POWERTECH (USA) INC.

APPENDIX 3.5-A

SUBMITTED METHODOLOGY

6.0 VEGETATION BASELINE STUDIES

6.1 INTRODUCTION

The baseline vegetation study will cover the Dewey-Burdock permit area. The project area may contain all or some of the following four native vegetation community types: upland grassland, ponderosa pine woodland, riparian, and wetland. Field work was conducted in the summer of 2007. Table 6-1 shows the mapping acreages.

Table 6-1. Vegetation Map Units and Associated Acreages

Vegetation Map Units	Proposed Permit Area Acreage
Upland Grassland	To be determined
Ponderosa Pine Woodland	
Riparian	
Wetland	
Total	**9,400**

Vegetation baseline study monitoring will be conducted using the procedures described in this document. Vegetation parameter sampling will be conducted by vegetation community type as specified in Table 6-2. For purposes of this methodology, "project area" will be the same as "study or permit area."

Table 6-2. Vegetation Baseline Sampling—Measured Parameters

Parameter	Upland Grassland	Ponderosa Pine Woodland	Riparian	Wetland[a]
% Absolute Total Ground Cover	Yes	Yes	Yes	No
First Hit % Absolute Total Vegetation Cover	Yes	Yes	Yes	No
Multiple Hit Vegetation	Yes	Yes	Yes	No
Shrub/Subshrub Density	Yes	Yes	Yes	No
Production	No	No	No	No
Tree Count and Distribution	No	Yes	No	No

(a) Wetlands will not be sampled as part of the baseline study but will be included under U.S. Army Corps of Engineers (US ACE) delineation requirements.

6.2 VEGETATION COMMUNITY CLASSIFICATION AND MAPPING

The baseline project area will be classified and mapped before commencing vegetation sampling. Preliminary mapping and classification, based on aerial photography, has identified the four following plant communities:

1. Upland grassland
2. Ponderosa pine woodland
3. Riparian
4. Wetland.

Plant communities will be further mapped using color infra-red (CIR) aerial photography and verified through field survey. Disturbed areas within the project will also be identified and mapped, if possible, based on the scale of available mapping. Disturbed areas will be excluded, however, from all vegetation parameter sampling. All areas within ½ mile of the project area will be mapped, based on a review of CIR aerial photography and known expression of photography within the project area. It will not be necessary to field verify this mapping within a ½ mile nor will vegetation sampling be conducted.

6.3 TRANSECT ORIGIN SELECTION

A computerized systematic grid (through AutoCAD or ArcGIS) will be used to randomly locate sample points within each vegetation community. These computer-generated random numbers will be uploaded to a hand-held GPS unit for actual location in the field. Sample points will be sampled in numerical order until the minimum sample size is attained and then until either sample adequacy is met or the required maximum number of samples is collected.

6.4 LINE TRANSECT LAYOUT

A 50-meter line transect will be used in the three vegetation communities to be sampled; i.e., upland grassland, ponderosa pine woodland, and riparian. Each 50-meter line transect will begin at its specified random origin point and extend in a randomly generated compass direction.

Transects that exceed the boundaries of the vegetation community being sampled will be redirected back into its vegetation community at a 90-degree angle from the original transect direction at the point of intercept. In instances where a 90-degree angle of reflection does not place the transect within the sampled community, a 45-degree angle of reflection will be used.

6.5 GROUND COVER

Line-transect point-intercept methods will be used to collect percent absolute cover data from the three vegetation communities. In the upland grassland, ponderosa pine woodland, and riparian communities, each 50-meter transect will represent a single sample point. Percent cover measurements will be taken from point-intercepts at 1-meter intervals along a 50-meter transect using a laser pointer. Should a transect run out of the vegetation community boundary or a nonvegetated feature, it will be redirected as described above. Each point-intercept will represent 2 percent toward cover measurements.

Percent cover measurements will record "first-hit" point-intercepts by live foliar vegetation species, litter, rock, or bare ground. Litter will include all organic material that is dead, including manure. Rock fragments will be recorded when they are equal to or greater than 2 centimeters in size (i.e., sheet flow, minimum nonerodible particle size). First-hit data will be recorded and tabulated to evaluate total ground cover and total vegetation cover. Multiple hits on vegetation will be recorded but used only for the purpose of constructing a plant species list for each plant community. Total ground cover is the sum of cover values for percent vegetation, percent litter, and percent rock.

6.6 TOTAL VEGETATION COVER

Vegetation cover data will be recorded by species using first-hit data. All point intercepts of living vegetation and growth produced during the current growing season will be counted toward total vegetation cover. Total vegetation cover measurements will be expressed in absolute percentages for each sample point. Relative cover values for percent species cover will be provided. Percent vegetation cover is the vertical projection of the general outline of plants to the ground surface. Total vegetation cover will include moss.

6.7 TOTAL GROUND COVER

Total ground cover data will be recorded by live vegetation, litter, rock, or bare ground. Litter will include all dead organic matter and manure that is recognizable as well as lichen and moss. Total ground cover measurements will be expressed in absolute percentages for each sample point.

6.8 SPECIES DIVERSITY

The total number of plant species within a 1×50-meter belt transect will be summarized for each vegetation type.

6.9 PRODUCTION

No production sampling will be necessary for the 2007 baseline vegetation assessment.

6.10 SHRUB DENSITY

Shrub density data will be collected in conjunction with randomly selected cover transects, wherever possible. All shrubs, full, half, or sub, will be counted within 50 centimeters on either side of the 50-meter cover transect (1-meter×50-meter belt transect). Sample adequacy will not be calculated on shrub density transects; however, shrub density data will be qualitatively evaluated. The number of belt transects will equal the number of cover transects for a given vegetation type. No shrub height measurements will be collected.

6.11 TREE DENSITY

Within the ponderosa pine woodland vegetation community, tree density will be estimated by gridding the aerial photograph for the project area and counting the number of ponderosa pine per unit area, based on a small number of randomly selected grid intervals. In addition, a range of age distribution will be determined using nondestructive techniques, such as correlating known measures of age and height, or age and diameter at breast height (DBH), or ring counts from recent timber harvest stumps and logs.

Within other vegetation communities, individual ponderosa pine or other tree species found will be directly counted for numbers. Height and DBH may be more appropriate in these vegetation types based on lack of downed timber, such as is present in the ponderosa pine woodland.

6.12 SAMPLE ADEQUACY

A minimum of 20 cover transects per vegetation type will be sampled in upland grassland, ponderosa pine woodland, and riparian communities. Sample adequacy will be calculated and an incremental number of cover transects will be sampled up to the maximum of 50.

Minimum and maximum sample sizes are listed in Table 6-3. The following sample adequacy formula will be utilized to determine the minimum required size of the sample population:

$$n_{min} \geq \frac{2(sz)^2}{(dx)^2} \qquad (6\text{-}1)$$

where:

n_{min} = minimum number of sampled line transects needed to adequately represent native vegetation types

s = sample standard deviation

z = the z statistic

d = the amount of reduction desired

x = sample mean for cover.

