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**JOINT BASE ELMENDORF-RICHARDSON,
ALASKA**

ENVIRONMENTAL RESTORATION PROGRAM

**2012–2013 REMEDIAL ACTION SUMMARY REPORT
XU022, OPERABLE UNIT C – EAGLE RIVER FLATS**

FINAL

JULY 2013



**2012–2013
Remedial Action Summary Report**

Final

**XU022 – Operable Unit C, Eagle River Flats
Joint Base Elmendorf-Richardson, Alaska**

Prepared for:

**673d Civil Engineer Squadron, Asset Management Flight,
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and
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LIST OF ABBREVIATIONS AND ACRONYMS

| | | | |
|------------|--|----------------|---|
| µg/g | microgram(s) per gram | km | kilometer(s) |
| | | km/hr | kilometer(s) per hour |
| ADEC | Alaska Department of Environmental Conservation | m | meter(s) |
| | | m ² | square meter(s) |
| Bering Sea | Bering Sea Environmental, LLC | mL | milliliter(s) |
| BIP | blow-in-place | mm | millimeter(s) |
| BRAC | Base Realignment and Closure | | |
| BT | bread truck | NA | not analyzed |
| | | N/A | not applicable |
| CERCLA | Comprehensive Environmental Restoration, Compensation, and Liability Act of 1980 | NAD | North American Datum |
| | | nd | no data |
| CIR | color infrared | ND | nondetect |
| cm | centimeter(s) | NPL | National Priorities List |
| CRREL | Cold Regions Research and Engineering Laboratory | NWRC | National Wildlife Research Center |
| | | OB/OD | open burn/open detonation |
| EOD | explosive ordnance disposal | OP | observation point |
| EPA | United States Environmental Protection Agency | OU | operable unit |
| ERDC | Engineer Research and Development Center | RA | remedial action |
| | | RAO | remedial action objective |
| ERF | Eagle River Flats | RCRA | Resource Conservation and Recovery Act |
| | | ROD | record of decision |
| GIS | Geographical Information System | RPM | restoration project manager |
| gpm | gallon(s) per minute | | |
| GPS | global positioning system | SW | southwest |
| IC | institutional control | USACE | U.S. Army Corps of Engineers |
| ID | identification | USAF | United States Air Force |
| | | USFWS | U.S. Fish and Wildlife Service |
| JBER | Joint Base Elmendorf- Richardson | UXO | unexploded ordnance |
| JBER-R | JBER-Richardson | UTM | universal transverse Mercator |
| | | WP | white phosphorus |

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1.0 INTRODUCTION

Fort Richardson was established in 1940 as a military staging and supply center during World War II. As a result of Base Realignment and Closure (BRAC) legislation passed in 2005, Fort Richardson was realigned with Elmendorf Air Force Base as Joint Base Elmendorf-Richardson (JBER) in Oct 2010. JBER occupies approximately 74,000 acres bounded to the west and north by Knik Arm, to the east by the Chugach Range, and to the south by the Municipality of Anchorage. Figure 1-1 shows the location of Eagle River Flats (ERF) (XU022), Operable Unit C (OUC) and the JBER-Richardson (JBER-R) area. Fort Richardson, Alaska, was proposed for the National Priorities List (NPL) in June 1993, and was placed on the NPL in August 1994. A Federal Facilities Agreement (signed on December 20, 1994) was negotiated among the U.S. Army, United States Environmental Protection Agency (EPA), and the Alaska Department of Environmental Conservation (ADEC) to establish the framework and schedule for all Comprehensive Environmental Restoration, Compensation, and Liability Act of 1980 (CERCLA) activities to be conducted at Fort Richardson. A total of 125 potential source areas were identified at Fort Richardson, and 79 of those were selected for No Further Action. The remaining 46 source areas were either grouped into one of four operable units (OUA through OUD) or were designated for parallel-track actions pursuant to a Two-Party Agreement between the U.S. Army and ADEC. OUE, a fifth operable unit, was designated in the OUD Record of Decision (ROD) signed in 2000. The ERF Impact Area (now designated XU022) and the adjoining OB-OD Pad (a Resource Conservation and Recovery Act [RCRA] unit, now designated XE023) were designated as OUC. The ROD for OUC was signed by the U.S. Army, EPA, and ADEC on September 30, 1998 (CH2M HILL, 1998).

XU022, or ERF, is an estuarine salt marsh at the mouth of the Eagle River (Figure 1-2). It is surrounded by forested uplands on the west, south, and east, and is bounded by the Knik Arm on the north. The Eagle River flows through XU022 from southeast to northwest, ultimately discharging into Knik Arm. Clunie and Otter Creeks also drain into ERF. Because of its wetlands and small, interconnected ponds, XU022 serves as an important staging ground for waterfowl during spring and fall migrations. In addition, XU022 supports local populations of fish, birds, mammals, and macro-invertebrates (primarily insects, snails, and crustaceans), as well as a population of wood frogs.

XU022 has been used for artillery and munitions training since the 1940s and contains numerous targets, as well as craters created by detonation of munitions in the wetlands and associated mud flats. During the 1980s, an unusually high number of waterfowl carcasses were discovered in the ERF marshes. Subsequent investigation revealed that white phosphorus (WP) particles were being ingested by the birds, causing their deaths. WP particles had been dispersed into the impact area during detonation of specific smoke munitions. WP is a smoke and incendiary agent that burns (oxidizes) and degrades readily in air. However, when WP particles are disbursed from munitions and come into contact with water, they are extinguished (without oxidizing) and settle out as seed-sized particles. Dabbling waterfowl, such as green-winged teal, northern pintails, and mallards that feed mainly on seeds and insects in shallow pond bottom sediments, consume WP particles while foraging for food, which results in waterfowl mortality. This discovery resulted in a nationwide U.S. Army ban on the use of WP in wetland impact areas.

Studies at XU022 have since indicated that concentrations of WP in sediment associated with a spent WP round ranged from thousands of micrograms per gram ($\mu\text{g/g}$) for sediment collected from within the spent rounds, to hundreds of $\mu\text{g/g}$ for sediment co-located (immediately surrounding) with the spent rounds, and to less than 10 $\mu\text{g/g}$ in sediment within a few meters (m) of the spent rounds. Sediment with a concentration over 1 $\mu\text{g/g}$ is likely to contain WP particles large enough to poison ducks (U.S. Army Corps of Engineers [USACE, 2012]). As a result, areas with sediment concentrations greater than the target concentration of 1 $\mu\text{g/g}$ have been considered “hot spots” and have been subject to remediation through pumping, draining, and capping.

2.0 RECORD OF DECISION REQUIREMENTS

The 1998 ROD established two remedial action objectives (RAOs) related to short-term and long-term waterfowl mortality reduction. To support these objectives, remedial action (RA) treatment options designed to expose pond sediments (allowing oxidation and sublimation of the WP), as well as to prevent access to WP in areas that could not be drained, were outlined; and procedures for long-term monitoring of waterfowl mortality and habitat impacts were indicated. In addition, site access and use by U.S. Army (and civilian) personnel is restricted by institutional controls (ICs) to reduce the potential for human exposure, and to prevent damage to previously capped areas.

2.1 Remedial Action Objectives

The RAOs for the RA at OUC are presented as follows:

- **Short-term RAO:** Within 5 years of the ROD being signed, reduce the dabbling duck mortality rate attributable to WP to 50 percent of the 1996 mortality rate attributable to WP (dabbling ducks were the primarily affected group). Radio tracking and aerial surveys suggest that approximately 1,000 birds died from WP at XU022 in 1996. Therefore, the allowable number of duck deaths from WP is approximately 500 per year to meet the RAO.
- **Long-term RAO:** Within 20 years of the ROD being signed, reduce the mortality rate attributable to WP to no more than 1 percent of the total annual fall population of dabbling ducks at XU022.

These reductions in mortalities were expected to occur as a result of reducing the area of contaminated media accessible to waterfowl. As that area decreased, a corresponding reduction in mortalities was expected to occur.

Refinement of the mortality model in 2005 reduced the calculated 1996 mortality rate from 1,000 to 655 ducks (Bigl and Collins, 2007). Therefore, to meet the short-term RAO, the allowable number of duck deaths attributable to WP needed to be less than 327 by 2003. The short-term RAO was achieved after 1 year of the start of RA, and the long-term RAO was first achieved in 2006, as well as during subsequent years through this 2012 monitoring event (USACE, 2012). The consistent downward trend in mortality since 2000 is a strong indication of the success of the selected remedy, as well as the strength and reliability of the data.

2.2 Selected Remedy and Remedial Design Summary

The remedy at XU022 includes multiple components, as summarized in Table 2-1. The remedy consists of RAs such as pond pumping/draining and capping/filling operations; long-term monitoring of waterfowl mortality rates, habitat changes, and WP concentrations in sediment; ICs; and restrictions on invasive activities within XU022.

The ROD provided an initial schedule for performing actions described in the remedy components. Per agreement by the restoration project managers (RPMs) made during a quarterly federal facility meeting in January 2008, this schedule was modified in 2011 based on the accelerated achievement of the long-term (20-year) mortality objective. The modified schedule

was presented in the *Operable Unit C – Eagle River Flats Impact Area Joint Base Elmendorf-Richardson, Memorandum to the Site File* (United States Air Force [USAF], 2011). The modified schedule is presented in Table 2-2, and the complete memo is included in Appendix A of this report. The individual components of the RAs are discussed further in subsequent sections. The work described in this report was conducted in accordance with the schedule as outlined in Table 2-2 and the 2012-13 Long Term Monitoring Work Plan for Operable Unit C – Eagle River Flats (Engineer Research and Development Center Cold Regions Research and Engineering Laboratory [ERDC/CRREL], 2012).

2.2.1 Remedial Actions

Because WP does not sublime and oxidize when wet or submerged, wetland conditions at XU022 are conducive to retention of WP in the sediments. Therefore, a major component of the selected remedy was draining the ponds sufficiently to allow the sediments to dry, thereby facilitating sublimation and oxidation of the WP. The selected remedy incorporated pumping to drain the ponds, followed by capping and filling for areas that had not dried sufficiently. Draining of the ponds and drying the WP-contaminated sediments to the maximum extent practicable was the preferred component of the RA before application of cap and fill material. RAs involving pumping and draining areas to dry sediment occurred from 1999 through 2007. **Capping and filling operations have taken place in 2007, 2008, 2009, 2011, and 2013.** The success of targeted remediation efforts is evaluated with sediment sampling. Additional information on the history of remedy component implementation is included in Table 2-1.

2.2.2 Long-term Monitoring

Long-term monitoring is performed to determine waterfowl populations, habitat usage and changes, and mortality rates; to document negative habitat changes (impacts) resulting from RAs (pond pumping and channel construction) and habitat recovery after pumping efforts are discontinued; and to document success of RAs in reducing/eliminating areas of WP contamination (Table 2-1). The goals of long-term monitoring as written in the ROD are as follows:

- To verify that an exposure pathway does not exist between waterfowl and WP-contaminated sediment
- To determine the number of waterfowl using ERF
- To determine the number of waterfowl dying as a result of feeding in WP-contaminated sediment
- To determine whether RA is effective or needs modification

Implementation and evaluation of the first and fourth goals involve analysis of sediments to (1) locate areas of contamination, and (2) confirm the success of the remediation (i.e., pumping or capping).

The second goal is accomplished using frequent aerial census surveys. These surveys have been conducted concurrently with telemetry studies (used through 2002) or ground-based mortality

surveys (2004–present). The combination of the mortality and total population data, along with laboratory analysis of gizzard content for WP, is used to accomplish the third goal.

In addition, a fifth (secondary) goal of monitoring is outlined in the components of the remedy. This involves minimizing and monitoring the impact of the RA on the natural salt marsh habitat. Minimization strategies include restricting the area used for performing ground-based actions such as remediation and surveys. Monitoring the impacts of remediation is conducted using aerial and ground-based photography to provide a means of comparing historical and present conditions of the marsh vegetation overall and at specific study plots.

2.2.3 Institutional Controls

ICs for XU022 include restrictions on site access, construction, and road maintenance, as well as training requirements for personnel conducting onsite operations. These controls will remain in place as long as hazardous substances remain onsite at levels that preclude unrestricted use.

Additional information on the major components of the selected remedy, including specific objectives, historic occurrence, and other details, are included in Table 2-1.

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Table 2-1: Components of the Selected Remedy

| Component | Description | Objective | Duration/History | Additional Notes |
|--|---|--|--|--|
| Remedial Action – Pond Pumping/Draining | Use of pumps to drain water from ponds in selected areas allowing for drying of sediments | Enable the sublimation and oxidation of WP | 1999-2003: Six pump systems installed throughout the wetland – about 90 percent of area remediated during this timeframe 2004-2007: Limited pumping using one or two systems in Area C to address remaining WP 2008-2012: One pump system deployed to facilitate sampling and provide safer working environment | During active remediation (1999-2003), pumps operated May through September each year Elevation of pumps optimized by conducting pond elevation surveys Float-mounted pumping systems used automated start/stop water table elevations Explosives used to create sumps and shallow drainage channels to enhance hydraulic connectivity between ponds |
| Remedial Action – Cap and Fill Operations | Application of geotextile membrane and cobble in WP-contaminated ponds that could not be drained | Provide a barrier between the WP-contaminated sediment and dabbling waterfowl | Placed after RAOs achieved and active pumping efforts discontinued Cap and fill material to be monitored for 4 years following placement to verify cap integrity 2007: Test cap (geotextile and gravel) installed at Pond 23 2008: Twenty-two gravel caps installed 2009: Eight new caps installed; six existing caps expanded 2011: Three new caps installed; three existing caps expanded; three temporary caps installed 2013: Three temporary caps augmented; three existing caps expanded Cap integrity monitoring/repair ongoing. Next occurrence 2016 (verification)-2017 (repairs, if needed) | |
| Long-term Monitoring – Waterfowl/Dabbling Duck Mortality | Telemetry, aerial surveys, and ground-based surveys | Determine waterfowl populations, habitat usage and changes, and mortality rates | Aerial surveys performed annually since 1999 Telemetry (ROD scheduled for first 5 years): <ul style="list-style-type: none"> Performed in 1999, 2001, and 2002 concurrent to pumping activities Not conducted in 2000 and 2003 as a result of reduced helicopter and pilot availability Ceased in 2004 and replaced with ground-based surveys Ground-based Waterfowl Mortality Surveys: 2004-2012 | Ground-based waterfowl surveys replaced telemetry in 2004 as a less costly option of determining mortality rates. |
| Long-term Monitoring – Habitat | Aerial photography (natural and infrared), ground-based photos of established vegetation plots, habitat mapping | Document habitat changes (impacts) resulting from RAs (pond pumping and channel construction) and habitat rebound after pumping efforts are discontinued | Vertical false CIR aerial photography (scale of 1"=600') Aerial photography conducted in 1991, 1993, 1994, 1995, 1998, 2001, 2002, 2003, 2006, 2008, 2009, 2010, and 2012 Ground-based vegetation plot photography – 1992, 1999, 2004, and 2012 Habitat mapping using aerial photography and vegetation plot photography was scheduled to be conducted every 4 years for 20 years; however, prior to the evaluation of 2012 data included in this report, the last habitat mapping effort occurred in 1999. | Changes in drainage, topography, and vegetation to be evaluated. |
| Long-term Monitoring – WP in Sediment | Baseline and follow-up sediment sampling, including discrete and multi-incremental sampling strategies; sediment dataloggers also used to monitor sediment moisture and temperature | Document success of RAs in reducing/eliminating areas of WP contamination | Sediment sampling for WP has occurred annually from 1999–2012. This includes targeting new areas of suspected contamination and follow-up sampling in remediated (drained or capped) areas to determine whether remediation has been successful. Starting in 1999 and continuing through 2011, dataloggers recorded moisture and temperature of sediments during active pumping remediation. | Discrete sampling is used to target specific locations, while multi-incremental sampling is used to examine larger areas such as ponds (or sections of ponds) or the perimeter of a capped area. Study strategies have also included planting known quantities of WP at specific locations and repeatedly sampling those locations on an annual basis to observe the effects of remediation. |
| ICs | Limiting or preventing access to contaminated areas or closing exposure pathways | Protect human health, safety, and the environment | Restrictions to remain in place as long as hazardous substances remain onsite at levels that preclude unrestricted use. | Restrictions apply to site access, construction, and road maintenance. All personnel working at OUC must complete required training, including receiving briefings from Range Control and Explosive Ordinance Disposal personnel, as well as becoming familiar with the route from OUC to the base hospital. |
| Protective Measures | Restrictions on invasive activities within ERF | Minimize disturbances to wildlife and wetland habitat | Ongoing (1999–2012) | Remedial activities in prime waterfowl habitat (Areas B and D) restricted Foot traffic restricted to shortest/narrowest walking corridors feasible Equipment/structures properly maintained for maximum efficiency, minimal waste/ spills Minimal use of equipment and explosives Limited staging area footprint Monitoring impacts to wetland and waterfowl at ERF Using agency-approved work plans |

Table 2-1: Components of the Selected Remedy

| Component | Description | Objective | Duration/History | Additional Notes |
|------------------|--|---|--|--|
| Record Keeping | GIS Database and General Reporting | Collect and maintain results of all XU022 data in a single, comprehensive database Coordinate with agencies and stakeholders | 1994: Database established. Database updated regularly as additional data is collected. Work plans composed for each field season, adapted as conditions change, and reviewed by agencies and stakeholders. Activities and results reported annually and reviewed by agencies and stakeholders. | Data include the following: <ul style="list-style-type: none"> • WP sampling results • Telemetry survey data • Aerial survey data • Waterfowl mortality data • Habitat and physical landform data |
| Waterfowl Hazing | Activities to purposely scare away waterfowl | Deter waterfowl from feeding in contaminated areas | ROD designated “contingency” action if remedial action activities were not enough to deter bird usage of contaminated area. Such measures were not used because RA activities proved sufficient for deterring waterfowl usage. | |

Notes:
 CIR = color infrared
 GIS = Geographical Information System

Table 2-2: Modified Remedial Action Schedule

| | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|--|------|------|------|------|------|------|
| Monitoring | | | | | | | |
| M1. Waterfowl mortality surveys using telemetry (1999 through 2004) and ground-based surveys (2005 through present) | X | | | | X | | |
| M2. Aerial waterfowl surveys | X | | | | X | | |
| M3. WP monitoring of treated ponds | X | | | | X | | |
| M4. WP composite sampling in untreated areas | | | | | | | |
| M5. GIS database management | X | | | | | X | |
| M6. Ponds survey, ground truthing, limited aerial survey | This element has been removed from the revised schedule. | | | | | | |
| M7. Aerial photography and interpretation | X | | | | | X | |
| M8. Mapping of physical habitat changes and vegetation rebound | X | | | | | X | |
| Treatment | | | | | | | |
| T1. Pond pumping treatment (active) | | | | | | | |
| T2. Cap and fill application | | X | | | | X | |
| T3. Cap and fill integrity inspection | | X | | | | X | |
| T4. Hazing (contingency) | | | | | | | |

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3.0 FIELD ACTIVITIES CONDUCTED IN THE 2012-2013 REPORTING PERIOD

Field Activities addressed in this monitoring report were conducted during the period from August 14 through October 18, 2012 (long-term monitoring activities), and again from February 6 through February 8, 2013 (capping operations). Long-term monitoring activities conducted during 2012 included waterfowl mortality surveys, aerial waterfowl surveys, sediment sampling, pumping operations, and habitat monitoring. RAs consisted of the capping operations in February 2013 to expand and augment six temporary or existing caps. Activities were documented in field logs (Appendix B). All ground-based field activities were supported by unexploded ordnance (UXO) technicians.

During the early years of investigations at XU022, subareas were designated based on geographical features and landmarks. These subareas are frequently referred to in the discussion of field activities and are shown on Figure 1-2. Similarly, individual ponds (areas of open water within the marsh) have been given numbers; remediated ponds are shown on Figure 1-2.

3.1 UXO Support

The following presents a summary of the UXO screening and avoidance activities conducted at XU022 to support the site-related sampling and monitoring performed in 2012.

3.1.1 UXO Screening and Avoidance

Before workers entered an area at ERF, each area was screened for UXO. Bering Sea Environmental, LLC (Bering Sea) was contracted to provide UXO support for monitoring and remediation activities during the 2012–2013 Reporting Period. Throughout the monitoring and remediation activities, Bering Sea provided a UXO technician on the following three occasions:

- From August 14 through 17, the technician cleared the work staging areas and pathways in the XU022 for monitoring waterfowl mortalities in Areas A, C, CD, and bread truck (BT). Clearing the pathways within the marsh involved the installation and marking of the 10-m-wide lanes. The UXO technician swept the lane width for the presence of UXO and marked items for avoidance. This allowed the survey team to subsequently walk the lane periodically to conduct the mortality surveys without UXO technician escort. Small ammunitions and munitions debris found in roadways, pathways, or staging areas were relocated to the identification (ID) line, a collection area on the ground at the western side of the staging area in the Open Burn/Open Detonation (OB/OD) pad (Figure 1-2).
- From September 10 through 14, a UXO technician was present for sediment sample collection to clear areas before sampling was conducted. During sediment sampling, discrete samples were collected from sediment located adjacent to buried anomalies to determine whether the anomalies could be a source of WP. These sampling/anomaly locations are discussed further in Section 3.3.
- From February 6 through 8, the UXO technician provided onsite support in case any suspected anomalies were encountered within staging areas and routes used for remedial capping operations. A full clearance was not conducted in February because the range control manager indicated that the range had not been in use since before the technician's previous visit.

For the August and September field efforts, the UXO technician first conducted a visual inspection of the ground surface and then used a magnetometer to scan areas for buried ferrous metal objects. If a buried object was detected, the spot was marked and flagged. These areas were avoided, and walking paths were relocated a safe distance away. Walking paths used throughout the monitoring season were cleared and marked during the initial August field efforts.

The following areas (see Figure 1-2) were cleared to accommodate fieldwork:

- Observation Point Fagan
- OB/OD Pad Staging Area (also known as Explosive Ordnance Disposal [EOD] Pad)
- Road to the OB/OD Pad
- Bomb Crater Road
- Gravel pile staged last year
- Road to Clunie Point and Pad
- Generator pad
- Access routes to each of the capped areas
- Areas C, CD, and BT mortality transects
- Path to canoe transect
- Area A mortality transects
- Firing Point Cole
- Area surrounding the pump and generator

3.1.2 2012–2013 UXO Detection and Disposal

Items of significance found during the UXO screenings during 2012 and 2013 field events are shown in Table 3-1.

Table 3-1: Summary of Potential UXO Detections

| Date | Location | Description | Outcome |
|----------------|---|---|---|
| August 2012 | Road from OP Fagan to OB/OD Pad | Detonation cord | Relocated to ID line on the OB/OD Pad |
| | Road From OP Fagan to OB/OD Pad | Numerous small arms ammunition and munitions debris | Relocated to ID line on the OB/OD Pad |
| September 2012 | Edge of 04DIS84 Cap (355248, 6801435) | Buried anomaly | Left in place and avoided; discrete sediment sample collected |
| | West of Cross Ditch (355219, 6801535) | Buried anomaly | Left in place and avoided; discrete sediment sample collected |
| | South Sump (355275, 6801524) | Buried anomaly | Left in place and avoided; discrete sediment sample collected |
| | Adjacent to Pond 730 Cap | Buried anomaly | Left in place and avoided; multi-increment sample collected from surface sediment surrounding cap |
| | Old Site 53 (355331, 6801175) | 81-mm fin | Left in place and avoided; discrete sediment sample collected |
| | West of Pond 146 Grid (355292, 6801164) | Empty WP projectile | Left in place and avoided; discrete sediment sample collected |

Notes:

ID line refers to area on OB/OD pad where munitions-related materials are collected and staged to be shown to visitors as examples of what is encountered in the ERF Area.

mm = millimeter(s)

OP = Observation Point

Bering Sea's report on the UXO monitoring activities, Eagle River Flats 2012 UXO Clearance Survey Report, is included in Appendix C.

3.2 Remedial Action Operations

The following presents a summary of pumping and capping operations.

3.2.1 Pumping System Placement and Operation

Although pumping was not used in 2012 as an active remediation technique, pumping was used to support monitoring activities, including sampling and mortality transect observations in Area C south of the BT Area and in Pond 730 (Figure 1-2). These areas can be partially drained by pumping Pond 146 from a sump located adjacent to the OB/OD Pad. The partial draining is important to expedite sampling and increase the safety of the operations by allowing easier access to work areas and better visibility of any UXO.

A dual pump system ("System 3"), which has a capacity of up to 3,000 gallons per minute (gpm), was installed in Pond 146 in mid-August 2012; operated from August 15 through 18 as a test run, and from September 7 through 14 during sediment sampling; and was subsequently removed near the end of September.

3.2.2 Capping Activities

Since active pumping remedial efforts concluded in 2007, additional hot spots have been identified during sediment sampling activities with WP above target concentrations (1 µg/g). To prevent waterfowl from accessing these areas of remaining contamination, the locations are capped using geotextile fabric and washed, crushed ballast (Walsh et al., 2008).

Areas to be capped were initially identified as suspect as a result of higher concentrations of water fowl deaths. WP phosphorus sampling was then conducted in the area to confirm and more precisely identify the location of the WP-contaminated sediment. The locations were marked using 5-foot orange witness posts with spray-painted black tops. In addition, each site was surveyed to allow relocation of the site with a global positioning system (GPS) unit if the fiberglass marker was missing or had been pushed over and covered by ice. The capping operations themselves occurred in the winter, when thick ice cover allowed heavy equipment to access the wetland without causing damage to the habitat. Geotextile was spread on the ice at the designated locations, and then ballast was deposited on top of the geotextile liner. When the ice melts in the spring, the gravel will be deposited over the target sediment, preventing waterfowl access. Ice thickness was measured on February 5, 2013, at several locations before beginning capping operations. Measurements were collected using a manual auger and tape measure, and ice was in excess of 30 inches. Snow was cleared to create paths to the capping sites, which were also cleared to allow placement of geotextile.

Six areas required capping in February 2013. These included three previously capped areas that needed to be expanded, and three expedient caps that needed augmentation. The expedient caps were temporary measures to prevent waterfowl access until a permanent cap could be installed. These expedient caps had been placed during summer 2011 by personnel on foot (a geotextile liner was positioned, ballast was hand-carried from nearby caps that had sufficient ballast to

spare, and the ballast was placed on the geotextile). The three capped areas requiring expansion were 04DIS84, 03DIS03, and 03DIS18 (Figure 3-1). Expedient cap locations included the northern arm of Pond 730, near the Duck Pond’s drainage channel, and a small section of Pond 155. In total, approximately 200 cubic yards of stone ballast (0.75- to 3-inch gravel) were used for the caps. Areas capped during the February 2013 capping operations are shown on Figure 3-1.

In total, 36 caps have been installed within the wetland throughout the history of the site. The total area that has been capped is estimated to be approximately 1,900 square meters (m²). Although this includes the approximate areas of the capping material as it was placed on the ice, actual measurements were not collected. Winter measurements would not account for changes during settlement or overlap of the expansion with the existing caps. The areas of the expanded caps and augmented temporary caps will be measured during the next field effort, in 2016. Almost 50 percent of the capped area covers large sections of drainage ditches. Most of the caps cover an area of between 5 and 30 m². Table 3-2 and Figure 3-1 show the details for each cap and a map of the locations, respectively. All of the caps are located within the C-Marsh area where limited remediation has occurred because of the inability to effectively drain the area and dry out the sediments. Because Clunie Creek drains into this location, the area remains wet even during active pond pumping.

Table 3-2: Cap Information

| Cap No. | Year Installed | Cap ID | Area (m ²) | Easting | Northing |
|---------|----------------------------|----------------------|------------------------|---------|----------|
| 1 | 2007 expanded in 2008/2011 | Pond 23 | 99.2 | 355292 | 6801535 |
| 2 | 2008 | 04DIS85 | 12.6 | 355221 | 6801425 |
| 3 | 2008 expanded in 2009 | 03DIS36 | 34.1 | 355233 | 6801449 |
| 4 | 2008 expanded in 2013 | 04DIS84 | 134.9 | 355249 | 6801443 |
| 5 | 2008 | 04DIS82 | 17.0 | 355247 | 6801461 |
| 6 | 2008 | 03DIS38 | 17.7 | 355217 | 6801490 |
| 7 | 2008 expanded in 2011 | South Ditch Junction | 248.5 | 355226 | 6801523 |
| 8 | 2008 expanded in 2009 | North Ditch | 92.9 | 355215 | 6801643 |
| 9 | 2008 expanded in 2009 | BIPS 5 to 9 | 142.7 | 355185 | 6801565 |
| 10 | 2008 | BIP 10 | 16.8 | 355167 | 6801567 |
| 11 | 2008 expanded in 2009 | BIP 11 | 29.4 | 355169 | 6801590 |
| 12 | 2008 expanded in 2009 | South Ditch West | 68.9 | 355167 | 6801527 |
| 13 | 2008 expanded in 2009 | 03DIS40 | 35.2 | 355168 | 6801505 |
| 14 | 2008 | 03DIS21 | 45.8 | 355153 | 6801443 |
| 15 | 2008 | 04DIS97 | 13.1 | 354780 | 6801724 |
| 16 | 2008 | 04DIS96 | 15.5 | 354833 | 6801722 |
| 17 | 2008 | 04DIS93 | 11.5 | 354823 | 6801706 |
| 18 | 2008 | 04DIS106 | 10.8 | 354798 | 6801650 |
| 19 | 2008 | 04DIS90 | 12.3 | 354827 | 6801651 |
| 20 | 2008 | 04DIS86 | 12.6 | 354857 | 6801626 |
| 21 | 2008 | BIP 2 | 18.9 | 355242 | 6801531 |
| 22 | 2008 expanded in 2013 | 03DIS03 | 56.8 | 355185 | 6801454 |

Table 3-2: Cap Information

| Cap No. | Year Installed | Cap ID | Area (m ²) | Easting | Northing |
|--------------|--|------------------------------------|------------------------|---------|----------|
| 23 | 2009 expanded in 2013 | 03DIS18 | 64.9 | 355209 | 6801430 |
| 24 | 2009 | 03DIS11 | 29.1 | 355212 | 6801441 |
| 25 | 2009 | 03DIS37 | 20.7 | 355220 | 6801465 |
| 26 | 2009 | South Ditch East | 52.6 | 355253 | 6801517 |
| 27 | 2009 | 03DIS42 | 29.0 | 355144 | 6801509 |
| 28 | 2009 | 04DIS76 | 24.4 | 355133 | 6801512 |
| 29 | 2009 | 03DIS43 | 26.9 | 355138 | 6801473 |
| 30 | 2009 | 04DIS68 | 31.5 | 355177 | 6801436 |
| 31 | 2011 | Bomb Crater Ditch | 235.1 | 355354 | 6801671 |
| 32 | 2011 | Pond 730 SW (0 to 10 m) | 108.4 | 354791 | 6801813 |
| 33 | 2011 | Pond 730 SW (30 to 40 m) | 46.5 | 354791 | 6801800 |
| 34 | 2011 temporary cap, made permanent in 2013 | Area BT Duck Pond Drainage Channel | 41.8 | 354790 | 6801633 |
| 35 | 2011 temporary cap, made permanent in 2013 | Area C Pond 155 | 48.8 | 355117 | 6801545 |
| 36 | 2011 temporary cap, made permanent in 2013 | Pond 730 North Arm | 20.9 | 354885 | 6801896 |
| Total | | 36 Caps | 1,927.8 | | |

Notes:

Northing/easting coordinates based on North American Datum (NAD)27 universal transverse Mercator (UTM) grid, meters

Red font indicates cap was expanded or augmented in 2013. The area of these caps is estimated. Field measurements will be collected during the next field event, in 2016, when the flats are ice-free, the ballast has settled, and the entire cap perimeters can be measured.

SW = southwest

3.3 Sediment Sampling

In 2004, a sampling program was initiated with the objectives to determine whether sediments at XU022 contain WP particles that could be ingested by dabbling ducks and to determine whether remediated ponds remain uncontaminated.

The monitoring methods for this program include or have included the following:

- Multi-increment sampling from pond surface sediments to determine whether WP is present
- Discrete sampling to monitor temporal changes in WP concentrations or identify potential hot spots (such as those associated with suspected WP rounds)
- Measuring sediment moisture and temperature to assess sublimation/oxidation conditions at select locations within contaminated and remediated ponds
- Measuring residual WP from planted WP particles of known initial mass

Sediment sampling was conducted at ERF in September 2012 to meet the following objectives:

- Assess continued clean status of ponds previously remediated using pond pumping, and determine whether there has been rebound in contamination resulting from exposure of buried WP residue.

- Determine whether the gravel caps completely covered the WP-contaminated sediments.
- Locate areas of WP contamination not previously identified by sampling where higher numbers of waterfowl deaths were concentrated.

September 2012 sampling locations are shown on Figure 3-2.

3.3.1 Sediment Sampling Methods and Locations

Previous research has shown that WP contamination at XU022 above target concentrations (1 µg/g) is mainly distributed in relatively small hot spots (localized areas) averaging approximately 2 m in diameter that were created by detonation of WP ordnance (Walsh et al., 1997). Because of their small size, detection of these hot spots requires intensive sampling such as multi-increment sampling methods. Three types of multi-increment sampling as well as discrete sampling methods have been used to assess WP contaminant conditions in the XU022 wetland. The sampling methods and locations used are shown in Table 3-3 and discussed below.

Table 3-3: Sediment Sample Locations

| Sample | Sample Date | Area |
|---|-------------|------|
| Grid Multi-increment Samples | | |
| Pond 171 C Marsh | 14-Sep-12 | C |
| Pond 155 Southwest Grid | 14-Sep-12 | C |
| Pond 183 C 100 m + | 14-Sep-12 | C |
| Pond 109 BT South 100 m + | 13-Sep-12 | BT |
| Pond 109 BT South 100 m - | 13-Sep-12 | BT |
| Pond 146 Canoe Point 1 (East, Shore) | 13-Sep-12 | C |
| Pond 146 Canoe Point 2 (West) | 13-Sep-12 | C |
| Systematic-Random Multi-increment Sediment Samples | | |
| <i>Gravel Cap Perimeters</i> | | |
| 03DIS03 | 10-Sep-12 | C |
| 03DIS11 | 10-Sep-12 | C |
| 03DIS18 | 10-Sep-12 | C |
| 03DIS21 | 10-Sep-12 | C |
| 03DIS36 | 10-Sep-12 | C |
| 03DIS37 | 10-Sep-12 | C |
| 03DIS38 | 10-Sep-12 | C |
| 03DIS40 | 10-Sep-12 | C |
| 03DIS42 | 10-Sep-12 | C |
| 03DIS43 | 10-Sep-12 | C |
| 04DIS68 | 10-Sep-12 | C |
| 04DIS76 | 10-Sep-12 | C |
| 04DIS82 | 10-Sep-12 | C |

Table 3-3: Sediment Sample Locations

| Sample | Sample Date | Area |
|--|-------------|------|
| 04DIS84 | 10-Sep-12 | C |
| 04DIS84 (South of Cap) | 10-Sep-12 | C |
| 04DIS85 | 10-Sep-12 | C |
| 04DIS86 | 12-Sep-12 | BT |
| 04DIS90 | 12-Sep-12 | BT |
| 04DIS93 | 12-Sep-12 | BT |
| 04DIS96 | 12-Sep-12 | BT |
| 04DIS97 | 12-Sep-12 | BT |
| 04DIS106 | 12-Sep-12 | BT |
| BIP 10 | 11-Sep-12 | C |
| BIP 11 | 11-Sep-12 | C |
| BIPS 5 to 9 West Side | 11-Sep-12 | C |
| BIPS 5 to 9 East Side | 11-Sep-12 | C |
| Bomb Crater West Side | 11-Sep-12 | C |
| Bomb Crater East Side | 11-Sep-12 | C |
| North Ditch West Side | 11-Sep-12 | C |
| North Ditch East Side | 11-Sep-12 | C |
| South Ditch East-West Side | 11-Sep-12 | C |
| South Ditch East-East Side | 11-Sep-12 | C |
| Cross-South Ditch Junc-North Side | 11-Sep-12 | C |
| Cross-South Ditch Junc-West Side | 11-Sep-12 | C |
| Cross-South Ditch Junc-East Side | 11-Sep-12 | C |
| South Ditch West-West Side | 11-Sep-12 | C |
| South Ditch West-East Side | 11-Sep-12 | C |
| Pond 730 SW 0 to 10 m-West Side | 12-Sep-12 | BT |
| Pond 730 SW 0 to 10 m-East Side | 12-Sep-12 | BT |
| <i>Expedient Cap</i> | | |
| Pond 730 North – 0 to 1 m annulus | 12-Sep-12 | BT |
| Pond 730 North – 1 to 2 m annulus | 12-Sep-12 | BT |
| Discrete Samples | | |
| 12DIS01 Edge of 04DIS84 Cap Projectile 37 cm deep | 10-Sep-12 | C |
| 12DIS02 Anomaly West of Cross Ditch | 11-Sep-12 | C |
| 12DIS03 Anomaly near South Sump | 11-Sep-12 | C |
| 12DIS04 81-mm fin at old site 53 | 13-Sep-12 | C |
| 12DIS05 Empty WP projectile West of Pond 146 grids | 13-Sep-12 | C |

Notes:
 C = Area C
 cm = centimeter(s)

3.3.2 Grid Multi-increment Sampling

The grid multi-increment sampling method was developed in 1996 (Walsh et al., 1997) to determine whether the mass of WP sufficient to poison waterfowl was present in a defined area or “decision unit.” ADEC (2007) defines a decision unit as “the defined area or volume in question, that is, that area or volume about which we need to make a decision.” The spacing between increments was 1.82 m, which coincides with a 10 percent chance of missing a 2-m-diameter WP-ordnance impact point, if one exists (Gilbert, 1987; Walsh et al., 1997). Several 5.46- by 20-m decision units were established in various ponds between 1997 and 2000; these decision units have been re-sampled in multiple years. In 2012, grid multi-increment samples were collected from decision units within Area C Ponds 183, 171, 146, and 155, and in BT Area Pond 109 (Figure 3-2).

3.3.3 Systematic-Random Multi-increment Sampling

Systematic-random multi-increment samples are used to sample larger decision units and linear features such as drainage channels and the perimeter of gravel caps. The samples are formed by collecting sediment aliquots at evenly spaced intervals (e.g., 1 to 2 m) starting at a random location within a decision unit. This method was used to sample around the perimeter of the gravel caps, in drainage channels in Area C, and in Pond 730 (Figure 3-2).

3.3.4 Sieved Multi-increment Sampling

Sieved multi-increment samples have been used to sample large areas (entire ponds) and to intensively sample smaller areas by taking increments of sediment at 1- to 2-m intervals and placing them in a sieve bucket (0.59-mm mesh). The sediment is then stirred underwater during collection to remove the fine-grain fraction. The mesh retains WP particles that, if present, would pose significant hazard to waterfowl. This method was last used in 2010 and 2011 to sample Ponds 226 and 258 in Area A at two locations where WP was detected in the 1990s (ponds are shown on Figure 1-2). Sieved multi-increment sampling was not conducted during the 2012 sampling event.

3.3.5 Discrete Sampling

Discrete samples were collected near magnetic anomalies to determine whether the metal was part of WP ordnance. Each discrete sample was composed of at least 120 milliliters (mL) of sediment collected adjacent to the metal ordnance item. During 2012, sediment next to metallic anomalies was collected in five locations: two in the area of the ditch transects, one associated with a cap located south of the ditch transects, and two in the area of Pond 146 (Figure 3-2).

3.4 Waterfowl Mortality Monitoring

As described in Section 2.1, the RAOs at XU022 are based on waterfowl mortality rates. The use of waterfowl mortality rates for RAOs, rather than a regulatory cleanup level, is somewhat problematic in that both the waterfowl population and the waterfowl mortality numbers must be measured each year that the mortality rate is calculated, neither of which is a simple task. However, the use of mortality rates in the RAOs is necessary because there is not an established

cleanup level for WP in sediment, and the overall goal is to minimize mortality of waterfowl using the site.

