

# WILLARD BAY DIESEL SPILL SETTLEMENT WATER QUALITY PROJECT



## BIO-WEST Proposal for Noxious and Invasive Weed Treatment





## Introduction

For this proposal, BIO-WEST, Inc. (BIO-WEST) will conduct treatment of noxious and invasive weeds within the borders of the Willard Bay Bureau of Reclamation (Reclamation)-owned lands (project area). The project area is managed by Reclamation, the Weber Basin Water Conservancy District, Willard Bay State Park, and the Utah Division of Wildlife Resources (DWR).

**Applicant Name:** Wes Thompson PG, Principal Hydrogeologist, BIO-WEST, Inc.  
**Co-Applicant Name(s) (if applicable):** None  
**Project Title:** Willard Bay Noxious and Invasive Weed Treatment

**Agency or Business Name (if applicable):** BIO-WEST, Inc.  
**Mailing Address:** 1063 West 1400 North Logan, UT 84321-2291  
**Phone:** (435)752-4202  
**E-mail:** westthompson@bio-west.com

Commercial

### 1. Estimated Project Costs:

Labor	\$136,450
Materials	\$ 95,700
Equipment	\$ 51,717
Administration	\$ 8,873
Miscellaneous	\$ 2,640
<b>TOTAL</b>	<b>\$295,381</b>



### Other Sources of Project Funding:

**Source:** *Willard Bay State Park* (labor and equipment donation) **Amount:** \$36,744  
(note: this amount is not included in the project costs above)

*Box Elder County* (Box Elder County has committed to treating all dikes for Dyer's woad during 2014–2017 (143 acres) (Estimated) **Amount:** \$4,914

*Weber Basin Water Conservancy District* (herbicide contribution or donation toward purchase) from 2014–2017. (Equivalent) **Amount:** \$8,000

## 2. Purpose and Need of Project.

### Purpose

Purpose of this project is to control state- and county-listed noxious weeds in the project area. In 2013 BIO-WEST treated noxious weeds in a portion of the project area. This area was either impacted by the diesel spill or adjacent to the spill area. BIO-WEST has visited various other locations within the project area and identified large populations of listed noxious weed species.

### Need

This project is needed to help the owners and managers comply with the Utah Noxious Weed Act (R68-9), which requires property owners to control noxious weeds on their property. This project will also help owners and managers who are implementing vegetation and noxious weed management as required in the *Willard Bay Resource Management Plan* that was completed in April 2000.

BIO-WEST treated the following state-listed weeds within and adjacent to the area that was impacted by the diesel spill: hoary cress (aka whitetop, *Lepidium draba*), diffuse or spotted knapweed (*Centaurea*

species), perennial pepperweed (aka tall whitetop, *Lepidium* species), Canada thistle (*Cirsium arvense*), musk thistle (*Carduus nutans*), Scotch thistle (*Onopordum acanthium*), Dyer's woad (*Isatis tinctoria*), poison hemlock (*Conium maculatum*), houndstongue hawkweed (*Hieracium cynoglossoides*), field bindweed (*Convolvulus arvensis*), and saltcedar (*Tamarix* species). In addition to state-listed weeds, species that were listed as noxious in other counties or are generally invasive or problematic were treated including silverleaf nightshade (*Solanum elaeagnifolium*), puncturevine (aka goathead, *Tribulus terrestris*) yellow nutsedge (*Cyperus esculentus*), common reed (*Phragmites*), burdock (*Arctium minus*), cocklebur (*Xanthium* species), and Russian olive (*Elaeagnus angustifolia*).

Some of the weeds pose a special concern for recreational areas where children are frequent visitors and where visitors travel barefoot wearing only swimsuits. The poisonous plants (poison hemlock and silverleaf nightshade) could pose a health threat if ingested by children. Puncturevines are very painful if stepped on and often cause infection if a portion breaks off in the skin. The various thistles, Russian olive, burdock, and cocklebur all have thorns and are undesirable in a recreational setting.

These noxious and invasive plant compete with plants for desirable wildlife habitat. The noxious weeds can also spread seeds to adjacent lands and into the reservoir where they can be mobilized into irrigated areas and picked up by avians, mammals, wind, and visitors' clothing, vehicles, and equipment to other parts of the state. This project will improve wildlife habitat and reduce the spread of these noxious weeds not only in the project area and adjacent properties but also throughout a much wider area.

### 3. Estimate the Time Frame of the Project with Significant Milestones.

The National Environmental Policy Act (NEPA) evaluation completed during development of the *Willard Bay Resource Management Plan* evaluated noxious weed control in that document. Reclamation has stated that additional NEPA analyses may be needed. If additional NEPA analysis is not needed, weed treatment could start in 2014 as soon as funds are awarded. If additional NEPA analyses is needed, treatments would start in spring of 2014. BIO-WEST expects that if NEPA is needed, a Categorical Exclusion document would be sufficient for the weed treatment.

#### PROJECT TIMELINE

##### If NEPA is not needed:

- **June 30, 2014**—Complete coordination with all parties on the 2014 treatment schedule.
- **July, August, September 2014**—Conduct weed treatments
- **December 20, 2014**—Submit progress report on treatments completed to the Utah Division of Water Quality (DWQ).

##### If additional NEPA analysis is needed:

- **March 31, 2015**—Reclamation to have completed NEPA process.
- **April 30, 2015**—Complete coordination for treatment schedule with all parties.
- **May, June, July, and August**—Conduct weed treatments.
- **December 20, 2015**—Submit progress report on treatments completed to the DWQ.

(Note: If NEPA is required, the three treatments budgeted for 2014 will be used for one additional treatment in 2015, 2016, and 2017.)

- **April 30, 2016**—Complete coordination for treatment schedule with all parties.
- **May, June, July, and August 2016**—Conduct weed treatments.
- **December 20, 2016**—Submit progress report on treatments completed to the DWQ.
  
- **April 30, 2017**—Complete coordination for treatment schedule with all parties.
- **May, June, July and August 2017**—Conduct weed treatments.
- **December 20, 2017**—Submit final progress report on treatments completed to the DWQ.

