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Resources Management & Science

Weed-Free Gravel Program

PROGRAM OVERVIEW

MISSION: The primary goal of this program is to prevent the introduction of weed seeds into the park via imported mineral materials. Secondary goals include: creating a straight-forward method for managing weeds in gravel pits; providing assistance to gravel pit operators to develop and update their weed management plans; creating a steady source of weed-free mineral material for regional land managers; and providing incentive and recognition to gravel pit operators that implement good weed management practices.

APPROACH: While ultimately this project is a preventative measure to keep invasive plants out of the park, the program is conducted as an outreach service to gravel pits. The aim is to work collaboratively with gravel pit operators, providing the botanical skills and access to resources necessary for efficient and effective weed control. Successful participation in this program by gravel pits allows the sale of mineral material to Yosemite National Park and provides a marketable certificate that can increase the value of mineral materials. Similar programs are in place in the Lake Tahoe basin, Glacier National Park, and the greater Yellowstone area.

METHOD: This program has two primary components. First, each mineral material site will create a weed management plan following a Yosemite-provided template and developed with assistance from a park botanist. The weed management plan has a set of general conditions that are common to all sites and a set of specific conditions that are tailored to the individual site and the weeds encountered. An initial site assessment is conducted in conjunction with a Yosemite botanist to provide the information necessary to develop the specific conditions for certification.

The second component of this program consists of semi-annual inspections by a Yosemite botanist to verify that the plan is implemented and to monitor for new weed populations. These regular inspections ensure that botanists visit the sites when weed species are identifiable and eliminate the need for project by project inspections. During each site visit the weed management plan is reviewed jointly before and after inspection. Following the inspection the specific conditions for certification are expected to be updated in response to changing weed populations. A rating is assigned to the pit based on their implementation of the weed management plan. The ratings are as follows:

Passing:

<u>Full compliance</u>: The inspector is confident that mineral material from this site is free of listed weeds.

<u>Conditional</u>: The inspector cannot confidently state that all mineral material from this site is weed free. Certain restrictions are specified as to where on site mineral material may be supplied from and mitigation measures may be required.

Failing:

<u>Unacceptable</u>: The inspector believes that mineral material from this site poses the threat of spreading listed weeds.

Gravel pits receiving a passing rating are approved to sell mineral material to Yosemite National Park and will receive a weed-free certification valid until the next semi-annual inspection. Yosemite project management regularly receives a list with the status of local gravel pits, expediting purchases and ensuring that only weed-free mineral material enters the park, even during emergency situations.

Further details are found in the following program documents:

- 1. Weed management plan template
- 2. Inspection protocols
- 3. List of weeds requiring control
- 4. List of weed control resources
- 5. Inspection form
- 6. Inspection certificate
- 7. Gravel Pit information and inspection history form
- 8. Acronyms and definitions.

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WEED MANAGEMENT PLAN

Company Name

Site Name

I am requesting weed free certification from Yosemite National Park. I understand that this certification will require two inspections a year by a Yosemite approved botanist. I agree to maintain the following required documents and furnish them upon request. I agree to adhere to the following general and specific conditions for certification. I understand that the specific conditions for certification are developed in response to current weed threats and will be revised as conditions change.

Checklist of required documents:

This weed management plan, signed by an authorized representative.

A current copy of the listed weeds from Yosemite National Park

- A current map of the certification site identifying weed populations
- Records of past inspections
- Records of weed treatments

Records of product delivery

Authorized representative:		Title:	
Authorized Representative Signature:		Phone:	
Designated contact employee or contracted	professional:		
Phone:	Date:		

General Conditions for Certification:

Mineral Material:

- 1. Mineral materials are maintained free of listed weeds* from the time of extraction until the time of delivery
- 2. Storage piles growing listed weeds are treated to kill weeds and then stripped of the top 8 inches of material. Mineral material from this pile is not sold as weed-free and is only used as sub-surface fill

Weeds:

- 3. Listed weeds are promptly and aggressively controlled. Control is continual and ongoing
- Listed weeds are not allowed to set seed where likely to contaminate the extraction pit, processing facilities, storage sites, or on-site roads (collectively referred to as the "active area")
- 5. Herbicide use is in strict accordance with the label and with consultation from a UC cooperative extension, county agricultural commissioner, or licensed pest control advisor
- 6. Plant parts containing seed are not transported off-site. On-site disposal by burning, composting or burying is conducted away from the active area