3.4.1 Ground-based Mortality Surveys

Ground-based surveys have been conducted for the past 9 years. These surveys have been a successful, cost-effective, and repeatable process for determining waterfowl mortality and, ultimately, the success of remediation activities. During early years of investigation at ERF (1998 through 2002), telemetry studies were used to determine the number of waterfowl mortalities. The National Wildlife Research Center (NWRC) conducted waterfowl mortality studies from 1996 through 2002 by attaching radio-collars to dabbling ducks (mallards) and tracking their movements and mortality (NWRC, 2004). For a more detailed description of the telemetry studies (by year), refer to the CRREL reports titled Interagency Expanded Site Investigation, Evaluation of White Phosphorus Contamination and Potential Treatability at Eagle River Flats, Alaska, FY 98 Report (CRREL, 1999) and Remediation and Monitoring White Phosphorus Contamination at Eagle River Flats (Operable Unit C), Fort Richardson, Alaska for 1999 through 2002 (CRREL, 2000; CRREL, 2002; CRREL, 2003). Because of contracting issues or lack of helicopter availability, studies were not completed in 2000 or 2003. Starting in 2004, ground-based monitoring surveys by patrolling established transects were introduced as a less costly, although effective, way to monitor for waterfowl mortalities.

In 2012, mortality surveys were conducted during the fall migration periods from August 15 to October 16. At the conclusion of the surveys in October 2012, the ponds on ERF were frozen, precluding waterfowl use and the need for continued survey.

Transect Descriptions and Monitoring Frequency

The ground-based mortality surveys consist of monitoring a total of 13 transects. These transects are modified and monitored at varying frequencies based on where mortalities have been recorded in recent years. When few to no mortalities were recorded over a period of years, monitoring frequencies or transect lengths have been reduced. The transects surveyed during the 2012 migration period are shown on Figure 3-3, and associated access points are shown on Figure 1-2. Transect descriptions are presented in Table 3-4.

The Area C/CD Grid, Ditch, BT Grid, Pond 730, Duck Ponds, and Pond 183 transects are located in areas where mortalities have continued to be found on a regular basis. These transects were accessed from Clunie Point and surveyed three times per week. The Area A transect (accessed through Firing Point Cole) and C/D Canoe transect (accessed from a trail off of Bomb Crater Road) were monitored weekly or every other week; and monitoring frequency was reduced to every other week when no mortalities were found. The canoe transect was the only transect conducted regularly by canoe, as the pond was too deep for safe foot travel.

The final transects were the Upland transects, which were scheduled to be conducted once and include the Woodland transect and Transects 1 through 4; and the Upland transects were accessed from Bomb Crater Road. The purpose of the Upland transect monitoring was to account for duck carcasses that may have been found by and carried to upland areas by predators for consumption. Prior to pumping and draining operations when duck mortality rates were higher,

predators (particularly eagles) and ravens were commonly observed to scavenge carcasses of dabbling ducks found in ERF, sometimes carrying the carcasses to upland perches to feed (ERDC/CRREL, 2005). As the numbers of mortalities were reduced through remediation, the predators were observed less frequently and at lower concentrations; however, such scavenging was expected to have continued on a more limited basis.

Table 3-4: Mortality Survey Transect Descriptions

| Transect | Description |
|---|---|
| Core Transects (surveyed three times weekly) | |
| Ditch | The small pools in the northern area where two large interconnected drainage ditches were excavated for pumping remediation |
| Pond 183 | Large waterfowl feeding ponds previously remediated by pumping in Area C |
| Pond 730 and Duck Ponds | Large waterfowl feeding ponds previously remediated by pumping in western Area C/D |
| Area C/CD Grid and BT | Transects in vegetated area roughly between Pond 730 and Duck Ponds |
| Weekly or Biweekly Transects | |
| Area A | Starts at the southern end and follows the eastern side of Pond 290, then continues along the eastern side of the northern A pond complex, returning along the western side of Pond 290 Approach from an access trail from Lower Cole Point along Otter Creek and the western edge of ERF |
| Canoe Transect of Pond 40 | Starts along the eastern shore of Area C/D; follows the entire edge of Pond 40. Accessed by walking north approximately 1.2 km along the trail from the former OB/OD Pad, continuing along a short path down the bluff to the edge of the Area. A canoe was used to follow along the entire edge of Pond 140. |
| Upland Transects | |
| Forest Edge (four transects) | Four 400-m-long transects running perpendicular into the forest from the salt marsh boundary on the eastern side of ERF |
| Additional Forest Edge | One 50- by 200-m quadrant was located along the forest edge east of the northern Area C marsh, just north of Clunie Inlet |

Note:

km = kilometer(s)

Wetland transect locations were originally surveyed to sub-meter accuracy using a GPS. The centerline of the 10-m-wide lanes was marked at transect ends or corners with 1.5-m orange fiberglass markers with the tops painted fluorescent lime green. Some small variations in the pathways occur from year to year based on interpretation of pond edges (where carcasses are often found) and best paths between the corner/transect end stakes. Lanes were further delineated with 1.2-m wood lath with lime-green-painted tops, placed every 50 or 100 m along the survey lanes.

Survey and Mortality Recording Procedures

Surveys were conducted by a two-person observation team walking or canoeing (Canoe Transect of Pond 40 and occasionally some of the core transects during flood tides) each transect lane, visually scanning for waterfowl carcasses or feather pile remains. When a carcass or feather pile was found, the field team recorded the date, location (NAD 27 UTM coordinate using a GPS

system or estimated from NAD 27 UTM-gridded photo maps of the areas), species (if possible), and a description of the carcass (degree of decay, partial or whole, and so on). A unique sequential sample ID number was assigned (MORT 01, MORT 02, and so on) to all carcasses and feather piles. Carcass or feather pile locations were marked with a polyvinyl chloride pin flag with the ID number and date. Waterfowl carcasses in good condition were removed from the site to avoid later double-counting that could result from the carcass being moved by a predator. If possible, gizzards were also removed from carcasses for WP analysis, and the carcass was preserved for subsequent H5N1 avian influenza screening.

If a carcass or feather pile was seen outside of a cleared transect lane, the approximate location was recorded in the field notes; however, the carcass was not collected unless the area had been cleared by the UXO technician.

3.4.2 Aerial Waterfowl Census Surveys

A total of 21 aerial census surveys were conducted by the U.S. Fish and Wildlife Service (USFWS) from August 16 to October 29, 2012. In general, surveys were conducted twice per week, and were flown with a fixed-wing aircraft at an airspeed of 130 to 170 km/hr (kilometers per hour) and an altitude of 30 to 75 m. Total coverage of XU022 was obtained by overlapping transects. Over the duration of the study period, surveys were spaced an average of 3.7 days apart despite (1) a week-long interruptions in late August and early September caused by airspace restrictions within the XU022 Restricted Area and (2) once in late September because of a severe windstorm. Observations were recorded regarding the types and numbers of birds observed in the flats. ID was made by type (such as “shorebirds”) or species (when possible). The results of the surveys were compiled and used to determine the approximate fall population of waterfowl. A complete report on the USFWS observations in 2012 is included in Appendix D.

3.5 Habitat Monitoring

Habitat monitoring consists of comparisons of aerial photography of the ERF area and ground-based photographs of vegetation plots over time to identify changes in vegetation communities that may be the result of RAs.

3.5.1 Vegetation Plot Analysis

This section describes the methods used to perform the 2012 photography of established vegetation plots, as well as examine and compare existing data for the historic vegetation plot photos and percent coverage analysis, for the purpose of evaluating potential changes to ERF habitat resulting from remedial activities.

Ground-based photography of 1-m² vegetation plots was conducted on September 14 and 15, 2012. During this time, 43 vegetation plots located in Area C, BT Area, and Area C/D were photographed for comparison to historic photographs of the same locations to determine whether changes have occurred to plant communities over time as a result of remedial efforts.

Ground-level monitoring was intended to track changes in the plant community as site remediation progressed. A total of 180 vegetation plots were established along 13 transects in 1992 (pre-remediation), and follow-on monitoring occurred at a subset of those plots in 1999,

2004, and 2012 (Figure 3-4). The monitoring design included determining the relative cover of individual plant species in 1- by 1-m plots along transects throughout the remediation area. These plots were sited to capture potential changes in vegetation in and near ponds slated for draining or pumping (Figure 3-4). Plot locations were originally marked by 3-foot wooden lathes with green tops, and the GPS location was recorded to allow relocation whenever a lathe had been removed or damaged.

In 2012, relocation of the original plots was accomplished using a handheld GPS; however, because the wooden lathe markers were often destroyed in the interim, the precise location of the original plots was difficult to determine. Further, species-level cover data are only available for 2004. Photographs are available for 58 plots, although coverage across all years of monitoring is spotty. Photographs from all monitoring events are available for 20 plots. Photographs are available from 1992, 2004, and 2012 for nine plots and from 1999, 2004, and 2012 for four plots. For the remaining 25 plots, photographs are available only from 1992 and 1999.

The lack of a complete set of data and photos for all plots precludes a full analysis at the species level. As such, the decision was made to assess vegetative cover for those plots with photos from at least 3 years of monitoring. Assessing vegetative cover to the species level from photos is imprecise at best; therefore, cover was determined by the following life-form categories: forb, graminoid, and pondweed. Grouping plants by life form is very reliable, because each form has characteristics that makes it determinable from photographs. Forbs are herbaceous plants with broad leaves and typically showy flowers. In contrast, graminoids have reduced flowers and thin leaves, and include grasses and sedges. Pondweeds are true aquatic plants and live out their entire life cycles in water, although they occasionally can be found stranded in recently dewatered areas.

3.5.2 Aerial Photography

This section discusses the 2012 aerial photography procedures and the two methods of digital aerial photograph analysis used to evaluate habitat changes in ERF over time. The photograph analysis included Supervised Classification (to analyze changes in vegetation and landform types over time) and Normalized Difference Vegetation Index (to analyze changes in vegetation in terms of overall increases and decreases).

Aerial photography of ERF was conducted by Aerometric on August 29, 2012. The photographs are orthorectified in Alaska State Plane Zone 4, NAD83, with a pixel size of 0.25 foot. To collect the imagery, five parallel passes were flown across the ERF, and 25 exposures were collected using a large format Z/I Imaging Digital Mapping Camera. Images were recorded as high-resolution, panchromatic images with red, green, blue, and near-infrared multi-spectral data. A report that summarizes the procedures used to collect and process the photographs in 2012 is included in Appendix E.

Methods for Digital Interpretation of Vegetation Types (Supervised Classification)

A classification was performed on each of three CIR images taken of the study area in 1991, 2003, and 2012. A supervised classification method was chosen, because the basic vegetation classes appeared to have fairly unique characteristics in the CIR imagery. The initial classes were

identified based on the categories found in the vegetation class vector data that were provided by CRREL. The 1991 CIR data were studied, and representative areas were selected for each of the following seven vegetation classes that are found within the study area: vegetated mudflats, sedge marsh or bog, Ramenski sedge meadow, permanent pond, intermittent pond, border low shrub, and barren mudflats. Sedge marsh and sedge bog were originally separate classes; however, they were ultimately combined because they were largely indistinguishable from one another within the CIR imagery. These seven areas were used to define the classification signature file, which was used to perform the classification analysis. Descriptions of these classes are found in Table 3-5.

Table 3-5: Descriptions of Vegetation Classes Used in Supervised Classification

| Vegetation Class | Description |
|-----------------------|--|
| Barren mudflats | Less than 20 percent vegetation cover, often associated with pans or intermittent ponds |
| Border low shrub | Border area with scattered shrubs of <i>Myrica gale</i> and graminoids |
| Intermittent pond | Usually barren mudflat areas that flood with 10 to 20 cm of water during spring tides |
| Permanent pond | Brackish to freshwater ponds 25 to 50 cm deep |
| Ramenski sedge meadow | Over 80 percent vegetation cover forming a tight, well-vegetated sod of <i>Carex ramenskii</i> |
| Sedge marsh or bog | Low sedge mats interspersed with or surrounding ponds |
| Undetermined/barren | Undetermined/no vegetation |
| Vegetated mudflats | Greater than 20 percent vegetation cover |

Source: ERDC/CRREL, 2005.

The supervised classification was performed multiple times, each with slightly different parameters, and each checked for quality against the vegetation plots and the CIR imagery. The final 1991 classification signature used the following parameters:

- Step 1: Supervised Classification:
 - Classification: two best classes per pixel
 - Non-parametric Rule: None
 - Parametric Rule: Maximum Likelihood
- Step 2: Fuzzy Convolve
 - Window Size: 5 by 5 pixels
 - Neighbor Weighting Options: by distance
 - Neighborhood Weight Factor: 0.50

For the 2003 classification, the same signature file was applied with one addition; in 2003, an additional class appeared in the CIR imagery, which was identified as “undetermined/barren.” These areas had little or no vegetation, although they had distinct spectral signatures from the barren mudflats (e.g., less presence of vegetation). The 2003 and 2012 supervised classifications were then performed with this updated signature file using the same parameters as the 1991 analysis.

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4.0 MONITORING RESULTS AND DISCUSSION

This section presents the results of sediment sampling, mortality surveys, aerial waterfowl surveys, and habitat mapping activities, including comparisons to historic results.

4.1 Sediment Sampling

Sediment sampling in 2012 included grid multi-increment sampling, systematic-random multi-increment sampling, and discrete sampling for WP. Figure 4-1 and Table 4-1 show the locations of all samples and highlight the WP detections. Multi-increment sampling was used to examine pond areas and cap perimeters for remaining WP contamination, and discrete samples were collected adjacent to anomalies to determine whether the rounds had contained WP and were continuing to provide a source of WP in the marsh.

Table 4-1: Sediment Sample White Phosphorus Concentrations

| Sample | Sample Date | Area | Field Repetition | Result (µg/g) |
|---|-------------|------|------------------|---------------|
| Grid Multi-increment Samples | | | | |
| Pond 171 C Marsh | 14-Sep-12 | C | 1 | 0.002 |
| | | | 2 | ND (0.0002) |
| Pond 155 Southwest Grid | 14-Sep-12 | C | 1 | 0.002 |
| | | | 2 | 0.011 |
| Pond 183 C 100 m + | 14-Sep-12 | C | 1 | ND (0.0002) |
| | | | 2 | ND (0.0002) |
| Pond 109 BT South 100 m + | 13-Sep-12 | BT | 1 | ND (0.0002) |
| | | | 2 | ND (0.0002) |
| Pond 109 BT South 100 m - | 13-Sep-12 | BT | 1 | ND (0.0002) |
| | | | 2 | ND (0.0002) |
| Pond 146 Canoe Point 1 (East, Shore) | 13-Sep-12 | C | 1 | ND (0.0002) |
| | | | 2 | ND (0.0002) |
| Pond 146 Canoe Point 2 (West) | 13-Sep-12 | C | 1 | ND (0.0002) |
| | | | 2 | ND (0.0002) |
| Systematic-Random Multi-increment Sediment Samples | | | | |
| <i>Gravel Cap Perimeters</i> | | | | |
| 03DIS03 | 10-Sep-12 | C | N/A | ND (0.0002) |
| 03DIS11 | 10-Sep-12 | C | N/A | ND (0.0002) |
| 03DIS18 | 10-Sep-12 | C | N/A | ND (0.0002) |
| 03DIS21 | 10-Sep-12 | C | N/A | ND (0.0002) |
| 03DIS36 | 10-Sep-12 | C | N/A | ND (0.0002) |
| 03DIS37 | 10-Sep-12 | C | N/A | ND (0.0002) |
| 03DIS38 | 10-Sep-12 | C | N/A | ND (0.0002) |
| 03DIS40 | 10-Sep-12 | C | N/A | ND (0.0002) |
| 03DIS42 | 10-Sep-12 | C | N/A | ND (0.0002) |

Table 4-1: Sediment Sample White Phosphorus Concentrations

| Sample | Sample Date | Area | Field Repetition | Result (µg/g) |
|-----------------------------------|-------------|------|------------------|----------------|
| 03DIS43 | 10-Sep-12 | C | N/A | ND (0.0002) |
| 04DIS68 | 10-Sep-12 | C | N/A | ND (0.0002) |
| 04DIS76 | 10-Sep-12 | C | N/A | ND (0.0002) |
| 04DIS82 | 10-Sep-12 | C | N/A | ND (0.0002) |
| 04DIS84 | 10-Sep-12 | C | N/A | ND (0.0002) |
| 04DIS84 (South of Cap) | 10-Sep-12 | C | N/A | 0.0002 |
| 04DIS85 | 10-Sep-12 | C | N/A | ND (0.0002) |
| 04DIS86 | 12-Sep-12 | BT | N/A | ND (0.0002) |
| 04DIS90 | 12-Sep-12 | BT | N/A | ND (0.0002) |
| 04DIS93 | 12-Sep-12 | BT | N/A | ND (0.0002) |
| 04DIS96 | 12-Sep-12 | BT | N/A | ND (0.0002) |
| 04DIS97 | 12-Sep-12 | BT | N/A | ND (0.0002) |
| 04DIS106 | 12-Sep-12 | BT | N/A | ND (0.0002) |
| BIP 10 | 11-Sep-12 | C | N/A | 0.0012 |
| BIP 11 | 11-Sep-12 | C | N/A | ND (0.0002) |
| BIPS 5 to 9 West Side | 11-Sep-12 | C | N/A | 0.00031 |
| BIPS 5 to 9 East Side | 11-Sep-12 | C | N/A | 0.0025 |
| Bomb Crater West Side | 11-Sep-12 | C | N/A | ND (0.0002) |
| Bomb Crater East Side | 11-Sep-12 | C | N/A | ND (0.0002) |
| North Ditch West Side | 11-Sep-12 | C | N/A | ND (0.0002) |
| North Ditch East Side | 11-Sep-12 | C | N/A | ND (0.0002) |
| South Ditch East-West Side | 11-Sep-12 | C | N/A | ND (0.0002) |
| South Ditch East-East Side | 11-Sep-12 | C | N/A | ND (0.0002) |
| Cross-South Ditch Junc-North Side | 11-Sep-12 | C | N/A | ND (0.0002) |
| Cross-South Ditch Junc-West Side | 11-Sep-12 | C | N/A | ND (0.0002) |
| Cross-South Ditch Junc-East Side | 11-Sep-12 | C | N/A | ND (0.0002) |
| South Ditch West-West Side | 11-Sep-12 | C | N/A | ND (0.0002) |
| South Ditch West-East Side | 11-Sep-12 | C | N/A | ND (0.0002) |
| Pond 730 SW 0 to 10 m-West Side | 12-Sep-12 | BT | N/A | ND (0.0002) |
| Pond 730 SW 0 to 10 m-East Side | 12-Sep-12 | BT | N/A | ND (0.0002) |
| <i>Expedient Cap</i> | | | | |
| Pond 730 North – 0 to 1 m annulus | 12-Sep-12 | BT | N/A | ND (0.0002) |
| Pond 730 North – 1 to 2 m annulus | 12-Sep-12 | BT | N/A | ND (0.0002) |

Table 4-1: Sediment Sample White Phosphorus Concentrations

| Sample | Sample Date | Area | Field Repetition | Result (µg/g) |
|--|-------------|------|------------------|---------------|
| Discrete Samples | | | | |
| 12DIS01 Edge of 04DIS84 Cap Projectile 37 cm deep | 10-Sep-12 | C | N/A | 800 |
| 12DIS02 Anomaly West of Cross Ditch | 11-Sep-12 | C | N/A | 0.0024 |
| 12DIS03 Anomaly near South Sump | 11-Sep-12 | C | N/A | 0.0003 |
| 12DIS04 81-mm fin at old site 53 | 13-Sep-12 | C | N/A | 0.0011 |
| 12DIS05 Empty WP projectile West of Pond 146 grids | 13-Sep-12 | C | N/A | ND (0.0002) |

Notes:

Bold font with grey shading indicates white phosphorus concentration capable of causing mortalities.

Bold font highlights white phosphorus detections.

BIP = blow-in-place

4.1.1 Grid Multi-increment Sampling

As described in Section 3.3, grid multi-increment sampling is designed to detect a 2-m-diameter WP-ordnance impact point if one exists within the 5.46- by 20-m decision unit. Seven grid multi-increment samples were collected from decision units within the ponds that previously had the highest WP concentrations before treatment, including Ponds 109, 146, 155, 171, and 183 (Figure 4-1). Duplicate samples were taken for each pond grid for field quality control purposes. WP was detected in three grid multi-increment samples, including both primary and duplicate samples from Pond 155 (concentrations of 0.002 and 0.011 µg/g), and one of the samples collected from the Pond 171 grid (0.002 µg/g) (Figure 4-1 and Table 4-1). None of the grid multi-increment 2012 samples in 2012 contained concentrations of WP above the target concentration of 1 µg/g.

Although no definitive signs of ordnance have been detected during magnetometer surveys in the Pond 155 grid area, previous samples have also indicated that low levels of WP continue to be present. Detected concentrations from past samples, collected in 2010 and 2011, ranged from 0.00008 to 0.054 µg/g (Appendix F). Although concentrations were below 1 µg/g, a temporary cap was installed in the area in July 2011 (limiting the sample collection from this grid in 2012), and a permanent cap was installed in February 2013 to prevent waterfowl from accessing the contaminated sediment.

The results of 2012 sediment sampling are presented in Table 4-1, and historic sampling results can be found in Appendix F.

4.1.2 Systematic-random Multi-increment Sampling

A total of 41 systematic-random samples were collected from around permanent and temporary caps in Areas C and C/D (Figure 4-1). These samples were used to determine whether the gravel caps effectively covered areas identified as having WP contamination, thereby preventing access by waterfowl. Four samples contained detectable concentrations of WP; all concentrations were at least two orders of magnitude less than the target concentration of 1 µg/g suspected to cause waterfowl mortalities. Sample concentrations ranged from 0.002 to 0.0025 µg/g (Table 4-1).

Sample 04DIS04 (south of cap), which had a concentration of 0.0002 µg/g, was in the same general location as discrete sample 12DIS01 Edge of 04DIS84 Cap Projectile 37 cm deep. This cap was expanded during the February 2013 remedial operations.

4.1.3 Discrete Sampling

When potential WP-containing anomalies were detected during UXO clearance activities, a discrete sample was collected from the surrounding sediment to determine whether the round had residual WP associated with it. Five discrete samples were collected in 2012. The detected anomalies included one projectile approximately 37 cm deep in the sediment near the edge of cap 04DIS84, one west of the cross ditch in the ditch transect area, one near the south sump in the ditch area, an 81-mm fin at “old site 53” (on the eastern shore of Pond 146), and an empty projectile west of the Pond 146 grid.

Of the five discrete samples, four contained WP above the detection limit (Table 4-1 and Figure 4-1). Three samples had concentrations of less than 1 µg/g (ranging from 0.0003 to 0.0024 µg/g), and one sample, associated with the anomaly near the edge of Cap 04DIS84, had a WP concentration of 800 µg/g. Because this cap was expanded in 2013, the location of the projectile and the relatively high concentration of WP is now located beneath a protective layer of ballast.

4.1.4 Data Quality Analysis

Sediment samples were stored, processed, and analyzed according to procedures outlined in the 2012-13 Long-term Monitoring Work Plan (ERDC/CRREL, 2012). Samples were analyzed using EPA SW-846 Method 7580 [White Phosphorus (P₄) by Solvent Extraction and Gas Chromatography]. The presence of WP is determined using solid-phase micro-extraction and gas chromatography. If WP is present in the sample, the average concentration is estimated by extracting the WP from the sample with solvent (100 mL of isooctane) and analyzing the extract by gas chromatography (nitrogen–phosphorus detector). The SW-7580 method includes the generation of a daily calibration (five standards) curve with check standards run every 10 samples. Spike recovery samples are also analyzed. The results of these quality control checks and analysis are presented in Appendix G.

An ADEC Laboratory Data Check List (http://www.dec.state.ak.us/spar/csp/guidance/lab_revchecklist_2.pdf) is included in Appendix G. A copy of method EPA SW-846 Method 7580 (White Phosphorus [P₄] by Solvent Extraction and Gas Chromatography) is included in Appendix H.

4.2 Waterfowl Mortality Studies

Waterfowl mortality studies are conducted using ground-based transects and aerial surveys. The ground-based transect surveys identify waterfowl mortalities, and the aerial surveys estimate the numbers of waterfowl using the XU022 area. Together, these numbers are used to calculate the mortality rate.

4.2.1 Waterfowl Mortality Transects

A total of 22 mortalities, including 17 feather piles and five carcasses, were recorded during the 2012 field season (Figure 4-2 and Table 4-2). “Feather piles” are mortalities that were depredated by scavengers; therefore, the term includes locations where only feathers remained as well as partial carcasses (generally including feathers as well as bones or wings, and occasionally organs).

Table 4-2: Summary of 2012 Mortalities by Transect

| Transect | Carcass | Feather Pile | Total |
|-----------------|----------|--------------|-----------|
| Ditch | 3 | 3 | 6 |
| Pond 730 | 2 | 4 | 6 |
| Pond 183 | 0 | 1 | 1 |
| Duck Pond | 0 | 4 | 4 |
| BT | 0 | 0 | 0 |
| C/D | 0 | 1 | 1 |
| Other Area C | 0 | 1 | 1 |
| Canoe (Pond 40) | 0 | 3 | 3 |
| Upland | 0 | 0 | 0 |
| Area A | 0 | 0 | 0 |
| Total | 5 | 17 | 22 |

In general, carcasses were discovered near pond edges, presumably near the location where the duck had ingested the lethal dose of WP. Based on studies of WP ingestion by ducks in 1992, the behavior of ducks after WP ingestion included a variety of abnormal postures such as arching the neck over their back, swimming with the head down, swimming in circles, and convulsing (Racine et al., 1992). These symptoms suggest that after manifestation begins, the individual is unlikely to be oriented enough to fly or travel purposefully and would therefore perish in the general area where the poison was ingested.

Being the product of predation, feather piles were more frequently associated with available vantage points such as the stone ballast caps, muskrat “popups” (piles of vegetation), logs, towers, and range targets such as vehicles or portions of vehicles, and other debris. Mortality transects, when possible, were positioned along the edges of actively used feeding ponds, and passed by area vantage points to aid in the detection of the mortalities.

Gizzards were collected from four carcasses and one feather pile (partial carcass). All five gizzards tested positive for WP. Because of the uncertainties in determining the cause of death from evidence remaining at a feather pile, it is now standard operating procedure to assume that all waterfowl died as a result of WP poisoning. This provides a conservative estimation, or an overestimation, of 22 dabbling duck mortalities resulting from WP poisoning in 2012.

As shown on Figure 4-2 and in Tables 4-2 and 4-3, the highest numbers of mortalities in recent years, including all five carcasses in 2012, were found along the Ditch and Pond 730 transects. Together, these two transects had approximately two-thirds of the total mortalities found during the 2004 through 2012 field seasons combined. These results are consistent with sediment sampling results, which continued to identify localized WP hot spots in these areas. Five of the six caps that were expanded in February 2013 (to cover the identified WP hot spot areas) were located in these two transect areas (the sixth cap expanded in 2013 was associated with an active drainage channel). The Canoe transect had the next-highest frequency of mortalities, with 28 in the 9-year period, followed closely by Area A, which had 26 mortalities for the same period. In 2012, three feather piles were found on the Canoe transect, and none were found in Area A. During 2004–2012, Pond 183, the Duck Pond, C/D transect, and other areas between transects in Area C had mortalities recorded less frequently. The low occurrence of mortalities in areas other than the Ditch and Pond 730 transects, especially in the last 3 years, indicates that there is less probability of the persistence of accessible WP hot spots in these areas.

Table 4-3: Summary of 2004-2012 Mortalities by Transect

| Transect | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | Total |
|-----------------|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|
| Ditch | 64 | 25 | 6 | 13 | 4 | 5 | 11 | 2 | 6 | 136 |
| Pond 730 | 17 | 7 | 9 | 9 | 5 | 21 | 6 | 8 | 6 | 88 |
| Pond 183 | 9 | 1 | 3 | 1 | 0 | 0 | 2 | 0 | 1 | 17 |
| Duck Pond | 3 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 4 | 11 |
| BT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C/D | 6 | 3 | 2 | 3 | 0 | 0 | 0 | 0 | 1 | 15 |
| Other Area C | 3 | 2 | 0 | 2 | 1 | 1 | 0 | 0 | 1 | 10 |
| Canoe (Pond 40) | 6 | 4 | 1 | 0 | 2 | 8 | 0 | 4 | 3 | 28 |
| Upland | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 3 |
| Area A | 1 | 4 | 2 | 7 | 0 | 9 | 3 | 0 | 0 | 26 |
| Total | 111 | 49 | 23 | 36 | 13 | 44 | 22 | 14 | 22 | 334 |

As shown in Table 4-4, the number of recorded waterfowl mortalities has dramatically declined since 1996. Full-scale remediation, which occurred from 1999 to 2004, reduced the area of WP-contaminated sediments by pumping large areas dry and allowing the WP to sublimate and oxidize. Subsequent operation targeted smaller areas with pumping or capping.

Table 4-4: Recorded Waterfowl Mortalities in Eagle River Flats (1996-2012)

| Year | Remedial Activity | Recorded Mortalities |
|------|-----------------------|----------------------|
| 1996 | Investigative studies | 655 |
| 1997 | | 240 |
| 1998 | | 355 |

Table 4-4: Recorded Waterfowl Mortalities in Eagle River Flats (1996-2012)

| Year | Remedial Activity | Recorded Mortalities |
|------|--|----------------------|
| 1999 | Full-scale remediation (pumping large areas dry) | 198 |
| 2000 | | NA |
| 2001 | | 87 |
| 2002 | | 203 |
| 2003 | | NA |
| 2004 | Limited remediation (smaller-scale pumping and capping operations) | 111 |
| 2005 | | 49 |
| 2006 | | 25 |
| 2007 | Capping operations (with very limited pumping to facilitate sediment sampling) | 35 |
| 2008 | | 12 |
| 2009 | | 44 |
| 2010 | | 22 |
| 2011 | | 14 |
| 2012 | | 22 |

Notes:

From 1996 to 2002, recorded mortalities were based on waterfowl telemetry. From 2004 to the present, recorded mortalities have been based on surveying ground-based mortality transects.

NA = not analyzed

4.2.2 Aerial Mortality Surveys

A total of 21 aerial census surveys were conducted by the USFWS from August 16 to October 29, 2012, to determine the fall 2012 waterfowl population. In comparison, 24 aerial surveys were conducted in 2011, and 28 census surveys were conducted in 2010 during similar time periods. Observed waterfowl species were similar in types and relative numbers as in previous years. Canada geese were the most commonly observed waterfowl, followed by mallards, American wigeon, northern pintails, white-fronted geese, swans, green-winged teal, and sandhill cranes. Of these species, mallards, American wigeons, northern pintails, and green-winged teal are dabbling ducks (the types most likely to consume WP-contaminated sediment while feeding). The USFWS report detailing the 2012 aerial census survey results can be found in Appendix D.

Estimating a total duck population from periodic aerial census data is complicated by (1) lack of information regarding whether any of the ducks counted during one census flight were also present during the previous census, and (2) not knowing how many transient waterfowl use the area between censuses and are not counted.

Part of the purpose for the telemetry studies conducted during 1996-2002 was to estimate the turnover rate. The turnover rate was used to calculate the number of ducks that migrate into ERF to feed and then leave before the next aerial census flight, and ultimately estimate the fall waterfowl population. This is important because these transient waterfowl need to be accounted

for to accurately determine the annual fall population of ducks. The NWRC calculated an average annual turnover rate of 0.83 during the survey period based on the telemetry data, and determined that the turnover rate was fairly constant from year to year. Using that turnover rate, the NWRC model uses the dabbling duck population as counted in the aerial survey (Aerial Count of Dabbling Ducks) and then adjusts this for the average turnover to determine an estimated total duck population for that census period (Total Population Adjusted for Turnover). The total increase (Population Change) in duck population for each census period was then estimated by subtracting the previous period’s adjusted population from the current period’s adjusted population. If the current period’s population was higher than the previous period, then the difference was the total increase in duck population for that period. If the current period’s population was lower than the previous period, then there was no net increase in the duck population for that period. At the end of the season, the increases for each census period were summed to give the total estimated dabbling duck population for the season.

Table 4-5 presents the 2012 fall population estimate. The total fall dabbling duck population was determined to be 2,238 birds in 2012. As shown in Table 4-6, the fall population for 2012 was the second lowest since 2004. For comparison, the observed number of mortalities was 14 in 2011 (out of an estimated total population of 2,695) and 22 in 2010 (out of an estimated total population of 5,245).

Table 4-5: Aerial Census Data and Estimated Population

| Observation Date | Aerial Count of Dabbling Ducks (D) | Total Population Adjusted for Turnover (Total = D/0.83) | Population Change |
|------------------|------------------------------------|---|-------------------|
| 16-Aug-12 | 841 | 1,013 | 1,013 |
| 24-Aug-12 | 888 | 1,070 | 57 |
| 28-Aug-12 | 878 | 1,058 | 0 |
| 4-Sep-12 | 916 | 1,104 | 46 |
| 7-Sep-12 | 829 | 999 | 0 |
| 10-Sep-12 | 414 | 499 | 0 |
| 13-Sep-12 | 581 | 700 | 201 |
| 21-Sep-12 | 726 | 875 | 175 |
| 24-Sep-12 | 515 | 620 | 0 |
| 26-Sep-12 | 561 | 676 | 55 |
| 30-Sep-12 | 510 | 614 | 0 |
| 3-Oct-12 | 135 | 163 | 0 |
| 6-Oct-12 | 58 | 70 | 0 |
| 8-Oct-12 | 218 | 263 | 193 |
| 10-Oct-12 | 498 | 600 | 337 |
| 12-Oct-12 | 565 | 681 | 81 |
| 16-Oct-12 | 83 | 100 | 0 |
| 18-Oct-12 | 121 | 146 | 46 |

Table 4-5: Aerial Census Data and Estimated Population

| Observation Date | Aerial Count of Dabbling Ducks (D) | Total Population Adjusted for Turnover (Total = D/0.83) | Population Change |
|----------------------------------|------------------------------------|---|-------------------|
| 22-Oct-12 | 36 | 43 | 0 |
| 26-Oct-12 | 0 | 0 | 0 |
| 29-Oct-12 | 28 | 34 | 34 |
| Total Population for 2012 | | | 2,238 |

Notes:

Total Population Adjusted for Turnover: Assumes that the Aerial Count of Dabblers on a given date accounts for 83 percent of the ducks that have been present in ERF since the previous census.

Population Change: Assumes that an increase in Total Population Adjusted for Turnover over the previous census are "new" individuals visiting ERF.

Total Population for 2012: Total of positive Population Change.

4.2.3 Estimation of Mortality Rate

The dabbling duck population estimate is used in conjunction with the compiled waterfowl mortality data collected from the ground-based transect surveys to estimate a percentage mortality rate for the total fall dabbling duck population of ERF.

The observed number of mortalities was 22 in 2012. Because the overall population was relatively low, the mortality as a percentage was slightly higher than in the previous 6 years, at 0.98 percent, even though the number of observed mortalities was within the range observed in recent years. Mortality rates since 2004 are shown in Table 4-6. Since 2006, the calculated mortality rates have been below the long-term RAO target of less than 1 percent.

The following uncertainties may be involved when determining a mortality rate:

- Inaccuracies in counting waterfowl numbers during the aerial census flights
- Variable periodicity of aerial flights, which might miss “peaks or valleys” of waterfowl population
- Application of an average turnover rate instead of a site- and time-specific turnover rate
- Imprecision in counting WP-poisoned waterfowl on the ground because of the following:
 - Missing carcasses along a transect
 - A small contaminated area not covered by a transect
 - Waterfowl that feed in a known contaminated area (with transects) but fly to another area without transects or are carried to a non-transect area by a scavenger or predator
 - Birds killed by causes other than WP poisoning, but for which no evidence exists to rule out WP poisoning because of post-mortem predation

- Multiple feather piles from the same mortality (distributed by predators) being counted as multiple mortalities

There are no agreed upon procedures to quantify these uncertainties, and any estimate of uncertainty is likely questionable. However, as a highly conservative measure of uncertainty, a variability analysis is performed to calculate mortality if the fall population of dabbling ducks varies by plus or minus 20 percent of the calculated population, and if the dabbling duck mortality rate were to be 50 percent higher than counted during the ground-based transect mortality surveys.

With the potential errors for total population and mortality applied, the variability analysis indicates that the mortality rate could range from 0.4 to 1.8 percent in 2012 (Table 4-6). This is slightly higher than the previous 2 years, which indicated a range of 0.3 to 0.8 percent for 2010 and 0.4 to 0.9 percent for 2011. Using these conservative variability calculations, the upper end of the estimated range has been above the long-term goal four times since 2006. Figure 4-3 plots mortality rate as a percentage of the total fall dabbling duck population from 1996 through 2012 and shows the upper and lower uncertainty estimates. Because of the natural population variability and the considerable uncertainties in estimating both population and mortality, the mortality rate will undoubtedly vary slightly from year to year. However, the long-term trend has been a significant reduction in mortality resulting from WP, and the calculated mortality rate has remained below 1 percent Figure 4-3. This reflects the significant amount of remediation that has occurred over the last 14 years.

Table 4-6: Estimated Mortality Rates with Uncertainties

| Year | Fall Population Calculated from Census (using 0.83 turnover) | Fall Population Estimates ($\pm 20\%$) | Mortality (Observed $\pm 50\%$) | Calculated Mortality Rate | Mortality Rate Range With Uncertainty |
|------|--|--|----------------------------------|---------------------------|---------------------------------------|
| 1996 | 5,413 | 4,330 to 6,496 | 655 to 983 | 12.10% | 10.1 to 22.7% |
| 1997 | 6,063 | 4,850 to 7,276 | 240 to 360 | 4.00% | 3.3 to 7.4% |
| 1998 | 3,772 | 3,018 to 4,526 | 355 to 533 | 9.40% | 7.8 to 17.7% |
| 1999 | 1,334 | 1,067 to 1,601 | 198 to 297 | 14.80% | 12.4 to 27.8% |
| 2001 | 3,628 | 2,902 to 4,354 | 87 to 131 | 2.30% | 2.0 to 4.5% |
| 2002 | 3,112 | 2,490 to 3,734 | 203 to 305 | 6.50% | 5.4 to 12.2% |
| 2004 | 3,659 | 2,927 to 4,391 | 111 to 167 | 3.00% | 2.5 to 5.7% |
| 2005 | 2,130 | 1,704 to 2,556 | 49 to 74 | 2.30% | 1.9 to 4.3% |
| 2006 | 4,479 | 3,583 to 5,375 | 25 to 38 | 0.60% | 0.5 to 1.1% |
| 2007 | 5,279 | 4,223 to 6,335 | 35 to 53 | 0.70% | 0.6 to 1.3% |
| 2008 | 5,895 | 4,716 to 7,074 | 12 to 18 | 0.20% | 0.2 to 0.4% |
| 2009 | 4,760 | 3,808 to 5,712 | 44 to 66 | 0.90% | 0.7 to 1.7% |
| 2010 | 5,245 | 4,196 to 6,294 | 22 to 33 | 0.40% | 0.3 to 0.8% |
| 2011 | 2,695 | 2,156 to 3,234 | 14 to 21 | 0.50% | 0.4 to 0.9% |
| 2012 | 2,239 | 1,791 to 2,687 | 22 to 33 | 0.98% | 0.4 to 1.8% |

4.3 **Habitat Monitoring**

The 2012 habitat monitoring analysis for XU022 uses ground-level vegetation sampling and infrared and multispectral satellite data comparisons over time. Use of these techniques permits data analysis on several scales, providing a multifaceted view of the area. Although available aerial photography and vegetation plot photography were not available from the same dates/years, the habitat observation data were examined and compared for pre-remediation (1999 and prior), toward the end of active remediation (which continued through 2004), and post-remediation (as close to the present as existing data allowed) time periods.

4.3.1 **Vegetation Plot Analysis**

This section describes the results drawn from the comparisons of the plots over time.

Vegetation Plot Analysis

The percent vegetative cover by growth form was determined for 33 plots across five transects and is presented in Table 4-7. Remaining percent coverage (beyond the vegetative cover shown in the table) includes areas that are barren sediment, open water, or occupied by man-made or natural articles. A summary of results for all plots and years is presented in Appendix I. Percent cover varied across all plots in all years. Both pondweeds and forbs had lower cover in 2012 than in 1992, before remediation started. Graminoids had higher cover in 2012 than before remediation began.