#### **4. Describe the Location (maps, details and acreages).**

*See Figure 1 on following page.*

- Proposed treatment locations for noxious weeds will include the north and south recreation areas, portions of the primary jurisdiction area adjacent to the south recreation area, portions of the primary jurisdiction area adjacent to the Willard Bay Wildlife Management area, portions of the Willard Bay Wildlife Management Area, portions of the natural area south of the north marina, and the dikes surrounding the reservoir.
- The north recreation area consists of approximately 134 acres. Noxious weed treatments areas will include the campgrounds, picnic areas, and the marina.
- The south recreation area consists of approximately 49 acres. Noxious weed treatments areas will include the picnic areas and the marina.
- An approximate 103-acre portion of the primary jurisdiction area adjacent to the south recreation area will be treated. This includes the primary jurisdiction area south and east of the south recreation area.
- An approximate 92-acre portion of the Willard Bay Wildlife Management Area will be treated. This includes the triangular piece of property on the northeastern corner of the Willard Bay Wildlife Management Area.
- An approximate 31-acre portion of the primary jurisdiction area on the southern portion of the reservoir will be treated. This includes the primary jurisdiction property located west of the triangular Willard Bay Wildlife Management Area property.
- An approximate 22-acre portion of the natural area on the eastern portion of the reservoir will be treated. This includes the natural area property located adjacent to the north recreation area.
- Approximately 263 acres of dikes and adjacent lands surrounding the reservoir will be treated. The dikes will be treated from the top of the dike to approximately 30 feet past the dike's outside toe.

#### **5. Describe How the Project Will Enhance and Protect Waterways Affected by Willard Spill (wildlife, habitat, natural veg, water quality, emergency response).**

This project will reduce the spread of noxious and invasive weeds within the project area, increase native vegetation, improve wildlife habitat diversity, and also reduce the spread of noxious and invasive weeds to adjacent farmlands, wetlands, and wildlife management areas. It will also reduce the spread of noxious weeds via avians, mammals, wind, water, and visitor clothing, vehicles, and equipment to other parts of the state.

#### **6. Describe the Project's Connectivity to Other Natural Areas (wildlife, habitat, natural veg, water quality, emergency response).**

The project area is connected to Harold Crane Waterfowl Management Area (HCWMA) and Willard Spur, and is adjacent to the Bear River Migratory Bird Refuge. Avian species may travel between these areas and the project area. Water from Willard Bay is discharged into Willard Spur, and the South Drain discharges into the HCWMA. Removing noxious weeds from the project area benefits the species that use these areas and also prevents the spread of seeds to these connected, sensitive properties.

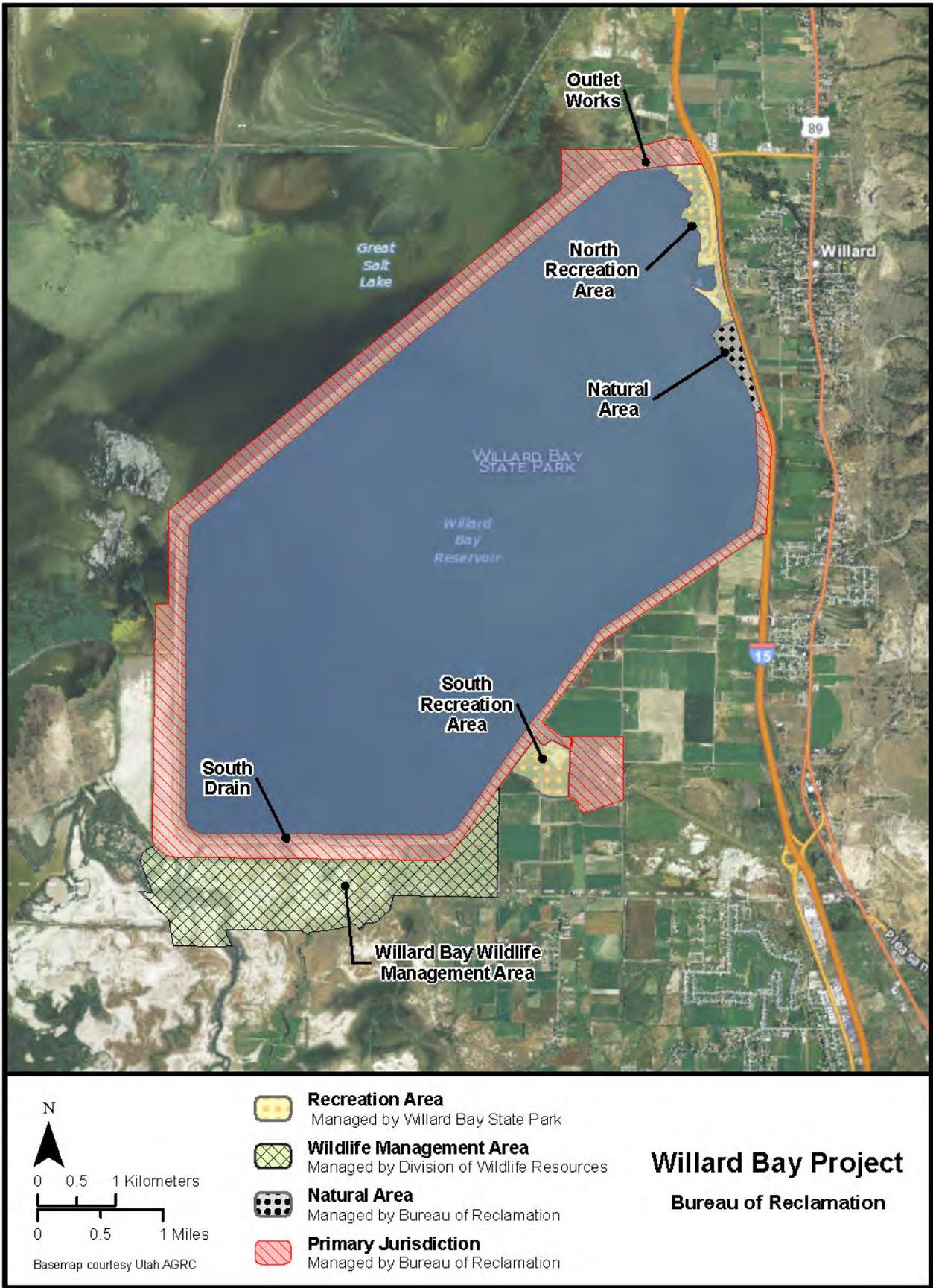


Figure 1. Project area map.