Surrounding Area:

- 7. The active area and periphery is regularly inspected to monitor identified weed populations
- 8. Berms are established on the periphery of the active area where adjacent to weedy property
- 9. Berms, roadsides and other vegetated land within the active area are planted with dense native vegetation or treated regularly to control weeds

*"Listed Weeds" are defined by Yosemite National Park and documentation is provided to gravel pit operators

Specific Conditions for Certification:

An initial inspection is performed in conjunction with a Yosemite National Park botanist to establish a priority weed list and develop the following specific conditions for certification. These conditions are reviewed before and after each inspection. Updates are made as necessary to respond to current weed infestations and maintain mineral material in a weed-free state.

Listed Weed Species Encountered:	Date
The following treatments are required to preve	nt the spread of listed weeds:
Access roads:	
Active pit area:	
Perimeter of property:	
Vehicle parking area:	



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Vehicle wash area:	
Stock Piles:	

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INSPECTION PROTOCOLS

All inspections shall occur while weed species are present and identifiable, generally between May and September. An appropriate date and time will be set when the mineral material supplier (MMS) representative will be available and all areas of the site can be safely inspected.

Initial Assessment:

The first step in the certification process is the creation of a site specific weed management plan. An initial site assessment must be conducted in conjunction with a Yosemite botanist to inform the creation of this plan.

Yosemite (YOSE) will provide:

- a list of weeds requiring control
- a qualified, knowledgeable botanist
- a weed management plan template.

The mineral material supplier (MMS) will:

- provide a large format map of the site (11x17 or larger)
- designate a staff member or contractor to be the contact for this program
- complete a basic information form.

In conjunction YOSE and MMS will:

- identify and map priority weed species on site
- develop a list of specific conditions for certification
- discuss methods to achieve these conditions
- complete and sign a weed management plan.

Certification Inspection:

Once conditions identified within the weed management plan have been reached, a certification inspection will be conducted by a Yosemite botanist to verify that the plan has been implemented and to monitor for new weed populations. Continued certification will require an early season and late season inspection each year. Following each inspection the "specific conditions for certification" are expected to be updated in response to changing weed populations.

- The YOSE inspector will review the weed management plan and current weed map with the MMS representative
- The inspector will examine all active areas of the site including the extraction area, processing machinery, roads, storage areas and perimeter

Certification Inspection Continued:

- The inspectors will certify that:
 - the specific and general conditions for certification in the weed management plan have been met
 - all saleable mineral material is free of listed weeds
 - no listed weeds have set seed where contamination of the active area is likely
- The findings of the inspection will be discussed with the MMS representative and a rating will be assigned to the MMS site.
- The weed management plan and site weed map will be reviewed and updated with the MMS representative to respond to current weed populations
- An official inspection form and a certificate of inspection will be completed and provided to the MMS. These documents must be maintained by both the MMS and YOSE

Mineral Material Site Ratings:

A rating will be assigned to the pit based on their implementation of the weed management plan. Gravel pits receiving a passing rating are approved to sell mineral materials to Yosemite. The ratings are as follows:

Passing:

<u>Full compliance</u>: The inspector is confident that mineral material from this site is free of listed weeds

<u>Conditional</u>: The inspector cannot confidently state that all mineral material from this site is weed free. Certain restrictions will be specified as to where on site mineral material may be supplied from and mitigation measures may be specified

Failing:

<u>Unacceptable</u>: The inspector believes that mineral material from this site poses the threat of spreading listed weeds

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LISTED WEEDS

The following plants require control to receive weed-free cerification. These plants are not allowed to grow in the active areas of gravel pits or set seed where likely to contaminate mineral material.