Table 4-7: Percent Vegetative Cover by Growth Form for all Monitoring Plots

| Year | Growth Form | | |
|-------------------|-------------|-----------|----------|
| | Forb | Graminoid | Pondweed |
| 1992 ^a | 22.1 | 18.0 | 3.6 |
| 1999 ^b | 16.5 | 30.3 | 0.1 |
| 2004 ^c | 22.9 | 21.7 | 0.0 |
| 2012 ^c | 13.8 | 40.9 | 1.5 |

^a 29 plots

^b 24 plots

^c 33 plots

Note:

Areas not covered by vegetation include barren areas and open water

To evaluate whether changes might be attributable to remedial pumping and draining actions as opposed to natural processes, percent vegetative cover was also separated into plots located within remediated pond areas and unremediated ponds. Table 4-8 shows the results for remediated and unremediated ponds, respectively. Percent cover for all growth forms varied across all years in both pond types. Forbs steadily increased in remediated ponds, although forbs fluctuated in the unremediated ponds. Current cover by forbs in unremediated ponds is the lowest since monitoring began. Graminoid cover likewise varied across the years. Graminoid cover in unremediated ponds is the highest since monitoring began, while cover in remediated ponds is currently the lowest. No pondweeds were present in any plots in the unremediated

ponds. In remediated ponds, pondweeds decreased significantly after remediation began, although they have since increased. Photographs from plot L11-13, located in a remediated pond, are shown on Figure 4-4.

Table 4-8: Percent Vegetative Cover by Growth Form for Plots in Remediated and Unremediated Ponds

| Year-Pond Status | Plots | Growth Form | | |
|-------------------|-------|-------------|------------|-----------|
| | | Forbs | Graminoids | Pondweeds |
| 1992-Remediated | 4 | 3.8 | 8.8 | 26.3 |
| 1992-Unremediated | 25 | 25.0 | 19.5 | 0.0 |
| 1999-Remediated | 5 | 9.0 | 11.0 | 0.4 |
| 1999-Unremediated | 19 | 18.5 | 35.4 | 0.0 |
| 2004-Remediated | 5 | 10.4 | 23.5 | 0.0 |
| 2004-Unremediated | 28 | 25.1 | 21.4 | 0.0 |
| 2012-Remediated | 5 | 13.6 | 8.4 | 10.0 |
| 2012-Unremediated | 28 | 13.8 | 46.8 | 0.0 |

Notes:

Areas not covered by vegetation include barren areas and open water.

Fluctuations in forbs and graminoids can be attributed to any number of variables. However, the lack of species-specific information prevents the conclusion that these variations are the product of remediation activities or are within the natural range of variability for a salt marsh. Pumping and ditching produced low water levels that may have affected plant distribution. Species preferring drier areas could have replaced emergent species that prefer standing water. Similarly, emergent species could have spread into areas that once contained deeper water. Changes in water level may also have exposed suitable habitat to propagules persisting in the seed bank.

The changes in pondweed cover can be credited to remediation activities. Pumping and draining had a significant impact on water levels in remediated ponds (locations are shown on Figure 3-4), which decreased the availability of suitable habitat for pondweeds. The cessation of pumping activities and the resultant increase in areas of standing water are likely responsible for the rebound in pondweed cover seen in recent years.

4.3.2 Digital Aerial Photograph Interpretation

This section discusses two methods of digital aerial photograph analysis: Supervised Classification (to analyze changes in vegetation and landform types over time), and Normalized Difference Vegetation Index (to analyze changes in vegetation in terms of overall increases and decreases).

Digital Interpretation of Vegetation Types (Supervised Classification)

The resulting three classifications used in this analysis performed well when measured against the limited available reference data (e.g., vegetation plots and visual inspection of imagery).

Figures 4-5, 4-6, and 4-7 show the results of the supervised classifications for 1991, 2003, and 2012, respectively. In general, the classification analysis suggests a distinct change in landforms between 1991 and 2003 (a general reduction in vegetated areas and a change from “permanent ponds” to other landforms in remediated areas), and again between 2003 and 2012 (a general increase in vegetated areas, particularly in areas where remediation efforts had been completed before 2003). The vegetation classes for the monitoring plots are presented in Table 4-9. The vegetation plots fell into one of the following five categories: barren mudflats, intermittent pond, permanent pond, sedge marsh or bog, or vegetated mudflats.

Table 4-9: Vegetation Classification for Monitoring Plots as Determined from Supervised Classifications

| Plot | 1991 | 2003 | 2012 |
|---------|--------------------|--------------------|--------------------|
| L2-4 | nd | nd | Vegetated mudflats |
| L2-10* | nd | nd | Vegetated mudflats |
| L2-17 | nd | nd | Sedge marsh or bog |
| L2-18 | nd | nd | Intermittent pond |
| L5-9 | Vegetated mudflats | Vegetated mudflats | Vegetated mudflats |
| L5-10 | Vegetated mudflats | Vegetated mudflats | Vegetated mudflats |
| L5-12 | Intermittent pond | Barren mudflats | Intermittent pond |
| L5-13 | Permanent pond | Permanent pond | Intermittent pond |
| L5-16* | Permanent pond | Barren mudflats | Intermittent pond |
| L5-17* | Permanent pond | Vegetated mudflats | Intermittent pond |
| L5-18 | Permanent pond | Vegetated mudflats | Sedge marsh or bog |
| L5-19 | Sedge marsh or bog | Vegetated mudflats | Sedge marsh or bog |
| L6-1 | Vegetated mudflats | Vegetated mudflats | Vegetated mudflats |
| L10-2 | Permanent pond | Sedge marsh or bog | Sedge marsh or bog |
| L10-3 | Vegetated mudflats | Sedge marsh or bog | Sedge marsh or bog |
| L10-6 | Sedge marsh or bog | Vegetated mudflats | Sedge marsh or bog |
| L10-8 | Vegetated mudflats | Vegetated mudflats | Permanent pond |
| L10-9 | Vegetated mudflats | Sedge marsh or bog | Vegetated mudflats |
| L10-10 | Barren mudflats | Barren mudflats | Intermittent pond |
| L10-11 | Intermittent pond | Barren mudflats | Vegetated mudflats |
| L10-12 | Vegetated mudflats | Vegetated mudflats | Vegetated mudflats |
| L10-19 | Vegetated mudflats | Vegetated mudflats | Vegetated mudflats |
| L10-21 | Vegetated mudflats | Vegetated mudflats | Vegetated mudflats |
| L10-22 | Sedge marsh or bog | Vegetated mudflats | Sedge marsh or bog |
| L10-23 | Permanent pond | Permanent pond | Intermittent pond |
| L10-24 | Vegetated mudflats | Permanent pond | Permanent pond |
| L10-25* | Vegetated mudflats | Permanent pond | Permanent pond |

Table 4-9: Vegetation Classification for Monitoring Plots as Determined from Supervised Classifications

| Plot | 1991 | 2003 | 2012 |
|---------|--------------------|--------------------|--------------------|
| L11-7 | Barren mudflats | Sedge marsh or bog | Vegetated mudflats |
| L11-8 | Vegetated mudflats | Barren mudflats | Intermittent pond |
| L11-10 | Permanent pond | Sedge marsh or bog | Vegetated mudflats |
| L11-12 | Permanent pond | Barren mudflats | Permanent pond |
| L11-13* | Permanent pond | Barren mudflats | Permanent pond |
| L11-15 | Sedge marsh or bog | Vegetated mudflats | Sedge marsh or bog |

* = remediated pond

Note:

nd = no data

Classifications varied across all years of the study. Four plots on the L2 transect were located just outside the boundary of available data for 1991 and 2003, and have no assigned classification for these years. There was no change in the classification of six plots over the course of the study; these were classified as vegetated mudflats. Classification of eight plots changed in 2003, but reverted to the 1991 classification in 2012. Classifications of seven plots changed in 2003 and changed again in 2012. Four plots changed classification in 2003 and maintained the changed classification in 2012. Four additional plots were the same in 1991 and 2003, and were changed in classification only in 2012.

Classification data was available for four of the five plots occurring in remediated ponds. Three plots (L5-16, L5-17, and L11-13) were initially classified as permanent ponds. All three plots had different classifications in 2003; L5-16 and L11-13 were barren mudflats, and L5-17 was vegetated mudflats. In 2012, L11-13 was once again a permanent pond; however, L5-16 and L5-17 were intermittent ponds. L10-25 was classified as vegetated mudflats in 1991, although it was changed to permanent pond in 2003 and stayed the same in 2012.

Some of these changes may have resulted from remediation activities in ERF. Removing water from the salt marsh through pumping and ditching is likely responsible for the transition of permanent pond areas to barren or vegetated mudflats. However, salt marshes are dynamic systems, so it is unlikely that all changes in the vegetation classifications resulted from remediation activities.

Relative Change in Vegetation Based on NDVI

The image difference analyses for 1986 to 2003 and 2003 to 2009 are shown on Figures 4-8 and 4-9, respectively. Both indicate significant changes in vegetation over time. Between 1986 and 2003, there appears to have been considerable reduction in vegetation within and near the remediated areas, while there was no clear pattern of vegetative change in the reference area (unremediated areas west of Eagle River). Between 2003 and 2009, there appears to have been significant reversal in vegetative change within and near the remediated areas. While not as significant as in the first analysis, vegetation appears to have increased in 2009 relative to 2003 in the remediated areas, while again the reference areas indicate no clear change.

5.0 CONCLUSIONS

This section describes the status of progress toward the achievement of the RAOs based on reduction of waterfowl mortality (as a percentage of the population), and also discusses the remedial success relative to the reduction in areas with contaminated sediment.

5.1 Status of Progress Toward Achievement of Remedial Action Objectives

As described in Section 2.0, the OUC ROD for XU022 included two RAOs based on reducing the mortality rate of dabbling ducks attributable to WP. The RAOs included a short-term objective to reduce the mortality rate to less than 50 percent of the 1996 mortalities, estimated at 1,000 individuals, within 5 years (by 2003); and a long-term objective to reduce the mortality rate to less than 1 percent of the migrating population within 20 years (by 2018).

As presented in Table 4-6 and Figure 4-3, the mortality rate of dabbling ducks at XU022 indicates that both RAOs have been achieved. Refinement of the mortality model in 2005 reduced the calculated 1996 mortality rate from 1,000 to 655 ducks (Bigl and Collins, 2007). Therefore, to meet the short-term RAO, the allowable number of duck deaths attributable to WP needed to be less than 327 by 2003. As shown in Table 4-4, duck mortality rates since 1999 have been less than this target number. Based on the mortality data, the short-term RAO has been successfully met.

The calculated mortality rate has been below 1 percent since 2006, and the upper bound of the conservative estimated range also was below 1 percent in 2008, 2010, and 2011. Overall, waterfowl mortality resulting from WP poisoning has decreased significantly in ERF since remedial activities have begun. This decreasing trend is expected to continue following the capping operations performed in February 2013.

Mortality monitoring will next be conducted in 2016 (Table 2-2).

5.2 Treated Pond Acreage

Although treated pond acreage is not a specific RAO for this project, it is a good indicator that WP residual matter is being remediated. The ROD identified 57 acres as contaminated or potentially contaminated at ERF; Figure 5-1 shows the status of ponds at XU022 at the time of the ROD. Monitoring activities performed since 1999 have indicated that some areas previously thought to be contaminated were not, whereas other areas thought to be un-contaminated were not. The current revised estimate of the total area that had been contaminated by WP (before treatment) is approximately 47 acres. Pumping and draining remediation activities have successfully treated most of the contaminated area. Smaller hot spots with WP concentrations above the target of 1 µg/g in areas that could not be drained or pumped consisted of less than 0.5 acre; these areas were remediated through capping. Figure 5-2 shows the status of ponds at XU022 as of 2012.

5.3 Institutional Controls

JBER Environmental maintains a GIS database with information on all of the contaminated sites onbase. XU022 restrictions include preventing site access to personnel without appropriate site-

specific training (on UXO, range procedures, and WP.) Site access is controlled by a locked gate. JBER Environmental is responsible for ensuring that ICs are maintained. Evidence of trespassing by unauthorized individuals was not detected in 2012. In addition, firing is restricted to winter months, when ice protects caps and potential buried munitions from being exposed by the impact of munitions. ICs will remain in place as long as hazardous substances remain onsite at levels that preclude unrestricted use.

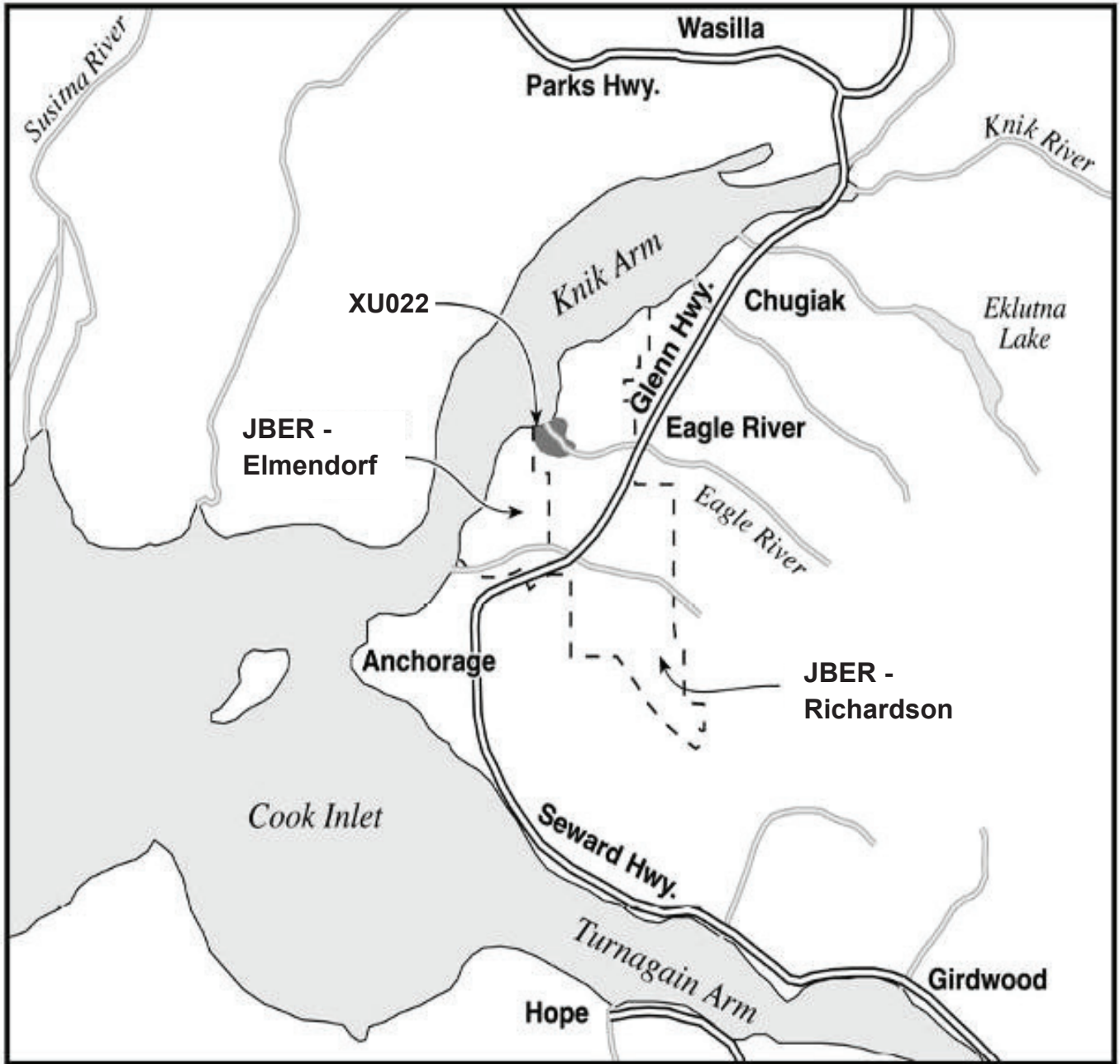
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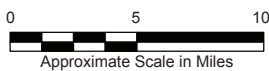
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Figures

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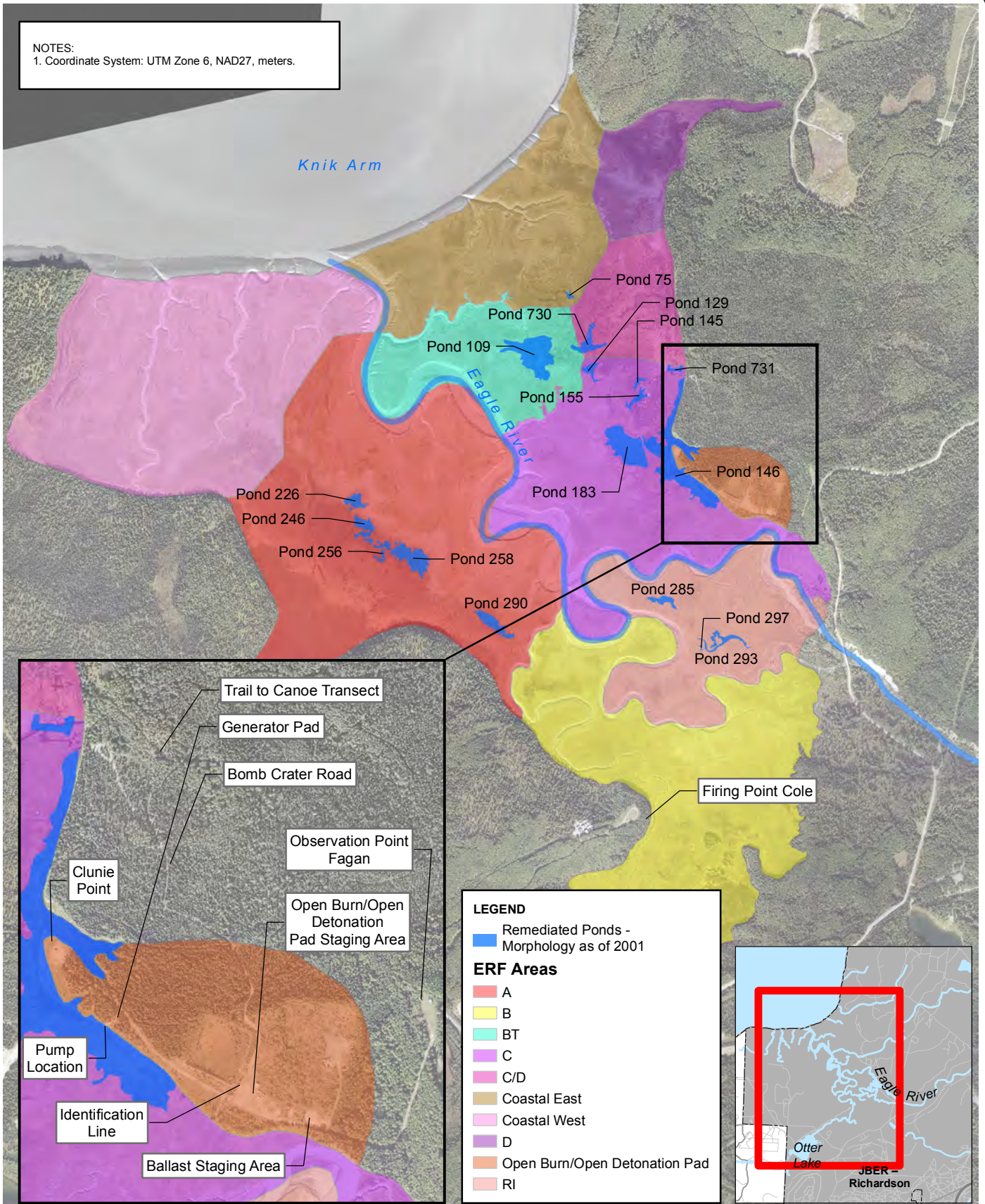
XU022 LOCATION

2012-2013 Remedial Action Summary Report
 XU022 – Operable Unit C, Eagle River Flats
 Joint Base Elmendorf-Richardson, Alaska

Figure

1-1

NOTES:
1. Coordinate System: UTM Zone 6, NAD27, meters.



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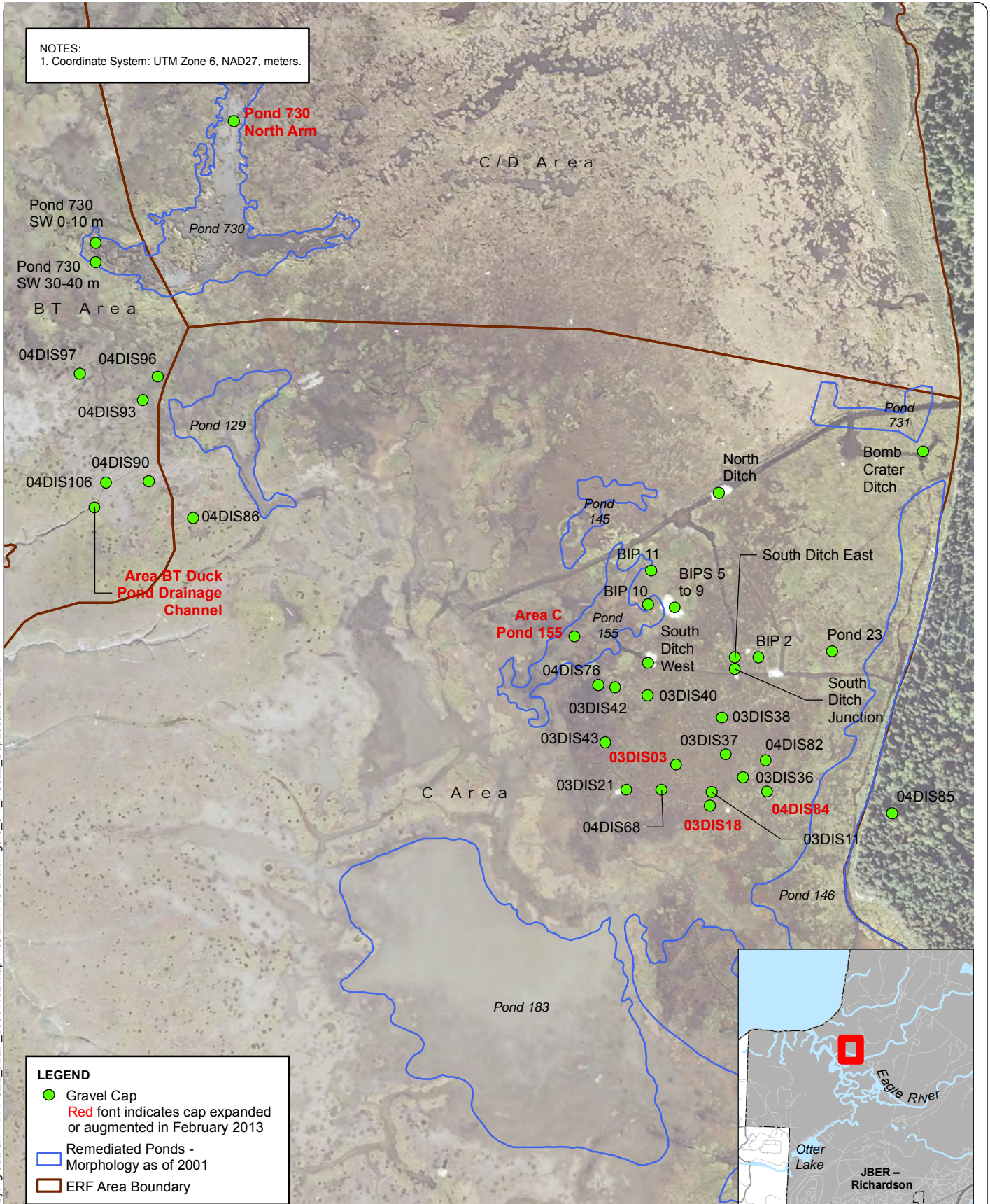
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Meters

XU22 SUBAREAS

2012-2013 Remedial Action Summary Report
XU22 – Operable Unit C, Eagle River Flats
Joint Base Elmendorf-Richardson, Alaska

Figure
1-2

NOTES:
1. Coordinate System: UTM Zone 6, NAD27, meters.



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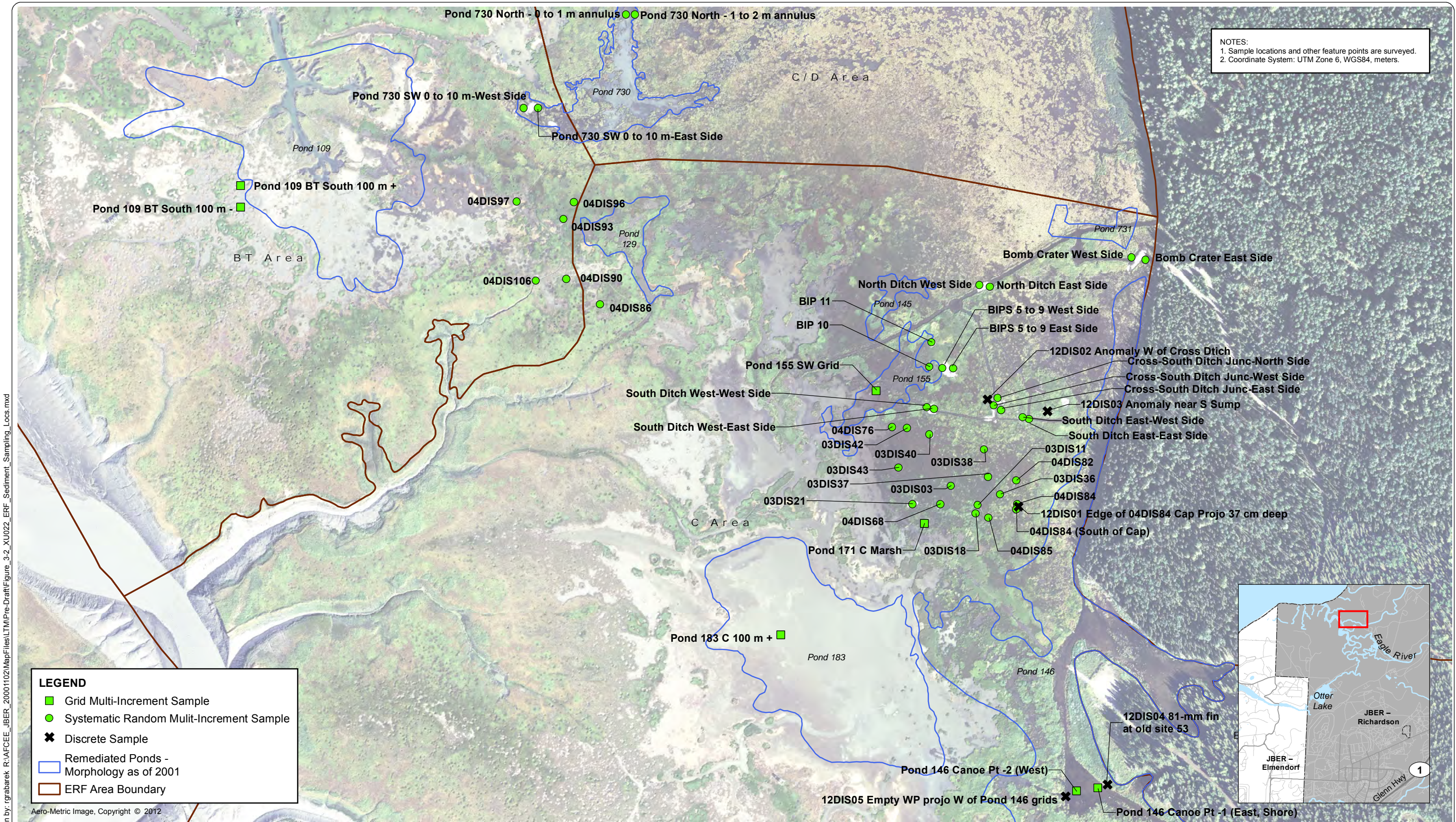
XU022 CAP LOCATIONS

2012-2013 Remedial Action Summary Report
XU022 – Operable Unit C, Eagle River Flats
Joint Base Elmendorf-Richardson, Alaska

Figure
3-1



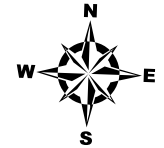
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LEGEND

- Grid Multi-Increment Sample
- Systematic Random Mult-Increment Sample
- ✕ Discrete Sample
- Remediated Ponds - Morphology as of 2001
- ERF Area Boundary

NOTES:
 1. Sample locations and other feature points are surveyed.
 2. Coordinate System: UTM Zone 6, WGS84, meters.

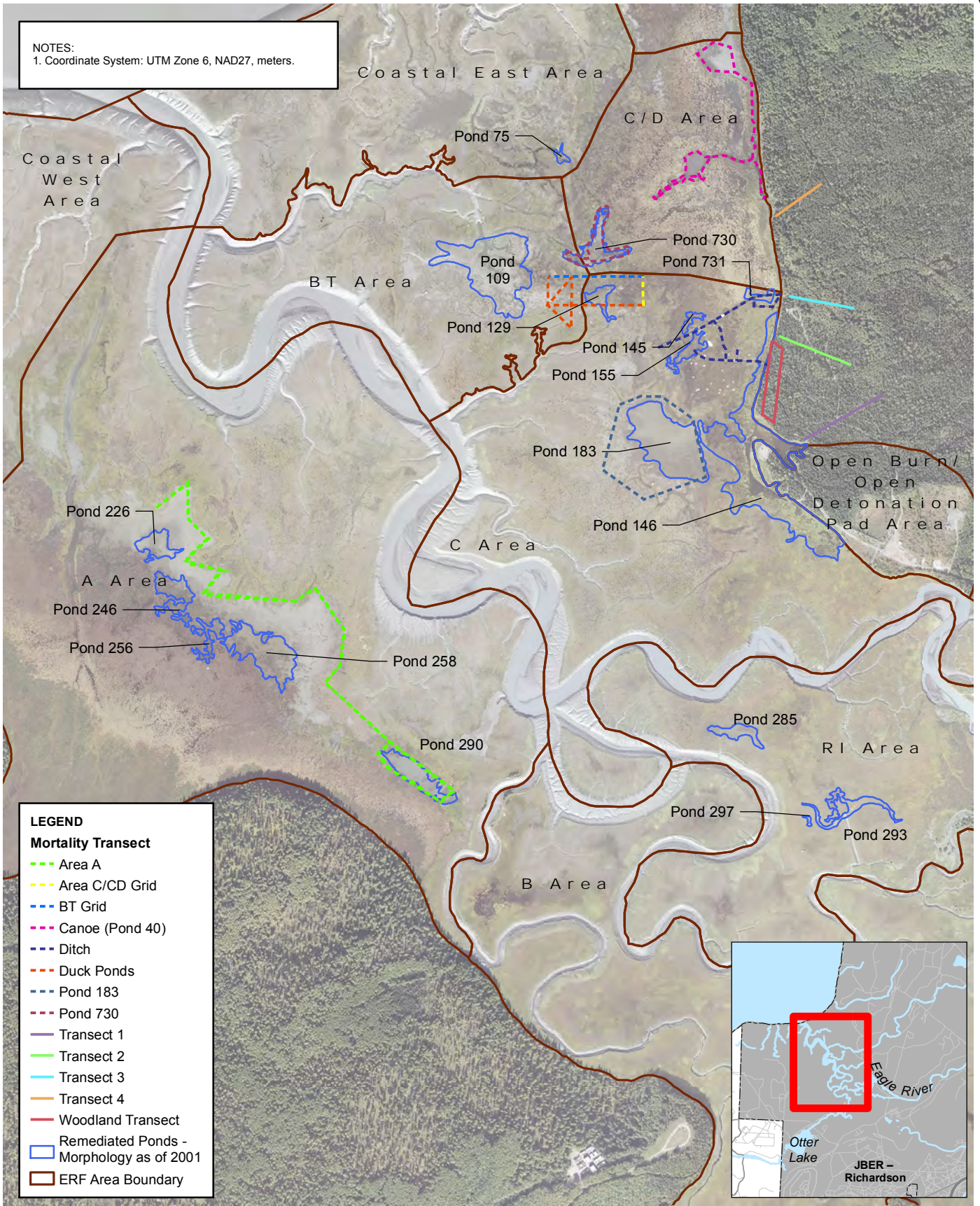


XU022 SEDIMENT SAMPLING LOCATIONS

2012-2013 Remedial Action Summary Report
 XU022 – Operable Unit C, Eagle River Flats
 Joint Base Elmendorf-Richardson, Alaska

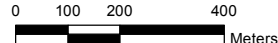
Figure
3-2

NOTES:
1. Coordinate System: UTM Zone 6, NAD27, meters.



Date: 04-Apr-2013 Drawn by: rgrabarek R:\AFCEE_JBER_20001102\MapFiles\TM\Pre-Draft\Figure_3-3_XU022_WaterfowlMonitoring.mxd

- LEGEND**
- Mortality Transect**
 - Area A
 - Area C/CD Grid
 - BT Grid
 - Canoe (Pond 40)
 - Ditch
 - Duck Ponds
 - Pond 183
 - Pond 730
 - Transect 1
 - Transect 2
 - Transect 3
 - Transect 4
 - Woodland Transect
 - Remediated Ponds - Morphology as of 2001
 - ERF Area Boundary



XU022 WATERFOWL MONITORING TRANSECT LOCATIONS

2012-2013 Remedial Action Summary Report
XU022 – Operable Unit C, Eagle River Flats
Joint Base Elmendorf-Richardson, Alaska

Figure
3-3

NOTES:
 1. Coordinate System: UTM Zone 6, NAD27, meters.
 2. Remediation and capping dates were not readily available for all ponds.

Pond ID: 75
Start Date: 5/12/2000
Years Treated: 1
Methods: Ditched

Pond ID: 730
Start Date: 5/25/1999
Years Treated: 2
Methods: Pumped

Pond ID: 109
Start Date: 4/21/1996
Years Treated: 5
Methods: Ditched

Pond ID: 129
Methods: Remediated

Pond ID: 731
Methods: Capped

Pond ID: 145
Methods: Capped

Pond ID: 155
Start Date: 4/21/1996
Years Treated: 3
Methods: Pumped

Pond ID: 183
Start Date: 5/21/1997
Years Treated: 4
Methods: Pumped

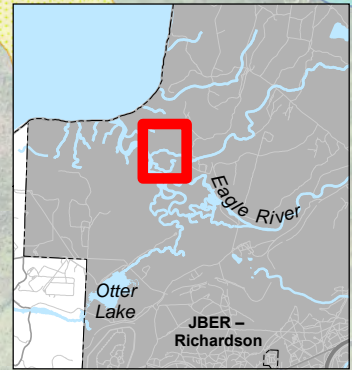
Pond ID: 146
Start Date: 10/1/1994
Years Treated: 4
Methods: Dredged/pumped

LEGEND

Vegetation Plot / Years Monitored

- ▲ 1992, 2004, 2012
- ▲ 1999, 2004, 2012
- ▲ 1992, 1999, 2004, 2012
- Remediated Ponds - Morphology as of 2001
- Pond System Prior to Remediation

0 100 200 400
 Feet



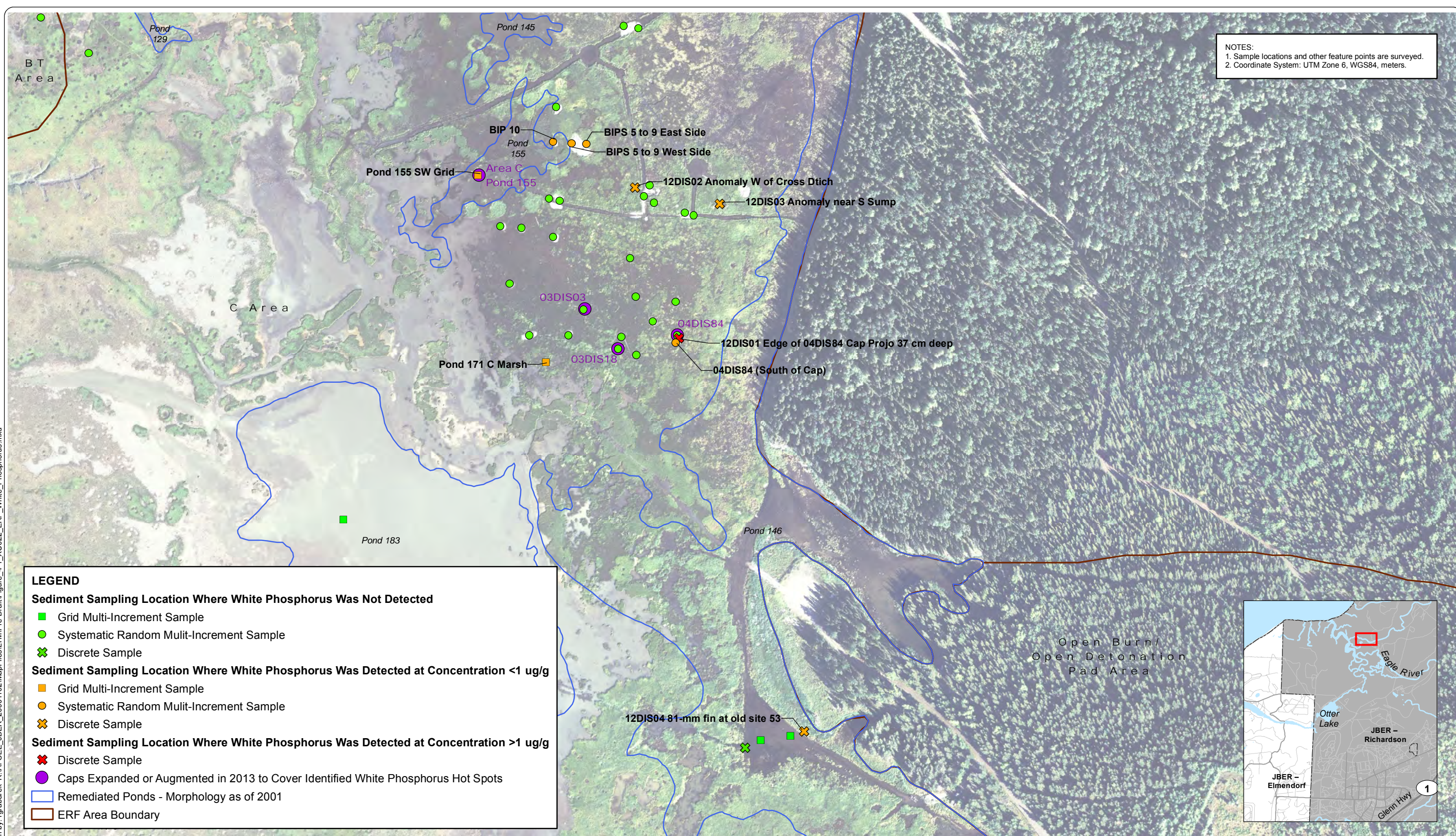
POND REMEDIATION INFORMATION AND VEGETATION PLOT LOCATIONS

2012-2013 Remedial Action Summary Report
 XU22 – Operable Unit C, Eagle River Flats
 Joint Base Elmendorf-Richardson, Alaska

Figure
3-4

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NOTES:
 1. Sample locations and other feature points are surveyed.
 2. Coordinate System: UTM Zone 6, WGS84, meters.