## 7. Describe Any Additional Social Benefits.

Social benefits include a better and safer recreation experience for project area visitors. There is an increase in safety for visitors from the removal of poisonous plants and thorny species. Regionally connected farmlands, wetlands, and wildlife management areas benefit from the reduction of a large source of seeds that can be transported by wind, irrigation and water conveyance operations associated with the reservoir, avian and mammal species, and people who recreate in the area. By implementing this project, land owners and managers of the project area will be in compliance with state laws related to noxious weeds.

## 8. Describe Project Plans and Details, Including Rights to Work on Specified Piece of Land.

BIO-WEST will treat the noxious and invasive weeds noted in Item 1, with the exception of *Phragmites* (which is being covered in another proposal) and Russian olive and saltcedar individuals that are larger than saplings.

- The project area is composed of lands located within the Willard Bay Reservoir, owned by Reclamation, and managed by Willard Bay State Park, the Weber Basin Water Conservancy District, and the DWR.
- BIO-WEST will inspect each proposed treatment area and identify areas with noxious weed populations. Noxious weeds at each treatment area will be spot sprayed using backpack and ATV sprayers and approved herbicides. The dike treatment area may be sprayed with a trailer- or truck-mounted broadcast sprayer, depending on noxious weed concentrations. All spraying operations will be conducted by Utah-approved herbicide applicators. Three weed treatment events will be conducted annually at each treatment area.
- BIO-WEST has obtained verbal approval from all managing agencies at Willard Bay Reservoir to conduct noxious weed treatment operations on their respective pieces of land. Written confirmation for noxious weed treatment operations was obtained from Reclamation, the Weber Basin Water Conservancy District, and the DWR (including Willard Bay Upland Game Area management). Although we have been given verbal approval, written approval from Willard Bay State Park was not provided in time to be included in this proposal. Letters of approval are included in Attachment 1.

## 9. Describe Your Experience in Implementing Projects of Similar Scope and Magnitude.

- **Willard Bay Habitat Restoration and Invasive Species Removal.** In March 2013 BIO-WEST was contracted to respond to an accidental release of diesel fuel from a ruptured pipeline near Willard Bay in Box Elder County, Utah. Post-clean-up tasks included noxious weed control and invasive species removal. Noxious weeds treated included puncturevine, poison hemlock, silverleaf nightshade, thistles, knapweed, burdock, cocklebur, field bindweed, and *Phragmites*. Weeds were treated using backpack and ATV sprayers. Saltcedar and Russian olive trees were cut with a chainsaw, the stumps painted with herbicide, and hauled to the landfill. Under contract with EarthFax Engineering. 2013–present.
- **Hobble Creek Invasive Weeds Treatment.** BIO-WEST was contracted to provide noxious weed control at the Hobble Creek delta wetland restoration site. Following construction of a new channel, oxbows, ponds, and restoration planning, noxious weed control was required as part of the wetland permit. BIO-WEST treated 26 acres of wetlands and uplands using backpack sprayers. Species treated included burdock, kochia (*Kochia scoparia*), thistles, perennial pepperweed, *Phragmites*, saltcedar, Russian olive, and Siberian elm (*Ulmus pumila*). BIO-WEST coordinated mowing of selected areas each season. Under contract with the Central Utah Water Conservancy District, 2009–present.
- **Redwood Natural Area Noxious Weeds Treatment.** BIO-WEST was contracted to provide noxious weed control at the Redwood Natural Area wetland restoration site. Following clearing, regrading, and

replanting to create new wet meadows and ponds for wetland mitigation, noxious weed control was required as part of the wetland permit. BIO-WEST treated 35 acres of wetlands and uplands using backpack sprayers and ATV-mounted sprayers. Species treated included: whitetop, burdock, kochia, thistles, puncturevine, perennial pepperweed, *Phragmites*, saltcedar, Russian olive, and Siberian elm. BIO-WEST coordinated mowing of selected areas each season. Under contract with the Utah Transit Authority. 2009–present.

- **Coldwater Ranch.** BIO-WEST was contracted to provide noxious weed control along roadways for a large, privately owned ranch in Cache Valley. Over 100 miles of roads and trails were treated. Backpacks and ATVs were used to spray the weeds. Species treated included Dyer’s woad, burdock, knapweed, thistles, and houndstongue hawkweed. Under contract with Coldwater Ranch, Inc. 2013.
- **White Oak Mine Musk Thistle Control.** This BIO-WEST project involved supervising an invasive weed-control program for a reclaimed coal mine in a mountainous area in Scofield, Utah. Project work included applying herbicide monthly using backpack sprayers to control noxious weeds. BIO-WEST investigated the use of weed-specific insects as biological controls in areas where spraying was prohibited. Under contract with the Utah Division of Oil, Gas, and Mining. 2006–2008.

*Additional information concerning these projects is provided in Attachment 2, Supplemental Information.*

## 10. Describe How Ongoing Maintenance of the Project Will Be Funded and Carried Out.

- Ongoing maintenance will be through the operating funds of WBWCD, Reclamation, Willard Bay State Park, the DWR. This project will “start the ball rolling” and have a significant impact noxious weeds, potentially providing for future reduced efforts regarding maintenance of the weed reductions created by this project.

## 11. List Consultants or Agency Partners That Have Participated in Project Development (name, address, and phone number).

- **Bureau of Reclamation Provo Area Office:** 302 East 1860 South, Provo, UT 84606  
(801) 379-1150, office  
Contact: Kerry Schwartz, Manager, Water and Environmental Resources Division  
(801) 376-5821 cell
- **Willard Bay State Park:** 900 West 600 North, Willard, UT .84340  
(435) 734-9494, office  
Contact: James Morgan, Park Manager  
(435) 230-0050 cell  
*Willard Bay State Park has verbally committed to supply two employees and equipment for weed treatment for 6 days each season.*
- **Weber Basin Water Conservancy District:** 2837 Utah 193, Layton, UT 84040  
(801) 771-1677 office  
Contact: Mark Anderson, Deputy General Manager
- **Utah Division of Wildlife Resources:** 1594 West North Temple, Salt Lake City, UT 84116  
(801) 538-4700 office  
Contact: Val Bachman, Manager, Ogden Bay Waterfowl Management Area  
(801) 389-2820 cell

Signature \_\_\_\_\_

Applicant

Date 5/5/2014 \_\_\_\_\_

**ATTACHMENT 1: LETTERS OF APPROVAL**





Wes Thompson <westhompson@bio-west.com>

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## Re: Noxious Weed control at Willard Bay, DEQ Grant (Second Proposal)

1 message

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**Schwartz, Kerry** <kschwartz@usbr.gov>

Tue, Apr 22, 2014 at 1:31 PM

To: Wes Thompson <westhompson@bio-west.com>

Once your project has been approved for funding by Utah Division of Water Quality, Reclamation will issue a letter of authorization for the work at Willard Bay. Reclamation would also need to do NEPA prior to the physical treatment or application of any herbicide.