Table 6-3. Vegetation Monitoring Minimum/Maximum Sample Population Requirements for Upland Grassland, Ponderosa Pine Woodland, and Riparian Communities

Vegetation Community	Parameter	Sample Size	
		Minimum	Maximum
Upland Grassland	Ground Cover	20	50
	Vegetation Cover		
	Shrub Density		
Ponderosa Pine Woodland	Ground Cover	20	50
	Vegetation Cover		
	Shrub Density		
Riparian	Ground Cover	20	50
	Vegetation Cover		
	Shrub Density		
	Vegetation Cover		
	Shrub Density		
Total		60	150

The three vegetation communities have been identified as "grassland" or "shrubland." Upland grassland is identified as grassland while the ponderosa pine woodland and riparian communities are identified as shrublands. The constant values to be used in statistical test are: z=1.28 and d=0.1 for grasslands. The shrubland values are z=0.84 and d=0.2. All sampled vegetation will be included in the sample adequacy test (i.e., "undesirable" species will not be eliminated from the equation).

6.13 PLANT SPECIES LIST

A vegetation species list by scientific name, common name, and lifeform will be developed individually for each of the three vegetation communities. This list will be compiled from species noted during all vegetation monitoring activities, including point-intercept line transect cover measurements and other opportunistic observations of the sampling area.

6.14 OTHER DATA COLLECTED

Any United States Fish and Wildlife Service (US FWS) threatened or candidate species or any state species of special concern listed in the South Dakota Natural Heritage database will be surveyed and any known location identified on the map. Table 6-4 lists the threatened and candidate species along with their habitat and flowering dates. Table 6-5 lists the species of special concern along with their habitats and flowering dates. All state-listed noxious weed will be noted and significant concentrations identified on the vegetation baseline report map.

Photographs will be taken of the vegetation communities. Photographic locations will be documented and illustrated on a map.

6.15 EXTENDED REFERENCE AREA MAPPING AND JUSTIFICATION

As noted in the Vegetation Community Classification and Mapping section (Section 6.2), all lands within the project area are to be mapped as one of three plant community types. Upland grassland, ponderosa pine woodland, and riparian areas unaffected by the mining operation will serve as an Extended Reference Area (EXREFA). Wetlands will not be sampled under baseline evaluation but included in US ACE delineation. For the purposes of this study, EXREFA means a native land unit which will be used to evaluate revegetation success for each of the same native plant communities which was affected by the mining operation. The EXREFA will be a subset of the mapped native communities and will be included as potential sample points for the cover sampling program. The EXREFA will remain unaffected over the course of the mining operation and will be as large as practical, at least 2 acres, considering land ownership patterns and land management history. The permit application will show the EXREFA on the vegetation map and will include text justifying the choice of the EXREFA.

Table 6-4. Threatened and Candidate Species to Be Sampled

Scientific Name	Common Name	Flowering Date	Habitat	Classification
Botrychium campestre	Prairie Moonwort	May–Early June	Dry prairies and sand dunes, as well as sandy, dry disturbed sites, such as roadsides and old fields	Not ranked (under review)
Botrychium lineare	Moonwort Grape-Fern	May–Early June	Meadows with tall grasses and forbs, beneath trees in wooded areas, on north-facing limestone cliff shelves, and in streamside edges	Not ranked
Botrychium multisided	Leathery Grape-fern	May–Early June	Savannah, prairie, meadow, field	Not ranked (under review)
Carex alopecoidea	Tawny Sedge	July	Seasonally saturated soils in wet meadows, openings in alluvial woods, stream banks, particularly on calcareous substrates	S2
Cypripedium parviflorum	Lesser Yellow Lady's Slipper	May–June	Bogs, shady swamps, wet woods	Not ranked (under review)
Eleocharis elliptica	Elliptic Spikerush	June–August	Very wet, calcareous (or brackish) shores, pool margins, fens, meadows, prairies	Not ranked
Epipactis gigantea	Stream Orchid	April–July	Ledges, stream, river banks	S1
Lycopodium complanatum	Ground Cedar	Unknown	Dry open coniferous or mixed forest alpine slopes	S1
Platanthera orbiculata	Round-Leaved Orchid	July	Moderate moisture; woods, forests; in rich soil	S2
Salix candida	Sage Willow	April–May	Cold, open fens, swamps and bogs	S1
Salix serissima	Autumn Willow	Unknown	Swamp, marsh, bog, fen, lakeshores	S1
Sanguinaria canadensis	Bloodroot	March–April	Rich, deciduous, upland and floodplain woods	S4
Viburnum opulus var. americana	American Cranberrybush	May–July	Cool woods, thickets, rocky shores, slopes	Not ranked (under review)
Viola selkirkii	Great-Spurred Violet	April–June	Cold areas	S1

Table 6-5. Species of Special Concern to Be Sampled

Scientific Name	Common Name	Flowering Date	Habitat	Classification
Adianthum capillus-veneris	Southern Maidenhair Fern	June–August	Moist, well-drained sand, loam or limestone	S1
Carex bella	Elegant Sedge	June–August	Moist subalpine meadows	S1
Eleocharis rostellata	Beaked Spikerush	July–September	Saline or alkaline wetlands	S1
Gentiana affinis	Northern Gentian	Unknown	Moist	S2
Listera convallarioides	Broad-Lipped Twayblade	June–August	Moist woods	S1
Lycopodium annotinum	Bristly Clubmoss	Unknown	Swampy or moist coniferous forests, mountain forests, and exposed grassy or rocky sites	S1
Oxyria digyna	Mountain Sorrel	June–September	Gravel bars, mudflats, tundra, scree slopes, crevices in rock outcrops, talus slopes	S1
Petasites sagittatus	Sweet-Coltsfoot	May–June	Wet, forests, meadows	S1
Polystichum lonchitis	Northern Holly-Fern	Unknown	Woodland, rocky bluff	S1
Salix lucida	Shining Willow	April–May	Steam and swamp banks, fens, beaches, met meadows, mud flats	S1

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APPENDIX 3.5-B

VEGETATION SPECIES SUMMARY

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			Vegetation Community				
Code	Scientific Name	Common Name	Big Sagebrush Shrubland	Cottonwood Gallery	Greasewood Shrubland	Ponderosa Pine Woodland	Upland Grassland
Cool Season Perennial Grasses							
AGRCRI	*Agropyron cristatum*	crested wheatgrass	X	X	X		X
BROINE	*Bromus inermis*	smooth brome		X	X		
CARFIL	*Carex filifolia*	threadleaf sedge	X		X	X	X
CARGEY	*Carex geyeri*	Geyer's sedge				X	
CARSTE	*Carex stenophylla*	needleleaf sedge	X		X		
ELYCAN	*Elymus canadensis*	Canada wildrye				X	
ELYCIN	*Elymus cinereus*	basin wildrye			X		
ELYELY	*Elymus elymoides*	bottlebrush squirreltail	X				
ELYHIS	*Elymus hispidus*	intermediate wheatgrass			X		
ELYLAN	*Elymus lanceolatus*	thickspike wheatgrass	X		X	X	
ELYSMI	*Elymus smithii*	western wheatgrass	X	X	X	X	X
ELYTRA	*Elymus trachycaulus*	slender wheatgrass			X		
HESCOM	*Hesperostipa comata*	needleandthread	X			X	X
HORJUB	*Hordeum jubatum*	foxtail barley			X		
KOEMAC	*Koeleria macrantha*	prairie junegrass	X			X	
NASVIR	*Nassella viridula*	green needlegrass			X	X	
SCHPAN	*Schedonnardus panniculatus*	common tumblegrass			X		
PHLALP	*Phleum alpinum*	alpine timothy			X		
POAPRA	*Poa pratensis*	Kentucky bluegrass		X	X	X	
POASEC	*Poa secunda*	Sandberg bluegrass	X		X	X	X
Warm Season Perennial Grasses							
ARISPP	*Aristida* spp.	Threeawn	X		X		
ARIPUR	*Aristida purpurea*	purple threeawn	X				X
ARIPUR	*Aristida purpurea var. fendleriana*	Fendler's threeawn				X	
BOUCUR	*Bouteloua curtipendula*	sideoats grama	X			X	X
BOUGRA	*Bouteloua gracilis*	blue grama	X		X	X	X
BUCDAC	*Buchloe dactyloides*	buffalograss	X		X	X	X
DISSTR	*Distichlis stricta*	inland saltgrass		X	X		
SCHSCO	*Schizachyrium scoparium*	little bluestem	X			X	
SPOAIR	*Sporobolus airoides*	alkali sacaton			X		
SPOCRY	*Sporobolus cryptandrus*	sand dropseed			X		
	Species observed but not sampled						

POWERTECH (USA) INC.