Scientific Name	Family	Common Name
Conium maculatum	Apiaceae	Poison hemlock
Foeniculum vulgare	Apiaceae	Sweet fennel
Vinca major	Apocynaceae	Greater periwinkle
Hedera helix	Araliaceae	English ivy
Acroptilon repens	Asteraceae	Russian knapweed
Carduus acanthoides	Asteraceae	Plumeless thistle
Carduus nutans	Asteraceae	Musk thistle
Carduus pycnocephalus	Asteraceae	Italian thistle
Carduus tenuiflorus	Asteraceae	Slenderflower thistle
Centaurea calcitrapa	Asteraceae	Purple starthistle
Centaurea cyanus	Asteraceae	Bachelor's button
Centaurea diffusa	Asteraceae	Diffuse knapweed
Centaurea maculosa	Asteraceae	Spotted knapweed
Centaurea melitensis	Asteraceae	Tocolote
Centaurea solstitialis	Asteraceae	Yellow star thistle
Centaurea triumfettii	Asteraceae	Squarose knapweed
Chondrilla juncea	Asteraceae	Rush skeletonweed
Cirsium arvense	Asteraceae	Canada thistle
Crupina vulgaris	Asteraceae	Bearded creeper
Dittrichia graveolens	Asteraceae	Stinkwort
Leucanthemum vulgare	Asteraceae	Oxeye daisy
Onopordum acanthium	Asteraceae	Scotch thistle
Senecio jacobaea	Asteraceae	Tansy ragwort
Tanacetum vulgare	Asteraceae	Common tansy
Cynoglossum officinale	Boraginaceae	Gypsyflower
Brassica nigra	Brassicaceae	Black mustard
Brassica rapa	Brassicaceae	Field mustard
Cardaria chalapensis	Brassicaceae	Lens-podded hoaerycress
Cardaria draba	Brassicaceae	Heart-podded hoarycress
Cardaria pubescens	Brassicaceae	Globe-podded hoarycress
Hirschfeldia incana	Brassicaceae	Shortpod mustard
Isatis tinctoria	Brassicaceae	Dyer's woad
Lepidium latifolium	Brassicaceae	Perennial pepperweed
Saponaria officinalis	Brassicaceae	Bouncingbet
Sisymbrium irio	Brassicaceae	London rocket
Halogeton glomeratus	Chenopodiaceae	Saltlover
Convolvulus arvensis	Convolvulaceae	Field bindweed
Dipsacus fullonum	Dipsacaceae	Common teasel
Dipsacus sativus	Dipsacaceae	Indian teasel
Scientific Name	Family	Common Name

		Russian olive
Elaeagnus angustifolia	Elaeagnaceae	
Euphorbia esula	Euphorbiaceae	Leafy spurge
Euphorbia oblongata	Euphorbiaceae	Oblong spurge
Sesbania punicea	Euphorbiaceae	Rattlebox
Cytisus scoparius	Fabaceae	Scotchbroom
Genista monspessulana	Fabaceae	French broom
Lathyrus latifolius	Fabaceae	Perennial sweet pea
Melilotus alba	Fabaceae	White sweetclover
Melilotus indica	Fabaceae	Sourclover
Melilotus officinalis	Fabaceae	Yellow sweetclover
Robinia pseudoacacia	Fabaceae	Black locust
Spartium junceum	Fabaceae	Spanish broom
Vicia benghalensis	Fabaceae	Purple vetch
Geranium dissectum	Geraniaceae	Cutleaf geranium
Geranium robertianum	Geraniaceae	Robert geranium
Hypericum perforatum	Hypericaceae	Klamath weed
Salvia aethiopis	Lamiaceae	African sage
Lythrum salicaria	Lythraceae	Purple loosestrife
Aegilops cylindrica	Poaceae	Jointed goatgrass
Aegilops triuncialis	Poaceae	Barbed goatgrass
Anthoxanthum odoratum	Poaceae	Sweet vernalgrass
Arundo donax	Poaceae	Giant reed
Brachypodium sylvaticum	Poaceae	Slender false brome
Bromus diandrus	Poaceae	Ripgut brome
Bromus inermis ssp. inermis	Poaceae	Smooth brome
Bromus madritensis ssp. rubens	Poaceae	Foxtail chess
Bromus tectorum	Poaceae	Cheat grass
Cortaderia selloana	Poaceae	Pampas grass
Cynodon dactylon	Poaceae	Bermuda grass
Dactylis glomerata	Poaceae	Orchard grass
Ehrharta erecta	Poaceae	Panic veldtgrass
Festuca arundinacea	Poaceae	Tall fescue
Holcus lanatus	Poaceae	Common velvet grass
Pennisetum clandestinum	Poaceae	Kikuyu grass
Sorghum halepense	Poaceae	Johnson grass
Taeniatherum caput-medusae	Poaceae	Medusa-head
Rubus discolor	Rosaceae	Himalayan blackberry
Rubus laciniatus	Rosaceae	Cutleaf blackberry
Digitalis purpurea	Scrophulariaceae	Foxglove
Linaria genistifolia ssp. dalmatica	Scrophulariaceae	Dalmatian toadflax
Linaria vulgaris	Scrophulariaceae	Yellow toadflax
Verbascum blattaria	Scrophulariaceae	Moth mullein
Verbascum thapsus	Scrophulariaceae	Common mullein
Ailanthus altissima	Simaroubaceae	Tree of heaven
Tamarix parviflora	Tamaricaceae	Tamarisk
Tamarix ramosissima	Tamaricaceae	Tamarisk
Tribulus terrestris	Zygophyllaceae	Puncture vine
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WEED CONTROL RESOURCES