**Kerry Schwartz**

Manager, Water and Environmental Resources Division  
Bureau of Reclamation  
Provo Area Office  
302 East 1860 South  
Provo, UT 84606  
(801) 379-1150 office  
(801) 376-5821 cell

On Mon, Apr 21, 2014 at 3:29 PM, Wes Thompson <westhompson@bio-west.com> wrote:

Kerry:

Thank you for talking with me last week about the BIO-WEST proposal for noxious weed control at the Willard Bay State Park (north and south marinas) and on portions of the Willard Bay Upland Game Areas managed by the Division of Wildlife Resources (DWR). BIO-WEST is submitting a proposal to the Utah Division of Water Quality for funding for a mitigation project to control noxious weeds at these two state parks (north and south Marinas). The funding for this project is part of the Chevron Pipe Line Company Settlement.

BIO-WEST proposes treating upland areas managed by Willard Bay State Park, DWR and Weber Basin Water Conservancy District (WBWCD) for state and county listed noxious weeds using backpack and all terrain vehicle sprayers. All spray personnel will be Utah-certified for weed treatment. Treatments will be conducted 3-4 times per year for 3-4 years with the treatment ending in fall of 2018. Treatments will primarily be spot spraying, but limited broadcast spraying may be completed in areas with significant weed populations.

BIO-WEST is also coordinating with Box Elder County for treatment of dyers woad on the dikes, however, very little area of the dikes are managed by state parks. BIO-WEST is also obtaining written permission from Willard Bay State Park, DWR, and WBWCD for this project. State Parks may also supply some labor for weed treatment.

We have contacted Willard Bay State Park, DWR, as well as the WBWCD and they have expressed support for this project.

This email is to confirm that Reclamation would support this weed control effort and will provide access to lands managed by state parks, DWR, or WBWCD to the BIO-WEST project team.

Please reply via email with a simple statement that Reclamation will grant permission for this project on lands they own and would support this weed control effort.

Sincerely,

--

Wes Thompson P.G.  
Principal Hydrogeologist  
BIO-WEST, Inc  
1063 West 1400 North  
Logan, Utah 84321  
Phone 435-752-4202  
Cell 435-232-3057



Wes Thompson &lt;westhompson@bio-west.com&gt;

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**RE: Noxious Weed Control Proposal**

1 message

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**Mark Anderson** <manderson@weberbasin.com>

Thu, May 1, 2014 at 4:06 PM

To: Wes Thompson &lt;westhompson@bio-west.com&gt;

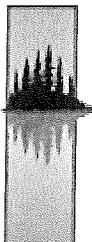
Cc: Scott Paxman &lt;spaxman@weberbasin.com&gt;, Chris Hogge &lt;chogge@weberbasin.com&gt;, Darren Hess &lt;dhes@weberbasin.com&gt;

Wes,

WBWCD will support this proposal for noxious weed control at the Willard Bay and will grant permission for this project on lands we manage at Willard Bay.

Sincerely,

Mark Anderson, P.E.  
Assistant General Manager  
**Weber Basin Water Conservancy District**  
2837 East Highway 193  
Layton, UT 84040  
801-771-1677  
801-544-0103 fax  
manderson@weberbasin.com



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**From:** Wes Thompson [mailto:westhompson@bio-west.com]**Sent:** Thursday, April 17, 2014 1:54 PM**To:** manderson@weberbasin.com**Subject:** Noxious Weed Control Proposal

Mark:

Thank your for talking with me last week about the BIO-WEST proposal for noxious week control at the Willard Bay State Park North and South Marinas and on portions of the Willard Bay Upland Game Areas managed by the Division of Wildlife Resources (DWR). BIO-WEST is submitting a proposal to the Utah Division of Water Quality for funding for a mitigation project to control noxious weeds at these two state parks. The funding for this project is part of the Chevron Pipe Line Company Settlement.

BIO-WEST proposes treating upland areas managed by the state parks and DWR and for state and county listed noxious weeds using backpack and all terrain vehicle sprayers. All spray personnel will be Utah-certified for weed treatment. Treatments will be conducted 3-4 times per year for 3-4 years with the treatment ending in fall of 2018. Treatments will primarily be spot spraying, but limited broadcast spraying may be completed in areas with significant weed populations.

BIO-WEST is also coordinating with Box Elder County for treatment of dyers woad on the dikes, however, very little area of the dikes are managed by state parks. BIO-WEST is also obtaining written permission from Willard Bay State Park, DWR, and the Bureau of Reclamation for this project.

We have contacted Willard Bay State Park, DWR, as well as the Bureau of Reclamation and they have expressed support for this project.

This email is to confirm that WBWCD would support this weed control effort and will provide access to lands managed by state parks or WBCWD to the BIO-WEST project team.

Please reply in writing with a simple statement that WBWCD will grant permission for this project on lands they manage and would support this weed control effort.

Sincerely,  
--

Wes Thompson P.G.  
Principal Hydrogeologist  
BIO-WEST, Inc  
1063 West 1400 North  
Logan, Utah 84321  
Phone 435-752-4202  
Cell 435-232-3057



Wes Thompson <westhompson@bio-west.com>

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## RE: Noxious Weed Control Proposal

1 message

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**Mark Anderson** <manderson@weberbasin.com>  
To: Wes Thompson <westhompson@bio-west.com>  
Cc: Chris Hogge <chogge@weberbasin.com>

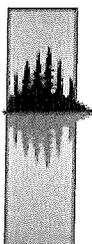
Mon, May 5, 2014 at 9:59 AM

Wes:

Weber Basin Water Conservancy District (WBWCD) will participate with a budget of \$2000/year until fall of 2018 of chemicals or for the purchase of chemicals for noxious weed control on Willard Bay facilities managed by WBWCD. This is based on our review and concurrence with the program including spray schedule and target noxious weeds.