			Vegetation Community				
Code	Scientific Name	Common Name	Big Sagebrush Shrubland	Cottonwood Gallery	Greasewood Shrubland	Ponderosa Pine Woodland	Upland Grassland
Warm Season Perennial Grasses continued							
PANVIR	*Panicum virgatum*	switchgrass	X	X	X		X
Annual Grasses							
BROJAP	*Bromus japonicus*	Japanese brome	X	X	X	X	X
BROTEC	*Bromus tectorum*	cheatgrass	X	X	X	X	X
HORPUS	*Hordeum pusillum*	little barley	X		X		X
VULOCT	*Vulpia octoflora*	sixweeks fescue			X		X
Annual Forbs							
ALYDES	*Alyssum desertorum*	desert alyssum	X		X	X	X
ATRPAT	*Atriplex patula*	spear saltbush	X		X		X
BASSIE	*Bassia sieversiana*	summer cypress		X	X		
BORAGE	*Boraginaeceae* spp.	borage species	X		X	X	
CAMMIC	*Camelina microcarpa*	littleseed falseflax	X		X		X
CHEALB	*Chenopodium album*	lambsquarters goosefoot	X	X	X	X	
CHEBER	*Chenopodium berlandieri*	pitseed goosefoot	X	X	X	X	
CHELEP	*Chenopodium leptophyllum*	narrowleaf goosefoot	X				
CHOTEN	*Chorispora tenella*	crossflower		X		X	
CRYSPP	*Cryptantha* spp.	cryptantha	X		X		
DESPIN	*Descurainia pinnata*	pinnate tansymustard	X	X	X	X	
DESSOP	*Descurainia sophia*	flixweed tansymustard	X	X	X	X	
DRANEM	*Draba nemorosa*	yellow draba			X	X	X
GERVIS	*Geranium viscosissimum*	sticky purple geranium				X	
HEDHIS	*Hedeoma hispidum*	rough false pennyroyal	X		X	X	X
HELANN	*Helianthus annuus*	annual sunflower				X	
LAPRED	*Lappula redowski*	beggars-tick	X	X	X	X	
LEPDEN	*Lepidium densiflorum*	prairie peppergrass	X		X	X	X
LEPPER	*Lepidium perfoliatum*	clasping peppergrass			X		X
LINAUS	*Linum australe*	southern flax	X				X
LINPUB	*Linum puberulum*	plains flax	X				
LUPUS	*Lupinus pusillus*	rusty lupine	X				
MICGRA	*Microsteris gracilis*	slender phlox				X	
	Species observed but not sampled						

POWERTECH (USA) INC.

			Vegetation Community				
Code	Scientific Name	Common Name	Big Sagebrush Shrubland	Cottonwood Gallery	Greasewood Shrubland	Ponderosa Pine Woodland	Upland Grassland
Annual Forbs continued							
MONUT	*Monolepis nuttalliana*	Nuttall's povertyweed	X		X		
OROMUL	*Orobanche multiflora*	manyflower broomrape	X				
PLAPAT	*Plantago patagonica*	Pursh's plantain	X		X	X	X
POLAVI	*Polygonum aviculare*	prostrate knotweed			X	X	
SALTRA	*Salsola tragus*	Russian thistle		X	X		
SISALT	*Sisymbrium altissimum*	tumbling hedgemustard	X	X	X		
SOLROS	*Solanum rostratum*	buffalobur nightshade					X
SOLTRI	*Solanum triflorum*	cutleaf nightshade			X		
THLARV	*Thlaspi arvense*	field pennycress	X	X	X	X	X
Biennial Forbs							
IPOAGG	*Ipomopsis aggregata*	scarlet gilia	X				
MELOFF	*Melilotus officinalis*	yellow sweetclover	X		X	X	X
TRADUB	*Tragopogon dubius*	yellow salsify	X		X	X	X
Perennial Forbs							
ACHMIL	*Achillea millefolium*	common yarrow		X			
ALLSPP	*Allium* spp.	onion	X		X		
ALLTEX	*Allium textile*	prairie onion	X		X	X	
AMBPSI	*Ambrosia psilostachya*	western ragweed			X		X
ANTMIC	*Antennaria microphylla*	little-leaf pussytoes	X			X	
ANTPAR	*Antennaria parvifolia*	small-leaf pussytoes				X	
ASCSPE	*Asclepias speciosa*	showy milkweed		X			
CALNUT	*Calochortus nuttallii*	sego mariposalily	X				
CAMROT	*Campanula rotundifolia*	harebell				X	
CERSPP	*Cerastium* spp.	chickweed	X				
CIRCAN	*Circaea canadensis*	broadleaf enchanter's nightshade			X		
CIRARV	*Cirsium arvense*	Canada thistle		X			
CIRSPP	*Cirsium* spp	thistle	X				
COMUMB	*Comandra umbellata*	common bastardtoadflax	X			X	
CONARV	*Convolvulus arvensis*	field bindweed			X		
CRESPP	*Crepis* spp.	hawksbeard	X				
	Species observed but not sampled						

POWERTECH (USA) INC.

			Vegetation Community				
Code	Scientific Name	Common Name	Big Sagebrush Shrubland	Cottonwood Gallery	Greasewood Shrubland	Ponderosa Pine Woodland	Upland Grassland
Perennial Forbs continued							
DALCAN	*Dalea candida*	white prairie-clover					X
DALENN	*Dalea ennandra*	nineanther prairie-clover				X	
DALPUR	*Dalea purpurea*	purple prairie-clover	X				
ECHANG	*Echinacea angustifolia*	purple coneflower					X
EREHOO	*Eremogone hookeri*	Hooker sandwort	X			X	
ERISPP	*Erigeron* spp	fleabane	X			X	
GAISPP	*Gaillardia* spp.	blanketflower				X	
GAUCOC	*Gaura coccinea*	scarlet gaura	X				
GRISQU	*Grindelia squarrosa*	curlycup gumweed	X			X	
HELPAU	*Helianthus pauciflorus*	stiff sunflower					X
HELSPP	*Helianthus* spp.	sunflower	X	X			
HESPUM	*Hesperochiron pumilus*	dwarf hesperochiron	X				
HETVIL	*Heterotheca villosa*	goldenaster	X			X	
LIAPUN	*Liatris punctata*	dotted blazingstar	X			X	
MACSPP	*Machaeranthera* spp.	tansyaster	X				
PEDARG	*Pediomelum argophyllum*	silverleaf scurfpea	X				X
PENSPP	*Penstemon* spp.	penstemon	X			X	
PHLMUL	*Phlox multiflora*	flowery phlox				X	
PHLSPP	*Phlox* spp.	phlox	X		X	X	X
PSOSPP	*Psoralidium* spp.	scurfpea	X				
PSOTEN	*Psoralidium tenuiflorum*	slimflower scurfpea				X	
PTESPP	*Pterospora* spp.	pinedrops				X	
SPHCOC	*Sphaeralcea coccinea*	scarlet globemallow	X		X	X	X
THERHO	*Thermopsis rhombifolia*	prairie thermopsis	X			X	
VICAME	*Vicia americana*	American vetch	X			X	X
WOOORE	*Woodsia oregana var. cathcartiana*	Oregon cliff fern				X	
Perennial Half and Sub-shrubs							
ARTFRI	*Artemisia frigida*	fringed sagewort	X	X	X	X	X
ARTLUD	*Artemisia ludoviciana*	Louisiana sagewort				X	
GUTSAR	*Gutierrezia sarothrae*	broom snakeweed	X			X	X
ROSARK	*Rosa arkansana*	prairie rose				X	
	Species observed but not sampled						

POWERTECH (USA) INC.