LEGEND

Sediment Sampling Location Where White Phosphorus Was Not Detected

- Grid Multi-Increment Sample
- Systematic Random Mult-Increment Sample
- ✕ Discrete Sample

Sediment Sampling Location Where White Phosphorus Was Detected at Concentration <1 ug/g

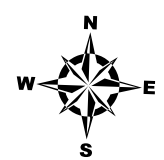
- Grid Multi-Increment Sample
- Systematic Random Mult-Increment Sample
- ✕ Discrete Sample

Sediment Sampling Location Where White Phosphorus Was Detected at Concentration >1 ug/g

- ✕ Discrete Sample
- Caps Expanded or Augmented in 2013 to Cover Identified White Phosphorus Hot Spots

▭ Remediated Ponds - Morphology as of 2001

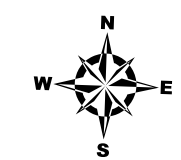
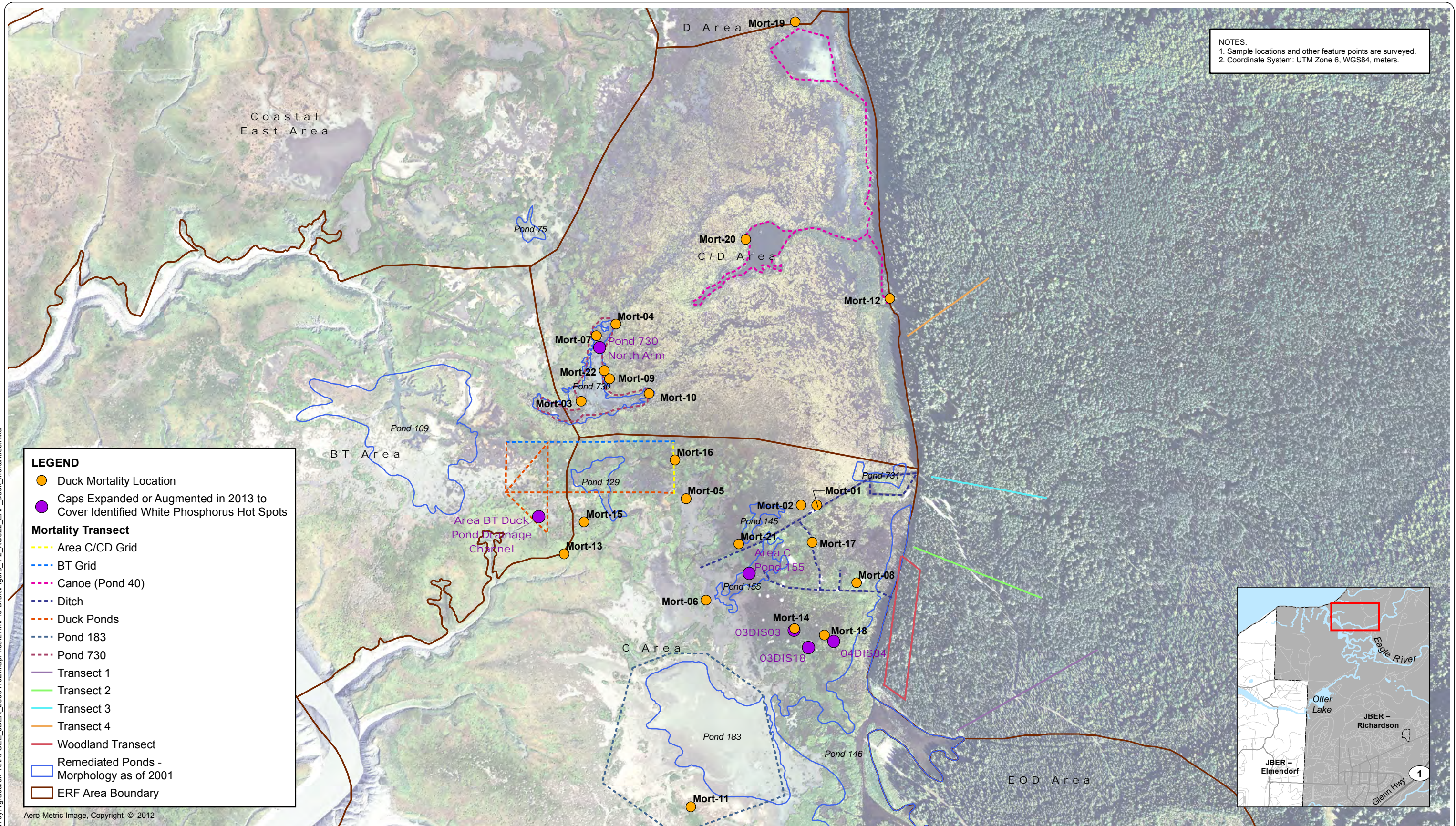
▭ ERF Area Boundary



XU022 WHITE PHOSPHORUS DETECTIONS
 2012-2013 Remedial Action Summary Report
 XU022 – Operable Unit C, Eagle River Flats
 Joint Base Elmendorf-Richardson, Alaska

Figure
4-1

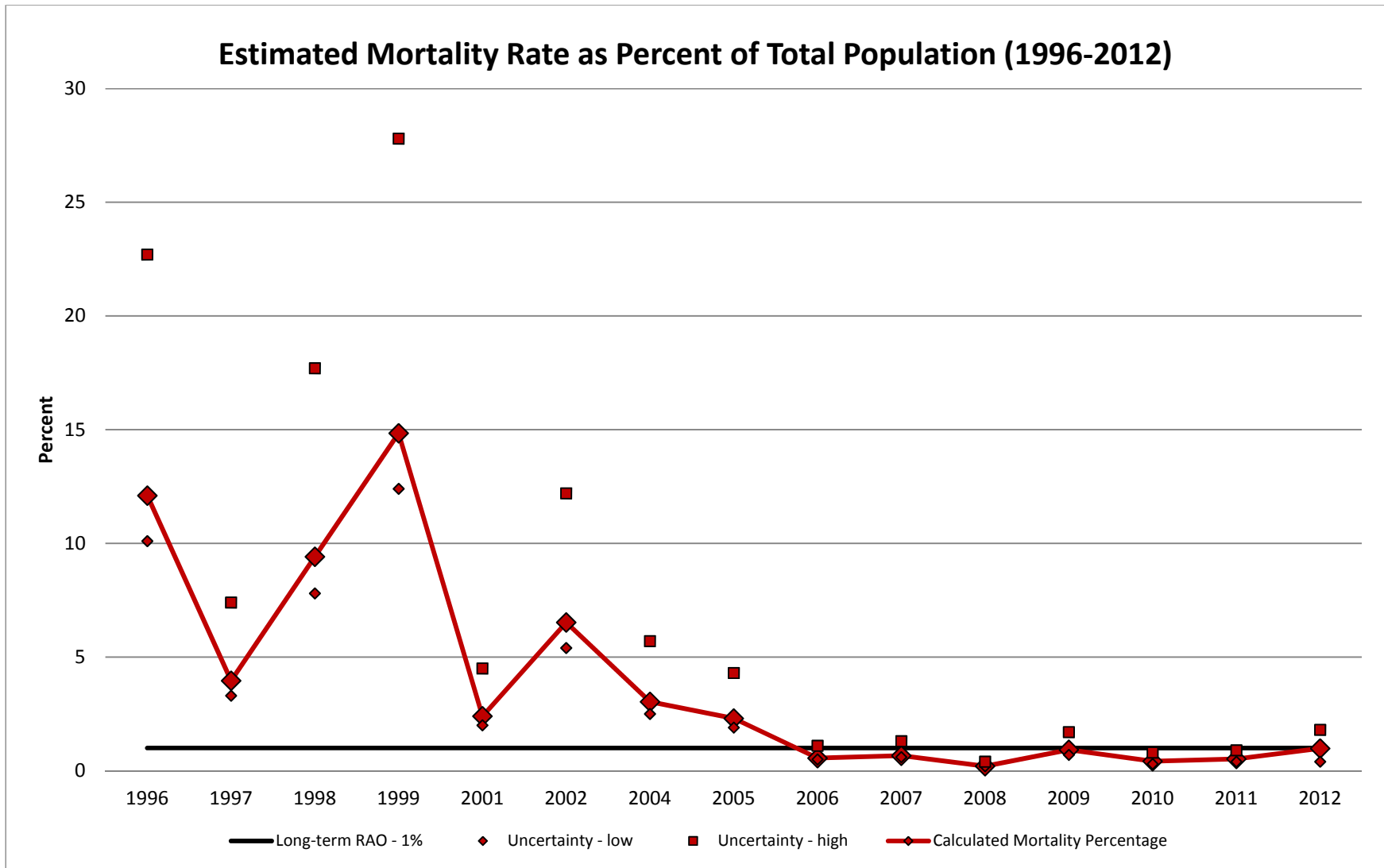
Date: 04 Apr 2013 Drawn by: rgrabarek R:\AFCEE_JBER_2000\102\MapFiles\LTMP\Pre-Draft\Figure_4-2_XU022_ERF_Duck_Mortalities.mxd



XU022 LOCATION OF DUCK MORTALITIES IN EAGLE RIVER FLATS, 2012

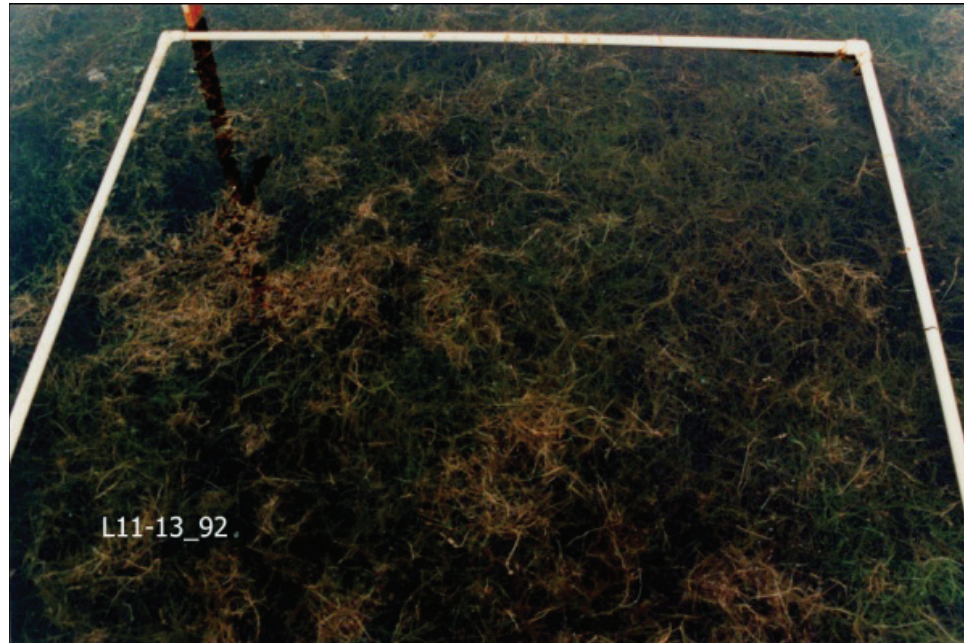
2012-2013 Remedial Action Summary Report
XU022 – Operable Unit C, Eagle River Flats
Joint Base Elmendorf-Richardson, Alaska

Figure 4-3: XU022 Mortality Rates Since 1996



Note:

Mortality monitoring not performed in 2000 and 2003



A. 1992



B. 1999



C. 2004



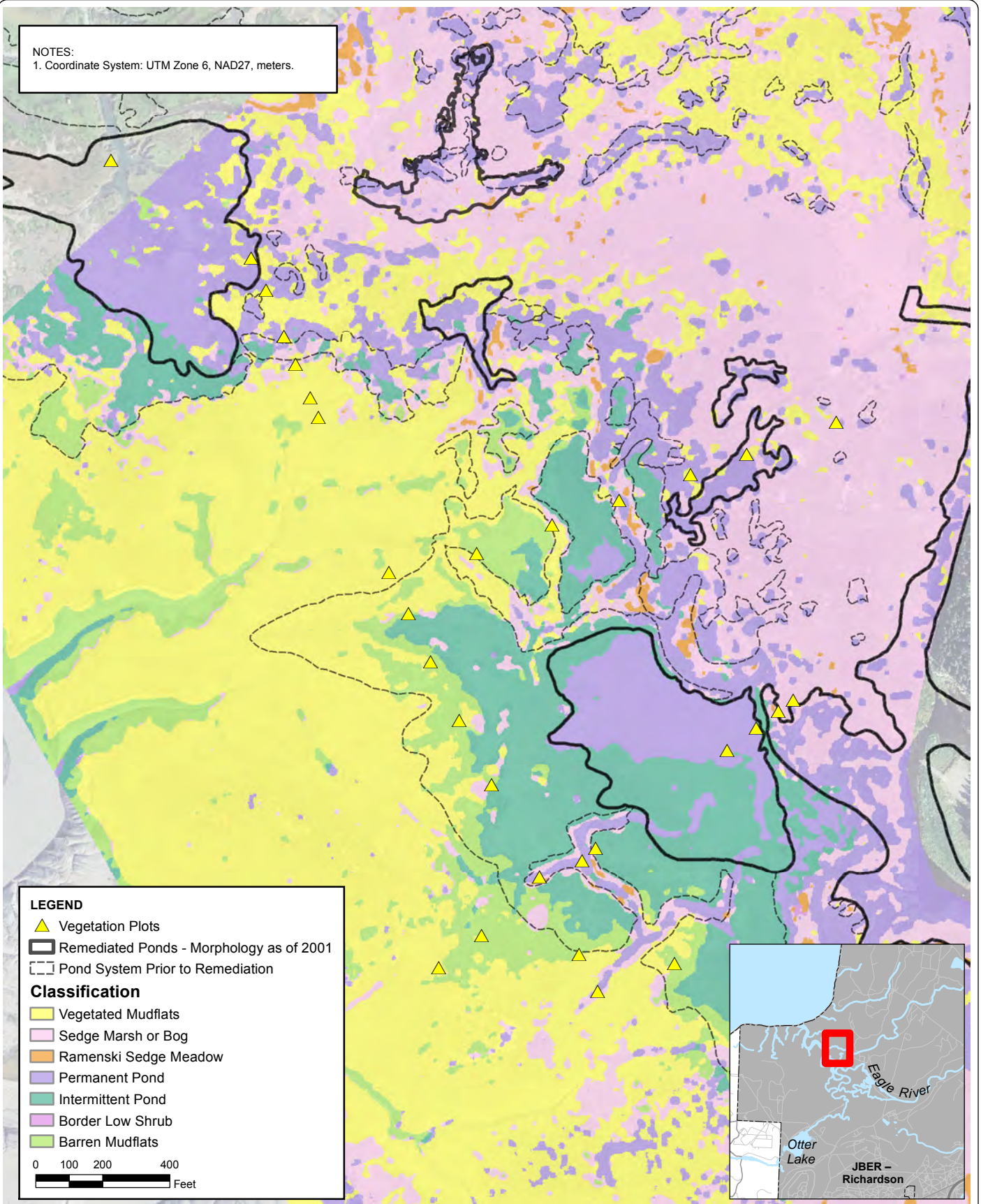
D. 2012



**PHOTOS OF PLOT L11-13 (REMEDIATED POND)
FROM ALL FOUR YEARS OF MONITORING**

2012-2013 Remedial Action Summary Report
XU022 – Operable Unit C, Eagle River Flats
Joint Base Elmendorf-Richardson, Alaska

NOTES:
1. Coordinate System: UTM Zone 6, NAD27, meters.



LEGEND

- ▲ Vegetation Plots
- ▭ Remediated Ponds - Morphology as of 2001
- - - Pond System Prior to Remediation

Classification

- Vegetated Mudflats
- Sedge Marsh or Bog
- Ramenski Sedge Meadow
- Permanent Pond
- Intermittent Pond
- Border Low Shrub
- Barren Mudflats

0 100 200 400
Feet



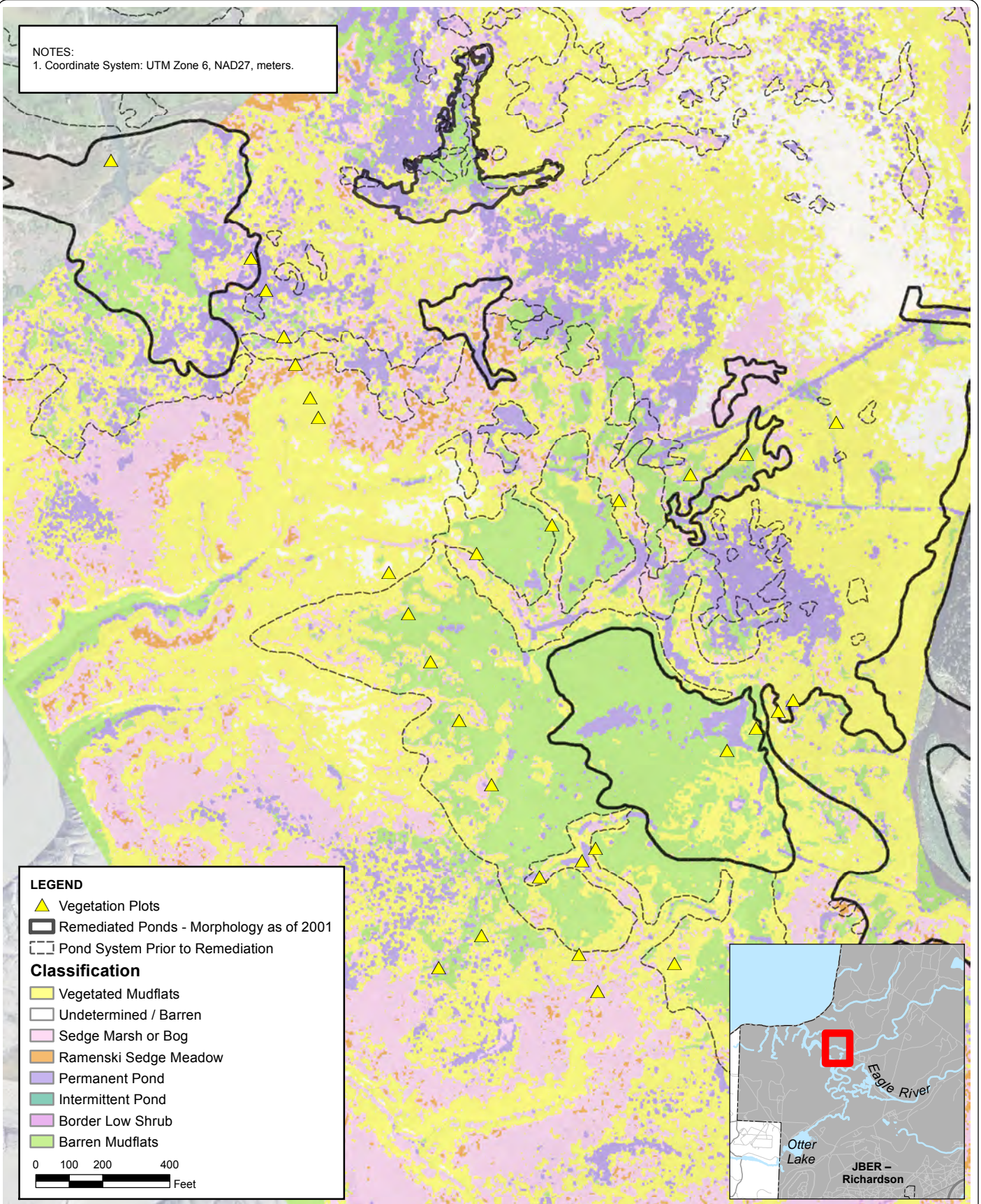
DIGITAL INTERPRETATION OF VEGETATION TYPES IN 1991 BASED ON AERIAL PHOTOGRAPHY (SUPERVISED CLASSIFICATION)

2012-2013 Remedial Action Summary Report
XU22 – Operable Unit C, Eagle River Flats
Joint Base Elmendorf-Richardson, Alaska

Figure
4-5

Date: 09 Apr 2013 Drawn by: bward R:\AFCEE_JBER_20001102\Analysis\ERF_ChangeDetection\MapFiles\ERF_Class\Figure_X-X_ERF_SupervisedClassification.mxd

NOTES:
1. Coordinate System: UTM Zone 6, NAD27, meters.



LEGEND

- ▲ Vegetation Plots
- ▭ Remediated Ponds - Morphology as of 2001
- - - Pond System Prior to Remediation

Classification

- Yellow: Vegetated Mudflats
- Light Green: Undetermined / Barren
- Pink: Sedge Marsh or Bog
- Orange: Ramenski Sedge Meadow
- Purple: Permanent Pond
- Blue: Intermittent Pond
- Pinkish-purple: Border Low Shrub
- Light Green: Barren Mudflats

0 100 200 400 Feet



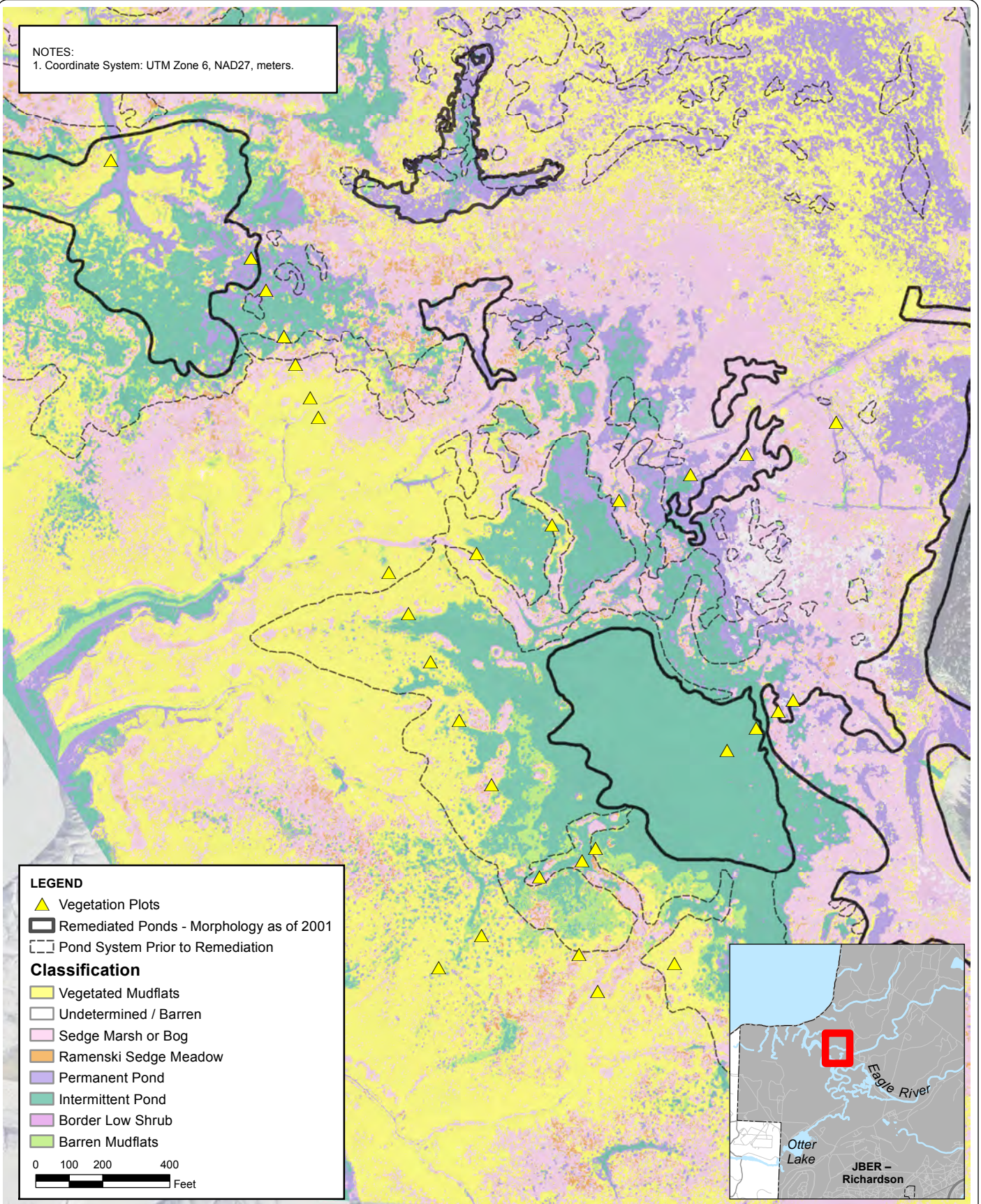
DIGITAL INTERPRETATION OF VEGETATION TYPES IN 2003 BASED ON AERIAL PHOTOGRAPHY (SUPERVISED CLASSIFICATION)

2012-2013 Remedial Action Summary Report
XU22 – Operable Unit C, Eagle River Flats
Joint Base Elmendorf-Richardson, Alaska

Figure
4-6

Date: 09 Apr 2013 Drawn by: bward R:\AFCEE_JBER_20001102\Analysis\ERF_ChangeDetection\MapFiles\ERF_Class\Figure_X-X_ERF_SupervisedClassification.mxd

NOTES:
1. Coordinate System: UTM Zone 6, NAD27, meters.



LEGEND

- Vegetation Plots
- Remediated Ponds - Morphology as of 2001
- Pond System Prior to Remediation

Classification

- Vegetated Mudflats
- Undetermined / Barren
- Sedge Marsh or Bog
- Ramenski Sedge Meadow
- Permanent Pond
- Intermittent Pond
- Border Low Shrub
- Barren Mudflats

0 100 200 400
Feet



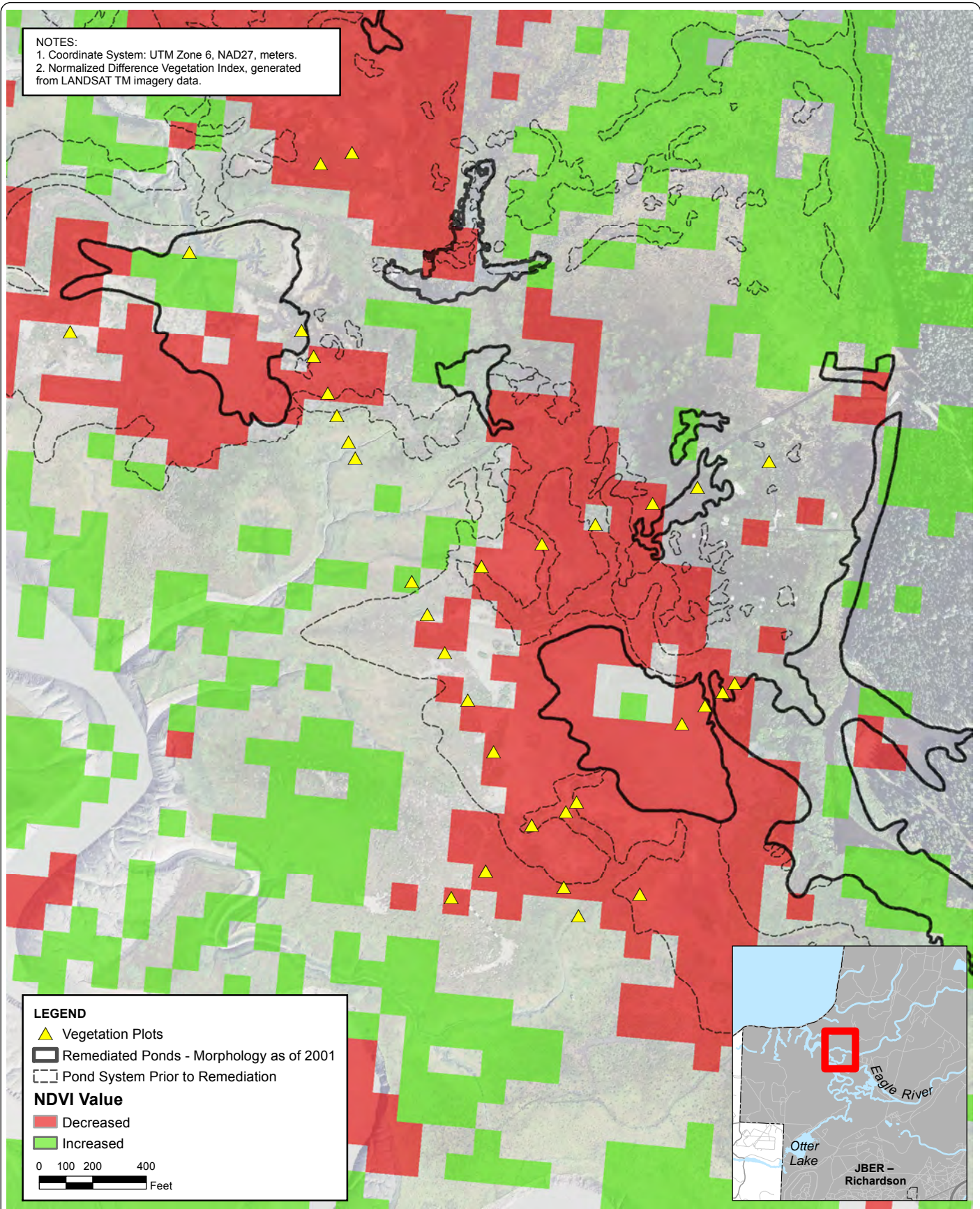
DIGITAL INTERPRETATION OF VEGETATION TYPES IN 2012 BASED ON AERIAL PHOTOGRAPHY (SUPERVISED CLASSIFICATION)

2012-2013 Remedial Action Summary Report
XU022 – Operable Unit C, Eagle River Flats
Joint Base Elmendorf-Richardson, Alaska

Figure
4-7

Date: 09 Apr 2013 Drawn by: bward R:\AFCEE_JBER_20001102\Analysis\ERF_ChangeDetection\MapFiles\ERF_Class\Figure_X-X_ERF_imageDiff.mxd

NOTES:
1. Coordinate System: UTM Zone 6, NAD27, meters.
2. Normalized Difference Vegetation Index, generated from LANDSAT TM imagery data.



LEGEND

- ▲ Vegetation Plots
- ▭ Remediated Ponds - Morphology as of 2001
- - - Pond System Prior to Remediation

NDVI Value

- Decreased
- Increased

0 100 200 400
Feet



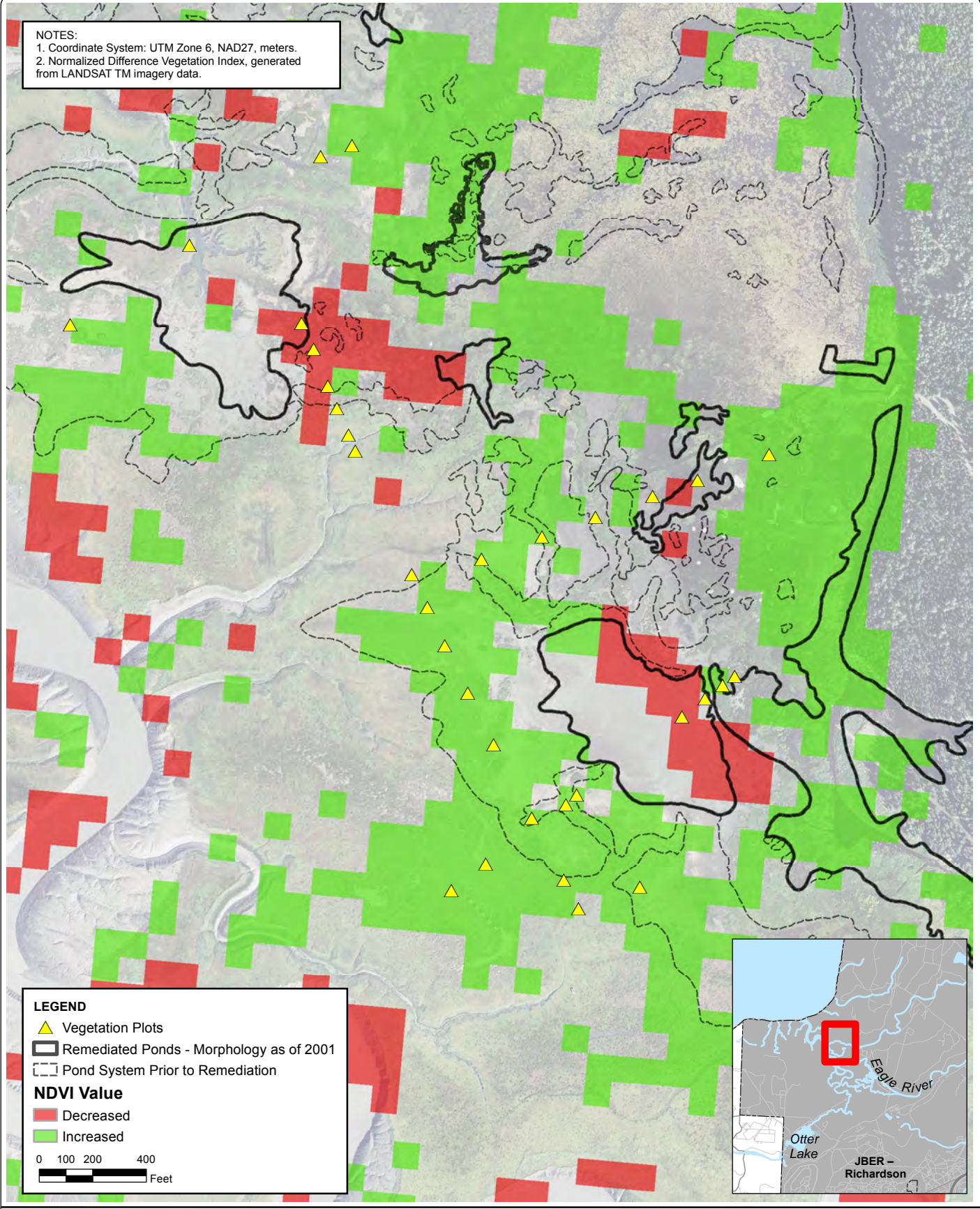
**RELATIVE CHANGE IN VEGETATION IN XU022
FROM 1986 TO 2003 BASED ON NDVI**

2012-2013 Remedial Action Summary Report
XU022 – Operable Unit C, Eagle River Flats
Joint Base Elmendorf-Richardson, Alaska

Figure
4-8

Date: 09 Apr 2013 Drawn by: bward R:\AFCEE_JBER_20001102\Analysis\ERF_ChangeDetection\MapFiles\ERF_Class\Figure_X-X_ERF_ImageDiff.mxd

NOTES:
1. Coordinate System: UTM Zone 6, NAD27, meters.
2. Normalized Difference Vegetation Index, generated from LANDSAT TM imagery data.



LEGEND

- ▲ Vegetation Plots
- ▭ Remediated Ponds - Morphology as of 2001
- - - Pond System Prior to Remediation

NDVI Value

- Decreased
- Increased

0 100 200 400
Feet

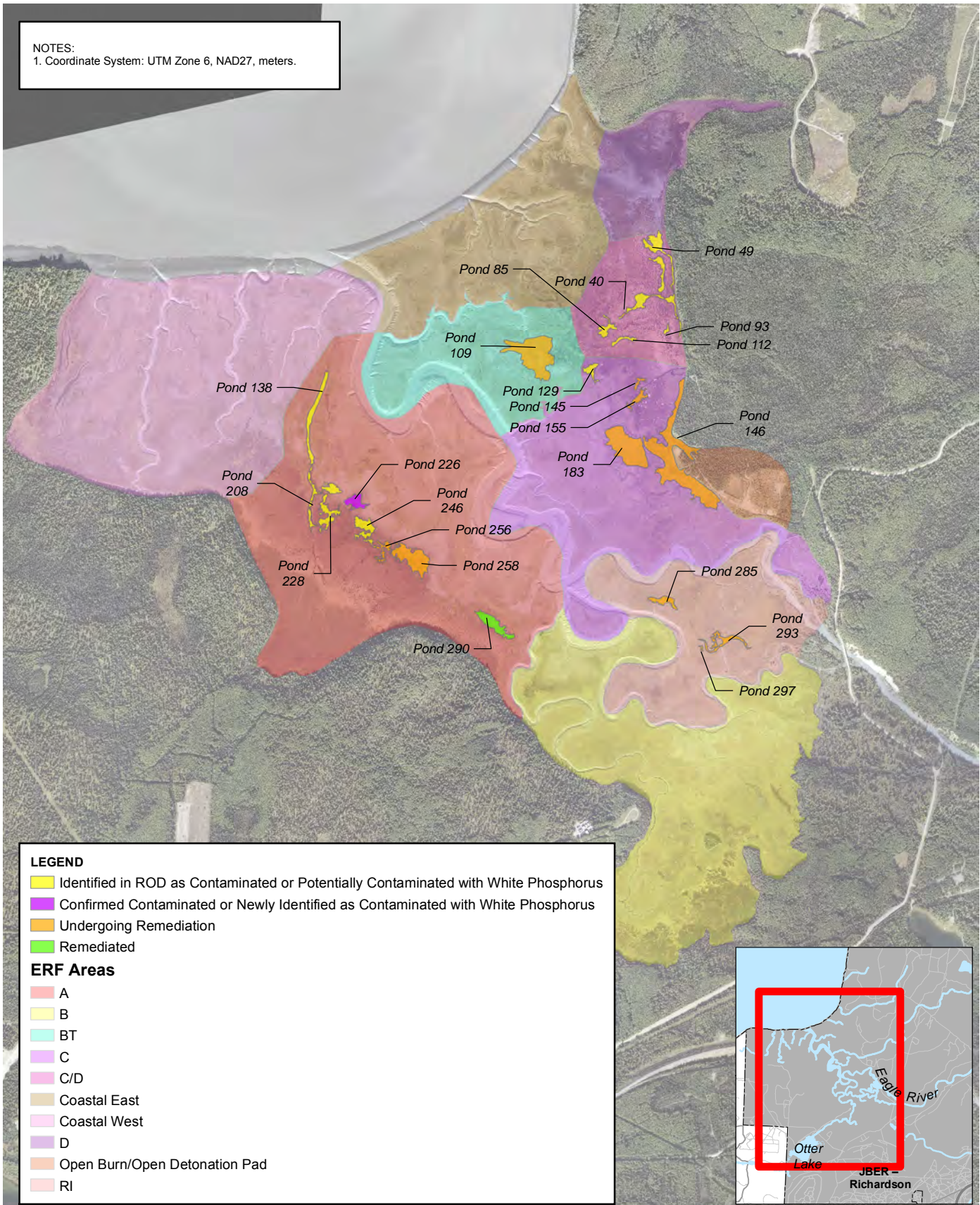


RELATIVE CHANGE IN VEGETATION IN XU022 FROM 2003 TO 2009 BASED ON NDVI

2012-2013 Remedial Action Summary Report
XU022 – Operable Unit C, Eagle River Flats
Joint Base Elmendorf-Richardson, Alaska

Figure
4-9

NOTES:
1. Coordinate System: UTM Zone 6, NAD27, meters.



LEGEND

- Identified in ROD as Contaminated or Potentially Contaminated with White Phosphorus
- Confirmed Contaminated or Newly Identified as Contaminated with White Phosphorus
- Undergoing Remediation
- Remediated

ERF Areas

- A
- B
- BT
- C
- C/D
- Coastal East
- Coastal West
- D
- Open Burn/Open Detonation Pad
- RI

Date: 04 Apr 2013 Drawn by: rgrabarek R:\AFCEE\JBER_20001102\MapFiles\TMI\Pre-Draft\Figure_5-1_XU022_PondStatus_1998.mxd




0 100 200 400

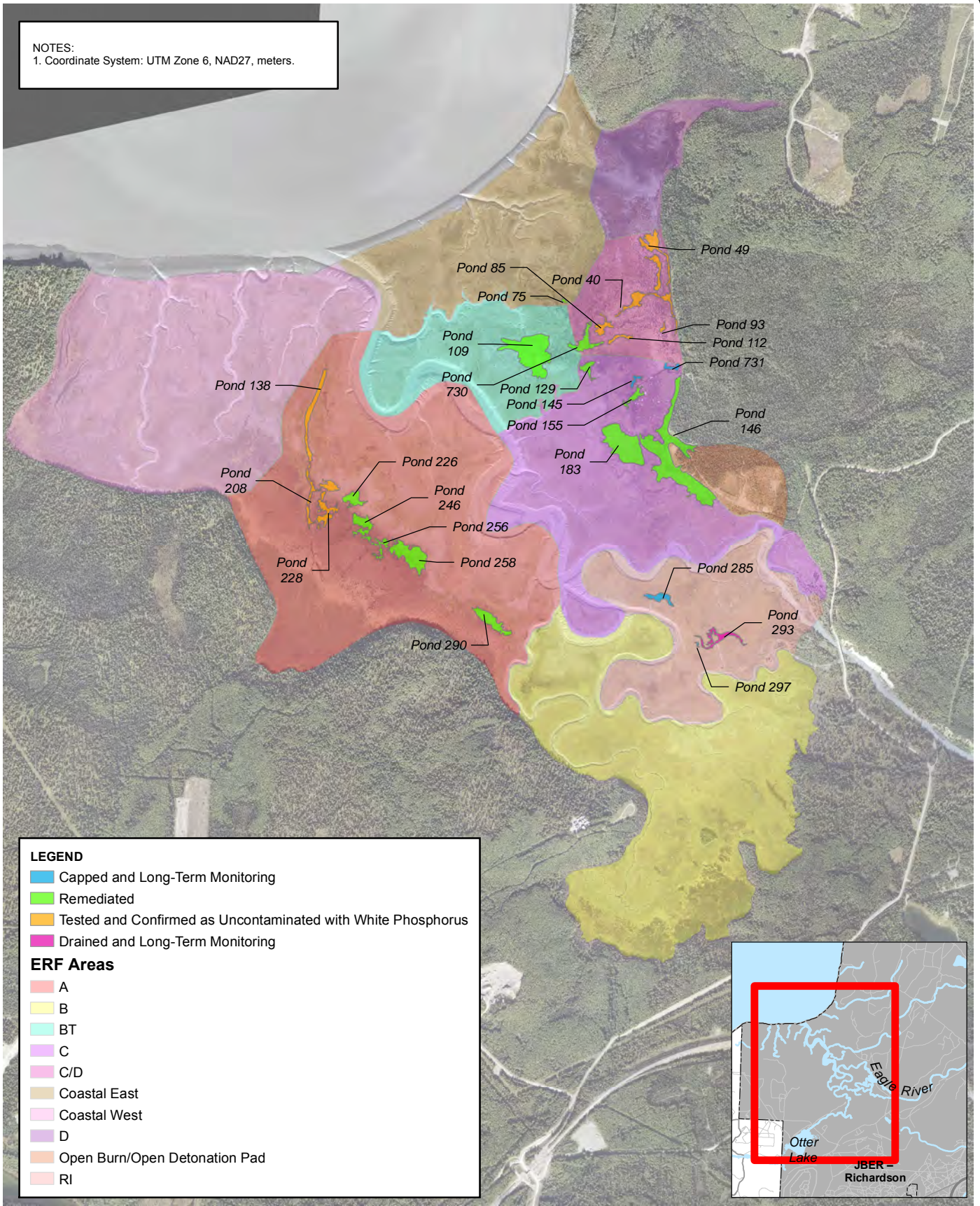


Meters

**XU022 POND STATUS, 1998
(AT SIGNING OF THE ROD)**
2012-2013 Remedial Action Summary Report
XU022 – Operable Unit C, Eagle River Flats
Joint Base Elmendorf-Richardson, Alaska

Figure
5-1

NOTES:
1. Coordinate System: UTM Zone 6, NAD27, meters.