County Agricultural Commissioners:

A public service to provide weed identification, advice on methods to control weeds and pesticide applicator permits

Alameda County: Dennis Bray (510) 670-5232 http://www.acgov.org/cda/awm/ Amador County: Michael Boitano (209)223-6487 http://www.co.amador.ca.us/index.aspx?page=160 Butte County: Richard Price (530) 538-7381 http://www.buttecounty.net/Agricultural%20Commissioner.aspx Calaveras County: Mary Mutz (209) 754-6504 http://www.co.calaveras.ca.us/departments/agriculture.asp Contra Costa County: Vincent Guise 925.646.5250 http://www.co.contra-costa.ca.us/index.aspx?nid=1542 El Dorado County: William J. Stephans (530) 621-5520 http://www.co.el-dorado.ca.us/ag/ Fresno County: Carol Hafner (559) 456-7510 http://www.co.fresno.ca.us/Departments.aspx?id=114 Inyo and Mono Counties: George L. Milovich (760) 873-7860 http://www.inyomonoagriculture.com/index.html Madera County: Robert Rolan 559-675-7703 http://www.madera-county.com/agcommissioner/ Mariposa County: Cathi Boze (209)966-2075 http://www.mariposacounty.org/index.aspx?nid=63 Merced County: (209) 385-7431 http://www.co.merced.ca.us/index.aspx?nid=58 Placer County: Christine Turner 530-889-7372 http://www.placer.ca.gov/Departments/Agriculture.aspx Sacramento County: Frank Carl (916) 875-6603 http://www.agcomm.saccounty.net/default.htm San Joaquin County: Scott Hudson (209) 953-6000 http://www.co.san-joaquin.ca.us/agcomm/ Stanislaus County: (209)525-4730 http://www.stanag.org/ Tulare County: Gary Kunkel (559) 684-3350 http://agcomm.co.tulare.ca.us/ Tuolumne County: 209-533-569 http://portal.co.tuolumne.ca.us/psp/ps/TUP AG AIR POLL WTS/ENTP/h/ Yolo County: Rick Landon (530) 666-8140 http://www.yolocounty.org/index.aspx?page=504

UC Cooperative Extension:

County offices can provide advice on weed control methods, literature on specific species and other expertise:

Amador County (209) 223-6482 http://ceamador.ucdavis.edu Butte County (530) 538-7201 http://cebutte.ucdavis.edu Calaveras County (209) 754-6477 http://cecalaveras.ucdavis.edu El Dorado County (530) 621-5502 http://ceeldorado.ucdavis.edu Fresno County (559) 456-7285 http://cefresno.ucdavis.edu Inyo-Mono Counties (760) 873-7854 http://ceinyo-mono.ucdavis.edu Madera County Neil MacDougald (559) 675-7879 http://cemadera.ucdavis.edu Mariposa County (209) 966-2417 http://cemariposa.ucdavis.edu Merced County (209) 385-7403 http://cemerced.ucdavis.edu Placer-Nevada Counties (530) 889-7385 http://ceplacer.ucdavis.edu Sacramento County (916) 875-6913 http://cesacramento.ucdavis.edu San Joaquin County (209) 953-6100 http://cesanjoaquin.ucdavis.edu Stanislaus County (209) 525-6800 http://cestanislaus.ucdavis.edu Tulare County Steve Wright (559) 684-3300 http://cetulare.ucdavis.edu Tuolumne County (209) 533-5695 http://cetuolumne.ucdavis.edu Yolo County (530) 666-8143 http://ceyolo.ucdavis.edu

Web-based Resources:

California Department of Food and Agriculture:

Excellent page containing photographs of CDFA listed weeds with information pages including descriptions and treatment methods (note: use the alphabetical list in the side bar) http://www.cdfa.ca.gov/phpps/ipc/weedinfo/winfo photogal-frameset.htm