Thanks you,

Mark Anderson, P.E.  
Assistant General Manager  
**Weber Basin Water Conservancy District**  
2837 East Highway 193  
Layton, UT 84040  
801-771-1677  
801-544-0103 fax  
manderson@weberbasin.com



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**From:** Wes Thompson [mailto:westhompson@bio-west.com]  
**Sent:** Thursday, May 01, 2014 4:25 PM  
**To:** Mark Anderson  
**Subject:** Re: Noxious Weed Control Proposal

Mark:

Thank you, thank your for your response on both of these proposals. By any change would the WBWCD be willing to donate any herbicides or funds to purchase herbicides for this project? If so, could you please respond with the amount for each year up to 2015. If you purchase them, we will find a way to get them applied.





Wes Thompson <westhompson@bio-west.com>

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## Re: USU Phragmites Proposal for DEQ Chevron Pipeline Grant (2 of 2)

1 message

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**Chad Cranney** <chadcranney@utah.gov>

Mon, May 5, 2014 at 8:59 AM

To: Wes Thompson <westhompson@bio-west.com>

Cc: Dustin Lofthouse <dlofthouse@bio-west.com>, Val Bachman <valbachman@utah.gov>

The Utah Division of Wildlife Resources and the management personnel at Ogden Bay (OBWMA) and Willard Bay Upland Game Area (WBUGA) support this proposed upland weed project under the stipulation of received written permission from Weber Basin Water Conservancy District and US Bureau of Reclamation, who are the primary landowners. Access to lands managed or owned by the UDWR will be provided in order to implement this project.

Sincerely,

Chad Cranney

Assistant Wetland Manager OBWMA/WBUGA

801-388-3942

On Mon, May 5, 2014 at 8:27 AM, Wes Thompson <westhompson@bio-west.com> wrote:

Chad and Val;

Could you please duplicate this email for my noxious weed proposal for treatment of the upland areas. I have written permission from both Reclamation and WBWCD. The proposal is due today, and it would be very helpful to have your support in writing.

Thanks

Wes Thompson

435-752-4202

On Mon, Apr 28, 2014 at 5:12 PM, Chad Cranney <chadcranney@utah.gov> wrote:

The Utah Division of Wildlife Resources and the management personnel at Ogden Bay (OBWMA) and Willard Bay Upland Game Area (WBUGA) support this proposed Phragmites project under the stipulation of received written permission from Weber Basin Water Conservancy District and US Bureau of Reclamation, who are the primary landowners. Access to lands managed or owned by the UDWR will be provided in order to implement this project.

Sincerely,

Chad Cranney

Assistant Wetland Manager OBWMA/WBUGA

801-388-3942

On Mon, Apr 28, 2014 at 11:16 AM, Karin Kettenring <karin.kettenring@usu.edu> wrote:

Hi Chad,

I got an auto-responder to my email below that Val is on vacation. We're trying to get a response by 5/5 that indicates support for the proposed work below. Previously, Wes Thompson from Bio-West discussed this work at length in person with Val and Val indicated his support.

Would you be able to respond on Val's behalf? Or, is Val back from vacation before the end of the week?

Thanks for your help!

Karin

(Wes and Dustin - Chad is the Assistant Manager at Ogden Bay and is also a graduate student in my lab at USU.)

On Mon, Apr 28, 2014 at 11:11 AM, Karin Kettenring <karin.kettenring@usu.edu> wrote:

Hi Val,

Would you be able to respond to this email to indicate your support for the proposed work Wes outlined below?

*Please reply via email with a simple statement that your organization will grant permission for this project on lands they manage and would support this weed control effort.*

Best wishes,  
Karin Kettenring

On Fri, Apr 18, 2014 at 1:59 PM, Wes Thompson <westhompson@bio-west.com> wrote:

Thank you for talking with me recently about the Utah State University (USU) and BIO-WEST proposal for phragmites treatment modeling and control within Bureau of Reclamation owned lands at Willard Bay. USU is submitting a proposal to the Utah Division of Water Quality for funding for a mitigation project to control invasive phragmites at these two state parks. The funding for this project is part of the Chevron Pipe Line Company Settlement. BIO-WEST will be on USU's project team to assist with mapping and treatment.

Karin Kettenring and her graduate students at USU have developed a model that uses variables such as distance to water, access, patch size, cost, distance to other phragmites, wetland type, etc. to evaluate both the restoration need and the restoration feasibility for phragmites. The model outputs a GIS layer that ranks or prioritizes the mapped phragmites patches based on restoration need and restoration feasibility.

The project team will be mapping the areas with phragmites, running the USU model, and then treating the identified high priority phragmites patches. Specific details of areas recommend for treatment will be forwarded for discussion and approval from your organization. Phragmites would be treated using truck and/or trailer mounted sprayers and all terrain vehicle sprayers. Backpack sprayers may be used for small or isolated patches. All spray personnel will be Utah-certified for weed treatment. Treatments will be conducted once per year for three 3 years with the treatment ending in fall of 2018. Treatments will both broadcast and spot spraying.

BIO-WEST is also seeking involvement in additional equipment, labor, and supplies from the Division of Wildlife Resources (DWR), Utah Lake commission, Division of Wildlife Resources (DWR), and others, but have not yet solidified those agreements.

The Project Team is also obtaining written permission from Weber Basin Water Conservancy District, DWR, the Bureau of Reclamation and Willard Bay State Park for this project.

This email is to confirm that your organization would support this phragmites control effort and will provide access to lands managed or owned by your organization to the project team.

Please reply via email with a simple statement that your organization will grant permission for this project on lands they manage and would support this weed control effort.

Sincerely,

--

Wes Thompson P.G.  
Principal Hydrogeologist

BIO-WEST, Inc  
1063 West 1400 North  
Logan, Utah 84321  
Phone 435-752-4202  
Cell 435-232-3057

P.S. Contact Dustin Lofthouse at the BIO-WEST office if you can not catch me, or talk with Karin Ketterring at USU at 435-713-5648 for additional details.

--

Wes Thompson P.G.  
Principal Hydrogeologist  
BIO-WEST, Inc  
1063 West 1400 North  
Logan, Utah 84321  
Phone 435-752-4202  
Cell 435-232-3057





Wes Thompson <westhompson@bio-west.com>

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**RE: Willard Bay dyers woad - DEQ Chevron Pipeline Grant**

1 message

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**Mike Miller** <mmiller@boxeldercounty.org>  
To: Wes Thompson <westhompson@bio-west.com>  
Cc: Bill Gilson <BGilson@boxeldercounty.org>

Mon, May 5, 2014 at 12:12 PM

Wes,

Sorry about being so slow with your request.