Date: 04 Apr 2013 Drawn by: rgrabarek R:\AFCEE\JBER_20001102\MapFiles\TMI\Pre-Draft\Figure_5-2_XU022_PondStatus_2012.mxd



0 100 200 400 Meters

XU022 POND STATUS, 2012

2012-2013 Remedial Action Summary Report
XU022 – Operable Unit C, Eagle River Flats
Joint Base Elmendorf-Richardson, Alaska

Figure
5-2

Appendix A
Memorandum to the Site File, Operable Unit C –
Eagle River Flats Impact Area, 23 November, 2011

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**DEPARTMENT OF THE AIR FORCE
673D AIR BASE WING
JOINT BASE ELMENDORF-RICHARDSON ALASKA**

23 November 2011

MEMORANDUM TO THE SITE FILE

Site Name and Location

Operable Unit C - Eagle River Flats Impact Area
Joint Base Elmendorf-Richardson

Statement of Purpose

The purpose of this Memorandum to the Site File is to present a non-significant or minor change to the Record of Decision (ROD) for Eagle River Flats (ERF) - Operable Unit C (OUC), now part of Joint Base Elmendorf-Richardson (JBER). This site was originally part of Fort Richardson, Alaska but, in October 2010, Fort Richardson was joined with Elmendorf Air Force Base to become Joint Base Elmendorf-Richardson.

This Memorandum to the Site File was prepared in accordance with the *EPA Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents (July 1999, Section 7.3.1 and Highlight 7-1)*, and will become part of the administrative record for OUC and JBER.

Regulatory History, Site Description, and Selected Remedy

Regulatory History

Fort Richardson, Alaska was proposed for the National Priorities List (NPL) in June 1993 and placed on the NPL in August 1994. On December 20, 1994, a Federal Facilities Agreement negotiated between the US Army, EPA, and ADEC established the framework and schedule for all CERCLA activities conducted at Fort Richardson. 125 potential source areas were identified at Fort Richardson and 79 of those were selected for No Further Action. The remaining 46 source areas were either grouped into one of four operable units (A-D) or were designated for parallel-track actions pursuant to a Two Party Agreement between the Army and ADEC. OUC, a fifth operable unit, was designated in the OUD ROD signed in 2000. Eagle River Flats Impact Area and the adjoining OB-OD Pad (a RCRA unit) were designated as Operable Unit C.

The ROD for OUC was signed by the US Army, US Environmental Protection Agency (EPA) and the Alaska Department of Environmental Conservation (ADEC) on September 30, 1998. It was prepared in accordance with Section 117 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and Chapter 40 of the Code of Federal Regulations (CFR), Section 300.430 of the National Oil and Hazardous Substances Pollution Contingency Plan.

Site Description

ERF is an artillery and mortar impact area located at the mouth of Eagle River where it flows into Knik Arm. The ERF is an estuarine salt marsh approximately 2,160 acres in size. ERF has been in use by the US Army since the early 1940's.

Unusually high mortality of dabbling waterfowl at ERF was discovered in the early 1980's, resulting in a series of studies to determine the cause. Initial investigations began around 1982, but it was not until late in 1990 that white phosphorus (WP) was determined to be the causative agent in the death of dabbling waterfowl. WP particles had been dispersed into the impact area during detonation of specific smoke munitions. Dabbling waterfowl, such as teal and mallards that feed mainly on seeds and insects in shallow pond bottom sediments, consumed WP particles while grazing for food, which resulted in mortality.

Selected Remedy

The selected remedy outlined in the ROD was to reduce white phosphorus contamination by draining ponds and other water bodies with pumps in an effort to dry out the contaminated sediments causing the WP to sublimate and oxidize.

Two temporal remedial action objectives (RAOs) were established for OUC as follows:

- 1) Within 5 years of the ROD being signed, reduce the dabbling duck mortality rate attributable to white phosphorus to 50 percent of the 1996 mortality rate attributable to white phosphorus. Radio tracking and aerial surveys suggest that about 1,000 birds died from white phosphorus at ERF in 1996. Therefore, the allowable number of duck deaths from white phosphorus would be approximately 500.
- 2) Within 20 years of the ROD being signed, reduce the mortality attributable to white phosphorus to no more than 1 percent of the total annual fall population of dabbling ERF ducks. Currently, that population is about 5,000. Therefore, the allowable number of duck deaths from white phosphorus would be approximately 50. This long-term goal could be adjusted based on future population studies conducted during the monitoring program.

The original sequence and schedule for monitoring and maintenance activities that were to be conducted at ERF are presented in Tables 7-1 and 7-2 of the OUC ROD. However, the schedule that was published in the ROD was primarily for cost estimation purposes, and the agencies understood that minor modifications would almost invariably be necessary as active remediation progressed.

Remedial action (active pond pumping/draining) began in 1999. The short-term RAO was achieved after one year of the start of remedial action and the long-term RAO was first achieved in 2006, as well as during subsequent years. The consistent downward trend in mortality since year 2000 is a strong indication of the success of the selected remedy, as well as the strength and reliability of the data. The mortality monitoring data used as a basis for this decision is presented in Table 1. The 2011 data set is not yet complete, but 14 waterfowl mortalities were detected and attributed to white phosphorus. Based on preliminary waterfowl population data, the projected mortality rate for 2011 is 0.3%, less than the long-term RAO.

Table 1. Dabbling Duck Mortalities - 2004 through 2010

| ITEM | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|-----------------------------------|-------|-------|-------|-------|-------|-------|-------|
| Observed Dabbling Duck Population | 3,659 | 2,130 | 4,479 | 5,279 | 5,895 | 4,760 | 5,245 |
| Observed Mortality | 111 | 49 | 25 | 35 | 12 | 44 | 22 |
| Mortality Rate | 3.0% | 2.3% | 0.6% | 0.7% | 0.2% | 0.9% | 0.4% |

Basis for this Document

During a meeting in January 2008, the Remedial Project Managers (RPM) agreed that in light of the accelerated achievement of the long-term RAO, as well as previously agreed to modifications to the treatment schedule, the remedial action schedule outlined in the ROD needed to be updated. Based on this agreement, a modified schedule was incorporated into the work plan for the 2008 season and later incorporated in Table 1.1 of the *2009 Long Term Monitoring Work Plan for Operable Unit C - Eagle River Flats*. The following sections discuss the major components of the selected remedy and compare the ROD schedule to the currently proposed LTM schedule (see Table 2).

Element M1 (Waterfowl telemetry and mortality monitoring): The initial estimate was that active pond draining would be completed within 5 years of signing the ROD (1999-2003) and that mortality monitoring would be conducted for 3 additional years to ensure the RAOs had been achieved. Subsequent monitoring was to be conducted in years 10, 15, and 20. However, active pond draining was conducted from 1999 through 2007, necessitating continued mortality monitoring. Additionally, as documented in this memorandum, the RPMs agreed that 7 years of mortality monitoring would be necessary to establish a long-term trend. The currently proposed LTM schedule is to conduct annual mortality monitoring through 2012 and then during years preceding 5-year reviews. Mortality data collection is conducted in the fall and the data is generally not processed until the December time frame. Since the follow-on 5-year review date is in February 2018, it will be necessary to conduct monitoring (as well as Elements M2 and M3) in 2016 to ensure the data is available in 2017 for incorporation into the 5-year review.

Element M2 (Aerial waterfowl surveys): Since this element is essential to determining waterfowl mortality, the rationale for the change in schedule for this element is the same as discussed for element M1.

Element M3 (White phosphorus monitoring of treated ponds): The schedule for this element corresponds to the schedule for element M1 and therefore the rationale for the change in schedule for this element is the same as discussed for element M1.

Element M4 (White phosphorus composite sampling in untreated areas): The ROD estimated that sampling to detect WP in untreated areas would be conducted for 5 years (1999-2003). The Army conducted sampling for 6 years, but as remediation continued the amount of untreated area decreased to the point that elements M4 and M3 became essentially the same effort. DOD has met the requirements of ROD by periodically conducting this task.

Element M5 (GIS database management): GIS database management has tracked with the schedule for Element M1 as the ROD required this element to be conducted as long as site-

specific monitoring data was being collected. GIS database management is also a key component to managing institutional controls at this site and thus the schedule will continue to track with the other data elements.

Element M6 (Ponds survey, ground truthing, limited aerial survey): This element was initially incorporated as some means to assess mortality until the long-term RAO was achieved (projected to be 2018). However, the scope of this element is not defined in the ROD and the meaning of the term “limited” is therefore unclear. The long-term RAO has been consistently met since 2006 and monitoring is being conducted under Elements M1, M2, and M3. Therefore this element of the remedy is no longer necessary. Because of redundancy in the schedule between this and other elements and because the long-term RAO was achieved starting in 2006 as opposed to the project 2018 date, this element will be removed from the ROD schedule.

Element M7 (Aerial photography and interpretation): The timing for conducting this element has not tracked with the proposed schedule in the ROD (every other year for 10 years) for the same reasons noted for Element M1. However, DOD has met the requirements of ROD by periodically conducting this task. Aerial photography was collected during the initial 6 years of active treatment and then again in 2008 and 2010. The imagery was to be used to assess changes to vegetation and habitat as defined by Element M8. The proposed schedule is to collect imagery again in 2012 and develop updated habitat/vegetation maps under Element M8.

Element M8 (Mapping of physical habitat changes and vegetation rebound): The timing for conducting this element has not tracked with the ROD schedule. However, DOD has met the substantive requirements of the ROD by periodically assessing changes and updating the habitat maps. Initial maps were developed in 2000 and updated in 2004 and 2008, with the proposal to update the maps again in 2012. No dramatic or rapid changes to the habitat within ERF have been noted, nor are they expected. Unless changes in land use are implemented, 2012 will be the last time the maps would be updated.

Element T1 (Pond pumping treatment): The estimate at the time the ROD was written was that it would take 5 years of dewatering the ERF wetland to remediate WP contamination. Wet conditions (high precipitation and flooding tides) during several years resulted in limited sediment drying, and also previously undetected WP was discovered in the C and C/D areas. These areas were also difficult to drain and sediment drying was slower than anticipated. These factors lead to the decision to extend active pond pumping through the 2007 field season. This decision resulted in subsequent modification to the schedules for almost all other elements of the remedy.

Element T2 (Cap and fill application): According to the ROD schedule, cap and fill operations were supposed to take place during the final year (2003) of pond pumping. However, as discussed, pond pumping treatment (T1) was extended through 2007 and capping did not take place until that time. The proposed schedule would extend cap and fill operations through 2012 and then only during years prior to the 5-year reviews, as necessary, to address any newly identified WP-contaminated areas that were not successfully remediated.

Element T3 (Cap and fill integrity inspection): The rationale for the change in schedule for this element is the same as discussed for element T2.

Element T4 (Hazing): Active hazing was conducted in 1998 and in 1999 using propane cannons, but because observations indicated that equipment and personnel operating within the treatment area had the affect of deterring bird use of the ERF area the process was discontinued.

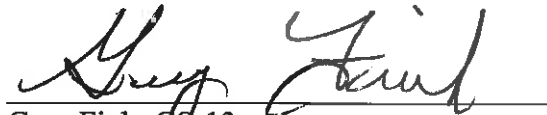
Documentation of Minor Modifications to the ROD Schedule

This memorandum documents the decision by the RPMs to update and the original remedial action schedule outlined in the ROD. These minor modifications were necessary to ensure the full effectiveness of the selected remedy and do not represent a change to the substantive requirements as outline in the ROD. The currently agreed to schedule is presented in Table 2.

The RPMs agree that if the mortality rate is consistently less than the 1% identified in the ROD for seven years ending in 2012, then mortality monitoring will only be conducted at five year intervals after 2012. These five year monitoring events will precede each successive CERCLA Five Year Review. Thus, mortality monitoring will be conducted again in 2016, but not in the intervening years (2013 – 2015). Changes to the monitoring frequency may be initiated by the RPMs if site conditions change or if the protectiveness of the remedy is in question.

This change to the OUC ROD does not significantly change or fundamentally affect the remedy selected in the ROD. Therefore, no public comment is required.

Approved by:


Gary Fink, GS-13
Chief, Restoration Section

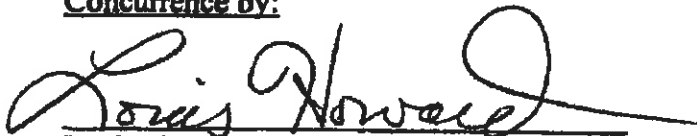
30 Nov 11
Date

Concurrence by:


Bill Adams
US Environmental Protection Agency, Region 10

11-28-11
Date

Concurrence by:


Louis Howard
Alaska Department of Environmental Conservation

11-25-2011
Date

Table 2: Comparison of 1998 ROD Schedule to the Currently Proposed LTM Schedule


| Monitoring | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|--|--|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| M1. Waterfowl telemetry and mortality study | X | X | X | X | X | X | X | X | | X | | | | | X | | | | | X |
| | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | | X | |
| M2. Aerial waterfowl surveys | X | X | X | X | X | X | X | X | | X | | | | | X | | | | | X |
| | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | | X | |
| M3. White phosphorus monitoring of treated ponds | X | X | X | X | X | | | | | | | | | | | | | | | |
| | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | | X | |
| M4. White phosphorus composite sampling in untreated areas | X | X | X | X | X | | | | | | | | | | | | | | | |
| | X | X | X | X | X | X | | | | | | | | | | | | | | |
| M5. GIS database management | X | X | X | X | X | X | X | X | | X | | | | | X | | | | | X |
| | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | | X | |
| M6. Ponds survey, ground truthing, limited aerial survey | This element has been removed from the revised schedule. | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| M7. Aerial photography and interpretation | X | | X | | X | | X | | X | | | | | | | | | | | |
| | X | X | X | X | X | X | | | | X | | X | | X | | | | | X | |
| M8. Mapping of physical habitat changes and vegetation rebound | X | | | X | | | | X | | | | X | | | | X | | | | X |
| | | X | | | | X | | | | X | | | | X | | | | | X | |
| Treatment | | | | | | | | | | | | | | | | | | | | |
| T1. Pond pumping treatment (active) | X | X | X | X | X | | | | | | | | | | | | | | | |
| | X | X | X | X | X | X | X | X | X | | | | | | | | | | | |
| T2. Cap and fill application | | | | | X | | | | | | | | | | | | | | | |
| | | | | | | | | | X | X | X | X | X | | X | | | | X | |
| T3. Cap and fill integrity inspection | | | | | X | X | X | X | | X | | | | | X | | | | | X |
| | | | | | | | | | X | X | X | X | X | | X | | | | X | |
| T4. Hazing (contingency) | X | X | X | X | X | | | | | | | | | | | | | | | |
| | X | | | | | | | | | | | | | | | | | | | |

Legend

| | |
|-------------------|--|
| ROD Schedule | From 1998 ROD, Table 2. Schedule of Activities for Selected Alternative |
| Proposed Schedule | Adapted from the 2009 LTMP, Table 1.1. Planned Long-Term Monitoring Activities |

Appendix B
Field Logs

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| | | | | | |
|--|-----------------------------------|---|-------------------------|--|-------------------------|
|  | | ERF DAILY REPORT SOP CQMM-017, Version 1 (ATTACH ADDITIONAL SHEETS IF NECESSARY) | | REPORT DATE :8/14/12 REVISION NO: 1 REVISION DATE: REPORT NO: | |
| CONTRACT NAME: JBER CONTRACT NO: FA8903-07-D-8589 | | PROJECT NAME / LOCATION: Eagle River Flats - Ft. Richardson, Anchorage AK | | | |
| TASK ORDER NO: 0080021 | | PROJECT DESCRIPTION: Waterfowl Mortality Survey | | | |
| PROJECT NUMBER: 457958 | | PROJECT MANAGER: Mike Whitney | | SITE QC MANAGER: Margaret Dombrowski | |
| SITE MANAGER: Stacey Re' | | SAFETY MANAGER: | | Josh Painter | |
| AM WEATHER: partly cloudy, breeze | | PM WEATHER: partly cloudy, breeze | | MAX TEMP: 61 | MIN TEMP: 59 |
| SUMMARY OF WORK PERFORMED TODAY | | | | | |
| Site Introduction, tour, start mob pump equipment | | | | | |
| HEALTH AND SAFETY REPORT | | | | | |
| SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted): | | | | | |
| TAILGATE TOPICS: Site intro, wildlife and remaining on UXO-cleared paths | | | | | |
| OPERATIONS / PRODUCTION REPORT | | | | | |
| WORK FORCE – CONTRACTOR AND SUBCONTRACTOR | | | | | |
| Company | | Cumulative Total of Work Hours From Previous Report | Total Hours Today | Total Work Hours From Start of Field Effort | |
| CH2MHILL – Stacey Ré, Mike Whitney, Rich Horn, Corey Schwabenlander, Leah Waller, Mike Landon, Kristen Stevens (2 each) | | 0 | 14 | 14 | |
| CRRREL- Ann Staples-2, Jon Zufelt-2, Mike Walsh-8, Marc Beede-8 | | 0 | 20 | 20 | |
| BSE – Jeff Bryant-4 | | 0 | 4 | 4 | |
| Total Hours worked project to date | | 0 | 32 | 38 | |
| EQUIPMENT ON HAND | | | | | |
| Description of Equipment | | Make/Model/Manufacturer | Equipment ID Number | Inspection Performed By | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| COMMENTS (acceptance status, inspection findings, etc.): | | | | | |
| | | | | | |
| | | | | | |
| CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to access, site or weather conditions, etc.): | | | | | |
| <ul style="list-style-type: none"> None | | | | | |
| VISITORS AND DISCUSSIONS: CH team met on site for tour and site introduction. | | | | | |
| QUALITY CONTROL REPORT | | | | | |
| MATERIALS DELIVERED TO JOB SITE | | | | | |
| Quantity/Volume/Weight | Description of Materials Received | | Make/Model/Manufacturer | Material Lot Number | Inspection Performed By |
| | | | | | |
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COMMENTS (acceptance status, inspection findings, etc.):

INSPECTIONS PERFORMED

| Transects Inspected | Number of Mortalities Recorded | Mortality ID #(s) | Type of Waterfowl (if known) |
|----------------------------|---------------------------------------|--------------------------|-------------------------------------|
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ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes,, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as "not applicable". Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

Stacey K. Ré

9/18/2012

PREPARER'S SIGNATURE

DATE

PHOTOGRAPHS TAKEN THIS DATE:

SUBJECT : Site from EOD OP Fagan tower

PHOTO LOG NO.S:

http://www.wunderground.com/history/airport/PABV/2012/8/24/DailyHistory.html?req_city=NA&req_state=NA&req_statename=NA



CONTRACT NAME: JBER
 CONTRACT NO: FA8903-07-D-8589

ERF DAILY REPORT
 SOP CQMM-017, Version 1
 (ATTACH ADDITIONAL SHEETS IF NECESSARY)

REPORT DATE :8/15/12
 REVISION NO: 1
 REVISION DATE:
 REPORT NO:

| | | | |
|-----------------------------------|---|------------------|---------------------|
| TASK ORDER NO: 0080021 | PROJECT NAME / LOCATION: Eagle River Flats - Ft. Richardson, Anchorage AK | | |
| PROJECT NUMBER: 457958 | PROJECT DESCRIPTION: Waterfowl Mortality Survey | | |
| PROJECT MANAGER: Mike Whitney | | SITE QC MANAGER: | Margaret Dombrowski |
| SITE MANAGER: Stacey Re' | | SAFETY MANAGER: | Josh Painter |
| AM WEATHER: partly cloudy, breeze | PM WEATHER: partly cloudy, breeze | MAX TEMP: 63 | MIN TEMP: 56 |

SUMMARY OF WORK PERFORMED TODAY

Transect UXO clearance, Duck Mortality Survey – Area C; Pump placement and setup

HEALTH AND SAFETY REPORT

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted):

TAILGATE TOPICS:

Wildlife and remaining on UXO-cleared paths

OPERATIONS / PRODUCTION REPORT

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

| Company | Cumulative Total of Work Hours From Previous Report | Total Hours Today | Total Work Hours From Start of Field Effort |
|---|---|-------------------|---|
| CH2MHILL – Stacey Ré | 14 | 8 | 22 |
| CRRREL- Ann Staples-8, Jon Zufelt-8, Mike Walsh-9, Marc Beede-8 | 20 | 33 | 53 |
| BSE – Jeff Bryant | 4 | 8 | 12 |
| | | | |
| | | | |
| | | | |
| Total Hours worked project to date | 38 | 49 | 87 |

EQUIPMENT ON HAND

| Description of Equipment | Make/Model/Manufacturer | Equipment ID Number | Inspection Performed By |
|--------------------------|------------------------------|-------------------------|-------------------------|
| 2.5 yd loader | ? | 089021 | |
| Forklift | JLG lift/Model JLG534D 10-45 | Unit 5-322; S#160030537 | |
| | | | |
| | | | |

COMMENTS (acceptance status, inspection findings, etc.):

CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to access, site or weather conditions, etc.):

- None

VISITORS AND DISCUSSIONS:

- Loader and forklift delivery folks were met at gate and were on site briefly to deliver equipment.

QUALITY CONTROL REPORT

MATERIALS DELIVERED TO JOB SITE

| Quantity/Volume/Weight | Description of Materials Received | Make/Model/Manufacturer | Material Lot Number | Inspection Performed By |
|------------------------|-----------------------------------|-------------------------|---------------------|-------------------------|
| | | | | |
| | | | | |

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|--|--|--|--|--|
| | | | | |
| | | | | |
| | | | | |
| | | | | |

COMMENTS (acceptance status, inspection findings, etc.):

INSPECTIONS PERFORMED

| Transects Inspected | Number of Mortalities Recorded | Mortality ID #(s) | Type of Waterfowl (if known) |
|----------------------------|--------------------------------|-------------------|------------------------------|
| Area C – ditch transects | 2 | 01 and 02 | Female mallards |
| Area C Pond 183 transect | 0 | NA | NA |
| Area C duck ponds transect | 0 | NA | NA |
| | | | |
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| | | | |

ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes,, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as “not applicable”. Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

Stacey K. Ré

9/18/2012

PREPARER’S SIGNATURE


DATE

PHOTOGRAPHS TAKEN THIS DATE:

SUBJECT : none

PHOTO LOG NO.S:

http://www.wunderground.com/history/airport/PABV/2012/8/24/DailyHistory.html?req_city=NA&req_state=NA&req_statename=NA

| | | | | |
|--|---|---|--|---------------------|
|  CONTRACT NAME: JBER CONTRACT NO: FA8903-07-D-8589 | ERF DAILY REPORT SOP CQMM-017, Version 1 (ATTACH ADDITIONAL SHEETS IF NECESSARY) | | REPORT DATE :8/16/12 REVISION NO: 1 REVISION DATE: REPORT NO: | |
| | TASK ORDER NO: 0080021 | PROJECT NAME / LOCATION: Eagle River Flats - Ft. Richardson, Anchorage AK | | |
| PROJECT NUMBER: 457958 | PROJECT DESCRIPTION: Waterfowl Mortality Survey | | | |
| PROJECT MANAGER: Mike Whitney | | | SITE QC MANAGER: | Margaret Dombrowski |
| SITE MANAGER: Stacey Re' | | | SAFETY MANAGER: | Josh Painter |
| AM WEATHER: overcast, showers | PM WEATHER: overcast, showers | MAX TEMP: 67 | MIN TEMP: 58 | |
| SUMMARY OF WORK PERFORMED TODAY | | | | |
| Transect UXO clearance, Duck Mortality Survey – Area C; Pump placement and setup, cobble pile reconstruction | | | | |
| HEALTH AND SAFETY REPORT | | | | |
| SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted): Mike Walsh indicated he wasn't very confident in Marc Beede's ability to operate the loader. Stacey asked if he was trained, and Mike indicated he had had a few minutes of on the job training that day. Stacey indicated we should really have trained operators; Mike indicated he was just doing the tail end of the cleanup of the cobble pile and should be fine. Although Stacey did not completely agree, it didn't seem serious enough to issue a stop work order. Mark is a skilled operator with other equipment, including forks. | | | | |
| TAILGATE TOPICS: Wildlife and remaining on UXO-cleared paths | | | | |
| OPERATIONS / PRODUCTION REPORT | | | | |
| WORK FORCE – CONTRACTOR AND SUBCONTRACTOR | | | | |
| Company | Cumulative Total of Work Hours From Previous Report | Total Hours Today | Total Work Hours From Start of Field Effort | |
| CH2MHILL – Stacey Ré-4, Kristen Stevens-8 | 22 | 12 | 34 | |
| CRRREL- Ann Staples-8, Jon Zufelt-8, Mike Walsh-9, Mark Bedee-8 | 53 | 33 | 86 | |
| BSE – Jeff Bryant | 12 | 8 | 20 | |
| | | | | |
| | | | | |
| | | | | |
| Total Hours worked project to date | 87 | 53 | 140 | |
| EQUIPMENT ON HAND | | | | |
| Description of Equipment | Make/Model/Manufacturer | Equipment ID Number | Inspection Performed By | |
| 2.5 yd loader | ? | 089021 | | |
| Forklift | JLG lift/Model JLG534D 10-45 | Unit 5-322; S#160030537 | | |
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| COMMENTS (acceptance status, inspection findings, etc.): | | | | |
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| CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to access, site or weather conditions, etc.): <ul style="list-style-type: none"> None | | | | |
| VISITORS AND DISCUSSIONS: <ul style="list-style-type: none"> None | | | | |
| QUALITY CONTROL REPORT | | | | |
| MATERIALS DELIVERED TO JOB SITE | | | | |

| Quantity/Volume/ Weight | Description of Materials Received | Make/Model/Manufacturer | Material Lot Number | Inspection Performed By |
|----------------------------|-----------------------------------|-------------------------|------------------------|----------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

INSPECTIONS PERFORMED

| Transects Inspected | Number of Mortalities Recorded | Mortality ID #(s) | Type of Waterfowl (if known) |
|-----------------------------|--------------------------------|-------------------|------------------------------|
| Area C – Ditch transect | 0 | NA | NA |
| Area C – Duck Pond transect | 0 | NA | NA |
| Area C Pond 183 transect | 0 | NA | NA |
| Area C – Pond 730 transect | 1 | 03 | mallard |
| Area C – C/D south transect | 0 | NA | NA |
| | | | |
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| | | | |

ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes,, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as “not applicable”. Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

Stacey K. Ré

9/18/2012

PREPARER'S SIGNATURE

DATE

PHOTOGRAPHS TAKEN THIS DATE:

SUBJECT : none

PHOTO LOG NO.S:

http://www.wunderground.com/history/airport/PABV/2012/8/24/DailyHistory.html?req_city=NA&req_state=NA&req_statename=NA



CONTRACT NAME: JBER
CONTRACT NO: FA8903-07-D-8589

ERF DAILY REPORT
SOP CQMM-017, Version 1
(ATTACH ADDITIONAL SHEETS IF NECESSARY)

REPORT DATE :8/17/12
REVISION NO: 1
REVISION DATE:
REPORT NO:

| | | | |
|---------------------------------------|---|------------------|---------------------|
| TASK ORDER NO: 0080021 | PROJECT NAME / LOCATION: Eagle River Flats - Ft. Richardson, Anchorage AK | | |
| PROJECT NUMBER: 457958 | PROJECT DESCRIPTION: Waterfowl Mortality Survey | | |
| PROJECT MANAGER: Mike Whitney | | SITE QC MANAGER: | Margaret Dombrowski |
| SITE MANAGER: Stacey Re' | | SAFETY MANAGER: | Josh Painter |
| AM WEATHER: Partly cloudy – It breeze | PM WEATHER: mostly cloudy – It breeze | MAX TEMP: 63 | MIN TEMP: 55 |

SUMMARY OF WORK PERFORMED TODAY

Mortality transect survey – Area A

HEALTH AND SAFETY REPORT

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted):

TAILGATE TOPICS:

Staying hydrated. Drink frequently, before getting thirsty!

OPERATIONS / PRODUCTION REPORT

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

| Company | Cumulative Total of Work Hours From Previous Report | Total Hours Today | Total Work Hours From Start of Field Effort |
|--|---|-------------------|---|
| CH2MHILL Stacey Ré, Kristen Stevens | 34 | 5.5 | 39.5 |
| CRRREL Ann Staples-5.5, Mike Walsh-9, Mark Bedee-8, Jon Zufelt-6 | 86 | 28.5 | 104.5 |
| BSE Jeff Bryant | 20 | 5.5 | 25.5 |
| | | | |
| | | | |
| | | | |
| Total Hours worked project to date | 140 | 39.5 | 169.5 |

EQUIPMENT ON HAND

| Description of Equipment | Make/Model/Manufacturer | Equipment ID Number | Inspection Performed By |
|--------------------------|-------------------------|---------------------|-------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

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CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to access, site or weather conditions, etc.):

- None

VISITORS AND DISCUSSIONS:

- None

QUALITY CONTROL REPORT

MATERIALS DELIVERED TO JOB SITE

| Quantity/Volume/Weight | Description of Materials Received | Make/Model/Manufacturer | Material Lot Number | Inspection Performed By |
|------------------------|-----------------------------------|-------------------------|---------------------|-------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

INSPECTIONS PERFORMED

| Transects Inspected | Number of Mortalities Recorded | Mortality ID #(s) | Type of Waterfowl (if known) |
|-------------------------|--------------------------------|-------------------|------------------------------|
| Pond 290 | 0 | NA | NA |
| Northern A Pond Complex | 0 | NA | NA |
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ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes,, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as "not applicable". Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

Stacey K. Ré

9/18/2012

PREPARER'S SIGNATURE

DATE

PHOTOGRAPHS TAKEN THIS DATE:6
 SUBJECT :munitions, general area nearby area.

PHOTO LOG NO.S:

http://www.wunderground.com/history/airport/PABV/2012/8/24/DailyHistory.html?req_city=NA&req_state=NA&req_statename=NA



CONTRACT NAME: JBER
 CONTRACT NO: FA8903-07-D-8589

ERF DAILY REPORT
 SOP CQMM-017, Version 1
 (ATTACH ADDITIONAL SHEETS IF NECESSARY)

REPORT DATE :8/20/12
 REVISION NO: 1
 REVISION DATE:
 REPORT NO:

| | | | |
|--|---|------------------|---------------------|
| TASK ORDER NO: 0080021 | PROJECT NAME / LOCATION: Eagle River Flats - Ft. Richardson, Anchorage AK | | |
| PROJECT NUMBER: 457958 | PROJECT DESCRIPTION: Waterfowl Mortality Survey | | |
| PROJECT MANAGER: Mike Whitney | | SITE QC MANAGER: | Margaret Dombrowski |
| SITE MANAGER: Stacey Re' | | SAFETY MANAGER: | Josh Painter |
| AM WEATHER: overcast, light rain, calm | PM WEATHER: overcast, light rain, calm | MAX TEMP: 55 | MIN TEMP: 53 |

SUMMARY OF WORK PERFORMED TODAY

Mortality survey – Area C

HEALTH AND SAFETY REPORT

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted):

TAILGATE TOPICS:

Remaining on cleared paths, retrieve any nearby duck carcasses with boat hook

OPERATIONS / PRODUCTION REPORT

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

| Company | Cumulative Total of Work Hours From Previous Report | Total Hours Today | Total Work Hours From Start of Field Effort |
|--|---|-------------------|---|
| CH2MHILL Stacey Ré | 39.5 | 4 | 43.5 |
| CRRREL Ann Staples, (Mike Walsh-5 hours on Sat 8/18) | 104.5 | 9 | 113.5 |
| BSE (add staff names) | 25.5 | 0 | 25.5 |
| | | | |
| | | | |
| | | | |
| Total Hours worked project to date | 169.5 | 13 | 182.5 |

EQUIPMENT ON HAND

| Description of Equipment | Make/Model/Manufacturer | Equipment ID Number | Inspection Performed By |
|--------------------------|-------------------------|---------------------|-------------------------|
| | | | |
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COMMENTS (acceptance status, inspection findings, etc.):

CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to access, site or weather conditions, etc.):

- None

VISITORS AND DISCUSSIONS:

- None

QUALITY CONTROL REPORT

MATERIALS DELIVERED TO JOB SITE

| Quantity/Volume/Weight | Description of Materials Received | Make/Model/Manufacturer | Material Lot Number | Inspection Performed By |
|------------------------|-----------------------------------|-------------------------|---------------------|-------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

INSPECTIONS PERFORMED

| Transects Inspected | Number of Mortalities Recorded | Mortality ID #(s) | Type of Waterfowl (if known) |
|-----------------------------|--------------------------------|-------------------|------------------------------|
| Area C – Ditch transect | 0 | NA | NA |
| Area C – Duck Pond transect | 0 | NA | NA |
| Area C Pond 183 transect | 0 | NA | NA |
| Area C – Pond 730 transect | 1 | 04 | mallard |
| Area C – C/D south transect | 0 | NA | NA |
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ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes,, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as “not applicable”. Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

Stacey K. Ré

9/18/2012

PREPARER’S SIGNATURE


DATE

PHOTOGRAPHS TAKEN THIS DATE: none

SUBJECT :

PHOTO LOG NO.S:

http://www.wunderground.com/history/airport/PABV/2012/8/24/DailyHistory.html?req_city=NA&req_state=NA&req_statename=NA

| | | | | | |
|--|-----------------------------------|---|---------------------|--|--|
|  | | ERF DAILY REPORT SOP CQMM-017, Version 1 (ATTACH ADDITIONAL SHEETS IF NECESSARY) | | REPORT DATE :8/22/12 REVISION NO: 1 REVISION DATE: REPORT NO: | |
| CONTRACT NAME: JBER CONTRACT NO: FA8903-07-D-8589 | | PROJECT NAME / LOCATION: Eagle River Flats - Ft. Richardson, Anchorage AK | | | |
| TASK ORDER NO: 0080021 | | PROJECT DESCRIPTION: Waterfowl Mortality Survey | | | |
| PROJECT NUMBER: 457958 | | PROJECT MANAGER: Mike Whitney | | SITE QC MANAGER: Margaret Dombrowski | |
| PROJECT MANAGER: Mike Whitney | | SITE MANAGER: Stacey Re' | | SAFETY MANAGER: Josh Painter | |
| AM WEATHER: C-PC breeze | | PM WEATHER: C-PC, breeze | | MAX TEMP: 57 MIN TEMP: 65 | |
| SUMMARY OF WORK PERFORMED TODAY | | | | | |
| Surveyed Area C for duck mortalities | | | | | |
| HEALTH AND SAFETY REPORT | | | | | |
| SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted): | | | | | |
| TAILGATE TOPICS: Skin protection-sunscreen, sun blocking lip balm, bug repellent | | | | | |
| OPERATIONS / PRODUCTION REPORT | | | | | |
| WORK FORCE – CONTRACTOR AND SUBCONTRACTOR | | | | | |
| Company | | Cumulative Total of Work Hours From Previous Report | Total Hours Today | Total Work Hours From Start of Construction | |
| CH2MHILL Stacey Ré | | 43.5 | 5 | 48.5 | |
| CRRREL Ann Staples | | 113.5 | 5 | 118.5 | |
| BSE (add staff names) | | 25.5 | | 25.5 | |
| | | | | | |
| | | | | | |
| | | | | | |
| Total Hours worked project to date | | 182.5 | 10 | 192.5 | |
| EQUIPMENT ON HAND | | | | | |
| Description of Equipment | | Make/Model/Manufacturer | Equipment ID Number | Inspection Performed By | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| COMMENTS (acceptance status, inspection findings, etc.): | | | | | |
| | | | | | |
| CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to access, site or weather conditions, etc.): | | | | | |
| <ul style="list-style-type: none"> Ann noted that Jon would like to conduct the woodland transect without waiting for a UXO clearance. Since this is still within the impact area, need to emphasize this area should be cleared as well. Scope indicates this transect only needs to be performed once during this event, so can be delayed till September when UXO technician will be on site for sediment sampling area clearance. | | | | | |
| VISITORS AND DISCUSSIONS: | | | | | |
| <ul style="list-style-type: none"> None | | | | | |
| QUALITY CONTROL REPORT | | | | | |
| MATERIALS DELIVERED TO JOB SITE - NA | | | | | |
| Quantity/Volume/Weight | Description of Materials Received | Make/Model/Manufacturer | Material Lot Number | Inspection Performed By | |
| | | | | | |

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COMMENTS (acceptance status, inspection findings, etc.):

INSPECTIONS PERFORMED

| Transits Inspected | Number of Mortalities Recorded | Type of Waterfowl (if known) |
|-----------------------------|--------------------------------|------------------------------|
| Area C – Ditch transect | 0 | 0 |
| Area C – Duck Pond transect | 0 | 0 |
| Area C Pond 183 transect | 0 | 0 |
| Area C – Pond 730 transect | 0 | 0 |
| Area C – C/D south transect | 0 | 0 |
| | | |
| | | |
| | | |
| | | |

ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes,, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as “not applicable”. Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

Stacey K. Ré


9/18/2012

PREPARER’S SIGNATURE

DATE

PHOTOGRAPHS TAKEN THIS DATE: 4
 SUBJECT : General area (1) Sandhill cranes (2) New equipment ramp (1)

PHOTO LOG NO.S:

| | | | | | |
|---|-----------------------------------|---|-------------------------|--|-------------------------|
|  | | ERF DAILY REPORT SOP CQMM-017, Version 1 (ATTACH ADDITIONAL SHEETS IF NECESSARY) | | REPORT DATE :8/24/12 REVISION NO: 1 REVISION DATE: REPORT NO: | |
| CONTRACT NAME: JBER CONTRACT NO: FA8903-07-D-8589 | | PROJECT NAME / LOCATION: Eagle River Flats - Ft. Richardson, Anchorage AK | | | |
| TASK ORDER NO: 0080021 | | PROJECT DESCRIPTION: Waterfowl Mortality Survey | | | |
| PROJECT NUMBER: 457958 | | PROJECT MANAGER: Mike Whitney | | SITE QC MANAGER: Margaret Dombrowski | |
| PROJECT MANAGER: Mike Whitney | | SITE MANAGER: Stacey Re' | | SAFETY MANAGER: Josh Painter | |
| AM WEATHER: overcast, calm | | PM WEATHER: overcast, calm | | MAX TEMP: 57 MIN TEMP: 50 | |
| SUMMARY OF WORK PERFORMED TODAY | | | | | |
| Mortality transects - Area C | | | | | |
| HEALTH AND SAFETY REPORT | | | | | |
| SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted): | | | | | |
| TAILGATE TOPICS: | | | | | |
| OPERATIONS / PRODUCTION REPORT | | | | | |
| WORK FORCE - CONTRACTOR AND SUBCONTRACTOR | | | | | |
| Company | | Cumulative Total of Work Hours From Previous Report | Total Hours Today | Total Work Hours From Start of Construction | |
| CH2MHILL Stacey Ré | | 48.5 | 4 | 52.5 | |
| CRRREL Jon Zufelt | | 118.5 | 4 | 122.5 | |
| BSE (add staff names) | | 25.5 | | 25.5 | |
| | | | | | |
| | | | | | |
| | | | | | |
| Total Hours worked project to date | | 192.5 | 8 | 200.5 | |
| EQUIPMENT ON HAND | | | | | |
| Description of Equipment | | Make/Model/Manufacturer | Equipment ID Number | Inspection Performed By | |
| | | | | | |
| | | | | | |
| | | | | | |
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| COMMENTS (acceptance status, inspection findings, etc.): | | | | | |
| 2 mortalities recorded. Primarily feather piles and bone, with little flesh remaining (had been predated). Possible that the two piles were from the same mortality, but they were probably a couple hundred yards apart, and there were no duplicate parts, so we were not able to determine if they came from one duck or two. Feather color/size, and dark beak caused us to suspect they were both green winged teal. Observed a raven at the location of Mort-05, which included a wing and feathers, and wolf tracks around Mort-06, which included several bones (breast, spine, partial beak, feathers. | | | | | |
| | | | | | |
| | | | | | |
| CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to access, site or weather conditions, etc.): | | | | | |
| <ul style="list-style-type: none"> Update from 8/22 - Jon will try to coordinate getting an AF or Army EOD person to go out and clear the woodland transect area prior to surveying. If that is not possible we will wait until September sediment sampling when Bering Straits UXO (Jeff Bryant) returns. | | | | | |
| VISITORS AND DISCUSSIONS: | | | | | |
| <ul style="list-style-type: none"> None | | | | | |
| QUALITY CONTROL REPORT | | | | | |
| MATERIALS DELIVERED TO JOB SITE | | | | | |
| Quantity/Volume/Weight | Description of Materials Received | | Make/Model/Manufacturer | Material Lot Number | Inspection Performed By |

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|--|--|--|--|--|
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COMMENTS (acceptance status, inspection findings, etc.):

INSPECTIONS PERFORMED

| Transits Inspected | Number of Mortalities Recorded | Mortality ID #(s) | Type of Waterfowl (if known) |
|-----------------------------|--------------------------------|-------------------|------------------------------|
| Area C – Ditch transect | 0 | NA | NA |
| Area C – Duck Pond transect | 1 | 05 | Green winged teal? |
| Area C Pond 183 transect | 0 | NA | NA |
| Area C – Pond 730 transect | 0 | NA | NA |
| Area C – C/D south transect | 0 | NA | NA |
| Beluga trail* | 1 | 06 | Green winged teal? |
| | | | |
| | | | |
| | | | |
| | | | |

*Beluga trail not an official transect, but Mort-06 was located approximately equidistance from duck ponds, ditch transects, and Pond 183

ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes,, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as “not applicable”. Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.