			Vegetation Community				
Code	Scientific Name	Common Name	Big Sagebrush Shrubland	Cottonwood Gallery	Greasewood Shrubland	Ponderosa Pine Woodland	Upland Grassland
Perennial Half and Sub-shrubs continued							
YUCGLA	*Yucca glauca*	yucca (small soapweed)				X	
Perennial Shrubs							
ARTCAN	*Artemisia cana*	silver sagebrush		X	X	X	
ARTTRI	*Artemisia tridentata*	big sagebrush	X	X	X	X	X
CHRVIS	*Chrysothamnus viscidflorus*	Douglas rabbitbrush				X	
ERINAU	*Ericameria nauseosa*	rubber rabbitbrush		X	X	X	
SARVER	*Sarcobatus vermiculatus*	greasewood	X	X	X		
SYMOCC	*Symphoricarpos occidentalis*	western snowberry		X			
Succulents							
CORSPP	*Coryphantha* spp.	ball cactus	X				
OPUPOL	*Opuntia polyacantha*	plains prickly pear	X		X	X	X
PEDSIM	*Pediocactus simpsonii*	mountain ball cactus	X				
Trees							
JUNSCO	*Juniperus scopulorum*	Rocky Mountain juniper				X	
PINPON	*Pinus ponderosa*	ponderosa pine				X	
POPDEL	*Populus deltoides*	plains cottonwood		X			
Lichens and Moss							
LICSPP	*Lichen* spp.	lichen	X		X	X	X
MOSSPP	*Moss* spp.	moss			X	X	
	Species observed but not sampled						

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APPENDIX 3.5-C

VEGETATION COVER SUMMARIES

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DEWEY-BURDOCK PROJECT
Report: Cover Summary

Site Id: BS
Name: Baseline
Comm. Type/Form: Big Sagebrush
Sample Date:7-2-2007 to 7-12-2007

Sample Method: Point Intercept
Sample Size: 50 Meter Transect
Number of Samples: 27
Report Date: 1-14-08

	Cover			Frequency			
Species	Mean Absolute	Relative (%)	Std. Dev. n-1	Absolute	Relative (%)	I.V.	Rank
Cool Season Perennial Grasses							
Carex filifolia	3.56	7.76	6.14	48.15	7.39	15.14	5
Carex stenophylla	0.07	0.15	0.38	3.70	0.57	0.72	15
Elymus lanceolatus	0.07	0.15	0.38	3.70	0.57	0.72	15
Elymus smithii	3.78	8.24	3.82	70.37	10.80	19.03	4
Hesperostipa comata	0.89	1.94	2.03	18.52	2.84	4.78	11
Poa secunda	0.96	2.09	2.03	25.93	3.98	6.07	8
Sub-total	9.33	20.33					
Warm Season Perennial Grasses							
Aristida purpurea	0.15	0.33	0.53	7.41	1.14	1.46	15
Bouteloua curtipendula	0.22	0.48	0.85	7.41	1.14	1.62	14
Bouteloua gracilis	11.19	24.38	7.45	88.89	13.64	38.02	1
Buchloe dactyloides	9.63	20.98	10.47	77.78	11.93	32.92	2
Panicum virgatum	0.07	0.15	0.38	3.70	0.57	0.72	15
Sub-total	21.26	46.33					
Annual Grasses							
Bromus japonicus	2.81	6.12	3.56	55.56	8.52	14.65	6
Bromus tctorum	1.85	4.03	2.98	40.74	6.25	10.28	7
Sub-total	4.66	10.15					
Annual Forbs							
Alyssum desertorum	0.22	0.48	0.85	7.41	1.14	1.62	14
Camelina microcarpa	0.07	0.15	0.38	3.70	0.57	0.72	15
Hedeoma hispidum	0.07	0.15	0.38	3.70	0.57	0.72	15
Lappula redowski	0.07	0.15	0.38	3.70	0.57	0.72	15
Lepidium densiflorum	0.30	0.65	0.72	11.11	1.70	2.36	13
Linum australe	0.07	0.15	0.38	3.70	0.57	0.72	15
Plantago patagonica	0.07	0.15	0.38	3.70	0.57	0.72	15
Sub-total	0.87	1.90					
Perennial Forbs							
Calochortus nuttallii	0.07	0.15	0.38	3.70	0.57	0.72	15
Phlox spp.	0.07	0.15	0.38	3.70	0.57	0.72	15
Sphaeralcea coccinea	0.37	0.81	1.11	11.11	1.70	2.51	12
Sub-total	0.51	1.11					
Perennial Sub-Shrubs							
Artemisia frigada	1.04	2.27	1.25	22.22	3.41	5.68	9
Gutierrezia sarothrae	0.15	0.33	0.27	7.41	1.14	1.46	15
Sub-total	1.19	2.59					
Perennial Shrubs							
Artemisia tridentata	7.26	15.82	5.82	92.59	14.20	30.03	3
Sub-total	7.26	15.82					
Perennial Succulants							
Opuntia polyacantha	0.81	1.77	0.89	22.22	3.41	5.17	10
Sub-total	0.81	1.77					
Total Vegetation	45.89		13.09				
Lichen	1.26		2.30				
Moss	0.07		0.38				
Litter/Rock	38.52		19.27				
Total Ground Cover	85.78		6.59				
Bare Soil	14.07		6.50				
Total Cover	99.85						
Species Abundance (No. of Species/Sample)	27						

POWERTECH (USA) INC

POWERTECH (USA) INC
DEWEY-BURDOCK PROJECT
Report: Cover Summary

Site Id: GW
Name: Baseline
Comm. Type/Form: Greasewood Shrubland
Sample Date:7-2-2007 to 7-12-2007

Sample Method: Point Intercept
Sample Size: 50 Meter Transect
Number of Samples: 37
Report Date: 1-14-08