Cal-IPC:

Excellent description of many California weeds including detailed descriptions of various control methods http://www.cal-ipc.org/ip/management/ipcw/sciname.php

Center for Invasive Plant Management:

Website with an enormous amount of weed information. This pages has a list of sites with weed photo galleries <u>http://www.weedcenter.org/inv_plant_info/images.html</u>

Invasipedia:

Wikipedia based resource with in-depth description of various herbicide treatments as well as natural history and other control methods list by weed. http://wiki.bugwood.org/Invasipedia

The Nature Conservancy:

Weed Control Methods Handbook: An in-depth discussion of several commonly used herbicides as well as a description of various control methods generalized for all weeds <u>http://www.invasive.org/gist/handbook.html</u>

Image Archive: A very large collection of photos of invasive plants (note: listed by scientific name. Link is for plants A-C, follow links on page to D-Z weeds) http://www.invasive.org/gist/photosa-c.html

UC Davis:

Website that allows gives control options for many weed species: <u>http://ucce.ucdavis.edu/specialsites/weed_sept/</u>

Weed photo gallery: http://www.ipm.ucdavis.edu/PMG/weeds_intro.html

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INSPECTION FORM

Operator: Site Name:	Date:
Site Name:	
Designated Weed Manager:Address:	
	Inspector Name:
Phone:	

Inspection Findings						
Weed Species	Location on Site	Approx. Area	Distance from Material	Mapped?		

Inspection Summary	
Free of listed weeds: Yes Specific requirements for certification met: Yes Revision of plan required: Yes Mitigation required: Yes Resurvey required: Yes	Listed Weeds Observed: No No No No No No No No No
Final Supplier Rating: Full Compliance Conditional Explanation:	Unacceptable

Weed Species	Inspection Findings (continue Location on Site	d) Approx. Area	Distance from	Mapped?	
		Λιεα	Material		
itigation Required:					
ddifficatel Demonduer					
dditional Remarks:					
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Weed-Free Gravel Program

CERTIFICATION OF INSPECTION

This certifies that the mineral material supplier described herein, has been inspected according to the certification standards of Yosemite National Park. The objective of the program is to help prevent and slow the spread of weeds by providing mineral material that is free of the potential for transport and dispersal of listed weed species.

Operator:					Phone No.:		
Address:				City:		State:	ZIP:
Site Location:							
Material Type:	Sand	Gravel	Rock	Top soil	Other	:	
Level of Certif	ication						
				eral material from			
Certa	in restrictions w	ill be specified a	as to where on s	ite mineral mater	ial may be	supplied fro	m
Restrictions							
C Unacc	eptable: The ir	nspector believe	s that the miner	al material poses	the threat o	of spreading	listed weeds

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INFORMATION AND INSPECTION HISTORY

Site Name			CA	A permit #
Operator				Phone
Designated	Weed Manager			Phone
Email			_	Fax
Address				_
City		State	County	Zip
UTM Coordinat	es			
Material Type:	Sand	Gravel	Rock Top Soil	Other:
Directions to Si	te:			

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INSPECTION HISTORY						
DATE	INSPECTOR	RATING	Plan revised?	Resurvey required?	Mitigation required?	

Weed-Free Gravel Program

ACRONYMS AND DEFINITIONS

- Active area Anywhere within a gravel pit where mineral materials are processed or stored including: extraction pits, crushing and sifting facilities, storage piles and on-site roads.
- Conditional A *passing* gravel pit inspection rating signifying that the inspector cannot confidently state that all mineral material from this site is weed free. Certain restrictions are specified as to where on site mineral material may be supplied from and mitigation measures may be required.
- Full compliance A *passing* gravel pit inspection rating signifying that the inspector is confident that mineral material from this site is free of listed weeds.
- General conditions for certification Actions or measures required of all mineral material suppliers regardless of weed populations.

- Listed weeds Plants deemed an invasive threat by Yosemite National Park. List is provided to all participants in the program.
- Mitigation Immediate actions required to address on-site weed populations.

MMS - Mineral Material Supplier

- Specific conditions for certification Actions or measures required to mitigate specific weed populations encountered on site. These are developed in consultation with a Yosemite botanist and are amended in response to changing weed populations.
- Unacceptable A *failing* gravel pit inspection rating signifying that the inspector believes that mineral material from this site poses the threat of spreading listed weeds.

YOSE – Yosemite National Park