60 days of completion of the pre-construction survey.

Post-construction monitoring would be performed by the ECM in year 1 following completions of construction and revegetation measures. Year 2 and year 3 monitoring may be performed by the ECM or a botanist. An ongoing monitoring map (updates to the baseline map) will be updated each year for the 3 years of monitoring following construction. The ongoing monitoring map will be provide to agencies and filed with the FERC within 60 days of completion of monitoring in year 1 and year 2 following construction.

A final report including the year 3 monitoring map will be prepared in consultation with agencies after the completion of the third post-construction monitoring year. CVEA will allow a minimum of 30 days for the agencies to comment and make recommendations before filing the final report with FERC.

3.3 Record of Consultation

The National Marine Fisheries Service (NMFS [2012]), United States Department of the Interior (DOI [2012]) representing the United States Fish and Wildlife Service (USFWS) and National Park Service (NPS), and Alaska Department of Fish and Game (ADFG [2012]) submitted letters detailing their terms, conditions, and recommendations for the Project in response to the Allison Creek Hydroelectric Project, FERC No. 13124 Application for Original License (CVEA 2011). These responses presented their review of the original license application and more specifically the preparation of this Plan. Based on comments received, a table summarizing the comments and recommendations was prepared and is included in Appendix B. This summary table also describes how the comments and recommendations were incorporated into this Plan.

This Plan is presented in draft form for comment and review for a 30-day review and comment period. A summary of additional comments and recommendations received will be attached to the final Plan in Appendix B, as well as copies of those comment and response letters. The final Plan will be submitted to FERC upon completion of consultation.
SECTION 4
REFERENCES


Alaska Department of Fish and Game. 2012. ADFG Comments on the Final License Application (FLA) Allison Creek Hydroelectric Project, FERC No. 13124. April 6, 2012.


Graziano, G. 2011. Strategic plan for invasive weed & agricultural pest management and prevention in Alaska. Alaska Plant Materials Center, Division of Agriculture, Department of Natural Resources, Palmer, AK.


FIGURES
Figure 1 - Location Map

Copper Valley Electric Association, Inc.
Allison Creek Hydroelectric Project, FERC No. 13124
Valdez, Alaska
Figure 2 – Project Overview

Copper Valley Electric Association, Inc.

Allison Creek Hydroelectric Project, FERC No. 13124

Valdez, Alaska

Notes
1. The position of all features identified are approximate and are only intended to aid in depicting site features.

Reference: Obtained from 2013 Google Maps
APPENDIX A

DRAWINGS
SHEET NOTES:
1. SEE DRAWING 1 FOR STANDARD EROSION AND SEDIMENT CONTROL NOTES.
2. LIMIT CONSTRUCTION VEHICLE ACCESS TO LIGHT-DUTY VEHICLES TO LIMIT SOIL DISTURBANCE.
3. CLEARING, GRUBBING, AND GROUND DISTURBING ACTIVITIES SHALL BE CONFINED TO WITHIN THE CLEARING LIMITS. PRESERVE EXISTING VEGETATION BEYOND THE CLEARING LIMITS.
4. THIS EROSION AND SEDIMENT CONTROL PLAN IS BASED ON THE 60% DESIGN. THE CONTRACTOR SHOULD PREPARE A CONSTRUCTION SPECIFIC SWPPP BASED ON THE 100% DESIGN FOR THE PROJECT.
EROSION AND SEDIMENT CONTROL PLAN (BASED ON 60% DESIGN)
1. Install silt fence around powerpoles on both sides of the stream channel.
2. Stream locations are approximated.
1. INSTALL SILT FENCE AROUND POWERPOLES ON BOTH SIDES OF THE STREAM CHANNEL.
2. STREAM LOCATIONS ARE APPROXIMATED.
1. Install silt fence around powerpoles on both sides of the stream channel.
2. Stream locations are approximated.
1. INSTALL SILT FENCE AROUND POWERPOLES
   ON BOTH SIDES OF THE STREAM CHANNEL.
2. STREAM LOCATIONS ARE APPROXIMATED.
1. Install silt fence around powerpoles on both sides of the stream channel.
2. Stream locations are approximated.
APPENDIX B

RECORD OF CONSULTATION
<table>
<thead>
<tr>
<th>No.</th>
<th>Commenter</th>
<th>Comment</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ADF&amp;G</td>
<td>Are you referring to a surface vegetation mat to be cut and then placed back like sod. This is unclear. If not, then the stockpiling of higher quality material is advised. It may be better quality material but will still require seeding to reduce erosion. (ADFG (M. Miller), Draft Vegetation Management Plan (VMP), Page 3, 12/27/2012)</td>
<td>Agree. Section 2.1.2 is revised to read: “Although grass seed and a geotextile fabric may be needed to stabilize the soil used to backfill the trench, topdressing the trench with the original vegetative mat will promote more rapid vegetation recovery.”</td>
</tr>
<tr>
<td>2</td>
<td>ADF&amp;G</td>
<td>Did this survey have the detail to identify invasive species vegetation? (ADFG (M. Miller), Draft VMP, Page 5, 12/27/2012)</td>
<td>No. A pre-construction survey and development of a baseline map will be performed.</td>
</tr>
<tr>
<td>3</td>
<td>ADF&amp;G</td>
<td>There are areas of this project that have road access, cross the pipeline route and/or about the Alyeska Pipeline terminus developed area. While the public may not have general access to these areas, they have been developed and thus have been potentially subjected to invasive species colonization. Is completion of an invasive species survey necessary to this project? FERC may require it. (ADFG (M. Miller), Draft VMP, Page 5, 12/27/2012)</td>
<td>Agree. A pre-construction survey and development of a baseline map will be performed. See Section 2.3.2.</td>
</tr>
<tr>
<td>4</td>
<td>ADF&amp;G</td>
<td>This is a listing of the eight invasive plants found in the Valdez Area/Richardson Highway survey previously mentioned in the text. To say &quot;the surrounding area of the Allison Creek Project&quot; implies that a survey has been conducted. It is not known if the previous survey actually looked at the Allison Creek Project area. (ADFG (M. Miller), Draft VMP, Page 18, Table 4, 12/27/2012)</td>
<td>Agree. Table 2-3 has been retitled accordingly. The previous survey did not look at the Allison Creek area. These are invasive species that may establish in disturbed areas.</td>
</tr>
<tr>
<td>5</td>
<td>ADF&amp;G</td>
<td>In the draft Vegetation Management Plan, the identification of invasive plants, and a survey, is initially undefined. Later in the plan you get into specifics of a study but then again use the Valdez area and Richardson Highway survey conducted several years ago as if it was current and for the study area (see comment on Table 4, Page 18). A little confusing. (ADFG (M. Miller), Email – RE: Allison Creek Hydroelectric Project – For Review – Draft Terrestrial Connectivity Plan, 12/27/2012)</td>
<td>Agree. The earlier study was not performed in the Allison Creek area. A pre-construction survey will be performed and a baseline map developed.</td>
</tr>
</tbody>
</table>