We plan to treat the dykes at Willard State Park for Dyers Woad and Poison Hemlock as we have done for a few years now and estimate the costs as follows:

Two days to cover 14 miles of dykes of approximately 68 acres.

Spray Truck	16 Hours @ \$25.00 per hour	\$400.00
labor	1 weed Tech	\$320.00
Pesticides	2, 4-D and MSM	\$938.00
Total		\$1638.00

We spray the slopes each year. In 2010, 2011, and 2012 we hosted joint Weed Days with the Utah and Idaho CWMA. We had about 20 people and we sprayed the entire park where ever noxious weeds were found. We have not however done a comprehensive treatment of the Phragmites.

In 2013 only the dykes were sprayed because of the spill.

I mis-spoke if I said we had used 800 gals of spray. We used 34 gals of 2,4-D and 68 ozs of MSM.

This was a complete circuit.

Last year the flat areas were not treated because the park would only give us limited access because of the spill.

If you have further question, let me know.

Mike Miller

Box Elder County Weed Department Foreman

5730 W 8800 N

Tremonton, UT 84337

435-230-2896

mmiller@boxeldercounty.org

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**From:** Wes Thompson [mailto:westhompson@bio-west.com]  
**Sent:** Monday, April 21, 2014 4:27 PM  
**To:** Mike Miller  
**Cc:** Dustin Lofthouse  
**Subject:** Willard Bay dyers woad - DEQ Chevron Pipeline Grant

Hi Mike:

Thank you for talking with me last week regarding spraying the dikes along Willard Bay and for your past efforts in that area.

My crews with ATVs could follow up your work to get to areas not accessible with your truck or to touch areas that need followup treatments.

As I am putting my grant proposal together, I have a couple of clarification requests.

You stated that in 2013 you used 800 gallons to treat the dikes for Dyers Woad.

Was this a complete circuit around the reservoir?

Did you also treat the flat area at the toe of the slope on the east and south sides?

Did you spray the top of the dike along the driving surface or just the slope?

What dollar value do you place on the work on the dikes in cost per acre or cost per day?

Can you send me an email that states you plan on spraying the dikes again for 2013-2017 if that is your plan?

If BIO-WEST is awarded this grant, together we could make a big difference on the weeds in the Willard Bay project area.

Thanks.

--

Wes Thompson P.G.  
Principal Hydrogeologist  
BIO-WEST, Inc  
1063 West 1400 North  
Logan, Utah 84321  
Phone 435-752-4202  
Cell 435-232-3057



**ATTACHMENT 2: SUPPLEMENTAL INFORMATION**





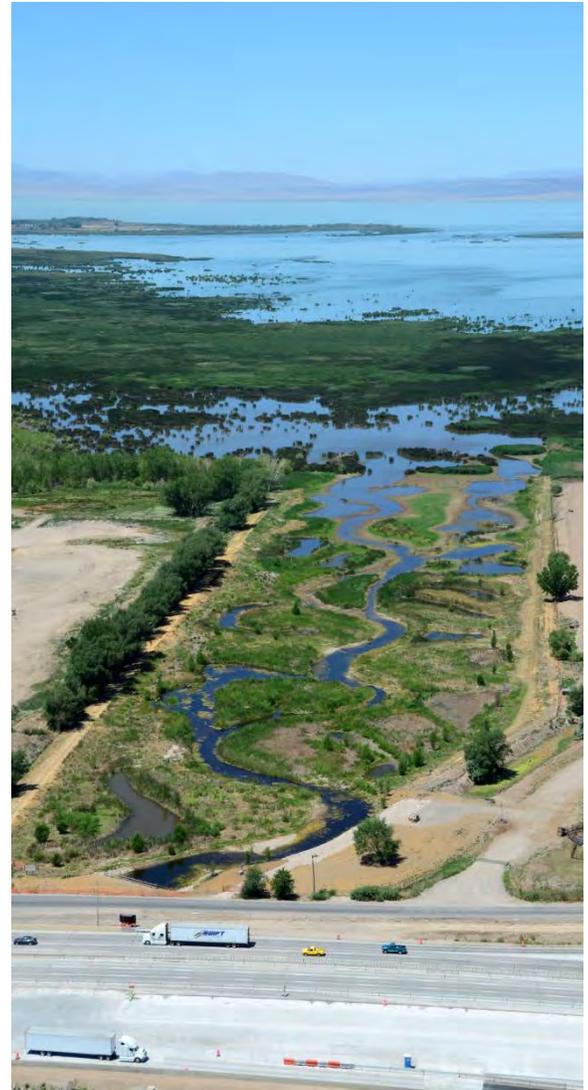
## BIO-WEST SUPPLEMENTAL INFORMATION: PREVIOUS PROJECT IMPLEMENTATION

### Hobble Creek Restoration and Nonnative Species Control

The June Sucker Recovery Implementation Program retained BIO-WEST to develop a self-sustaining stream channel and riparian-wetland habitat design and provide environmental clearances and permitting for the lower Hobble Creek Restoration Project on a 21-acre parcel near Utah Lake. The objective was to restore a naturally functioning interface with Utah Lake that would enable spawning access and provide high-quality rearing habitat for endangered June sucker (*Chasmistes liorus*). Prior to restoration, June sucker were unable to access the creek due to diversion dams, debris blockages, and stream channelization.

Restoration necessitated a full environmental analysis under the National Environmental Policy Act (NEPA), a US Army Corps of Engineers (USACE) Wetlands Permit, and a State of Utah Stream Alteration Permit. BIO-WEST coordinated agency involvement, facilitated public meetings, documented public input, and facilitated stakeholder partnerships. BIO-WEST also developed construction documents that included comprehensive revegetation using native species for upland and riparian-wetland habitats.

Since construction was completed in 2008, BIO-WEST has been providing weed-control services for the I-15 culvert crossing replacement, which affected this restoration project. Four annual treatments are conducted for thistle (*Cirsium*) species, common burdock (*Arctium minus*), perennial pepperweed (*Lepidium* species), common reed (*Phragmites australis*), Russian olive (*Elaeagnus angustifolia*), saltcedar (*Tamarix*) species, and other invasive species.