	Cover			Frequency			
Species	Mean Absolute	Relative (%)	Std. Dev. n-1	Absolute	Relative (%)	I.V.	Rank
Cool Season Perennial Grasses							
Agropyron cristatum	0.49	1.32	2.64	5.41	0.97	2.29	15
Bromus inermis	0.22	0.59	0.79	8.11	1.46	2.05	17
Carex filifolia	0.27	0.73	1.07	8.11	1.46	2.18	16
Carex stenophylla	0.11	0.30	0.66	2.70	0.48	0.78	22
Elymus hispidus	0.05	0.13	0.33	2.70	0.48	0.62	23
Elymus lanceolatus	0.22	0.59	1.03	5.41	0.97	1.56	19
Elymus smithii	8.65	23.31	8.47	89.19	16.02	39.33	1
Hordeum jubatum	0.05	0.13	0.33	2.70	0.48	0.62	23
Poa secunda	0.16	0.43	0.73	5.41	0.97	1.40	20
Schedonnardus panniculatus	0.05	0.13	0.33	2.70	0.48	0.62	23
Sub-total	10.27	27.67					
Warm Season Perennial Grasses							
Artistida spp.	0.05	0.13	0.33	2.70	0.48	0.62	23
Bouteloua gracilis	3.84	10.35	6.10	43.24	7.77	18.11	3
Buchloe dactyloides	3.57	9.62	5.97	45.95	8.25	17.87	4
Distichlis stricta	0.97	2.61	3.93	10.81	1.94	4.56	11
Sporobolus airoides	0.54	1.46	1.68	13.51	2.43	3.88	12
Sporobolus cryptandrus	0.05	0.13	0.33	2.70	0.48	0.62	23
Sub-total	9.02	24.31					
Annual Grasses							
Bromus japonicus	0.22	0.59	0.64	10.81	1.94	2.53	14
Bromus tectorum	1.62	4.37	3.43	29.73	5.34	9.71	5
Sub-total	1.84	4.96					
Annual Forbs							
Bassia sieveriana	1.68	4.53	4.15	21.62	3.88	8.41	8
Camelina microcarpa	0.05	0.13	0.33	2.70	0.48	0.62	23
Chenopodium album	0.16	0.43	0.55	8.11	1.46	1.89	18
Chenopodium berlandieri	0.05	0.13	0.33	2.70	0.48	0.62	23
Cryptantha spp.	0.05	0.13	0.33	2.70	0.48	0.62	23
Descurainia pinnata	0.11	0.30	0.46	5.41	0.97	1.27	21
Lappula redowski	0.22	0.59	0.79	8.11	1.46	2.05	17
Lepidium densiflorum	0.16	0.43	0.73	5.41	0.97	1.40	20
Lepidium perfoliatum	0.27	0.73	0.96	8.11	1.46	2.18	16
Monolepis nuttalliana	0.38	1.02	1.14	13.51	2.43	3.45	13
Plantago patagonica	0.65	1.75	1.89	16.22	2.91	4.66	10
Salsola tragus	0.05	0.13	0.33	2.70	0.48	0.62	23
Sub-total	3.83	10.32					
Perennial Forbs							
Ambrosia psilostachya	0.05	0.13	0.33	2.70	0.48	0.62	23
Convolvulus arvensis	0.05	0.13	0.33	2.70	0.48	0.62	23
Sphaeralcea coccinea	0.05	0.13	0.33	2.70	0.48	0.62	23
Sub-total	0.15	0.40					
Perennial Shrubs							
Artemisia cana	0.59	1.59	1.32	18.92	3.40	4.99	9
Artemisia tridentata	1.57	4.23	3.66	24.32	4.37	8.60	7

POWERTECH (USA) INC

POWERTECH (USA) INC
DEWEY-BURDOCK PROJECT
Report: Cover Summary

Site Id: GW
Name: Baseline
Comm. Type/Form: Greasewood Shrubland
Sample Date:7-2-2007 to 7-12-2007

Sample Method: Point Intercept
Sample Size: 50 Meter Transect
Number of Samples: 37
Report Date: 1-14-08

	Cover			Frequency			
Species	Mean Absolute	Relative (%)	Std. Dev. n-1	Absolute	Relative (%)	I.V.	Rank
Perennial Shrubs continued							
Sarcobatus vermiculatus	8.49	22.88	8.79	86.49	15.53	38.41	2
Sub-total	10.65	28.70					
Perennial Succulants							
Opuntia polyacantha	1.35	3.64	1.45	29.73	5.34	8.98	6
Sub-total	1.35	3.64					
Total Vegetation	37.11		10.88				
Lichen	0.48		1.52				
Moss	0.06		0.33				
Litter/Rock	42.54		23.85				
Total Ground Cover	80.19		13.47				
Bare Soil	18.70		13.37				
Total Cover	98.89						
Species Abundance (No. of Species/Sample)	37						

POWERTECH (USA) INC

POWERTECH (USA) INC
DEWEY-BURDOCK PROJECT
Report: Cover Summary

Site Id: PP
Name: Baseline
Comm. Type/Form: Ponderosa Pine Woodland
Sample Date:7-2-2007 to 7-12-2007

Sample Method: Point Intercept
Sample Size: 50 Meter Transect
Number of Samples: 37
Report Date: 1-14-08

Species	Cover Mean Absolute	Cover Relative (%)	Std. Dev. n-1	Frequency Absolute	Frequency Relative (%)	I.V.	Rank
Cool Season Perennial Grasses							
Carex filifolia	0.11	0.32	0.66	2.70	0.56	0.88	15
Carex geyeri	4.59	13.37	5.49	56.76	11.87	25.24	2
Elymus lanceolatus	0.05	0.15	0.33	2.70	0.56	0.71	16
Elymus smithii	1.24	3.61	1.96	37.84	7.91	11.52	6
Hesperostipa comata	0.16	0.47	0.73	2.70	0.56	1.03	14
Nassella viridula	0.11	0.32	0.46	5.41	1.13	1.45	13
Poa secunda	0.38	1.11	1.69	5.41	1.13	2.24	11
Sub-total	6.64	19.34					
Warm Season Perennial Grasses							
Andropogon scoparius	0.81	2.36	1.52	24.32	5.08	7.44	7
Aristida purpurea var. fendleriana	0.81	2.36	1.73	24.32	5.08	7.44	7
Bouteloua curtipendula	1.68	4.89	2.93	35.14	7.35	12.24	5
Bouteloua gracilis	4.05	11.80	4.58	62.16	12.99	24.79	3
Buchloe dactyloides	0.32	0.93	0.88	13.51	2.82	3.76	9
Sub-total	7.67	22.34					
Annual Grasses							
Bromus japonicus	0.22	0.64	0.63	10.81	2.26	2.90	10
Bromus tectorum	0.05	0.15	0.33	2.70	0.56	0.71	16
Sub-total	0.27	0.79					
Annual Forbs							
Chenopodium berlandieri	0.05	0.15	0.33	2.70	0.56	0.71	16
Draba nemorosa	0.05	0.15	0.33	2.70	0.56	0.71	16
Lappula redowski	0.05	0.15	0.33	2.70	0.56	0.71	16
Sub-total	0.15	0.44					
Biennial Forbs							
Melilotus officinalis	0.05	0.15	0.33	2.70	0.56	0.71	16
Sub-total	0.05	0.15					
Perennial Forbs							
Antennaria parvifolia	0.05	0.15	0.33	2.70	0.56	0.71	16
Erigeron spp.	0.11	0.32	0.66	2.70	0.56	0.88	15
Liatris punctata	0.05	0.15	0.33	2.70	0.56	0.71	16
Thermopsis rhombifolia	0.16	0.47	0.99	2.70	0.56	1.03	14
Vicia americana	0.05	0.15	0.33	2.70	0.56	0.71	16
Sub-total	0.42	1.22					
Perennial Sub-Shrubs							
Artemisia frigada	0.22	0.64	0.63	10.81	2.26	2.90	10
Sub-total	0.22	0.64					
Perennial Shrubs							
Artemisia cana	0.16	0.47	0.99	2.70	0.56	1.03	14
Artemisia tridentata	0.54	1.57	1.12	21.62	4.52	6.09	8
Sub-total	0.70	2.04					