9/18/2012

PREPARER’S SIGNATURE

DATE

PHOTOGRAPHS TAKEN THIS DATE:2 photos
SUBJECT : one of Mort-05, one of Mort-06

PHOTO LOG NO.S:

| | | | | | |
|--|---|---|-------------------------|--|-------------------------|
|  CONTRACT NAME: JBER CONTRACT NO: FA8903-07-D-8589 | ERF DAILY REPORT SOP CQMM-017, Version 1 (ATTACH ADDITIONAL SHEETS IF NECESSARY) | | | REPORT DATE :8/27/12 REVISION NO: 1 REVISION DATE: REPORT NO: | |
| TASK ORDER NO: 0080021 | PROJECT NAME / LOCATION: Eagle River Flats - Ft. Richardson, Anchorage AK | | | | |
| PROJECT NUMBER: 457958 | PROJECT DESCRIPTION: Waterfowl Mortality Survey | | | | |
| PROJECT MANAGER: Mike Whitney | | | SITE QC MANAGER: | Margaret Dombrowski | |
| SITE MANAGER: Stacey Re' | | | SAFETY MANAGER: | Josh Painter | |
| AM WEATHER: Sunny, calm | PM WEATHER: Sunny, light breeze | | MAX TEMP: 67 | MIN TEMP: 60 | |
| SUMMARY OF WORK PERFORMED TODAY | | | | | |
| Mortality survey – Area C | | | | | |
| HEALTH AND SAFETY REPORT | | | | | |
| SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted): | | | | | |
| TAILGATE TOPICS: Slips and trips – watch for/ remove old stakes in path, also paint leftover pipe supports (metal fence stakes) when near/in path for better visibility. | | | | | |
| OPERATIONS / PRODUCTION REPORT | | | | | |
| WORK FORCE – CONTRACTOR AND SUBCONTRACTOR | | | | | |
| Company | | Cumulative Total of Work Hours From Previous Report | Total Hours Today | Total Work Hours From Start of Field Effort | |
| CH2MHILL Stacey Ré, Kristen Stevens | | 52.5 | 11 | 63.5 | |
| CRRREL (add staff names) | | 122.5 | 0 | 122.5 | |
| BSE (add staff names) | | 25.5 | 0 | 25.5 | |
| | | | | | |
| | | | | | |
| | | | | | |
| Total Hours worked project to date | | 200.5 | 11 | 211.5 | |
| EQUIPMENT ON HAND | | | | | |
| Description of Equipment | | Make/Model/Manufacturer | Equipment ID Number | Inspection Performed By | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| COMMENTS (acceptance status, inspection findings, etc.): | | | | | |
| | | | | | |
| | | | | | |
| CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to access, site or weather conditions, etc.): | | | | | |
| <ul style="list-style-type: none"> Upon arrival to OP Fagan gate, discovered our lock (3N-70) had been removed from chain and we were unable to open the gate. Visited range control to get key to the other lock on the gate, and added our lock back in to the chain. Range control did not know how/why our lock had been taken out of the chain. Ann indicated she had previously had a handwritten note on the fence post indicating locks should be chained to allow access to multiple users, but it was painted over. | | | | | |
| VISITORS AND DISCUSSIONS: | | | | | |
| <ul style="list-style-type: none"> None | | | | | |
| QUALITY CONTROL REPORT | | | | | |
| MATERIALS DELIVERED TO JOB SITE | | | | | |
| Quantity/Volume/Weight | Description of Materials Received | | Make/Model/Manufacturer | Material Lot Number | Inspection Performed By |
| | | | | | |

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COMMENTS (acceptance status, inspection findings, etc.):

INSPECTIONS PERFORMED

| Transects Inspected | Number of Mortalities Recorded | Mortality ID #(s) | Type of Waterfowl (if known) |
|-----------------------------|--------------------------------|-------------------|------------------------------|
| Area C – Ditch transect | 0 | NA | NA |
| Area C – Duck Pond transect | 0 | NA | NA |
| Area C Pond 183 transect | 0 | NA | NA |
| Area C – Pond 730 transect | 0 | NA | NA |
| Area C – C/D south transect | 0 | NA | NA |
| | | | |
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| | | | |

ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes,, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as “not applicable”. Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

Stacey K. Ré

9/18/2012

PREPARER'S SIGNATURE

DATE

PHOTOGRAPHS TAKEN THIS DATE:None

SUBJECT :

PHOTO LOG NO.S:

http://www.wunderground.com/history/airport/PABV/2012/8/24/DailyHistory.html?req_city=NA&req_state=NA&req_staname=NA



CONTRACT NAME: JBER
 CONTRACT NO: FA8903-07-D-8589

ERF DAILY REPORT
 SOP CQMM-017, Version 1
 (ATTACH ADDITIONAL SHEETS IF NECESSARY)

REPORT DATE :8/28/12
 REVISION NO: 1
 REVISION DATE:
 REPORT NO:

| | | | |
|-------------------------------------|---|------------------|---------------------|
| TASK ORDER NO: 0080021 | PROJECT NAME / LOCATION: Eagle River Flats - Ft. Richardson, Anchorage AK | | |
| PROJECT NUMBER: 457958 | PROJECT DESCRIPTION: Waterfowl Mortality Survey | | |
| PROJECT MANAGER: Mike Whitney | | SITE QC MANAGER: | Margaret Dombrowski |
| SITE MANAGER: Stacey Re' | | SAFETY MANAGER: | Josh Painter |
| AM WEATHER: Sunny, calm – It breeze | PM WEATHER: Sunny, calm – It breeze | MAX TEMP: 67 | MIN TEMP: 62 |

SUMMARY OF WORK PERFORMED TODAY

Mortality transect survey – Area A

HEALTH AND SAFETY REPORT

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted):

TAILGATE TOPICS:

Staying hydrated. Drink frequently, before getting thirsty!

OPERATIONS / PRODUCTION REPORT

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

| Company | Cumulative Total of Work Hours From Previous Report | Total Hours Today | Total Work Hours From Start of Field Effort |
|---|---|-------------------|---|
| CH2MHILL Stacey Ré, Kristen Stevens | 63.5 | 5 | 68.5 |
| CRRREL Ann Staples | 122.5 | 5 | 127.5 |
| BSE (add staff names) | 25.5 | 0 | 25.5 |
| | | | |
| | | | |
| Total Hours worked project to date | 211.5 | 10 | 221.5 |

EQUIPMENT ON HAND

| Description of Equipment | Make/Model/Manufacturer | Equipment ID Number | Inspection Performed By |
|--------------------------|-------------------------|---------------------|-------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to access, site or weather conditions, etc.):

- None

VISITORS AND DISCUSSIONS:

- None

QUALITY CONTROL REPORT

MATERIALS DELIVERED TO JOB SITE

| Quantity/Volume/Weight | Description of Materials Received | Make/Model/Manufacturer | Material Lot Number | Inspection Performed By |
|------------------------|-----------------------------------|-------------------------|---------------------|-------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

INSPECTIONS PERFORMED

| Transects Inspected | Number of Mortalities Recorded | Mortality ID #(s) | Type of Waterfowl (if known) |
|-------------------------|--------------------------------|-------------------|------------------------------|
| Pond 290 | 0 | NA | NA |
| Northern A Pond Complex | 0 | NA | NA |
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ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes,, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as "not applicable". Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

Stacey K. Ré

9/18/2012

PREPARER'S SIGNATURE

DATE

PHOTOGRAPHS TAKEN THIS DATE:3

SUBJECT :munition, hiking to transect, parachute jump over nearby area.

PHOTO LOG NO.S:

http://www.wunderground.com/history/airport/PABV/2012/8/24/DailyHistory.html?req_city=NA&req_state=NA&req_statename=NA



CONTRACT NAME: JBER
 CONTRACT NO: FA8903-07-D-8589

ERF DAILY REPORT
 SOP CQMM-017, Version 1
 (ATTACH ADDITIONAL SHEETS IF NECESSARY)

REPORT DATE :8/29/12
 REVISION NO: 1
 REVISION DATE:
 REPORT NO:

| | | | |
|-------------------------------|---|------------------|---------------------|
| TASK ORDER NO: 0080021 | PROJECT NAME / LOCATION: Eagle River Flats - Ft. Richardson, Anchorage AK | | |
| PROJECT NUMBER: 457958 | PROJECT DESCRIPTION: Waterfowl Mortality Survey | | |
| PROJECT MANAGER: Mike Whitney | | SITE QC MANAGER: | Margaret Dombrowski |
| SITE MANAGER: Stacey Re' | | SAFETY MANAGER: | Josh Painter |
| AM WEATHER: Sunny, calm | PM WEATHER: Partly Cloudy, light breeze | MAX TEMP: 65 | MIN TEMP: 55 |

SUMMARY OF WORK PERFORMED TODAY

Mortality Survey-Area C

HEALTH AND SAFETY REPORT

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted):

TAILGATE TOPICS: Proper PPE, Water breaks/rest

OPERATIONS / PRODUCTION REPORT

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

| Company | Cumulative Total of Work Hours From Previous Report | Total Hours Today | Total Work Hours From Start of Field Effort |
|--|---|-------------------|---|
| CH2MHILL (add staff names) Kristen Stevens | 68.5 | 7 | 75.5 |
| CRRREL (add staff names) Ann Staples | 127.5 | 7 | 134.5 |
| BSE (add staff names) | 25.5 | 0 | 25.5 |
| | | | |
| | | | |
| Total Hours worked project to date | 221.5 | 14 | 235.5 |

EQUIPMENT ON HAND

| Description of Equipment | Make/Model/Manufacturer | Equipment ID Number | Inspection Performed By |
|--------------------------|-------------------------|---------------------|-------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to access, site or weather conditions, etc.):

- None

VISITORS AND DISCUSSIONS:

- None

QUALITY CONTROL REPORT

MATERIALS DELIVERED TO JOB SITE

| Quantity/Volume/Weight | Description of Materials Received | Make/Model/Manufacturer | Material Lot Number | Inspection Performed By |
|------------------------|-----------------------------------|-------------------------|---------------------|-------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

INSPECTIONS PERFORMED

| Transects Inspected | Number of Mortalities Recorded | Mortality ID #(s) | Type of Waterfowl (if known) |
|-----------------------------|--------------------------------|-------------------|------------------------------|
| Area C – Ditch transect | 0 | NA | NA |
| Area C – Duck Pond transect | 0 | NA | NA |
| Area C Pond 183 transect | 0 | NA | NA |
| Area C – Pond 730 transect | 0 | NA | NA |
| Area C – C/D south transect | 0 | NA | NA |
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ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes,, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as “not applicable”. Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

Kristen Stevens

9/18/2012

PREPARER'S SIGNATURE

DATE

PHOTOGRAPHS TAKEN THIS DATE:

SUBJECT :

PHOTO LOG NO.S:

http://www.wunderground.com/history/airport/PABV/2012/8/24/DailyHistory.html?req_city=NA&req_state=NA&req_statename=NA



CONTRACT NAME: JBER
 CONTRACT NO: FA8903-07-D-8589

ERF DAILY REPORT
 SOP CQMM-017, Version 1
 (ATTACH ADDITIONAL SHEETS IF NECESSARY)

REPORT DATE :8/30/12
 REVISION NO: 1
 REVISION DATE:
 REPORT NO:

| | | | |
|-------------------------------|---|---------------------|--------------|
| TASK ORDER NO: 0080021 | PROJECT NAME / LOCATION: Eagle River Flats - Ft. Richardson, Anchorage AK | | |
| PROJECT NUMBER: 457958 | PROJECT DESCRIPTION: Waterfowl Mortality Survey | | |
| PROJECT MANAGER: Mike Whitney | SITE QC MANAGER: | Margaret Dombrowski | |
| SITE MANAGER: Stacey Re' | SAFETY MANAGER: | Josh Painter | |
| AM WEATHER: overcast, calm | PM WEATHER: NA | MAX TEMP: 58 | MIN TEMP: 56 |

SUMMARY OF WORK PERFORMED TODAY

Mortality Survey – Area D Canoe Transects

HEALTH AND SAFETY REPORT

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted):

TAILGATE TOPICS: Wear life jackets during canoe transect.

OPERATIONS / PRODUCTION REPORT

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

| Company | Cumulative Total of Work Hours From Previous Report | Total Hours Today | Total Work Hours From Start of Field Effort |
|---|---|-------------------|---|
| CH2MHILL Stacey Ré | 75.5 | 2 | 77.5 |
| CRRREL Ann Staples | 134.5 | 2 | 136.5 |
| BSE (add staff names) | 25.5 | 0 | 25.5 |
| | | | |
| | | | |
| Total Hours worked project to date | 235.5 | 4 | 239.5 |

EQUIPMENT ON HAND

| Description of Equipment | Make/Model/Manufacturer | Equipment ID Number | Inspection Performed By |
|--------------------------|-------------------------|---------------------|-------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to access, site or weather conditions, etc.):

- None

VISITORS AND DISCUSSIONS:

- None

QUALITY CONTROL REPORT

MATERIALS DELIVERED TO JOB SITE

| Quantity/Volume/Weight | Description of Materials Received | Make/Model/Manufacturer | Material Lot Number | Inspection Performed By |
|------------------------|-----------------------------------|-------------------------|---------------------|-------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

INSPECTIONS PERFORMED

| Transects Inspected | Number of Mortalities Recorded | Mortality ID #(s) | Type of Waterfowl (if known) |
|-------------------------|--------------------------------|-------------------|------------------------------|
| Area D – Canoe Transect | 0 | NA | NA |
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ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes,, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as “not applicable”. Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

Stacey K. Ré

9/18/2012

PREPARER’S SIGNATURE

DATE

PHOTOGRAPHS TAKEN THIS DATE:

SUBJECT :

PHOTO LOG NO.S:

http://www.wunderground.com/history/airport/PABV/2012/8/24/DailyHistory.html?req_city=NA&req_state=NA&req_statename=NA



CONTRACT NAME: JBER
 CONTRACT NO: FA8903-07-D-8589

ERF DAILY REPORT
 SOP CQMM-017, Version 1
 (ATTACH ADDITIONAL SHEETS IF NECESSARY)

REPORT DATE :8/31/12
 REVISION NO: 1
 REVISION DATE:
 REPORT NO:

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|---|---|------------------|---------------------|
| TASK ORDER NO: 0080021 | PROJECT NAME / LOCATION: Eagle River Flats - Ft. Richardson, Anchorage AK | | |
| PROJECT NUMBER: 457958 | PROJECT DESCRIPTION: Waterfowl Mortality Survey | | |
| PROJECT MANAGER: Mike Whitney | | SITE QC MANAGER: | Margaret Dombrowski |
| SITE MANAGER: Stacey Re' | | SAFETY MANAGER: | Josh Painter |
| AM WEATHER: Overcast, scattered showers | PM WEATHER: Overcast, scattered showers | MAX TEMP: 50 | MIN TEMP: 53 |

SUMMARY OF WORK PERFORMED TODAY

Mortality Survey-Area C

HEALTH AND SAFETY REPORT

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted):

TAILGATE TOPICS: Gear maintenance – keeping gear in good working order and performing small repairs or replacing damaged gear will help keep you safe.

OPERATIONS / PRODUCTION REPORT

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

| Company | Cumulative Total of Work Hours From Previous Report | Total Hours Today | Total Work Hours From Start of Field Effort |
|---|---|-------------------|---|
| CH2MHILL (add staff names) Stacey Ré | 77.5 | 5.5 | 83 |
| CRRREL (add staff names) Ann Staples | 136.5 | 5.5 | 142 |
| BSE (add staff names) | 25.5 | 0 | 25.5 |
| | | | |
| | | | |
| | | | |
| Total Hours worked project to date | 239.5 | 11 | 250.5 |

EQUIPMENT ON HAND

| Description of Equipment | Make/Model/Manufacturer | Equipment ID Number | Inspection Performed By |
|--------------------------|-------------------------|---------------------|-------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to access, site or weather conditions, etc.):

- None

VISITORS AND DISCUSSIONS:

- None

QUALITY CONTROL REPORT

MATERIALS DELIVERED TO JOB SITE

| Quantity/Volume/Weight | Description of Materials Received | Make/Model/Manufacturer | Material Lot Number | Inspection Performed By |
|------------------------|-----------------------------------|-------------------------|---------------------|-------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

Mortality 07 and 08 were carcasses with collectible gizzards. Birds were taken back to the CRREL laboratory at Bldg 47812 and gizzard contents were collected. Contents of 08 showed visible wisps of smoke when exposed to the air, a telltale sign of white phosphorus poisoning.

INSPECTIONS PERFORMED

| Transects Inspected | Number of Mortalities Recorded | Mortality ID #(s) | Type of Waterfowl (if known) |
|-----------------------------|--------------------------------|-------------------|------------------------------|
| Area C – Ditch transect | 1 | 08 | Mallard - male |
| Area C – Duck Pond transect | 0 | NA | NA |
| Area C Pond 183 transect | 0 | NA | NA |
| Area C – Pond 730 transect | 1 | 07 | Mallard - female |
| Area C – C/D south transect | 0 | NA | NA |
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ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes,, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as “not applicable”. Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

Stacey Ré

9/18/2012

PREPARER'S SIGNATURE

DATE

PHOTOGRAPHS TAKEN THIS DATE: 3

SUBJECT :gizzardectomies

PHOTO LOG NO.S:

http://www.wunderground.com/history/airport/PABV/2012/8/24/DailyHistory.html?req_city=NA&req_state=NA&req_statename=NA



CONTRACT NAME: JBER
 CONTRACT NO: FA8903-07-D-8589

ERF DAILY REPORT
 SOP CQMM-017, Version 1
 (ATTACH ADDITIONAL SHEETS IF NECESSARY)

REPORT DATE :9/4/12
 REVISION NO: 1
 REVISION DATE:
 REPORT NO:

| | | | |
|-----------------------------------|---|------------------|---------------------|
| TASK ORDER NO: 0080021 | PROJECT NAME / LOCATION: Eagle River Flats - Ft. Richardson, Anchorage AK | | |
| PROJECT NUMBER: 457958 | PROJECT DESCRIPTION: Waterfowl Mortality Survey | | |
| PROJECT MANAGER: Mike Whitney | | SITE QC MANAGER: | Margaret Dombrowski |
| SITE MANAGER: Stacey Re' | | SAFETY MANAGER: | Josh Painter |
| AM WEATHER: overcast, calm-breezy | PM WEATHER: Overcast, breezy-windy, occasional gusts to approximately 25mph | MAX TEMP: 55 | MIN TEMP: 50 |

SUMMARY OF WORK PERFORMED TODAY

Mortality Survey-Area C

HEALTH AND SAFETY REPORT

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted):

TAILGATE TOPICS: wind precautions – secure loose gear (n packs and at staging area, monitor radio for changing conditions, depart area if wind becomes dangerous.

OPERATIONS / PRODUCTION REPORT

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

| Company | Cumulative Total of Work Hours From Previous Report | Total Hours Today | Total Work Hours From Start of Field Effort |
|---|---|-------------------|---|
| CH2MHILL (add staff names) Stacey Ré | 83 | 5.5 | 88.5 |
| CRRREL (add staff names) Ann Staples | 142 | 5.5 | 147.5 |
| BSE (add staff names) | 25.5 | 0 | 25.5 |
| | | | |
| | | | |
| | | | |
| Total Hours worked project to date | 250.5 | 11 | 261.5 |

EQUIPMENT ON HAND

| Description of Equipment | Make/Model/Manufacturer | Equipment ID Number | Inspection Performed By |
|--------------------------|-------------------------|---------------------|-------------------------|
| | | | |
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COMMENTS (acceptance status, inspection findings, etc.):

CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to access, site or weather conditions, etc.):

- None

VISITORS AND DISCUSSIONS:

- None

QUALITY CONTROL REPORT

MATERIALS DELIVERED TO JOB SITE

| Quantity/Volume/Weight | Description of Materials Received | Make/Model/Manufacturer | Material Lot Number | Inspection Performed By |
|------------------------|-----------------------------------|-------------------------|---------------------|-------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

Mortality 09 was a partial carcass and feather pile. We were able to collect the majority of the bird's gizzard, which had been left behind. The other two mortalities (10 and 11) were primarily feather piles (partial wing at 10). Green flight feathers and size indicated likely green winged teal.

INSPECTIONS PERFORMED

| Transects Inspected | Number of Mortalities Recorded | Mortality ID #(s) | Type of Waterfowl (if known) |
|-----------------------------|--------------------------------|-------------------|---|
| Area C – Ditch transect | 0 | NA | NA |
| Area C – Duck Pond transect | 0 | NA | NA |
| Area C Pond 183 transect | 1 | 11 | Green winged teal |
| Area C – Pond 730 transect | 2 | 09, 10 | Male northern pintail; possible green winged teal |
| Area C – C/D south transect | 0 | NA | NA |
| | | | |
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ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes,, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as "not applicable". Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

Stacey Ré

9/18/2012

PREPARER'S SIGNATURE

DATE

PHOTOGRAPHS TAKEN THIS DATE: 4

SUBJECT :Duck (mort-09)

PHOTO LOG NO.S:

http://www.wunderground.com/history/airport/PABV/2012/8/24/DailyHistory.html?req_city=NA&req_state=NA&req_statename=NA



CONTRACT NAME: JBER
 CONTRACT NO: FA8903-07-D-8589

ERF DAILY REPORT
 SOP CQMM-017, Version 1
 (ATTACH ADDITIONAL SHEETS IF NECESSARY)

REPORT DATE :9/6/12
 REVISION NO: 1
 REVISION DATE:
 REPORT NO:

| | | | |
|-------------------------------|--|------------------|---------------------|
| TASK ORDER NO: 0080021 | PROJECT NAME / LOCATION: Eagle River Flats - Ft. Richardson, Anchorage AK | | |
| PROJECT NUMBER: 457958 | PROJECT DESCRIPTION: Waterfowl Mortality Survey | | |
| PROJECT MANAGER: Mike Whitney | | SITE QC MANAGER: | Margaret Dombrowski |
| SITE MANAGER: Stacey Re' | | SAFETY MANAGER: | Josh Painter |
| AM WEATHER: NA | PM WEATHER: Partly-mostly cloudy, breezy-windy 15-20mph, occasional gusts to approx 30 mph | MAX TEMP: 57 | MIN TEMP: 53 |

SUMMARY OF WORK PERFORMED TODAY

Mortality Survey-Area C

HEALTH AND SAFETY REPORT

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted):

TAILGATE TOPICS: Driving conditions after storm – back roads are less of a priority, so be especially cautious and watch for downed trees and other debris in the roadway.

OPERATIONS / PRODUCTION REPORT

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

| Company | Cumulative Total of Work Hours From Previous Report | Total Hours Today | Total Work Hours From Start of Field Effort |
|---|---|-------------------|---|
| CH2MHILL (add staff names) Stacey Ré | 88.5 | 3 | 91.5 |
| CRRREL (add staff names) Ann Staples | 147.5 | 3 | 150.5 |
| BSE (add staff names) | 25.5 | 0 | 25.5 |
| | | | |
| | | | |
| | | | |
| Total Hours worked project to date | 261.5 | 6 | 267.5 |

EQUIPMENT ON HAND

| Description of Equipment | Make/Model/Manufacturer | Equipment ID Number | Inspection Performed By |
|--------------------------|-------------------------|---------------------|-------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to access, site or weather conditions, etc.):

- None

VISITORS AND DISCUSSIONS:

- None

QUALITY CONTROL REPORT

MATERIALS DELIVERED TO JOB SITE

| Quantity/Volume/Weight | Description of Materials Received | Make/Model/Manufacturer | Material Lot Number | Inspection Performed By |
|------------------------|-----------------------------------|-------------------------|---------------------|-------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

INSPECTIONS PERFORMED

| Transects Inspected | Number of Mortalities Recorded | Mortality ID #(s) | Type of Waterfowl (if known) |
|-----------------------------|--------------------------------|-------------------|------------------------------|
| Area C – Ditch transect | 0 | NA | NA |
| Area C – Duck Pond transect | 0 | NA | NA |
| Area C Pond 183 transect | 0 | NA | NA |
| Area C – Pond 730 transect | 0 | NA | NA |
| Area C – C/D south transect | 0 | NA | NA |
| | | | |
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ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes,, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as “not applicable”. Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

Stacey Ré

9/18/2012

PREPARER’S SIGNATURE


DATE

PHOTOGRAPHS TAKEN THIS DATE: 1

SUBJECT :Area C-

PHOTO LOG NO.S:

http://www.wunderground.com/history/airport/PABV/2012/8/24/DailyHistory.html?req_city=NA&req_state=NA&req_statename=NA

| | | | | |
|--|---|-------------------------|---|-------------------------|
|  CONTRACT NAME: JBER CONTRACT NO: FA8903-07-D-8589 | ERF DAILY REPORT SOP CQMM-017, Version 1 (ATTACH ADDITIONAL SHEETS IF NECESSARY) | | REPORT DATE :9/7/12 REVISION NO: 1 REVISION DATE: REPORT NO: | |
| TASK ORDER NO: 0080021 | PROJECT NAME / LOCATION: Eagle River Flats - Ft. Richardson, Anchorage AK | | | |
| PROJECT NUMBER: 457958 | PROJECT DESCRIPTION: Waterfowl Mortality Survey | | | |
| PROJECT MANAGER: Mike Whitney | | SITE QC MANAGER: | Margaret Dombrowski | |
| SITE MANAGER: Stacey Re' | | SAFETY MANAGER: | Josh Painter | |
| AM WEATHER: Sunny-partly cloudy, slight breeze | PM WEATHER: partly cloudy, breezy | MAX TEMP: 55 | MIN TEMP: 50 | |
| SUMMARY OF WORK PERFORMED TODAY | | | | |
| Mortality Survey-Area C and Area D canoe transects, UXO clearance, pump maintenance | | | | |
| HEALTH AND SAFETY REPORT | | | | |
| SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted): | | | | |
| | | | | |
| TAILGATE TOPICS: Slips and trips – especially with after storm debris. | | | | |
| OPERATIONS / PRODUCTION REPORT | | | | |
| WORK FORCE – CONTRACTOR AND SUBCONTRACTOR | | | | |
| Company | Cumulative Total of Work Hours From Previous Report | Total Hours Today | Total Work Hours From Start of Field Effort | |
| CH2MHILL - Kristen Stevens, Stacey Ré | 91.5 | 6 | 97.5 | |
| CRRREL - Ann Staples, Jon Zufelt, Mike Walsh, Marianne Walsh | 145.5 | 24 | 169.5 | |
| BSE – Don Ebersol | 25.5 | 6 | 31.5 | |
| | | | | |
| | | | | |
| | | | | |
| Total Hours worked project to date | 262.5 | 36 | 298.5 | |
| EQUIPMENT ON HAND | | | | |
| Description of Equipment | Make/Model/Manufacturer | Equipment ID Number | Inspection Performed By | |
| | | | | |
| | | | | |
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| | | | | |
| COMMENTS (acceptance status, inspection findings, etc.): | | | | |
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| CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to access, site or weather conditions, etc.): | | | | |
| <ul style="list-style-type: none"> None | | | | |
| VISITORS AND DISCUSSIONS: | | | | |
| <ul style="list-style-type: none"> None | | | | |
| QUALITY CONTROL REPORT | | | | |
| MATERIALS DELIVERED TO JOB SITE | | | | |
| Quantity/Volume/Weight | Description of Materials Received | Make/Model/Manufacturer | Material Lot Number | Inspection Performed By |
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COMMENTS (acceptance status, inspection findings, etc.): Wing (mort 12) was found next to canoe parking spot at Area D (just a couple feet away. Did not see it when we were getting ready to start, but the view may have been blocked by the canoe as it had almost surely been there before.

INSPECTIONS PERFORMED

| Transects Inspected | Number of Mortalities Recorded | Mortality ID #(s) | Type of Waterfowl (if known) |
|-----------------------------|--------------------------------|-------------------|------------------------------|
| Area C – Ditch transect | 0 | NA | NA |
| Area C – Duck Pond transect | 0 | NA | NA |
| Area C Pond 183 transect | 0 | NA | NA |
| Area C – Pond 730 transect | 0 | NA | NA |
| Area C – C/D south transect | 0 | NA | NA |
| Area D – canoe transect | 1 | 12 | ? –green winged teal? |
| | | | |
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| | | | |
| | | | |

ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as “not applicable”. Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

Stacey Ré

9/18/2012


PREPARER’S SIGNATURE


DATE

PHOTOGRAPHS TAKEN THIS DATE: 2
 SUBJECT :Area D living waterfowl, mort 12

PHOTO LOG NO.S:

http://www.wunderground.com/history/airport/PABV/2012/8/24/DailyHistory.html?req_city=NA&req_state=NA&req_statename=NA

| | | | | |
|--|---|-------------------------|---|-------------------------|
|  CONTRACT NAME: JBER CONTRACT NO: FA8903-07-D-8589 | ERF DAILY REPORT SOP CQMM-017, Version 1 (ATTACH ADDITIONAL SHEETS IF NECESSARY) | | REPORT DATE :9/7/12 REVISION NO: REVISION DATE: REPORT NO: | |
| TASK ORDER NO: 0080021 | PROJECT NAME / LOCATION: Eagle River Flats - Ft. Richardson, Anchorage AK | | | |
| PROJECT NUMBER: 457958 | PROJECT DESCRIPTION: Waterfowl Mortality Survey | | | |
| PROJECT MANAGER: Mike Whitney | | SITE QC MANAGER: | Margaret Dombrowski | |
| SITE MANAGER: Stacey Re' | | SAFETY MANAGER: | Josh Painter | |
| AM WEATHER: Sunny-partly cloudy, slight breeze | PM WEATHER: partly cloudy, breezy | MAX TEMP: 55 | MIN TEMP: 40 | |
| SUMMARY OF WORK PERFORMED TODAY | | | | |
| UXO clearance, pump maintenance | | | | |
| HEALTH AND SAFETY REPORT | | | | |
| SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted): | | | | |
| | | | | |
| TAILGATE TOPICS: | | | | |
| | | | | |
| OPERATIONS / PRODUCTION REPORT | | | | |
| WORK FORCE – CONTRACTOR AND SUBCONTRACTOR | | | | |
| Company | Cumulative Total of Work Hours From Previous Report | Total Hours Today | Total Work Hours From Start of Field Effort | |
| CH2MHILL - | 97.5 | 0 | 97.5 | |
| CRRREL - Mike Walsh, Marianne Walsh | 174.5 | 12 | 186.5 | |
| BSE – Don Ebersol | 31.5 | 6 | 37.5 | |
| | | | | |
| | | | | |
| | | | | |
| Total Hours worked project to date | 303.5 | 18 | 321.5 | |
| EQUIPMENT ON HAND | | | | |
| Description of Equipment | Make/Model/Manufacturer | Equipment ID Number | Inspection Performed By | |
| | | | | |
| | | | | |
| | | | | |
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| COMMENTS (acceptance status, inspection findings, etc.): | | | | |
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| CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to access, site or weather conditions, etc.): | | | | |
| <ul style="list-style-type: none"> None | | | | |
| VISITORS AND DISCUSSIONS: | | | | |
| <ul style="list-style-type: none"> None | | | | |
| QUALITY CONTROL REPORT | | | | |
| MATERIALS DELIVERED TO JOB SITE | | | | |
| Quantity/Volume/Weight | Description of Materials Received | Make/Model/Manufacturer | Material Lot Number | Inspection Performed By |
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|--|---|-------------------------|--|-------------------------|
|  CONTRACT NAME: JBER CONTRACT NO: FA8903-07-D-8589 | ERF DAILY REPORT SOP CQMM-017, Version 1 (ATTACH ADDITIONAL SHEETS IF NECESSARY) | | REPORT DATE :9/10/12 REVISION NO: REVISION DATE: REPORT NO: | |
| TASK ORDER NO: 0080021 | PROJECT NAME / LOCATION: Eagle River Flats - Ft. Richardson, Anchorage AK | | | |
| PROJECT NUMBER: 457958 | PROJECT DESCRIPTION: Waterfowl Mortality Survey | | | |
| PROJECT MANAGER: Mike Whitney | | | SITE QC MANAGER: | Margaret Dombrowski |
| SITE MANAGER: Stacey Re' | | | SAFETY MANAGER: | Josh Painter |
| AM WEATHER: clear, sunny, calm | PM WEATHER: clear, sunny, calm | MAX TEMP: 60 | MIN TEMP: 40 | |
| SUMMARY OF WORK PERFORMED TODAY | | | | |
| Mortality Survey-Area C, Sediment sampling around capped areas | | | | |
| HEALTH AND SAFETY REPORT | | | | |
| SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted): | | | | |
| TAILGATE TOPICS: Proper PPE for colder weather, UXO, being careful of footing, especially in newly drained mud. | | | | |
| OPERATIONS / PRODUCTION REPORT | | | | |
| WORK FORCE – CONTRACTOR AND SUBCONTRACTOR | | | | |
| Company | Cumulative Total of Work Hours From Previous Report | Total Hours Today | Total Work Hours From Start of Field Effort | |
| CH2MHILL Stacey Ré-7.5, Rich Horn-7.5, Kristen Stevens-4 | 97.5 | 19 | 116.5 | |
| CRRREL Ann Staples-4, Mike Walsh-2, Marianne Walsh-7.5, Jon Zufelt-2, Mike Udem-4 | 186.5 | 19.5 | 206 | |
| BSE Don Ebersole | 37.5 | 7.5 | 45 | |
| | | | | |
| | | | | |
| | | | | |
| Total Hours worked project to date | 321.5 | 46 | 367.5 | |
| EQUIPMENT ON HAND | | | | |
| Description of Equipment | Make/Model/Manufacturer | Equipment ID Number | Inspection Performed By | |
| | | | | |
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| | | | | |
| | | | | |
| COMMENTS (acceptance status, inspection findings, etc.): | | | | |
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| CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to access, site or weather conditions, etc.): | | | | |
| <ul style="list-style-type: none"> None | | | | |
| VISITORS AND DISCUSSIONS: | | | | |
| <ul style="list-style-type: none"> None | | | | |
| QUALITY CONTROL REPORT | | | | |
| MATERIALS DELIVERED TO JOB SITE | | | | |
| Quantity/Volume/Weight | Description of Materials Received | Make/Model/Manufacturer | Material Lot Number | Inspection Performed By |
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COMMENTS (acceptance status, inspection findings, etc.):

Mort 13 and 14 were feather piles with nothing to collect.

INSPECTIONS PERFORMED

| Transects Inspected | Number of Mortalities Recorded | Mortality ID #(s) | Type of Waterfowl (if known) |
|-----------------------------|--------------------------------|-------------------|------------------------------|
| Area C – Ditch transect | 1 | 14 | mallard |
| Area C – Duck Pond transect | 0 | NA | NA |
| Area C Pond 183 transect | 1 | 13 | unknown |
| Area C – Pond 730 transect | 0 | NA | NA |
| Area C – C/D south transect | 0 | NA | NA |
| | | | |
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ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes,, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as “not applicable”. Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

Stacey Ré

9/18/2012

PREPARER'S SIGNATURE

DATE

PHOTOGRAPHS TAKEN THIS DATE: 5

SUBJECT : Rich Horn dabbling-2, Don Ebersole and extracted munitions, view from Cluney Point -2

PHOTO LOG NO.S:

http://www.wunderground.com/history/airport/PABV/2012/8/24/DailyHistory.html?req_city=NA&req_state=NA&req_statename=NA



CONTRACT NAME: JBER
 CONTRACT NO: FA8903-07-D-8589

ERF DAILY REPORT
 SOP CQMM-017, Version 1
 (ATTACH ADDITIONAL SHEETS IF NECESSARY)

REPORT DATE :9/11/12
 REVISION NO:
 REVISION DATE:
 REPORT NO:

| | | | |
|--------------------------------|---|------------------|---------------------|
| TASK ORDER NO: 0080021 | PROJECT NAME / LOCATION: Eagle River Flats - Ft. Richardson, Anchorage AK | | |
| PROJECT NUMBER: 457958 | PROJECT DESCRIPTION: Waterfowl Mortality Survey | | |
| PROJECT MANAGER: Mike Whitney | | SITE QC MANAGER: | Margaret Dombrowski |
| SITE MANAGER: Stacey Re' | | SAFETY MANAGER: | Josh Painter |
| AM WEATHER: clear, sunny, calm | PM WEATHER: clear, sunny, calm | MAX TEMP: 60 | MIN TEMP: 40 |

SUMMARY OF WORK PERFORMED TODAY

Mortality Survey-Area A, Sediment sampling around capped areas (near ditches)

HEALTH AND SAFETY REPORT

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted):

TAILGATE TOPICS: Proper PPE for colder weather, UXO, being careful of footing, especially in newly drained mud.