Noxious weeds are sprayed at the subject property using backpack sprayers and approved herbicides. BIO-WEST is controlling several stands of common reed in the project area wetlands (these stands are the result of result of seeds being transported to the site from past flooding). BIO-WEST spot sprays any kochia (*Kochia scoparia*) along the roadways to prevent its spread from neighboring properties. All weed spraying is conducted by Utah-licensed commercial pesticide applicators. Noxious weed treatments are conducted in May, July, August, and September and take approximately 2 days of spraying for each treatment.



BIO-WEST has also recommended that roadways be mowed once annually to control any kochia and other noxious weed growth and seed distribution. Weed-mowing is conducted in early August to prevent kochia and other noxious weeds from going to seed.



### Project Successes

- All three success criteria for wetland creation at the site were achieved within 3 years of construction, including more than 80% survival of planted species, more than 80% cover of desirable wetland species, and less than 10% cover of noxious weeds.
- The Utah Division of Wildlife Resources documented successful June sucker spawning runs in Hobble Creek each spring since restoration was completed.
- Young-of-year June sucker were found within restored rearing habitats, which is the first documented natural recruitment of June sucker beyond the larval stage since the early 1990s.





## Salt Lake County Natural Areas

BIO-WEST was contracted to prepare a *Natural Areas Land Management Plan* for lands within Salt Lake County, Utah. The plan did not focus on specific parcels of land but was a detailed, complete manual that guided Parks and Recreation in its annual maintenance activities and care for natural areas throughout Salt Lake County. The plan established standards and guidelines for the following:

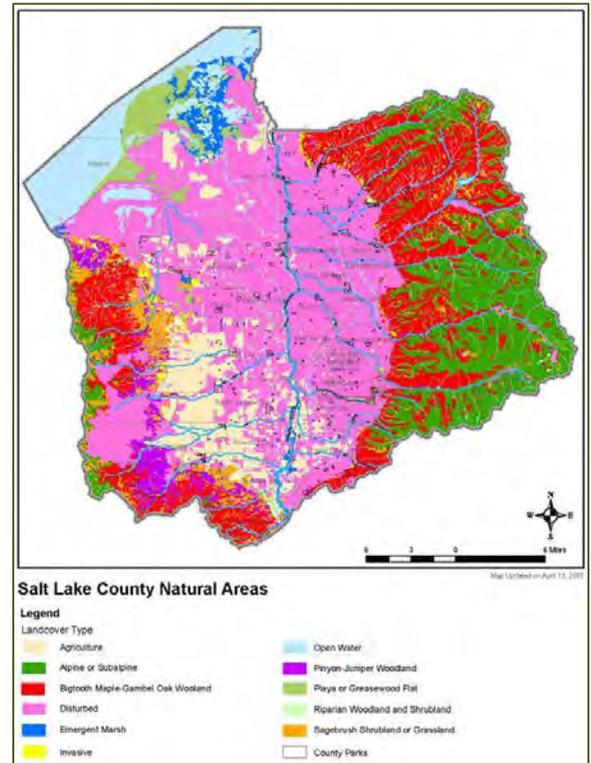
- defining and classifying natural areas by landscape type,
- maintaining natural areas and open space, and
- rehabilitating disturbed natural areas.

The plan also included the following elements:

- identification of native plants to use in various landscape types,
- enhancement and restoration techniques,
- water-management and erosion-control methods,
- weed-management techniques, and
- fire-management policies.

### Project Successes

- The American Society of Landscape Architects, Utah Chapter, presented BIO-WEST with awards in recognition of outstanding professional achievement (communication, planning and analysis) for the *Natural Areas Land Management Plan*.
- Salt Lake County contracted BIO-WEST to conduct several additional, related projects.





## Salt Lake County Invasive Species Removal

BIO-WEST was contracted by Salt Lake County to prepare a master plan identifying (1) areas along the Jordan River corridor that would benefit from the removal of invasive species and (2) one or two sites for plant removal and revegetation within Utah's most-populous county. Based on the invasive plant removal master plan, BIO-WEST prepared construction documents for chosen sites, assisted Salt Lake County with obtaining permit approvals, and provided construction administration services during the project's construction phase. More recently, BIO-WEST staff created and facilitated a training session for county maintenance staff regarding invasive species removal techniques and how best to use the *Natural Areas Land Management Plan* manual created for the county during a previous project.



## Redwood Natural Area Restoration Design, Environmental Permitting, and Noxious Weed Control

The Redwood Natural area was identified as one of the areas along the Jordan River that would benefit from invasive species removal and revegetation. BIO-WEST prepared detailed construction documents, assisted Salt Lake County with obtaining permits, and provided construction administration services. Restoration involved planting over 350 trees and 3,650 shrubs, as well as restoring over 45 acres of upland habitat, creating over 14 acres of wetland habitat, and enhancing over 7 acres of existing wetlands.

In addition, BIO-WEST developed design concepts and established project goals and objectives; prepared detailed construction documents, including 30%, 90%, and 100% review plans, details, specifications, and estimates; facilitated contractor bidding including a prebid conference and contract-award services; and





monitored construction including scheduling meetings, evaluating work, reviewing materials, interpreting documents, inspecting sites, reporting weekly, and preparing as-built drawings.

BIO-WEST was subsequently contracted to assist the Utah Transit Authority with a 20-acre wetland mitigation design and habitat restoration project at the Redwood Natural Area adjacent to the Jordan River, which included securing a USACE Wetlands Permit; a State of Utah Stream Alteration Permit; a State of Utah Division of Forestry, Fire, and State Lands Easement Permit for sovereign lands encroachments; and a Salt Lake County Flood Control Permit. This phase featured re-creating a hydrologic interface between the site and the Jordan River; addressing such issues as river channel morphology, sediment transport, and water delivery; and creating riparian-wetland habitats that mimic natural floodplain conditions.

Since completion of construction in 2009, BIO-WEST has also provided weed-control services for the Redwood Natural Area, which covers 35 acres of wetlands and uplands near the Jordan River. BIO-WEST staff conducted site a site inventory and analysis prior to the first weed-spraying event to familiarize Salt Lake County personnel with weed identification, herbicide selection, and application. The site inventory also included topographical survey and noxious weed mapping.

Species of concern included common reed, saltcedar (*Tamarix*) species, Russian olive, cocklebur (*Xanthium*) species, annual wild rye (*Elymus*) species, poison hemlock (*Conium maculatum*), bull thistle (*Cirsium vulgare*), Scotch thistle (*Onopordum acanthium*), musk thistle (*Carduus nutans*), Russian thistle (*Salsola tragus*), and hoary cress (aka whitetop) (*Lepidium draba*). BIO-WEST controlled noxious weeds using ATV and backpack sprayers.