POWERTECH (USA) INC

POWERTECH (USA) INC
DEWEY-BURDOCK PROJECT
Report: Cover Summary

Site Id: PP
Name: Baseline
Comm. Type/Form: Ponderosa Pine Woodland
Sample Date:7-2-2007 to 7-12-2007

Sample Method: Point Intercept
Sample Size: 50 Meter Transect
Number of Samples: 37
Report Date: 1-14-08

	Cover			Frequency			
Species	Mean Absolute	Relative (%)	Std. Dev. n-1	Absolute	Relative (%)	I.V.	Rank
Perennial Succulants							
Opuntia polyacantha	0.16	0.47	0.55	8.11	1.70	2.16	12
Sub-total	0.16	0.47					
Perennial Trees							
Juniperus scopulorum	2.59	7.54	4.52	32.43	6.78	14.32	4
Pinus ponderosa	15.46	45.03	10.79	91.89	19.21	64.24	1
Sub-total	18.05	52.58					
Total Vegetation	34.33		10.51				
Lichen	0.54		1.30				
Moss	0.38		1.14				
Litter/Rock	53.57		24.32				
Total Ground Cover	88.82		7.68				
Bare Soil	10.54		7.74				
Total Cover	99.36						
Species Abundance (No. of Species/Sample)	29						

POWERTECH (USA) INC

POWERTECH (USA) INC
DEWEY-BURDOCK PROJECT
Report: Cover Summary

Site Id: UG
Name: Baseline
Comm. Type/Form: Upland Grassland
Sample Date:7-2-2007 to 7-12-2007

Sample Method: Point Intercept
Sample Size: 50 Meter Transect
Number of Samples: 30
Report Date: 1-14-08

	Cover			Frequency			
Species	Mean Absolute	Relative (%)	Std. Dev. n-1	Absolute	Relative (%)	I.V.	Rank
Cool Season Perennial Grasses							
Agropyron cristatum	0.47	1.02	1.63	10.00	2.04	3.06	9
Carex filifolia	3.33	7.24	5.57	50.00	10.20	17.44	5
Elymus smithii	8.53	18.54	7.82	80.00	16.33	34.86	3
Hesperostipa comata	0.33	0.72	1.30	6.67	1.36	2.08	11
Poa secunda	0.07	0.15	0.37	3.33	0.68	0.83	13
Sub-total	12.73	27.66					
Warm Season Perennial Grasses							
Bouteloua gracilis	12.47	27.10	9.82	90.00	18.37	45.46	2
Buchloe dactyloides	12.80	27.81	9.88	90.00	18.37	46.18	1
Sub-total	25.27	54.91					
Annual Grasses							
Bromus japonicus	0.07	0.15	0.37	3.33	0.68	0.83	13
Bromus tectorum	4.07	8.84	5.26	53.33	10.88	19.73	4
Sub-total	4.14	9.00					
Annual Forbs							
Alyssum desertorum	0.67	1.46	1.60	16.67	3.40	4.86	7
Lepidium densiflorum	0.20	0.43	0.81	6.67	1.36	1.80	12
Thlaspi arvense	0.67	1.46	2.31	13.33	2.72	4.18	8
Sub-total	1.54	3.35					
Perennial Forbs							
Sphaeralcea coccinea	0.20	0.43	0.61	10.00	2.04	2.48	10
Sub-total	0.20	0.43					
Perennial Sub-Shrubs							
Artemisia frigada	0.07	0.15	0.37	3.33	0.68	0.83	13
Sub-total	0.07	0.15					
Perennial Succulants							
Opuntia polyacantha	2.07	4.50	2.49	53.33	10.88	15.38	6
Sub-total	2.07	4.50					
Total Vegetation	46.02		13.76				
Lichen	1.80		4.11				
Litter/Rock	41.13		20.69				
Total Ground Cover	88.95		6.07				
Bare Soil	11.07		5.94				
Total Cover	100.02						
Species Abundance (No. of Species/Sample)	15						

POWERTECH (USA) INC

POWERTECH (USA) INC
DEWEY-BURDOCK PROJECT
Report: Cover Summary

Site Id: CG
Name: Baseline
Comm. Type/Form: Cottonwood Gallery
Sample Date:7-2-2007 to 7-12-2007

Sample Method: Point Intercept
Sample Size: 50 Meter Transect
Number of Samples: 26
Report Date: 1-14-08

	Cover			Frequency			
Species	Mean Absolute	Relative (%)	Std. Dev. n-1	Absolute	Relative (%)	I.V.	Rank
Cool Season Perennial Grasses							
Bromus inermis	18.23	29.12	16.76	92.31	24.49	53.61	1
Elymus smithii	16.46	26.29	15.60	88.46	23.47	49.76	2
Sub-total	34.69	55.41					
Warm Season Perennial Grasses							
Distichlis stricta	0.23	0.37	1.18	3.85	1.02	1.39	10
Sub-total	0.23	0.37					
Annual Grasses							
Bromus japonicus	0.08	0.13	0.39	3.85	1.02	1.15	11
Bromus tectorum	0.69	1.10	1.95	15.38	4.08	5.18	6
Sub-total	0.77	1.23					
Annual Forbs							
Bassia sieveriana	9.77	15.60	15.98	53.85	14.29	29.89	4
Chenopodium album	1.38	2.20	2.76	26.92	7.14	9.35	5
Descurainia sophia	0.08	0.13	0.39	3.85	1.02	1.15	11
Lappula redowski	0.08	0.13	0.39	3.85	1.02	1.15	11
Sub-total	11.31	18.06					
Perennial Forbs							
Achillea millefolium	0.08	0.13	0.39	3.85	1.02	1.15	11
Cirsium arvense	1.38	2.20	6.66	7.69	2.04	4.24	7
Sub-total	1.46	2.33					
Perennial Shrubs							
Artemisia cana	0.15	0.24	0.54	7.69	2.04	2.28	8
Sarcobatus vermiculatus	0.08	0.13	0.39	3.85	1.02	1.15	11
Symphoricarpos occidentalis	0.54	0.86	2.75	3.85	1.02	1.88	9
Sub-total	0.77	1.23					
Perennial Trees							
Populus deltoides	13.38	21.37	20.28	57.69	15.30	36.68	3
Sub-total	13.38	21.37					
Total Vegetation	62.61		15.29				
Lichen	0.00		0.00				
Litter/Rock	35.00		12.83				
Total Ground Cover	97.62		4.16				
Bare Soil	2.38		4.16				
Total Cover	100.00						
Species Abundance (No. of Species/Sample)	15						

POWERTECH (USA) INC.