OPERATIONS / PRODUCTION REPORT

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

| Company | Cumulative Total of Work Hours From Previous Report | Total Hours Today | Total Work Hours From Start of Field Effort |
|---|---|-------------------|---|
| CH2MHILL Stacey Ré-7.5, Mike Landon-7.5, Kristen Stevens-4.5, Jennifer Ulrich-4.5 | 116.5 | 24 | 140.5 |
| CRRREL Marianne Walsh-7.5, Mike Undem-4.5 | 206 | 12 | 218 |
| BSE Don Ebersole | 45 | 7.5 | 52.5 |
| | | | |
| | | | |
| | | | |
| Total Hours worked project to date | 367.5 | 43.5 | 411 |

EQUIPMENT ON HAND

| Description of Equipment | Make/Model/Manufacturer | Equipment ID Number | Inspection Performed By |
|--------------------------|-------------------------|---------------------|-------------------------|
| | | | |
| | | | |
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COMMENTS (acceptance status, inspection findings, etc.):

CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to access, site or weather conditions, etc.):

- None

VISITORS AND DISCUSSIONS:

- None

QUALITY CONTROL REPORT

MATERIALS DELIVERED TO JOB SITE

| Quantity/Volume/Weight | Description of Materials Received | Make/Model/Manufacturer | Material Lot Number | Inspection Performed By |
|------------------------|-----------------------------------|-------------------------|---------------------|-------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

INSPECTIONS PERFORMED

| Transects Inspected | Number of Mortalities Recorded | Mortality ID #(s) | Type of Waterfowl (if known) |
|-------------------------|--------------------------------|-------------------|------------------------------|
| Pond 290 | 0 | NA | NA |
| Northern A Pond Complex | 0 | NA | NA |
| | | | |
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ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes,, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as "not applicable". Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

Stacey Ré

9/11/2012

PREPARER'S SIGNATURE

DATE

PHOTOGRAPHS TAKEN THIS DATE:3

SUBJECT : Area C landscapes

PHOTO LOG NO.S:

http://www.wunderground.com/history/airport/PABV/2012/8/24/DailyHistory.html?req_city=NA&req_state=NA&req_statename=NA

| | | | | | |
|--|-----------------------------------|---|-------------------------|--|-------------------------|
|  | | ERF DAILY REPORT SOP CQMM-017, Version 1 (ATTACH ADDITIONAL SHEETS IF NECESSARY) | | REPORT DATE :9/12/12 REVISION NO: REVISION DATE: REPORT NO: | |
| CONTRACT NAME: JBER CONTRACT NO: FA8903-07-D-8589 | | PROJECT NAME / LOCATION: Eagle River Flats - Ft. Richardson, Anchorage AK | | | |
| TASK ORDER NO: 0080021 | | PROJECT DESCRIPTION: Waterfowl Mortality Survey | | | |
| PROJECT NUMBER: 457958 | | PROJECT MANAGER: Mike Whitney | | SITE QC MANAGER: Margaret Dombrowski | |
| SITE MANAGER: Stacey Re' | | SAFETY MANAGER: | | Josh Painter | |
| AM WEATHER: overcast, rain, calm | | PM WEATHER: overcast, rain, calm | | MAX TEMP: 48 MIN TEMP: 42 | |
| SUMMARY OF WORK PERFORMED TODAY | | | | | |
| Mortality Survey-Area C, Sediment sampling around capped areas near duck ponds, and pond 730 | | | | | |
| HEALTH AND SAFETY REPORT | | | | | |
| SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted): | | | | | |
| TAILGATE TOPICS: Proper clothing for changing conditions and PPE. | | | | | |
| OPERATIONS / PRODUCTION REPORT | | | | | |
| WORK FORCE – CONTRACTOR AND SUBCONTRACTOR | | | | | |
| Company | | Cumulative Total of Work Hours From Previous Report | Total Hours Today | Total Work Hours From Start of Field Effort | |
| CH2MHILL Stacey Ré-6, Kristen Stevens-6, Jennifer Ulrich-6 | | 140.5 | 18 | 158.5 | |
| CRRREL Ann Staples-6, Marianne Walsh-6 | | 218 | 12 | 230 | |
| BSE Don Ebersole-6 | | 52.5 | 6 | 58.5 | |
| Total Hours worked project to date | | 411 | 36 | 447 | |
| EQUIPMENT ON HAND | | | | | |
| Description of Equipment | | Make/Model/Manufacturer | Equipment ID Number | Inspection Performed By | |
| | | | | | |
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| | | | | | |
| | | | | | |
| COMMENTS (acceptance status, inspection findings, etc.): | | | | | |
| | | | | | |
| CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to access, site or weather conditions, etc.): | | | | | |
| <ul style="list-style-type: none"> None | | | | | |
| VISITORS AND DISCUSSIONS: | | | | | |
| <ul style="list-style-type: none"> None | | | | | |
| QUALITY CONTROL REPORT | | | | | |
| MATERIALS DELIVERED TO JOB SITE | | | | | |
| Quantity/Volume/Weight | Description of Materials Received | | Make/Model/Manufacturer | Material Lot Number | Inspection Performed By |
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COMMENTS (acceptance status, inspection findings, etc.):

Mort 15 was a feather pile with nothing to collect.

INSPECTIONS PERFORMED

| Transects Inspected | Number of Mortalities Recorded | Mortality ID #(s) | Type of Waterfowl (if known) |
|-----------------------------|--------------------------------|-------------------|------------------------------|
| Area C – Ditch transect | 1 | 15 | unknown |
| Area C – Duck Pond transect | 0 | NA | NA |
| Area C Pond 183 transect | 0 | NA | NA |
| Area C – Pond 730 transect | 0 | NA | NA |
| Area C – C/D south transect | 0 | NA | NA |
| | | | |
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| | | | |

ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes,, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as “not applicable”. Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

Stacey Ré

9/18/2012

PREPARER'S SIGNATURE

DATE

PHOTOGRAPHS TAKEN THIS DATE: 0

SUBJECT :

PHOTO LOG NO.S:

http://www.wunderground.com/history/airport/PABV/2012/8/24/DailyHistory.html?req_city=NA&req_state=NA&req_statename=NA



CONTRACT NAME: JBER
 CONTRACT NO: FA8903-07-D-8589

ERF DAILY REPORT
 SOP CQMM-017, Version 1
 (ATTACH ADDITIONAL SHEETS IF NECESSARY)

REPORT DATE :9/13/12
 REVISION NO:
 REVISION DATE:
 REPORT NO:

| | | | |
|---|---|------------------|---------------------|
| TASK ORDER NO: 0080021 | PROJECT NAME / LOCATION: Eagle River Flats - Ft. Richardson, Anchorage AK | | |
| PROJECT NUMBER: 457958 | PROJECT DESCRIPTION: Waterfowl Mortality Survey | | |
| PROJECT MANAGER: Mike Whitney | | SITE QC MANAGER: | Margaret Dombrowski |
| SITE MANAGER: Stacey Re' | | SAFETY MANAGER: | Josh Painter |
| AM WEATHER: partly cloudy, light breeze | PM WEATHER: partly cloudy, light breeze | MAX TEMP: 54 | MIN TEMP: 43 |

SUMMARY OF WORK PERFORMED TODAY

Mortality Survey – Area D Canoe Transects

HEALTH AND SAFETY REPORT

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted):

TAILGATE TOPICS: Wear life jackets during canoe transect, watch for bears, be aware of changing weather conditions, slips, trips, and falls.

OPERATIONS / PRODUCTION REPORT

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

| Company | Cumulative Total of Work Hours From Previous Report | Total Hours Today | Total Work Hours From Start of Field Effort |
|--|---|-------------------|---|
| CH2MHILL Stacey Ré-3, Kristen Stevens-7, Jeremy Blei - 2 | 158.5 | 12 | 170.5 |
| CRRREL Marianne Walsh-7, Ron Bailey-7 | 230 | 14 | 244 |
| BSE (add staff names) Don Ebersole-7 | 58.5 | 7 | 65.5 |
| | | | |
| | | | |
| | | | |
| Total Hours worked project to date | 447 | 33 | 480 |

EQUIPMENT ON HAND

| Description of Equipment | Make/Model/Manufacturer | Equipment ID Number | Inspection Performed By |
|--------------------------|-------------------------|---------------------|-------------------------|
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| | | | |
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COMMENTS (acceptance status, inspection findings, etc.):

CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to access, site or weather conditions, etc.):

- None

VISITORS AND DISCUSSIONS:

- None

QUALITY CONTROL REPORT

MATERIALS DELIVERED TO JOB SITE

| Quantity/Volume/Weight | Description of Materials Received | Make/Model/Manufacturer | Material Lot Number | Inspection Performed By |
|------------------------|-----------------------------------|-------------------------|---------------------|-------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

INSPECTIONS PERFORMED

| Transects Inspected | Number of Mortalities Recorded | Mortality ID #(s) | Type of Waterfowl (if known) |
|-------------------------|--------------------------------|-------------------|------------------------------|
| Area D – Canoe Transect | 0 | NA | NA |
| | | | |
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ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes,, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as “not applicable”. Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

Stacey K. Ré

9/18/2012

PREPARER’S SIGNATURE


DATE

PHOTOGRAPHS TAKEN THIS DATE:6

SUBJECT : Area A from EOD pad, 2-grid sampling Area C, 2-munitions recovered from Area C, Area D from canoe

PHOTO LOG NO.S:

http://www.wunderground.com/history/airport/PABV/2012/8/24/DailyHistory.html?req_city=NA&req_state=NA&req_statename=NA

| | | | | |
|--|---|---|---|--|
|  CONTRACT NAME: JBER CONTRACT NO: FA8903-07-D-8589 | ERF DAILY REPORT SOP CQMM-017, Version 1 (ATTACH ADDITIONAL SHEETS IF NECESSARY) | | | REPORT DATE :9/14/12 REVISION NO: REVISION DATE: REPORT NO: |
| | TASK ORDER NO: 0080021 | PROJECT NAME / LOCATION: Eagle River Flats - Ft. Richardson, Anchorage AK | | |
| PROJECT NUMBER: 457958 | PROJECT DESCRIPTION: Waterfowl Mortality Survey | | | |
| PROJECT MANAGER: Mike Whitney | | SITE QC MANAGER: | Margaret Dombrowski | |
| SITE MANAGER: Stacey Re' | | SAFETY MANAGER: | Josh Painter | |
| AM WEATHER: overcast, rain, calm | PM WEATHER: overcast, rain, calm | MAX TEMP: 52 | MIN TEMP: 46 | |
| SUMMARY OF WORK PERFORMED TODAY | | | | |
| Mortality Survey-Area C, Sediment sampling grids in Pond 183, pond 171, and pond 155; began photographing vegetation plots | | | | |
| HEALTH AND SAFETY REPORT | | | | |
| SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted): | | | | |
| TAILGATE TOPICS: weather, wildlife, PPE, slips and trips, rain gear | | | | |
| OPERATIONS / PRODUCTION REPORT | | | | |
| WORK FORCE – CONTRACTOR AND SUBCONTRACTOR | | | | |
| Company | Cumulative Total of Work Hours From Previous Report | Total Hours Today | Total Work Hours From Start of Field Effort | |
| CH2MHILL Stacey Ré-9, Kristen Stevens-3.5 | 170.5 | 12.5 | 183 | |
| CRRREL Mike Undem-3.5, Marianne Walsh-9, Mike Walsh-3, Ron Bailey -9, Karen ?-3, Jon Zufelt-3 | 244 | 30.5 | 274.5 | |
| BSE Don Ebersole-9 | 65.5 | 9 | 74.5 | |
| | | | | |
| | | | | |
| | | | | |
| Total Hours worked project to date | 480 | 52 | 532 | |
| EQUIPMENT ON HAND | | | | |
| Description of Equipment | Make/Model/Manufacturer | Equipment ID Number | Inspection Performed By | |
| Forklift | JLG lift/Model JLG534D 10-45 | Unit 5-322; S#160030537 | | |
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| COMMENTS (acceptance status, inspection findings, etc.): | | | | |
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| CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to access, site or weather conditions, etc.): | | | | |
| <ul style="list-style-type: none"> None | | | | |
| VISITORS AND DISCUSSIONS: | | | | |
| <ul style="list-style-type: none"> None | | | | |
| QUALITY CONTROL REPORT | | | | |
| MATERIALS DELIVERED TO JOB SITE | | | | |
| Quantity/Volume/Weight | Description of Materials Received | Make/Model/Manufacturer | Material Lot Number | Inspection Performed By |
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COMMENTS (acceptance status, inspection findings, etc.):

INSPECTIONS PERFORMED

| Transects Inspected | Number of Mortalities Recorded | Mortality ID #(s) | Type of Waterfowl (if known) |
|-----------------------------|--------------------------------|-------------------|------------------------------|
| Area C – Ditch transect | 0 | NA | NA |
| Area C – Duck Pond transect | 0 | NA | NA |
| Area C Pond 183 transect | 0 | NA | NA |
| Area C – Pond 730 transect | 0 | NA | NA |
| Area C – C/D south transect | 0 | NA | NA |
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ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as “not applicable”. Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

Stacey Ré

9/18/2012

PREPARER’S SIGNATURE


DATE

PHOTOGRAPHS TAKEN THIS DATE: 4

SUBJECT : Area C grid sampling-2, gizzardectomy on Mort 9-2

PHOTO LOG NO.S:

http://www.wunderground.com/history/airport/PABV/2012/8/24/DailyHistory.html?req_city=NA&req_state=NA&req_statename=NA

| | | | | | |
|--|-----------------------------------|---|-------------------------|--|-------------------------|
|  | | ERF DAILY REPORT SOP CQMM-017, Version 1 (ATTACH ADDITIONAL SHEETS IF NECESSARY) | | REPORT DATE :9/15/12 REVISION NO: REVISION DATE: REPORT NO: | |
| CONTRACT NAME: JBER CONTRACT NO: FA8903-07-D-8589 | | PROJECT NAME / LOCATION: Eagle River Flats - Ft. Richardson, Anchorage AK | | | |
| TASK ORDER NO: 0080021 | | PROJECT DESCRIPTION: Waterfowl Mortality Survey | | | |
| PROJECT NUMBER: 457958 | | PROJECT MANAGER: Mike Whitney | | SITE QC MANAGER: Margaret Dombrowski | |
| SITE MANAGER: Stacey Re' | | SAFETY MANAGER: | | Josh Painter | |
| AM WEATHER: overcast, scattered showers, breeze | | PM WEATHER: overcast, scattered showers, breeze | | MAX TEMP: 54 MIN TEMP: 48 | |
| SUMMARY OF WORK PERFORMED TODAY | | | | | |
| Pump and gen set demobilization | | | | | |
| HEALTH AND SAFETY REPORT | | | | | |
| SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted): | | | | | |
| TAILGATE TOPICS: | | | | | |
| OPERATIONS / PRODUCTION REPORT | | | | | |
| WORK FORCE – CONTRACTOR AND SUBCONTRACTOR | | | | | |
| Company | | Cumulative Total of Work Hours From Previous Report | Total Hours Today | Total Work Hours From Start of Field Effort | |
| CH2MHILL - | | 183 | 0 | 183 | |
| CRRREL - Mike Walsh-8, Mark Bedee-8, Marianne Walsh-8, Ron Bailey-8, Karen Foley-8 | | 274.5 | 40 | 314.5 | |
| BSE - Don Ebersole-8 | | 74.5 | 8 | 82.5 | |
| Total Hours worked project to date | | 532 | 48 | 580 | |
| EQUIPMENT ON HAND | | | | | |
| Description of Equipment | | Make/Model/Manufacturer | Equipment ID Number | Inspection Performed By | |
| Forklift | | JLG lift/Model JLG534D 10-45 | Unit 5-322; S#160030537 | | |
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| | | | | | |
| | | | | | |
| COMMENTS (acceptance status, inspection findings, etc.): | | | | | |
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| CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to access, site or weather conditions, etc.): | | | | | |
| <ul style="list-style-type: none"> None | | | | | |
| VISITORS AND DISCUSSIONS: | | | | | |
| <ul style="list-style-type: none"> None | | | | | |
| QUALITY CONTROL REPORT | | | | | |
| MATERIALS DELIVERED TO JOB SITE | | | | | |
| Quantity/Volume/Weight | Description of Materials Received | | Make/Model/Manufacturer | Material Lot Number | Inspection Performed By |
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COMMENTS (acceptance status, inspection findings, etc.):

INSPECTIONS PERFORMED

| Transects Inspected | Number of Mortalities Recorded | Mortality ID #(s) | Type of Waterfowl (if known) |
|---------------------|--------------------------------|-------------------|------------------------------|
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ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as "not applicable". Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

Stacey Ré

9/18/2012

PREPARER'S SIGNATURE


DATE

PHOTOGRAPHS TAKEN THIS DATE:

SUBJECT :

PHOTO LOG NO.S:

http://www.wunderground.com/history/airport/PABV/2012/8/24/DailyHistory.html?req_city=NA&req_state=NA&req_statename=NA

| | | | | |
|--|---|-------------------------|--|-------------------------|
|  CONTRACT NAME: JBER CONTRACT NO: FA8903-07-D-8589 | ERF DAILY REPORT SOP CQMM-017, Version 1 (ATTACH ADDITIONAL SHEETS IF NECESSARY) | | REPORT DATE :9/17/12 REVISION NO: REVISION DATE: REPORT NO: | |
| TASK ORDER NO: 0080021 | PROJECT NAME / LOCATION: Eagle River Flats - Ft. Richardson, Anchorage AK | | | |
| PROJECT NUMBER: 457958 | PROJECT DESCRIPTION: Waterfowl Mortality Survey | | | |
| PROJECT MANAGER: Mike Whitney | | | SITE QC MANAGER: | Margaret Dombrowski |
| SITE MANAGER: Stacey Re' | | | SAFETY MANAGER: | Josh Painter |
| AM WEATHER: mostly cloudy, breezy | PM WEATHER: overcast, breezy | MAX TEMP: 53 | MIN TEMP: 48 | |
| SUMMARY OF WORK PERFORMED TODAY | | | | |
| Pump maintenance, transport, winterization | | | | |
| HEALTH AND SAFETY REPORT | | | | |
| SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted): | | | | |
| TAILGATE TOPICS: Flood tide, use canoe in deep water | | | | |
| OPERATIONS / PRODUCTION REPORT | | | | |
| WORK FORCE – CONTRACTOR AND SUBCONTRACTOR | | | | |
| Company | Cumulative Total of Work Hours From Previous Report | Total Hours Today | Total Work Hours From Start of Field Effort | |
| CH2MHILL Stacey Ré-1, Kristen Stevens-4 | 183 | 5 | 188 | |
| CRRREL Mark Udem-4 | 314.5 | 4 | 318.5 | |
| BSE | 82.5 | 0 | 82.5 | |
| | | | | |
| | | | | |
| | | | | |
| Total Hours worked project to date | 580 | 9 | 589 | |
| EQUIPMENT ON HAND | | | | |
| Description of Equipment | Make/Model/Manufacturer | Equipment ID Number | Inspection Performed By | |
| Forklift | JLG lift/Model JLG534D 10-45 | Unit 5-322; S#160030537 | | |
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| | | | | |
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| COMMENTS (acceptance status, inspection findings, etc.): | | | | |
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| CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to access, site or weather conditions, etc.): | | | | |
| <ul style="list-style-type: none"> None | | | | |
| VISITORS AND DISCUSSIONS: | | | | |
| <ul style="list-style-type: none"> None | | | | |
| QUALITY CONTROL REPORT | | | | |
| MATERIALS DELIVERED TO JOB SITE | | | | |
| Quantity/Volume/Weight | Description of Materials Received | Make/Model/Manufacturer | Material Lot Number | Inspection Performed By |
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COMMENTS (acceptance status, inspection findings, etc.):

Marianne indicated she had seen a duck carcass (already rotted) along the cross ditch connecting the north and south ditches on 9/15, but it was not observed during the survey on 9/17. Survey was conducted by canoe because of the flood tide..

INSPECTIONS PERFORMED

| Transects Inspected | Number of Mortalities Recorded | Mortality ID #(s) | Type of Waterfowl (if known) |
|-----------------------------|--------------------------------|-------------------|------------------------------|
| Area C – Ditch transect | 0 | NA | NA |
| Area C – Duck Pond transect | 0 | NA | NA |
| Area C Pond 183 transect | 0 | NA | NA |
| Area C – Pond 730 transect | 0 | NA | NA |
| Area C – C/D south transect | 0 | NA | NA |
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ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as “not applicable”. Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

Stacey Ré

9/18/2012

PREPARER'S SIGNATURE

DATE

PHOTOGRAPHS TAKEN THIS DATE: 7

SUBJECT : Area C flooded -6, Marianne homogenizing MI sample-1

PHOTO LOG NO.S:

http://www.wunderground.com/history/airport/PABV/2012/8/24/DailyHistory.html?req_city=NA&req_state=NA&req_statename=NA



CONTRACT NAME: JBER
 CONTRACT NO: FA8903-07-D-8589

ERF DAILY REPORT
 SOP CQMM-017, Version 1
 (ATTACH ADDITIONAL SHEETS IF NECESSARY)

REPORT DATE :9/20/12
 REVISION NO:
 REVISION DATE:
 REPORT NO:

| | | | |
|-------------------------------|---|------------------|---------------------|
| TASK ORDER NO: 0080021 | PROJECT NAME / LOCATION: Eagle River Flats - Ft. Richardson, Anchorage AK | | |
| PROJECT NUMBER: 457958 | PROJECT DESCRIPTION: Waterfowl Mortality Survey | | |
| PROJECT MANAGER: Mike Whitney | | SITE QC MANAGER: | Margaret Dombrowski |
| SITE MANAGER: Stacey Re' | | SAFETY MANAGER: | Josh Painter |
| AM WEATHER: overcast, breezy | PM WEATHER: overcast, breezy | MAX TEMP: 54 | MIN TEMP: 52 |

SUMMARY OF WORK PERFORMED TODAY

Waterfowl mortality surveys, Area C (by canoe)

HEALTH AND SAFETY REPORT

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted):

TAILGATE TOPICS: Stay dry, use proper gear/PPE

OPERATIONS / PRODUCTION REPORT

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

| Company | Cumulative Total of Work Hours From Previous Report | Total Hours Today | Total Work Hours From Start of Field Effort |
|---|---|-------------------|---|
| CH2MHILL Kristen Stevens-4 | 188 | 4 | 192 |
| CRRREL Mike Undem-4 | 318.5 | 4 | 322.5 |
| BSE | 82.5 | 0 | 82.5 |
| | | | |
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| | | | |
| Total Hours worked project to date | 589 | 8 | 597 |

EQUIPMENT ON HAND

| Description of Equipment | Make/Model/Manufacturer | Equipment ID Number | Inspection Performed By |
|--------------------------|-------------------------|---------------------|-------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to access, site or weather conditions, etc.):

- None

VISITORS AND DISCUSSIONS:

- None

QUALITY CONTROL REPORT

MATERIALS DELIVERED TO JOB SITE

| Quantity/Volume/Weight | Description of Materials Received | Make/Model/Manufacturer | Material Lot Number | Inspection Performed By |
|------------------------|-----------------------------------|-------------------------|---------------------|-------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

Survey conducted by canoe. No mortalities noted.

INSPECTIONS PERFORMED

| Transects Inspected | Number of Mortalities Recorded | Mortality ID #(s) | Type of Waterfowl (if known) |
|-----------------------------|--------------------------------|-------------------|------------------------------|
| Area C – Ditch transect | 0 | NA | NA |
| Area C – Duck Pond transect | 0 | NA | NA |
| Area C Pond 183 transect | 0 | NA | NA |
| Area C – Pond 730 transect | 0 | NA | NA |
| Area C – C/D south transect | 0 | NA | NA |
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ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as “not applicable”. Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

Stacey Ré

9/24/2012

PREPARER'S SIGNATURE

DATE

PHOTOGRAPHS TAKEN THIS DATE: 0

SUBJECT :

PHOTO LOG NO.S:

http://www.wunderground.com/history/airport/PABV/2012/8/24/DailyHistory.html?req_city=NA&req_state=NA&req_statename=NA



CONTRACT NAME: JBER
 CONTRACT NO: FA8903-07-D-8589

ERF DAILY REPORT
 SOP CQMM-017, Version 1
 (ATTACH ADDITIONAL SHEETS IF NECESSARY)

REPORT DATE :9/21/12
 REVISION NO:
 REVISION DATE:
 REPORT NO:

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|--------------------------------------|---|------------------|---------------------|
| TASK ORDER NO: 0080021 | PROJECT NAME / LOCATION: Eagle River Flats - Ft. Richardson, Anchorage AK | | |
| PROJECT NUMBER: 457958 | PROJECT DESCRIPTION: Waterfowl Mortality Survey | | |
| PROJECT MANAGER: Mike Whitney | | SITE QC MANAGER: | Margaret Dombrowski |
| SITE MANAGER: Stacey Re' | | SAFETY MANAGER: | Josh Painter |
| AM WEATHER: clear, occasional breeze | PM WEATHER: partly cloudy, breezy | MAX TEMP: 57 | MIN TEMP: 48 |

SUMMARY OF WORK PERFORMED TODAY

Waterfowl mortality surveys, Area C and Area D (by canoe)

HEALTH AND SAFETY REPORT

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted):

TAILGATE TOPICS: Don't forget sunglasses for bright, sunny days

OPERATIONS / PRODUCTION REPORT

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

| Company | Cumulative Total of Work Hours From Previous Report | Total Hours Today | Total Work Hours From Start of Field Effort |
|--|---|-------------------|---|
| CH2MHILL Kristen Stevens and Stacey Ré-4.5 | 192 | 9 | 201 |
| CRRREL | 322.5 | 0 | 322.5 |
| BSE | 82.5 | 0 | 82.5 |
| | | | |
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| | | | |
| Total Hours worked project to date | 597 | 9 | 606 |

EQUIPMENT ON HAND

| Description of Equipment | Make/Model/Manufacturer | Equipment ID Number | Inspection Performed By |
|--------------------------|-------------------------|---------------------|-------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to access, site or weather conditions, etc.):

- None

VISITORS AND DISCUSSIONS:

- None

QUALITY CONTROL REPORT

MATERIALS DELIVERED TO JOB SITE

| Quantity/Volume/Weight | Description of Materials Received | Make/Model/Manufacturer | Material Lot Number | Inspection Performed By |
|------------------------|-----------------------------------|-------------------------|---------------------|-------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

Survey conducted by canoe. No mortalities noted.

INSPECTIONS PERFORMED

| Transects Inspected | Number of Mortalities Recorded | Mortality ID #(s) | Type of Waterfowl (if known) |
|-----------------------------|--------------------------------|-------------------|------------------------------|
| Area C – Ditch transect | 0 | NA | NA |
| Area C – Duck Pond transect | 0 | NA | NA |
| Area C Pond 183 transect | 0 | NA | NA |
| Area C – Pond 730 transect | 0 | NA | NA |
| Area C – C/D south transect | 0 | NA | NA |
| Area D – Canoe Transect | 0 | NA | NA |
| | | | |
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ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as “not applicable”. Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

Stacey Ré

9/24/2012

PREPARER'S SIGNATURE

DATE

PHOTOGRAPHS TAKEN THIS DATE: 2

SUBJECT : Area D, Area D –Kristen in canoe

PHOTO LOG NO.S:

http://www.wunderground.com/history/airport/PABV/2012/8/24/DailyHistory.html?req_city=NA&req_state=NA&req_statename=NA



CONTRACT NAME: JBER
 CONTRACT NO: FA8903-07-D-8589

ERF DAILY REPORT
 SOP CQMM-017, Version 1
 (ATTACH ADDITIONAL SHEETS IF NECESSARY)

REPORT DATE :9/24/12
 REVISION NO:
 REVISION DATE:
 REPORT NO:

| | | | |
|-------------------------------|---|------------------|---------------------|
| TASK ORDER NO: 0080021 | PROJECT NAME / LOCATION: Eagle River Flats - Ft. Richardson, Anchorage AK | | |
| PROJECT NUMBER: 457958 | PROJECT DESCRIPTION: Waterfowl Mortality Survey | | |
| PROJECT MANAGER: Mike Whitney | | SITE QC MANAGER: | Margaret Dombrowski |
| SITE MANAGER: Stacey Re' | | SAFETY MANAGER: | Josh Painter |
| AM WEATHER: overcast, calm | PM WEATHER: partly cloudy, calm | MAX TEMP: 50 | MIN TEMP: 47 |

SUMMARY OF WORK PERFORMED TODAY

Waterfowl mortality surveys, Area C (Pond 730 by canoe)

HEALTH AND SAFETY REPORT

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted):

TAILGATE TOPICS: Be careful not to become complacent, and do not hurry. Rushing and complacency can both cause accidents like slips and trips.

OPERATIONS / PRODUCTION REPORT

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

| Company | Cumulative Total of Work Hours From Previous Report | Total Hours Today | Total Work Hours From Start of Field Effort |
|---|---|-------------------|---|
| CH2MHILL Kristen Stevens and Stacey Ré-4 | 201 | 8 | 209 |
| CRRREL | 322.5 | 0 | 322.5 |
| BSE | 82.5 | 0 | 82.5 |
| | | | |
| | | | |
| | | | |
| Total Hours worked project to date | 606 | 8 | 614 |

EQUIPMENT ON HAND

| Description of Equipment | Make/Model/Manufacturer | Equipment ID Number | Inspection Performed By |
|--------------------------|-------------------------|---------------------|-------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to access, site or weather conditions, etc.):

- None

VISITORS AND DISCUSSIONS:

- None

QUALITY CONTROL REPORT

MATERIALS DELIVERED TO JOB SITE

| Quantity/Volume/Weight | Description of Materials Received | Make/Model/Manufacturer | Material Lot Number | Inspection Performed By |
|------------------------|-----------------------------------|-------------------------|---------------------|-------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

Survey of Pond 730 conducted by canoe, remaining transects surveyed on foot. Mort 17 may be the carcass Marianne noted on the diagonal ditch on 9/15, carcass was located along the cross ditch connecting the north and south ditches, but was near where the diagonal ditch meets the cross ditch. Carcass was too rotten to collect tissue. Mort 16 was two wings, one of which appeared to have liver tissue attached; tissue was collected for analysis. Mort 18 was several small clumps of flight feathers with small amounts of connective tissue, nothing to collect.

INSPECTIONS PERFORMED

| Transects Inspected | Number of Mortalities Recorded | Mortality ID #(s) | Type of Waterfowl (if known) |
|-----------------------------|--------------------------------|-------------------|---------------------------------------|
| Area C – Ditch transect | 2 | 17 & 18 | Unknown-rotten carcass & feather pile |
| Area C – Duck Pond transect | 0 | NA | NA |
| Area C Pond 183 transect | 0 | NA | NA |
| Area C – Pond 730 transect | 0 | NA | NA |
| Area C – C/D south transect | 1 | 16 | Unknown-feather pile/wings and liver |
| | 0 | NA | NA |
| | | | |
| | | | |
| | | | |

ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as "not applicable". Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

Stacey Ré

9/24/2012

PREPARER'S SIGNATURE

DATE

PHOTOGRAPHS TAKEN THIS DATE: 0

SUBJECT :

PHOTO LOG NO.S:

http://www.wunderground.com/history/airport/PABV/2012/8/24/DailyHistory.html?req_city=NA&req_state=NA&req_statename=NA



CONTRACT NAME: JBER
 CONTRACT NO: FA8903-07-D-8589

ERF DAILY REPORT
 SOP CQMM-017, Version 1
 (ATTACH ADDITIONAL SHEETS IF NECESSARY)

REPORT DATE :9/25/12
 REVISION NO:
 REVISION DATE:
 REPORT NO:

| | | | |
|-------------------------------|---|------------------|---------------------|
| TASK ORDER NO: 0080021 | PROJECT NAME / LOCATION: Eagle River Flats - Ft. Richardson, Anchorage AK | | |
| PROJECT NUMBER: 457958 | PROJECT DESCRIPTION: Waterfowl Mortality Survey | | |
| PROJECT MANAGER: Mike Whitney | | SITE QC MANAGER: | Margaret Dombrowski |
| SITE MANAGER: Stacey Re' | | SAFETY MANAGER: | Josh Painter |
| AM WEATHER: overcast, calm | PM WEATHER: overcast, breezey | MAX TEMP: 46 | MIN TEMP: 43 |

SUMMARY OF WORK PERFORMED TODAY

Waterfowl mortality surveys, Area A

HEALTH AND SAFETY REPORT

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted):

Determined even at high tide, paddling the canoe from Area D to Area C for surveys may still require exiting the canoe in uncleared areas to navigate through high spots or around obstacles. Discussed with Ann, she was able to call Natural Resources and we will be able to obtain an additional canoe to stage at Area C before the next period of high tides.

TAILGATE TOPICS: High wind warning for higher elevations, watch for changing weather conditions in field area as well. Wet leaves and logs are also an additional slip hazard at this time of year.

OPERATIONS / PRODUCTION REPORT

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

| Company | Cumulative Total of Work Hours From Previous Report | Total Hours Today | Total Work Hours From Start of Field Effort |
|---|---|-------------------|---|
| CH2MHILL Kristen Stevens and Stacey Ré-4e | 209 | 8 | 217 |
| CRRREL Mike Udem, Ann Staples-4e | 322.5 | 8 | 330.5 |
| BSE | 82.5 | 0 | 82.5 |
| | | | |
| | | | |
| | | | |
| Total Hours worked project to date | 614 | 16 | 630 |

EQUIPMENT ON HAND

| Description of Equipment | Make/Model/Manufacturer | Equipment ID Number | Inspection Performed By |
|--------------------------|-------------------------|---------------------|-------------------------|
| | | | |
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| | | | |
| | | | |

COMMENTS (acceptance status, inspection findings, etc.):

CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to access, site or weather conditions, etc.):

- None

VISITORS AND DISCUSSIONS:

- None

QUALITY CONTROL REPORT

MATERIALS DELIVERED TO JOB SITE

| Quantity/Volume/Weight | Description of Materials Received | Make/Model/Manufacturer | Material Lot Number | Inspection Performed By |
|------------------------|-----------------------------------|-------------------------|---------------------|-------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

No mortalities recorded. Next monitoring of Area A scheduled for October 9 (unless freeze-up comes first.)

INSPECTIONS PERFORMED

| Transects Inspected | Number of Mortalities Recorded | Mortality ID #(s) | Type of Waterfowl (if known) |
|-------------------------|--------------------------------|-------------------|------------------------------|
| Pond 290 | 0 | NA | NA |
| Northern A Pond Complex | 0 | NA | NA |
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ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as "not applicable". Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

Stacey Ré

9/25/2012

PREPARER'S SIGNATURE

DATE

PHOTOGRAPHS TAKEN THIS DATE: 0

SUBJECT :

PHOTO LOG NO.S:

http://www.wunderground.com/history/airport/PABV/2012/8/24/DailyHistory.html?req_city=NA&req_state=NA&req_statename=NA



CONTRACT NAME: JBER
 CONTRACT NO: FA8903-07-D-8589

ERF DAILY REPORT
 SOP CQMM-017, Version 1
 (ATTACH ADDITIONAL SHEETS IF NECESSARY)

REPORT DATE :9/26/12
 REVISION NO:
 REVISION DATE:
 REPORT NO:

| | | | |
|---------------------------------|---|------------------|---------------------|
| TASK ORDER NO: 0080021 | PROJECT NAME / LOCATION: Eagle River Flats - Ft. Richardson, Anchorage AK | | |
| PROJECT NUMBER: 457958 | PROJECT DESCRIPTION: Waterfowl Mortality Survey | | |
| PROJECT MANAGER: Mike Whitney | | SITE QC MANAGER: | Margaret Dombrowski |
| SITE MANAGER: Stacey Re' | | SAFETY MANAGER: | Josh Painter |
| AM WEATHER: partly cloudy, calm | PM WEATHER: overcast, breezy | MAX TEMP: 47 | MIN TEMP: 41 |

SUMMARY OF WORK PERFORMED TODAY

Waterfowl mortality surveys, Area C

HEALTH AND SAFETY REPORT

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted):

Do not eat while in Area C; wait until returned to EOD pad.

TAILGATE TOPICS: High wind warning for higher elevations, watch for changing weather conditions in field area as well. Wet leaves and logs are also an additional slip hazard at this time of year.

OPERATIONS / PRODUCTION REPORT

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

| Company | Cumulative Total of Work Hours From Previous Report | Total Hours Today | Total Work Hours From Start of Field Effort |
|---|---|-------------------|---|
| CH2MHILL Kristen Stevens and Stacey Ré-3e | 217 | 6 | 223 |
| CRRREL | 330.5 | 0 | 330.5 |
| BSE | 82.5 | 0 | 82.5 |
| | | | |
| | | | |
| | | | |
| Total Hours worked project to date | 630 | 6 | 636 |

EQUIPMENT ON HAND

| Description of Equipment | Make/Model/Manufacturer | Equipment ID Number | Inspection Performed By |
|--------------------------|-------------------------|---------------------|-------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

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CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to access, site or weather conditions, etc.):

- None

VISITORS AND DISCUSSIONS:

- None

QUALITY CONTROL REPORT

MATERIALS DELIVERED TO JOB SITE

| Quantity/Volume/Weight | Description of Materials Received | Make/Model/Manufacturer | Material Lot Number | Inspection Performed By |
|------------------------|-----------------------------------|-------------------------|---------------------|-------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

No mortalities recorded.

INSPECTIONS PERFORMED

| Transects Inspected | Number of Mortalities Recorded | Mortality ID #(s) | Type of Waterfowl (if known) |
|-----------------------------|--------------------------------|-------------------|------------------------------|
| Area C – Ditch transect | 0 | NA | NA |
| Area C – Duck Pond transect | 0 | NA | NA |
| Area C Pond 183 transect | 0 | NA | NA |
| Area C – Pond 730 transect | 0 | NA | NA |
| Area C – C/D south transect | 0 | NA | NA |
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ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as “not applicable”. Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

Stacey Ré

9/26/2012

PREPARER'S SIGNATURE


DATE

PHOTOGRAPHS TAKEN THIS DATE: 0

SUBJECT :

PHOTO LOG NO.S:

http://www.wunderground.com/history/airport/PABV/2012/8/24/DailyHistory.html?req_city=NA&req_state=NA&req_statename=NA

| | | | | | |
|--|-----------------------------------|---|---------------------|--|--|
|  | | ERF DAILY REPORT SOP CQMM-017, Version 1 (ATTACH ADDITIONAL SHEETS IF NECESSARY) | | REPORT DATE :9/27/12 REVISION NO: REVISION DATE: REPORT NO: | |
| CONTRACT NAME: JBER CONTRACT NO: FA8903-07-D-8589 | | PROJECT NAME / LOCATION: Eagle River Flats - Ft. Richardson, Anchorage AK | | | |
| TASK ORDER NO: 0080021 | | PROJECT DESCRIPTION: Waterfowl Mortality Survey | | | |
| PROJECT NUMBER: 457958 | | PROJECT MANAGER: Mike Whitney | | SITE QC MANAGER: Margaret Dombrowski | |
| PROJECT MANAGER: Mike Whitney | | SITE MANAGER: Stacey Re' | | SAFETY MANAGER: Josh Painter | |
| AM WEATHER: overcast, slight breeze | | PM WEATHER: NA | | MAX TEMP: 45 MIN TEMP: 43 | |
| SUMMARY OF WORK PERFORMED TODAY | | | | | |
| Waterfowl mortality surveys, Area D | | | | | |
| HEALTH AND SAFETY REPORT | | | | | |
| SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted): | | | | | |
| TAILGATE TOPICS: Insect/spider bites – spiders are hatching in the flats in amazing numbers, so wear long sleeves and gloves, and keep an eye out for possible bites. Do not hesitate to call the CH2M HILL Injury Management/Return to Work hotline for assistance with bites before they become a real problem. | | | | | |
| OPERATIONS / PRODUCTION REPORT | | | | | |
| WORK FORCE – CONTRACTOR AND SUBCONTRACTOR | | | | | |
| Company | | Cumulative Total of Work Hours From Previous Report | Total Hours Today | Total Work Hours From Start of Field Effort | |
| CH2MHILL Kristen Stevens and Stacey Ré-2.5e | | 223 | 5 | 228 | |
| CRRREL | | 330.5 | 0 | 330.5 | |
| BSE | | 82.5 | 0 | 82.5 | |
| | | | | | |
| | | | | | |
| | | | | | |
| Total Hours worked project to date | | 636 | 5 | 641 | |
| EQUIPMENT ON HAND | | | | | |
| Description of Equipment | | Make/Model/Manufacturer | Equipment ID Number | Inspection Performed By | |
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| COMMENTS (acceptance status, inspection findings, etc.): | | | | | |
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| CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to access, site or weather conditions, etc.): | | | | | |
| <ul style="list-style-type: none"> None | | | | | |
| VISITORS AND DISCUSSIONS: | | | | | |
| <ul style="list-style-type: none"> None | | | | | |
| QUALITY CONTROL REPORT | | | | | |
| MATERIALS DELIVERED TO JOB SITE | | | | | |
| Quantity/Volume/Weight | Description of Materials Received | Make/Model/Manufacturer | Material Lot Number | Inspection Performed By | |
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COMMENTS (acceptance status, inspection findings, etc.):

The remains of one swan (feather pile and a few bones) were found on the north end of the Area D transect. There was no gizzard or fatty tissue available to collect. Area D will be surveyed again on October 4 unless weather dictates otherwise..