In addition, BIO-WEST staff created and facilitated a training session for county maintenance staff regarding invasive species removal techniques and is conducting four annual site treatments with county staff.



### Project Success

- All three success criteria for wetland creation at the site were achieved for more than half of the property within 3 years of construction, including over 80% survival of planted species, over 80% cover of desirable wetland species, and less than 10% cover of noxious weeds.
- The site is now being used for a variety of recreational activities and as an educational field site.



## Red Butte Creek Oil Spill Restoration Design, Riparian Evaluation, Environmental Monitoring, and Weed Control

BIO-WEST is working with EarthFax Engineering, Chevron’s primary environmental consultant, to assess and conduct remediation efforts related to a 2010 petroleum pipeline leak. Efforts included the following:

- field evaluations of instream contamination;
- assessment of impacts of the spill and clean-up activities on the stream and habitat;
- evaluation of physical habitat and riparian vegetation;
- conducting post-spill macroinvertebrate monitoring;
- and development and implementation of site-specific recommendations for weed control, revegetation, and streambank repairs to remedy damage from the spill and cleanup efforts.

BIO-WEST also conducted site surveys, developed conceptual designs and revegetation plans, prepared construction documents, and oversaw construction of stream channel and streambank restoration at the immediate spill site. BIO-WEST prepared complete construction documents for the spill site, including project feature layout, grading, erosion-control, planting, and irrigation plans and details. Stream channel and streambank design elements included bioengineered bank stabilization, creation of a low floodplain shelf to promote development of diverse herbaceous wetland and riparian shrub habitats, construction of rock weir grade-control structures, and use of deep-aeration techniques to decompact the soil and establish native understory plants in a high-use, shady area. BIO-WEST was also responsible for providing construction cost

estimates and facilitating contractor bidding and selection.

BIO-WEST obtained a Riparian Permit from Salt Lake City Department of Public Utilities to conduct weed treatments at the spill site and created a Pesticide Discharge Management Plan to treat invasive species. Because the riparian areas treated are used by the general public for recreation or are in the “backyards” of property owners, BIO-WEST exercised due diligence in posting signs warning of herbicide application and dying treated areas.





## White Oak Mine Reclamation Weed-Control Program

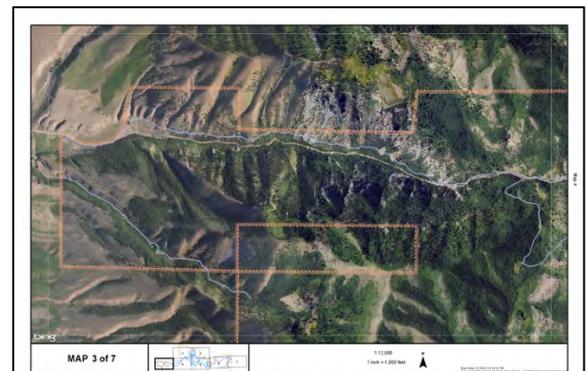
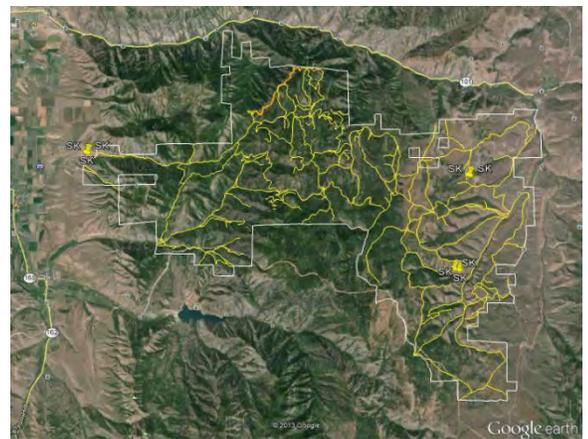
BIO-WEST was contracted by the Utah Division of Oil Gas and Mining to complete a 3-year invasive weed-control program for a reclaimed coal mine site in a mountainous area of central Utah near Scofield. The work included monthly 3-day applications of herbicide by a BIO-WEST field crew using backpack sprayers to control noxious weeds, including musk thistle, during the summer. The project also included deheading events for invasive musk thistle. In addition, BIO-WEST investigated the use of weed-specific insects for biological controls in areas where herbicides and spraying were prohibited.



## Cold Water Ranch

BIO-WEST field staff used AVTs to travel project area roads and trails and conduct a visual search to identify and map weed populations. Field staff recorded all observed locations of nonnative and noxious weeds classified on the Cache County and State of Utah noxious weed lists.

BIO-WEST is currently controlling the mapped noxious weed populations using ATV and backpack sprayers along the approximately 100 miles of roads and trails at this private client's cattle ranch in the Bear River Range mountains. Weeds being treated include Dyer's woad (*Isatis tinctoria*), thistle species, knapweed (*Centaurea* species), coast fiddleneck (*Amsinckia menziesii*), and houndstongue hawkweed (*Hieracium cynoglossoides*).





## Watery Lane Road Improvement/Box Elder Creek Stream Alignment Wetland Mitigation Site Weed Treatment (Walmart Weeds)

BIO-WEST was responsible for interdisciplinary team direction, agency coordination and permitting, alternatives generation and analysis, document preparation, and quality control for a local road-improvement project that included approximately 2,500 feet of perennial stream realignment. This required identification and acquisition of grant funding, wetland creation and enhancement, fishery enhancement, stormwater detention, and recreational amenities. BIO-WEST provided wetland expertise for environmental evaluations, mitigation design, and alterations of Box Elder Creek. The environmental evaluations were conducted to meet the intent of NEPA and Federal Highway Procedures for Implementing NEPA (23 CFR 771). BIO-WEST's responsibilities included identifying, delineating, characterizing, and mapping jurisdictional wetlands using the Federal agencies' three-parameter approach; assessing impacts; and preparing a comprehensive mitigation plan. Brigham City used the project as a mitigation bank.

BIO-WEST was later hired to spray noxious weeds on this approximately 30-acre wetland mitigation site. Weeds were treated using backpack sprayers and included thistle species, common reed, Russian olive, leafy spurge (*Euphorbia esula*), and perennial pepperweed.