APPENDIX 3.5-D

VEGETATION DENSITY SUMMARIES

POWERTECH (USA) INC

POWERTECH (USA) INC
DEWEY-BURDOCK PROJECT
Report: Density Summary

Site Id: BS
Name: Baseline
Comm. Type/Form: Big Sagebrush
Sample Date:7-2-2007 to 7-12-2007

Sample Method: Transect
Sample Size: 50 Meter Transect
Number of Samples: 27
Report Date: 1-14-08

	Mean (Number/Plot)	Relative Density	Std. Dev. n-1 (Number/Plot)	Mean (Number/sq.m.)	Mean (Number/Acre)
Full Shrubs					
Artemisia tridentata	24.26	53.65	14.83	0.49	1,964.33
Sub-Total	24.26	53.65		0.49	1,964.33
Sub-Shrubs & Half-Shrubs					
Artemisia frigada	20.52	45.38	40.21	0.41	1,661.50
Gutierrezia sarothrae	0.44	0.97	1.15	0.01	35.63
Sub-Total	20.96	46.35		0.42	1,697.13
Total	45.22	100.00		0.90	3,661.46

POWERTECH (USA) INC

POWERTECH (USA) INC
DEWEY-BURDOCK PROJECT
Report: Density Summary

Site Id: GW
Name: Baseline
Comm. Type/Form: Greasewood Shrubland
Sample Date:7-2-2007 to 7-12-2007

Sample Method: Transect
Sample Size: 50 Meter Transect
Number of Samples: 37
Report Date: 1-14-08

	Mean (Number/Plot)	Relative Density	Std. Dev. n-1 (Number/Plot)	Mean (Number/sq.m.)	Mean (Number/Acre)
Full Shrubs					
Artemisia cana	3.81	11.91	9.89	0.08	308.50
Artemisia tridentata	5.59	17.48	12.13	0.11	452.62
Ericameria nauseosa	0.22	0.69	1.32	0.00	17.81
Sarcobatus vermiculatus	22.22	69.48	20.88	0.44	1,799.15
Sub-Total	31.84	99.56		0.64	2,578.08
Sub-Shrubs & Half-Shrubs					
Artemisia frigida	0.14	0.44	0.48	0.003	11.34
Sub-Total	0.14	0.44		0.003	11.34
Total	31.98	100.00		0.64	2,589.42

POWERTECH (USA) INC

POWERTECH (USA) INC
DEWEY-BURDOCK PROJECT
Report: Density Summary

Site Id: PP
Name: Baseline
Comm. Type/Form: Ponderosa Pine Woodland
Sample Date:7-2-2007 to 7-12-2007

Sample Method: Transect
Sample Size: 50 Meter Transect
Number of Samples: 37
Report Date: 1-14-2008

	Mean (Number/Plot)	Relative Density	Std. Dev. n-1 (Number/Plot)	Mean (Number/sq.m.)	Mean (Number/Acre)
Full Shrubs					
Artemisia cana	2.11	13.96	12.82	0.04	170.85
Artemisia tridentata	4.14	27.38	7.05	0.08	335.22
Chrysothamnus viscidflorus	0.22	1.46	0.67	0.004	17.81
Ericameria nauseosa	0.14	0.93	0.54	0.003	11.34
Sub-Total	6.61	43.72		0.13	535.21
Sub-Shrubs & Half-Shrubs					
Artemisia frigada	6.92	45.77	16.08	0.14	560.31
Gutierrezia sarothrae	1.51	9.99	5.86	0.03	122.26
Rosa arkansana	0.03	0.20	0.33	0.001	2.43
Yucca glauca	0.05	0.33	0.16	0.001	4.05
Sub-Total	8.51	56.28		0.17	689.05
Total	15.12	100.00		0.30	1,224.27

POWERTECH (USA) INC

POWERTECH (USA) INC
DEWEY-BURDOCK PROJECT
Report: Density Summary

Site Id: UG
Name: Baseline
Comm. Type/Form: Upland Grassland
Sample Date:7-2-2007 to 7-12-2007

Sample Method: Transect
Sample Size: 50 Meter Transect
Number of Samples: 30
Report Date: 1-14-08

	Mean (Number/Plot)	Relative Density	Std. Dev. n-1 (Number/Plot)	Mean (Number/sq.m.)	Mean (Number/Acre)
Full Shrubs					
Artemisia tridentata	0.13	20.63	0.43	0.003	10.53
Sub-Total	0.13	20.63		0.003	10.53
Sub-Shrubs & Half-Shrubs					
Artemisia frigada	0.47	74.60	2.56	0.01	38.06
Gutierrezia sarothrae	0.03	4.76	0.18	0.00	2.43
Sub-Total	0.50	79.37		0.01	40.49
Total	0.63	100.00		0.01	51.01

POWERTECH (USA) INC

POWERTECH (USA) INC
DEWEY-BURDOCK PROJECT
Report: Density Summary

Site Id: CG
Name: Baseline
Comm. Type/Form: Cottonwood Gallery
Sample Date:7-2-2007 to 7-12-2007

Sample Method: Transect
Sample Size: 50 Meter Transect
Number of Samples: 26
Report Date: 1-14-08

	Mean (Number/Plot)	Relative Density	Std. Dev. n-1 (Number/Plot)	Mean (Number/sq.m.)	Mean (Number/Acre)
Full Shrubs					
Artemisa cana	0.5	7.13	1.12	0.01	40.49
Artemisia tridentata	0.04	0.57	0.19	0.00	3.24
Ericameria nauseosa	0.04	0.57	0.19	0.00	3.24
Sarcobatus vermiculatus	0.08	1.14	0.27	0.00	6.48
Symphoricarpos occidentalis	6.35	90.58	31.73	0.13	514.16
Sub-Total	7.01	100.00		0.14	567.60
Total	7.01	100.00		0.14	567.60

POWERTECH (USA) INC.

APPENDIX 3.5-E

PONDEROSA PINE WOODLAND TREE DENISTY SUMMARY

POWERTECH (USA) INC

POWERTECH (USA) INC
DEWEY-BURDOCK PROJECT
Report: Density Summary

Site Id: PP
Name: Baseline
Comm. Type/Form: Ponderosa Pine Woodland
Sample Date:7-2-2007 to 7-12-2007

Sample Method: Transect
Sample Size: 50 Meter Transect
Number of Samples: 37
Report Date: 1-14-2008

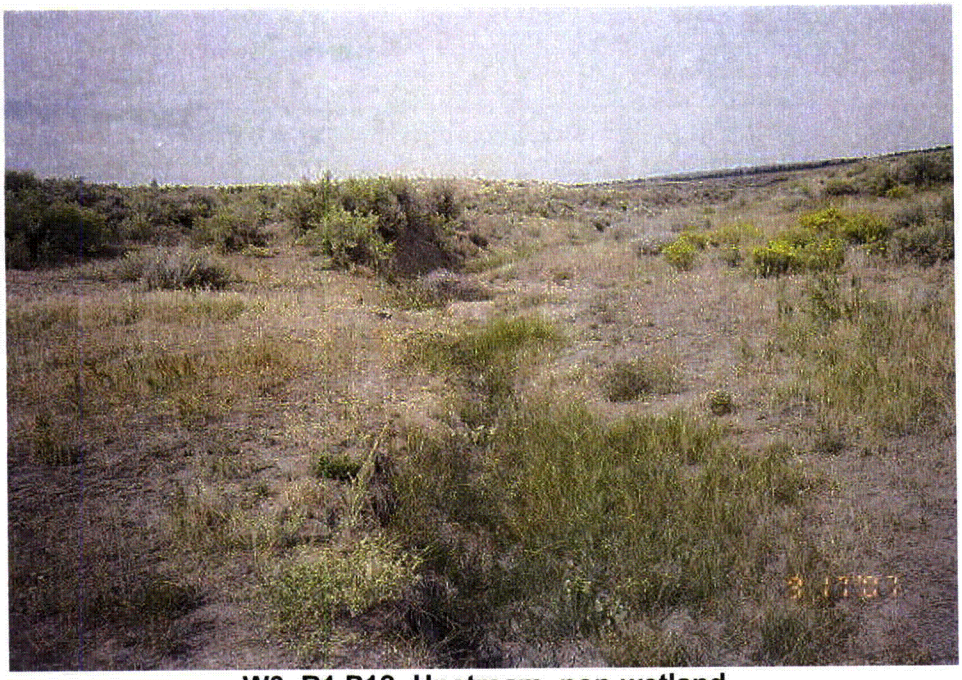
	Std. Dev. n-1 (Number/Plot)	Mean (Number/sq.m.)	Mean (Number/Acre)
Trees			
Pinus ponderosa	15.10	0.019	75.88
Sub-Total		0.019	75.88
Total		0.019	75.88

APPENDIX 3.5-F

WETLAND PHOTOGRAPHS

POWERTECH (USA) INC.

W1, R1 P1: Depression, non-wetland

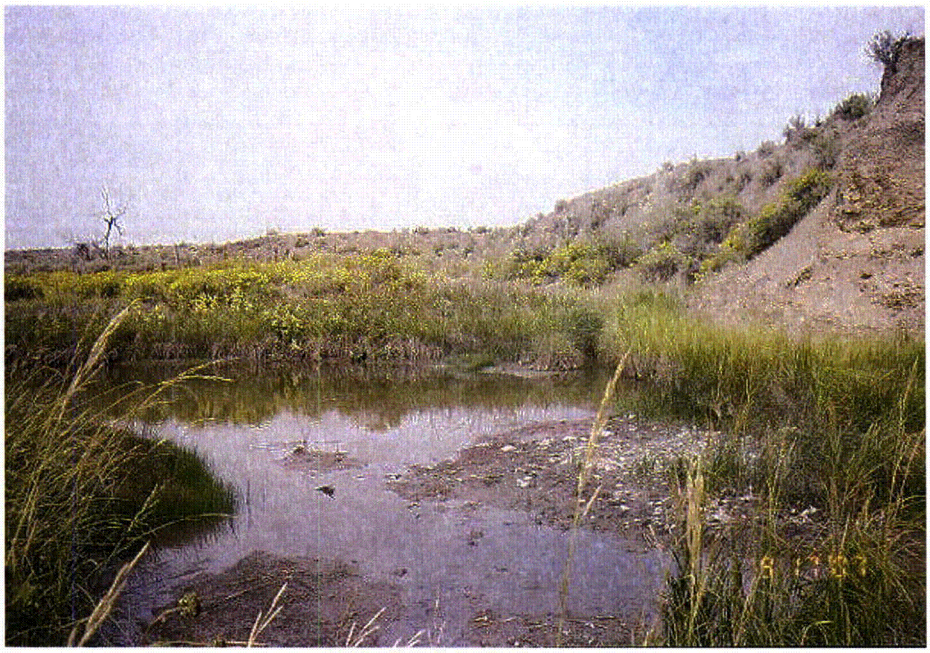


W3, R1 P12: Upstream, non-wetland

W3, R1 P13: Downstream, non-wetland

W4, R1 P2: Upstream, wetland

W4, R1 P3: Downstream, wetland



W4, R1 P4: Tributary

Wpt. 3, R1 P6: Upstream, wetland

Wpt. 3, R1 P7: Downstream, wetland

Wpt. 4, R1 P8: Upstream, wetland

Wpt. 4, R1 P9: Downstream, wetland

W5, R1 P5: Upland, non-wetland

W6, R1 P16: View of the drainage

W7, R1 P17: Upstream, wetland

W7, R1 P18: Downstream

W8, R1 P19: Upstream, wetland

W8, R1 P20: Downstream, wetland

W9, R1 P23: Upstream depression, wetland

W9, R1 P24: Downstream depression, wetland

W10, R2 P1: Downstream, wetland

W10, R2 P2: Upstream, wetland

W11, R2 P3: West

W11, R2 P4: East

W12, R2 P5: West, non-wetland

W12, R2 P6: East, non-wetland

W14, R2 P7: Upstream, wetland

W14, R2 P8: Downstream, wetland

W14, R2 P9: General area of PEMC

W15, R2 P12: Upstream, wetland

W15, R2 P13: Downstream, wetland

Wpt. 22, R2, P14: Upstream wetland

Wpt. 22, R2, P15: Downstream, wetland

W16, R2 P18: Upstream, wetland

W16, R2 P19: Downstream, wetland

W17, R2 P22: Upstream, non-wetland

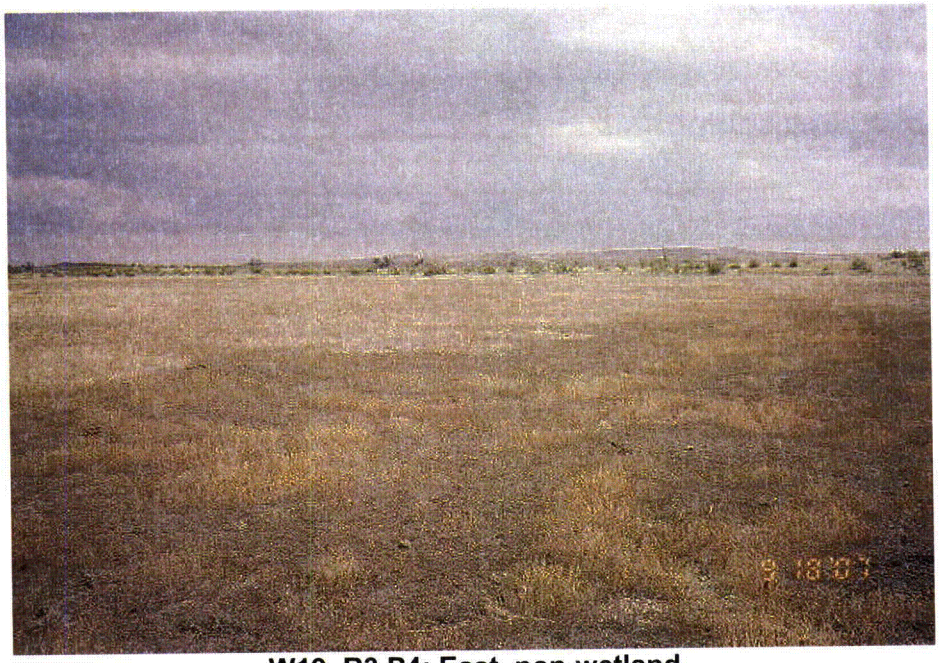
W17, R2 P23: Downstream, non-wetland

Wpt. 26, R2 P24: Similar to W18, wetland

W18, R3 P1: Upstream, wetland

W18, R3 P2: Downstream, wetland

W19, R3 P3: Northwest, non-wetland



W19, R3 P4: East, non-wetland

Wpt. 27, R3 P5: Drainage, non-wetland

Wpt. 29, R3 P6: Depression, non-wetland

Wpt. 29, R3 P7: Depression, non-wetland

W20, R3 P8: Upstream, wetland

W20, R3 P9: Downstream, wetland

W21, R3 P10: Upstream, wetland

W21, R3 P11: Downstream, wetland

W21, R3 P12: Bridge

W22, R3 P13: Upstream, wetland

W22, R3 P14: Downstream, wetland

W23, R3 P17: Upstream, wetland

W23, R3 P18, Downstream, wetland

Wpt. 35, R4 P23: Upstream, non-wetland

Wpt. 35, R4 P24: downstream, non-wetland

W25, R4 P1: Upstream, non-wetland

W25, R4 P2: Downstream, non-wetland

W26, R4 P3: Upstream, non-wetland

W26, R4 P4: Downstream, non-wetland

W27, R4 P11: Upstream, non-wetland

W27, R4 P12: Downstream, non-wetland