INSPECTIONS PERFORMED

| Transects Inspected | Number of Mortalities Recorded | Mortality ID #(s) | Type of Waterfowl (if known) |
|-------------------------|--------------------------------|-------------------|------------------------------|
| Area D – Canoe Transect | 1 | 19 | swan |
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ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as “not applicable”. Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

Stacey Ré 9/27/2012

PREPARER’S SIGNATURE DATE

PHOTOGRAPHS TAKEN THIS DATE: 5
 SUBJECT :Area D general-1 Swan feather pile and bones-4
 PHOTO LOG NO.S:

http://www.wunderground.com/history/airport/PABV/2012/8/24/DailyHistory.html?req_city=NA&req_state=NA&req_statename=NA



CONTRACT NAME: JBER
 CONTRACT NO: FA8903-07-D-8589

ERF DAILY REPORT
 SOP CQMM-017, Version 1
 (ATTACH ADDITIONAL SHEETS IF NECESSARY)

REPORT DATE :9/27/12
 REVISION NO:
 REVISION DATE:
 REPORT NO:

| | | | |
|-------------------------------|---|---------------------|--------------|
| TASK ORDER NO: 0080021 | PROJECT NAME / LOCATION: Eagle River Flats - Ft. Richardson, Anchorage AK | | |
| PROJECT NUMBER: 457958 | PROJECT DESCRIPTION: Waterfowl Mortality Survey | | |
| PROJECT MANAGER: Mike Whitney | SITE QC MANAGER: | Margaret Dombrowski | |
| SITE MANAGER: Stacey Re' | SAFETY MANAGER: | Josh Painter | |
| AM WEATHER: NA | PM WEATHER: rain, overcast, intermittent breeze | MAX TEMP: 43 | MIN TEMP: 42 |

SUMMARY OF WORK PERFORMED TODAY

Waterfowl mortality surveys, Area C

HEALTH AND SAFETY REPORT

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted):

TAILGATE TOPICS: Lifting – team lift heavy objects.

OPERATIONS / PRODUCTION REPORT

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

| Company | Cumulative Total of Work Hours From Previous Report | Total Hours Today | Total Work Hours From Start of Field Effort |
|---|---|-------------------|---|
| CH2MHILL Stacey Ré-2 | 228 | 2 | 230 |
| CRRREL Ann Staples and Mike Undem 2e | 330.5 | 4 | 334.5 |
| BSE | 82.5 | 0 | 82.5 |
| | | | |
| | | | |
| | | | |
| Total Hours worked project to date | 641 | 6 | 647 |

EQUIPMENT ON HAND

| Description of Equipment | Make/Model/Manufacturer | Equipment ID Number | Inspection Performed By |
|--------------------------|-------------------------|---------------------|-------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to access, site or weather conditions, etc.):

- None

VISITORS AND DISCUSSIONS:

- None

QUALITY CONTROL REPORT

MATERIALS DELIVERED TO JOB SITE

| Quantity/Volume/Weight | Description of Materials Received | Make/Model/Manufacturer | Material Lot Number | Inspection Performed By |
|------------------------|-----------------------------------|-------------------------|---------------------|-------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

No new mortalities recorded.

INSPECTIONS PERFORMED

| Transects Inspected | Number of Mortalities Recorded | Mortality ID #(s) | Type of Waterfowl (if known) |
|-----------------------------|--------------------------------|-------------------|------------------------------|
| Area C – Ditch transect | 0 | NA | NA |
| Area C – Duck Pond transect | 0 | NA | NA |
| Area C Pond 183 transect | 0 | NA | NA |
| Area C – Pond 730 transect | 0 | NA | NA |
| Area C – C/D south transect | 0 | NA | NA |
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ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as “not applicable”. Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

Stacey Ré

9/28/2012

PREPARER'S SIGNATURE

DATE

PHOTOGRAPHS TAKEN THIS DATE: 0

SUBJECT :

PHOTO LOG NO.S:



CONTRACT NAME: JBER
 CONTRACT NO: FA8903-07-D-8589

ERF DAILY REPORT
 SOP CQMM-017, Version 1
 (ATTACH ADDITIONAL SHEETS IF NECESSARY)

REPORT DATE :10/01/12
 REVISION NO:
 REVISION DATE:
 REPORT NO:

| | | | |
|-------------------------------|---|------------------|---------------------|
| TASK ORDER NO: 0080021 | PROJECT NAME / LOCATION: Eagle River Flats - Ft. Richardson, Anchorage AK | | |
| PROJECT NUMBER: 457958 | PROJECT DESCRIPTION: Waterfowl Mortality Survey | | |
| PROJECT MANAGER: Mike Whitney | | SITE QC MANAGER: | Margaret Dombrowski |
| SITE MANAGER: Stacey Re' | | SAFETY MANAGER: | Josh Painter |
| AM WEATHER: sunny, calm | PM WEATHER: sunny, calm | MAX TEMP: 44 | MIN TEMP: 38 |

SUMMARY OF WORK PERFORMED TODAY

Waterfowl mortality surveys, Area C
 No new mortalities. Overnight temperatures had been as low as 27 degrees; as a result, there was a film of ice on many areas, ranging up to ¼ inch thick. We considered not performing the transects (thicker ice is hard on the shins), but decided to give it a shot. Areas with thicker ice included the east side of Pond 730, the north ditch, and the east side of Pond 183. We saw only a few ducks (one flock of 8, and an occasional single or pair), 9 swans, and 4 shorebirds. There was still evidence of dabbling and preening activity present, especially in the ditch transects.

HEALTH AND SAFETY REPORT

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted):

TAILGATE TOPICS: frost and ice – slippery surfaces can result in slips and trips, and heavier ice in the transect areas can bruise shins and generally make walking more difficult.

OPERATIONS / PRODUCTION REPORT

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

| Company | Cumulative Total of Work Hours From Previous Report | Total Hours Today | Total Work Hours From Start of Field Effort |
|---|---|-------------------|---|
| CH2MHILL Stacey Ré-3.5 | 230 | 3.5 | 233.5 |
| CRRREL Ann Staples 3.5 | 334.5 | 3.5 | 338 |
| BSE | 82.5 | 0 | 82.5 |
| | | | |
| | | | |
| | | | |
| Total Hours worked project to date | 647 | 7 | 654 |

EQUIPMENT ON HAND

| Description of Equipment | Make/Model/Manufacturer | Equipment ID Number | Inspection Performed By |
|--------------------------|-------------------------|---------------------|-------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to access, site or weather conditions, etc.):

- None

VISITORS AND DISCUSSIONS:

- None

QUALITY CONTROL REPORT

MATERIALS DELIVERED TO JOB SITE

| Quantity/Volume/ Weight | Description of Materials Received | Make/Model/Manufacturer | Material Lot Number | Inspection Performed By |
|----------------------------|-----------------------------------|-------------------------|------------------------|----------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

No new mortalities recorded.

INSPECTIONS PERFORMED

| Transects Inspected | Number of Mortalities Recorded | Mortality ID #(s) | Type of Waterfowl (if known) |
|-----------------------------|--------------------------------|-------------------|------------------------------|
| Area C – Ditch transect | 0 | NA | NA |
| Area C – Duck Pond transect | 0 | NA | NA |
| Area C Pond 183 transect | 0 | NA | NA |
| Area C – Pond 730 transect | 0 | NA | NA |
| Area C – C/D south transect | 0 | NA | NA |
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ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as “not applicable”. Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

Stacey Ré

10/2/2012

PREPARER’S SIGNATURE

DATE

PHOTOGRAPHS TAKEN THIS DATE: yes – still need to upload – camera is at home.

SUBJECT : ice in area C

PHOTO LOG NO.S:



CONTRACT NAME: JBER
 CONTRACT NO: FA8903-07-D-8589

ERF DAILY REPORT
 SOP CQMM-017, Version 1
 (ATTACH ADDITIONAL SHEETS IF NECESSARY)

REPORT DATE :10/03/12
 REVISION NO:
 REVISION DATE:
 REPORT NO:

| | | | |
|-------------------------------|---|------------------|---------------------|
| TASK ORDER NO: 0080021 | PROJECT NAME / LOCATION: Eagle River Flats - Ft. Richardson, Anchorage AK | | |
| PROJECT NUMBER: 457958 | PROJECT DESCRIPTION: Waterfowl Mortality Survey | | |
| PROJECT MANAGER: Mike Whitney | | SITE QC MANAGER: | Margaret Dombrowski |
| SITE MANAGER: Stacey Re' | | SAFETY MANAGER: | Josh Painter |
| AM WEATHER: overcast, calm | PM WEATHER: overcast, breezey | MAX TEMP: 46 | MIN TEMP: 42 |

SUMMARY OF WORK PERFORMED TODAY

Waterfowl mortality surveys, Area C
 No new mortalities. One new feather pile was observed, but it appeared to be from a shorebird and not a dabbling duck. The location was flagged, but not marked/recorded as a mortality.

HEALTH AND SAFETY REPORT

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted):

TAILGATE TOPICS: frost and ice – slippery surfaces can result in slips and trips, and heavier ice in the transect areas can bruise shins and generally make walking more difficult.

OPERATIONS / PRODUCTION REPORT

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

| Company | Cumulative Total of Work Hours From Previous Report | Total Hours Today | Total Work Hours From Start of Field Effort |
|---|---|-------------------|---|
| CH2MHILL Kristen Stevens-3 | 233.5 | 3 | 236.5 |
| CRRREL Ann Staples 3 | 338 | 3 | 341 |
| BSE | 82.5 | 0 | 82.5 |
| | | | |
| | | | |
| | | | |
| Total Hours worked project to date | 654 | 6 | 660 |

EQUIPMENT ON HAND

| Description of Equipment | Make/Model/Manufacturer | Equipment ID Number | Inspection Performed By |
|--------------------------|-------------------------|---------------------|-------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to access, site or weather conditions, etc.):

- None

VISITORS AND DISCUSSIONS:

- None

QUALITY CONTROL REPORT

MATERIALS DELIVERED TO JOB SITE

| Quantity/Volume/Weight | Description of Materials Received | Make/Model/Manufacturer | Material Lot Number | Inspection Performed By |
|------------------------|-----------------------------------|-------------------------|---------------------|-------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

No new mortalities recorded.

INSPECTIONS PERFORMED

| Transects Inspected | Number of Mortalities Recorded | Mortality ID #(s) | Type of Waterfowl (if known) |
|-----------------------------|--------------------------------|-------------------|------------------------------|
| Area C – Ditch transect | 0 | NA | NA |
| Area C – Duck Pond transect | 0 | NA | NA |
| Area C Pond 183 transect | 0 | NA | NA |
| Area C – Pond 730 transect | 0 | NA | NA |
| Area C – C/D south transect | 0 | NA | NA |
| | | | |
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ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as “not applicable”. Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

Stacey Ré

10/4/2012

PREPARER’S SIGNATURE

DATE

PHOTOGRAPHS TAKEN THIS DATE: none.

SUBJECT :

PHOTO LOG NO.S:



CONTRACT NAME: JBER
 CONTRACT NO: FA8903-07-D-8589

ERF DAILY REPORT
 SOP CQMM-017, Version 1
 (ATTACH ADDITIONAL SHEETS IF NECESSARY)

REPORT DATE :10/04/12
 REVISION NO:
 REVISION DATE:
 REPORT NO:

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|-------------------------------|---|------------------|---------------------|
| TASK ORDER NO: 0080021 | PROJECT NAME / LOCATION: Eagle River Flats - Ft. Richardson, Anchorage AK | | |
| PROJECT NUMBER: 457958 | PROJECT DESCRIPTION: Waterfowl Mortality Survey | | |
| PROJECT MANAGER: Mike Whitney | | SITE QC MANAGER: | Margaret Dombrowski |
| SITE MANAGER: Stacey Re' | | SAFETY MANAGER: | Josh Painter |
| AM WEATHER: NA | PM WEATHER: overcast, breeze-10mph, gusts to 20 | MAX TEMP: 50 | MIN TEMP: 46 |

SUMMARY OF WORK PERFORMED TODAY

Waterfowl mortality surveys, Area D
 One new mortality, a mallard feather pile, was recorded in the west side of the southernmost open pond area of Area D. Next canoe transect will be conducted on October 11, if water remains unfrozen.

HEALTH AND SAFETY REPORT

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted):

TAILGATE TOPICS: frost and ice – slippery surfaces can result in slips and trips, and heavier ice in the transect areas can bruise shins and generally make walking more difficult.

OPERATIONS / PRODUCTION REPORT

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

| Company | Cumulative Total of Work Hours From Previous Report | Total Hours Today | Total Work Hours From Start of Field Effort |
|---|---|-------------------|---|
| CH2MHILL Stacey Ré-1.5 | 236.5 | 1.5 | 238 |
| CRRREL Ann Staples- 1.5 | 341 | 1.5 | 342.5 |
| BSE | 82.5 | 0 | 82.5 |
| | | | |
| | | | |
| | | | |
| Total Hours worked project to date | 660 | 3 | 663 |

EQUIPMENT ON HAND

| Description of Equipment | Make/Model/Manufacturer | Equipment ID Number | Inspection Performed By |
|--------------------------|-------------------------|---------------------|-------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to access, site or weather conditions, etc.):

- None

VISITORS AND DISCUSSIONS:

- None

QUALITY CONTROL REPORT

MATERIALS DELIVERED TO JOB SITE

| Quantity/Volume/Weight | Description of Materials Received | Make/Model/Manufacturer | Material Lot Number | Inspection Performed By |
|------------------------|-----------------------------------|-------------------------|---------------------|-------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

Mort 20, mallard, recorded.

INSPECTIONS PERFORMED

| Transects Inspected | Number of Mortalities Recorded | Mortality ID #(s) | Type of Waterfowl (if known) |
|-------------------------|--------------------------------|-------------------|------------------------------|
| Area D – Canoe Transect | 1 | 20 | mallard |
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ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as “not applicable”. Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

Stacey Ré

10/5/2012

PREPARER'S SIGNATURE

DATE

PHOTOGRAPHS TAKEN THIS DATE: 2.

SUBJECT : Mort 20

PHOTO LOG NO.S:



CONTRACT NAME: JBER
 CONTRACT NO: FA8903-07-D-8589

ERF DAILY REPORT
 SOP CQMM-017, Version 1
 (ATTACH ADDITIONAL SHEETS IF NECESSARY)

REPORT DATE :10/05/12
 REVISION NO:
 REVISION DATE:
 REPORT NO:

| | | | |
|----------------------------------|---|------------------|---------------------|
| TASK ORDER NO: 0080021 | PROJECT NAME / LOCATION: Eagle River Flats - Ft. Richardson, Anchorage AK | | |
| PROJECT NUMBER: 457958 | PROJECT DESCRIPTION: Waterfowl Mortality Survey | | |
| PROJECT MANAGER: Mike Whitney | | SITE QC MANAGER: | Margaret Dombrowski |
| SITE MANAGER: Stacey Re' | | SAFETY MANAGER: | Josh Painter |
| AM WEATHER: overcast, rain, calm | PM WEATHER: overcast, rain, calm | MAX TEMP: 50 | MIN TEMP: 46 |

SUMMARY OF WORK PERFORMED TODAY

Waterfowl mortality surveys, Area C
 One new mortality, a mallard in the ditch transect, north side of north ditch transect, towards west end. The carcass was collected for gizzardectomy. Observed large flocks of ducks and geese (around 100 each), as well as several smaller flocks of ducks (12-15), and 9 swans..

HEALTH AND SAFETY REPORT

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted):

TAILGATE TOPICS: Driving on base – do not speed, do not use cell phones, come to a complete stop at stop signs/lights.

OPERATIONS / PRODUCTION REPORT

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

| Company | Cumulative Total of Work Hours From Previous Report | Total Hours Today | Total Work Hours From Start of Field Effort |
|---|---|-------------------|---|
| CH2MHILL Stacey Ré-2 | 238 | 2 | 240 |
| CRRREL Jon Zufelt- 2 | 342.5 | 2 | 344.5 |
| BSE | 82.5 | 0 | 82.5 |
| | | | |
| | | | |
| | | | |
| Total Hours worked project to date | 663 | 4 | 667 |

EQUIPMENT ON HAND

| Description of Equipment | Make/Model/Manufacturer | Equipment ID Number | Inspection Performed By |
|--------------------------|-------------------------|---------------------|-------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to access, site or weather conditions, etc.):

- None

VISITORS AND DISCUSSIONS:

- None

QUALITY CONTROL REPORT

MATERIALS DELIVERED TO JOB SITE

| Quantity/Volume/Weight | Description of Materials Received | Make/Model/Manufacturer | Material Lot Number | Inspection Performed By |
|------------------------|-----------------------------------|-------------------------|---------------------|-------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

Mort 20, mallard, recorded.

INSPECTIONS PERFORMED

| Transects Inspected | Number of Mortalities Recorded | Mortality ID #(s) | Type of Waterfowl (if known) |
|-----------------------------|--------------------------------|-------------------|------------------------------|
| Area C – Ditch transect | 1 | 21 | Mallard (male) |
| Area C – Duck Pond transect | 0 | NA | NA |
| Area C Pond 183 transect | 0 | NA | NA |
| Area C – Pond 730 transect | 0 | NA | NA |
| Area C – C/D south transect | 0 | NA | NA |
| | | | |
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ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as “not applicable”. Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

Stacey Ré

10/5/2012


PREPARER’S SIGNATURE

DATE

PHOTOGRAPHS TAKEN THIS DATE: 2.

SUBJECT : Mort 21, Swans off Clunie pad

PHOTO LOG NO.S:

| | | | | |
|--|---|-------------------------|---|-------------------------|
|  CONTRACT NAME: JBER CONTRACT NO: FA8903-07-D-8589 | ERF DAILY REPORT SOP CQMM-017, Version 1 (ATTACH ADDITIONAL SHEETS IF NECESSARY) | | REPORT DATE :10/08/12 REVISION NO: REVISION DATE: REPORT NO: | |
| TASK ORDER NO: 0080021 | PROJECT NAME / LOCATION: Eagle River Flats - Ft. Richardson, Anchorage AK | | | |
| PROJECT NUMBER: 457958 | PROJECT DESCRIPTION: Waterfowl Mortality Survey | | | |
| PROJECT MANAGER: Mike Whitney | SITE QC MANAGER: | | Margaret Dombrowski | |
| SITE MANAGER: Stacey Re' | SAFETY MANAGER: | | Josh Painter | |
| AM WEATHER: mostly cloudy, breeze | PM WEATHER: mostly cloudy, breeze | MAX TEMP: 51 | MIN TEMP: 48 | |
| SUMMARY OF WORK PERFORMED TODAY | | | | |
| Waterfowl mortality surveys, Area C Cygnet (juvenile swan) mortality was found in pond 730 area. The carcass had been disemboweled, but the gizzard and organs remained. The gizzard was collected for white phosphorus analysis. Overall, very few live ducks (small flock of 5) were observed | | | | |
| HEALTH AND SAFETY REPORT | | | | |
| SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted): | | | | |
| TAILGATE TOPICS: Reinforced UXO cleared path widths and staying on cleared paths since Mike Landon had not been out in the flats for a while. | | | | |
| OPERATIONS / PRODUCTION REPORT | | | | |
| WORK FORCE – CONTRACTOR AND SUBCONTRACTOR | | | | |
| Company | Cumulative Total of Work Hours From Previous Report | Total Hours Today | Total Work Hours From Start of Field Effort | |
| CH2MHILL Stacey Ré, Michael Landon-2.5 | 240 | 5 | 245 | |
| CRRREL | 344.5 | 0 | 344.5 | |
| BSE | 82.5 | 0 | 82.5 | |
| | | | | |
| | | | | |
| | | | | |
| Total Hours worked project to date | 667 | 5 | 672 | |
| EQUIPMENT ON HAND | | | | |
| Description of Equipment | Make/Model/Manufacturer | Equipment ID Number | Inspection Performed By | |
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| COMMENTS (acceptance status, inspection findings, etc.): | | | | |
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| CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to access, site or weather conditions, etc.): | | | | |
| <ul style="list-style-type: none"> None | | | | |
| VISITORS AND DISCUSSIONS: | | | | |
| <ul style="list-style-type: none"> None | | | | |
| QUALITY CONTROL REPORT | | | | |
| MATERIALS DELIVERED TO JOB SITE | | | | |
| Quantity/Volume/Weight | Description of Materials Received | Make/Model/Manufacturer | Material Lot Number | Inspection Performed By |
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COMMENTS (acceptance status, inspection findings, etc.):

Mort 22, Tundra swan (juvenile), recorded.

INSPECTIONS PERFORMED

| Transects Inspected | Number of Mortalities Recorded | Mortality ID #(s) | Type of Waterfowl (if known) |
|-----------------------------|--------------------------------|-------------------|------------------------------|
| Area C – Ditch transect | 0 | NA | NA |
| Area C – Duck Pond transect | 0 | NA | NA |
| Area C Pond 183 transect | 0 | NA | NA |
| Area C – Pond 730 transect | 1 | 22 | Tundra swan (juvenile) |
| Area C – C/D south transect | 0 | NA | NA |
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ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as “not applicable”. Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

Stacey Ré

10/8/2012

PREPARER'S SIGNATURE

DATE

PHOTOGRAPHS TAKEN THIS DATE: 2.
SUBJECT : Mort 22



CONTRACT NAME: JBER
 CONTRACT NO: FA8903-07-D-8589

ERF DAILY REPORT
 SOP CQMM-017, Version 1
 (ATTACH ADDITIONAL SHEETS IF NECESSARY)

REPORT DATE :10/09/12
 REVISION NO:
 REVISION DATE:
 REPORT NO:

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|-----------------------------------|---|------------------|---------------------|
| TASK ORDER NO: 0080021 | PROJECT NAME / LOCATION: Eagle River Flats - Ft. Richardson, Anchorage AK | | |
| PROJECT NUMBER: 457958 | PROJECT DESCRIPTION: Waterfowl Mortality Survey | | |
| PROJECT MANAGER: Mike Whitney | | SITE QC MANAGER: | Margaret Dombrowski |
| SITE MANAGER: Stacey Re' | | SAFETY MANAGER: | Josh Painter |
| AM WEATHER: overcast, misty, calm | PM WEATHER: overcast | MAX TEMP: 48 | MIN TEMP: 46 |

SUMMARY OF WORK PERFORMED TODAY

Waterfowl mortality surveys, Area A
 Observed a few ducks (one pair, one flock of 12) a large flock of Canada geese (100), and 10 swans. No mortalities

HEALTH AND SAFETY REPORT

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted):

TAILGATE TOPICS:

Reinforced UXO cleared path widths and staying on cleared paths since Jennifer Ulrich had not been out in the flats for a while. Also discussed slips and trips because transects cross areas of forest with wet leaves, and wildlife (moose and bears).

OPERATIONS / PRODUCTION REPORT

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

| Company | Cumulative Total of Work Hours From Previous Report | Total Hours Today | Total Work Hours From Start of Field Effort |
|---|---|-------------------|---|
| CH2MHILL Stacey Ré, Michael Landon, Jennifer Ulrich-3.5 | 245 | 10.5 | 255.5 |
| CRRREL | 344.5 | 0 | 344.5 |
| BSE | 82.5 | 0 | 82.5 |
| | | | |
| | | | |
| | | | |
| Total Hours worked project to date | 672 | 10.5 | 682.5 |

EQUIPMENT ON HAND

| Description of Equipment | Make/Model/Manufacturer | Equipment ID Number | Inspection Performed By |
|--------------------------|-------------------------|---------------------|-------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

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CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to access, site or weather conditions, etc.):

- None

VISITORS AND DISCUSSIONS:

- None

QUALITY CONTROL REPORT

MATERIALS DELIVERED TO JOB SITE

| Quantity/Volume/Weight | Description of Materials Received | Make/Model/Manufacturer | Material Lot Number | Inspection Performed By |
|------------------------|-----------------------------------|-------------------------|---------------------|-------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

No mortalities recorded.

INSPECTIONS PERFORMED

| Transects Inspected | Number of Mortalities Recorded | Mortality ID #(s) | Type of Waterfowl (if known) |
|-------------------------|--------------------------------|-------------------|------------------------------|
| Pond 290 | 0 | NA | NA |
| Northern A Pond Complex | 0 | NA | NA |
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ATTACHMENTS

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Stacey Ré

10/9/2012

PREPARER'S SIGNATURE

DATE

PHOTOGRAPHS TAKEN THIS DATE: 0.

SUBJECT : None



CONTRACT NAME: JBER
 CONTRACT NO: FA8903-07-D-8589

ERF DAILY REPORT
 SOP CQMM-017, Version 1
 (ATTACH ADDITIONAL SHEETS IF NECESSARY)

REPORT DATE :10/10/12
 REVISION NO:
 REVISION DATE:
 REPORT NO:

| | | | |
|---------------------------------|---|------------------|---------------------|
| TASK ORDER NO: 0080021 | PROJECT NAME / LOCATION: Eagle River Flats - Ft. Richardson, Anchorage AK | | |
| PROJECT NUMBER: 457958 | PROJECT DESCRIPTION: Waterfowl Mortality Survey | | |
| PROJECT MANAGER: Mike Whitney | | SITE QC MANAGER: | Margaret Dombrowski |
| SITE MANAGER: Stacey Re' | | SAFETY MANAGER: | Josh Painter |
| AM WEATHER: mostly cloudy, calm | PM WEATHER: sunny, calm | MAX TEMP: 49 | MIN TEMP: 43 |

SUMMARY OF WORK PERFORMED TODAY

Waterfowl mortality surveys, Area C, and gizzardectomies of Morts 21 and 22.
 Observed no ducks, only a large number of Canada geese (approximately 200) No mortalities

HEALTH AND SAFETY REPORT

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted):

TAILGATE TOPICS:

Gizzardectomy safety – wear proper PPE (nitrile gloves and safety glasses) and beware of sharps.

OPERATIONS / PRODUCTION REPORT

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

| Company | Cumulative Total of Work Hours From Previous Report | Total Hours Today | Total Work Hours From Start of Field Effort |
|---|---|-------------------|---|
| CH2MHILL Stacey Ré, Michael Landon, Jennifer Ulrich-2 | 255.5 | 4 | 259.5 |
| CRRREL | 344.5 | 0 | 344.5 |
| BSE | 82.5 | 0 | 82.5 |
| | | | |
| | | | |
| | | | |
| Total Hours worked project to date | 682.5 | 4 | 686.5 |

EQUIPMENT ON HAND

| Description of Equipment | Make/Model/Manufacturer | Equipment ID Number | Inspection Performed By |
|--------------------------|-------------------------|---------------------|-------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

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CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to access, site or weather conditions, etc.):

- None

VISITORS AND DISCUSSIONS:

- None

QUALITY CONTROL REPORT

MATERIALS DELIVERED TO JOB SITE

| Quantity/Volume/Weight | Description of Materials Received | Make/Model/Manufacturer | Material Lot Number | Inspection Performed By |
|------------------------|-----------------------------------|-------------------------|---------------------|-------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

No mortalities recorded.

INSPECTIONS PERFORMED

| Transects Inspected | Number of Mortalities Recorded | Mortality ID #(s) | Type of Waterfowl (if known) |
|-----------------------------|--------------------------------|-------------------|------------------------------|
| Area C – Ditch transect | 0 | NA | NA |
| Area C – Duck Pond transect | 0 | NA | NA |
| Area C Pond 183 transect | 0 | NA | NA |
| Area C – Pond 730 transect | 0 | NA | NA |
| Area C – C/D south transect | 0 | NA | NA |
| | | | |
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ATTACHMENTS

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Stacey Ré

10/10/2012

PREPARER'S SIGNATURE

DATE

PHOTOGRAPHS TAKEN THIS DATE: 0.

SUBJECT : None



CONTRACT NAME: JBER
 CONTRACT NO: FA8903-07-D-8589

ERF DAILY REPORT
 SOP CQMM-017, Version 1
 (ATTACH ADDITIONAL SHEETS IF NECESSARY)

REPORT DATE :10/11/12
 REVISION NO:
 REVISION DATE:
 REPORT NO:

| | | | |
|-------------------------------|---|------------------|---------------------|
| TASK ORDER NO: 0080021 | PROJECT NAME / LOCATION: Eagle River Flats - Ft. Richardson, Anchorage AK | | |
| PROJECT NUMBER: 457958 | PROJECT DESCRIPTION: Waterfowl Mortality Survey | | |
| PROJECT MANAGER: Mike Whitney | | SITE QC MANAGER: | Margaret Dombrowski |
| SITE MANAGER: Stacey Re' | | SAFETY MANAGER: | Josh Painter |
| AM WEATHER: sunny | PM WEATHER: sunny | MAX TEMP: 46 | MIN TEMP: 43 |

SUMMARY OF WORK PERFORMED TODAY

Waterfowl mortality surveys, Area D.
 Observed 26 ducks total distributed in a few small groups, and 2 swans. No mortalities

HEALTH AND SAFETY REPORT

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted):

TAILGATE TOPICS:

Health – take water breaks, wear warm clothes but be careful of overexertion

OPERATIONS / PRODUCTION REPORT

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

| Company | Cumulative Total of Work Hours From Previous Report | Total Hours Today | Total Work Hours From Start of Field Effort |
|---|---|-------------------|---|
| CH2MHILL Kristen Stevens -2 | 259.5 | 2 | 261.5 |
| CRRREL Ann Staples-2 | 344.5 | 2 | 346.5 |
| BSE | 82.5 | 0 | 82.5 |
| | | | |
| | | | |
| | | | |
| Total Hours worked project to date | 686.5 | 4 | 690.5 |

EQUIPMENT ON HAND

| Description of Equipment | Make/Model/Manufacturer | Equipment ID Number | Inspection Performed By |
|--------------------------|-------------------------|---------------------|-------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

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CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to access, site or weather conditions, etc.):

- None

VISITORS AND DISCUSSIONS:

- None

QUALITY CONTROL REPORT

MATERIALS DELIVERED TO JOB SITE

| Quantity/Volume/Weight | Description of Materials Received | Make/Model/Manufacturer | Material Lot Number | Inspection Performed By |
|------------------------|-----------------------------------|-------------------------|---------------------|-------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

No mortalities recorded.

INSPECTIONS PERFORMED

| Transects Inspected | Number of Mortalities Recorded | Mortality ID #(s) | Type of Waterfowl (if known) |
|-------------------------|--------------------------------|-------------------|------------------------------|
| Area D – Canoe Transect | 0 | NA | NA |
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ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, etc.):

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Stacey Ré

10/12/2012

PREPARER'S SIGNATURE

DATE

PHOTOGRAPHS TAKEN THIS DATE: 1.
SUBJECT : Area D, looking North



CONTRACT NAME: JBER
 CONTRACT NO: FA8903-07-D-8589

ERF DAILY REPORT
 SOP CQMM-017, Version 1
 (ATTACH ADDITIONAL SHEETS IF NECESSARY)

REPORT DATE :10/12/12
 REVISION NO:
 REVISION DATE:
 REPORT NO:

| | | | |
|-------------------------------|---|------------------|---------------------|
| TASK ORDER NO: 0080021 | PROJECT NAME / LOCATION: Eagle River Flats - Ft. Richardson, Anchorage AK | | |
| PROJECT NUMBER: 457958 | PROJECT DESCRIPTION: Waterfowl Mortality Survey | | |
| PROJECT MANAGER: Mike Whitney | | SITE QC MANAGER: | Margaret Dombrowski |
| SITE MANAGER: Stacey Re' | | SAFETY MANAGER: | Josh Painter |
| AM WEATHER: Clear | PM WEATHER: Clear | MAX TEMP: 36 | MIN TEMP: 32 |

SUMMARY OF WORK PERFORMED TODAY

Waterfowl mortality surveys, partial woodland transects. (Checked area C, too much ice to survey.)
 After a clear, cold night, Ann and Jon went to ERF to determine if Area C transects would be walkable or too iced over.
 Determined the area had too much ice for safe, pain-free travel. Checked part of woodland transects (all except pink box, as shown on map) for ducks while on site. None found. Observed a few swans towards area D.

HEALTH AND SAFETY REPORT

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted):

TAILGATE TOPICS:

OPERATIONS / PRODUCTION REPORT

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

| Company | Cumulative Total of Work Hours From Previous Report | Total Hours Today | Total Work Hours From Start of Field Effort |
|---|---|-------------------|---|
| CH2MHILL | 261.5 | 0 | 261.5 |
| CRRREL Ann Staples, Jon Zufelt-2e | 346.5 | 4 | 350.5 |
| BSE | 82.5 | 0 | 82.5 |
| | | | |
| | | | |
| | | | |
| Total Hours worked project to date | 690.5 | 4 | 694.5 |

EQUIPMENT ON HAND

| Description of Equipment | Make/Model/Manufacturer | Equipment ID Number | Inspection Performed By |
|--------------------------|-------------------------|---------------------|-------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to access, site or weather conditions, etc.):

- None

VISITORS AND DISCUSSIONS:

- None

QUALITY CONTROL REPORT

MATERIALS DELIVERED TO JOB SITE

| Quantity/Volume/Weight | Description of Materials Received | Make/Model/Manufacturer | Material Lot Number | Inspection Performed By |
|------------------------|-----------------------------------|-------------------------|---------------------|-------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

No mortalities recorded.

INSPECTIONS PERFORMED

| Transects Inspected | Number of Mortalities Recorded | Mortality ID #(s) | Type of Waterfowl (if known) |
|-----------------------------|--------------------------------|-------------------|------------------------------|
| Woodland transect (partial) | 0 | NA | NA |
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ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, etc.):

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Stacey Ré

10/16/2012

PREPARER'S SIGNATURE

DATE

PHOTOGRAPHS TAKEN THIS DATE: 0.
SUBJECT : NA



CONTRACT NAME: JBER
 CONTRACT NO: FA8903-07-D-8589

ERF DAILY REPORT
 SOP CQMM-017, Version 1
 (ATTACH ADDITIONAL SHEETS IF NECESSARY)

REPORT DATE :10/15/12
 REVISION NO:
 REVISION DATE:
 REPORT NO:

| | | | |
|-------------------------------|---|------------------|---------------------|
| TASK ORDER NO: 0080021 | PROJECT NAME / LOCATION: Eagle River Flats - Ft. Richardson, Anchorage AK | | |
| PROJECT NUMBER: 457958 | PROJECT DESCRIPTION: Waterfowl Mortality Survey | | |
| PROJECT MANAGER: Mike Whitney | | SITE QC MANAGER: | Margaret Dombrowski |
| SITE MANAGER: Stacey Re' | | SAFETY MANAGER: | Josh Painter |
| AM WEATHER: NA | PM WEATHER: Overcast | MAX TEMP: 36 | MIN TEMP: 36 |

SUMMARY OF WORK PERFORMED TODAY

Waterfowl mortality survey of Area C scheduled. Upon arrival stopped at Clunie Point and then Site 5 (east side of ditch transects) and determined Area C was approximately 75% ice covered and would not be easily walkable. Following day (10/16) was forecast to have a flood tide, which was expected to reduce the amount of ice and allow some of the survey to be conducted by canoe, so the field crew planned to return the following day. No waterfowl were observed in the area while team was on site.

HEALTH AND SAFETY REPORT

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted):

TAILGATE TOPICS:

Staying healthy. Get enough sleep, and take vitamins. It's flu season! Help your body be prepared.

OPERATIONS / PRODUCTION REPORT

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

| Company | Cumulative Total of Work Hours From Previous Report | Total Hours Today | Total Work Hours From Start of Field Effort |
|---|---|-------------------|---|
| CH2MHILL Stacey Ré - .5 | 261.5 | .5 | 262 |
| CRRREL Ann Staples - .5 | 350.5 | .5 | 351 |
| BSE | 82.5 | 0 | 82.5 |
| | | | |
| | | | |
| | | | |
| Total Hours worked project to date | 694.5 | 1 | 695.5 |

EQUIPMENT ON HAND

| Description of Equipment | Make/Model/Manufacturer | Equipment ID Number | Inspection Performed By |
|--------------------------|-------------------------|---------------------|-------------------------|
| | | | |
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| | | | |

COMMENTS (acceptance status, inspection findings, etc.):

CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to access, site or weather conditions, etc.):

- None

VISITORS AND DISCUSSIONS:

- None

QUALITY CONTROL REPORT

MATERIALS DELIVERED TO JOB SITE

| Quantity/Volume/Weight | Description of Materials Received | Make/Model/Manufacturer | Material Lot Number | Inspection Performed By |
|------------------------|-----------------------------------|-------------------------|---------------------|-------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

No mortalities recorded.

INSPECTIONS PERFORMED

| Transects Inspected | Number of Mortalities Recorded | Mortality ID #(s) | Type of Waterfowl (if known) |
|------------------------|--------------------------------|-------------------|------------------------------|
| Not conducted (Area C) | 0 | NA | NA |
| | | | |
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ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as "not applicable". Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

Stacey Ré

10/16/2012

PREPARER'S SIGNATURE

DATE

PHOTOGRAPHS TAKEN THIS DATE: 2.

SUBJECT : Ice in ditch transect, looking west.



CONTRACT NAME: JBER
 CONTRACT NO: FA8903-07-D-8589

ERF DAILY REPORT
 SOP CQMM-017, Version 1
 (ATTACH ADDITIONAL SHEETS IF NECESSARY)

REPORT DATE :10/16/12
 REVISION NO:
 REVISION DATE:
 REPORT NO:

| | | | |
|-------------------------------|---|------------------|---------------------|
| TASK ORDER NO: 0080021 | PROJECT NAME / LOCATION: Eagle River Flats - Ft. Richardson, Anchorage AK | | |
| PROJECT NUMBER: 457958 | PROJECT DESCRIPTION: Waterfowl Mortality Survey | | |
| PROJECT MANAGER: Mike Whitney | | SITE QC MANAGER: | Margaret Dombrowski |
| SITE MANAGER: Stacey Re' | | SAFETY MANAGER: | Josh Painter |
| AM WEATHER: partly cloudy | PM WEATHER: Overcast | MAX TEMP: 31 | MIN TEMP: 30 |

SUMMARY OF WORK PERFORMED TODAY

Waterfowl mortality survey of Area C. Despite a flooding tide, patches of thin ice were encountered in Pond 730, east ends of the ditches, and in the southern part of the beluga trail. Ice appeared to be re-forming while we were there. Survey of Pond 183, Pond 730, ditches, and part of duck ponds were conducted by canoe. 5 ducks and around 200 tundra swans were observed. No new mortalities

HEALTH AND SAFETY REPORT

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted):

TAILGATE TOPICS:

Driving conditions –today is the first day with snow/ice on the roads this morning. Be careful of other drivers, reduce speeds, and allow additional space..

OPERATIONS / PRODUCTION REPORT

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

| Company | Cumulative Total of Work Hours From Previous Report | Total Hours Today | Total Work Hours From Start of Field Effort |
|---|---|-------------------|---|
| CH2MHILL Stacey Ré - 4 | 262 | 4 | 266 |
| CRRREL Ann Staples -3 .5 | 351 | 3.5 | 354.5 |
| BSE | 82.5 | 0 | 82.5 |
| | | | |
| | | | |
| | | | |
| Total Hours worked project to date | 695.5 | 7.5 | 703 |

EQUIPMENT ON HAND

| Description of Equipment | Make/Model/Manufacturer | Equipment ID Number | Inspection Performed By |
|--------------------------|-------------------------|---------------------|-------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to access, site or weather conditions, etc.):

- None

VISITORS AND DISCUSSIONS:

- Josh Painter and Jennifer Ulrich visited the site for approximately half an hour to allow Josh to see the project site. Josh completed a brief range control briefing before visiting, and remained on EOD pad to observe site.

QUALITY CONTROL REPORT

MATERIALS DELIVERED TO JOB SITE

| Quantity/Volume/Weight | Description of Materials Received | Make/Model/Manufacturer | Material Lot Number | Inspection Performed By |
|------------------------|-----------------------------------|-------------------------|---------------------|-------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

No mortalities recorded.

INSPECTIONS PERFORMED

| Transects Inspected | Number of Mortalities Recorded | Mortality ID #(s) | Type of Waterfowl (if known) |
|-----------------------------|--------------------------------|-------------------|------------------------------|
| Area C – Ditch transect | 0 | NA | NA |
| Area C – Duck Pond transect | 0 | NA | NA |
| Area C Pond 183 transect | 0 | NA | NA |
| Area C – Pond 730 transect | 0 | NA | NA |
| Area C – C/D south transect | 0 | NA | NA |
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ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as “not applicable”. Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

Stacey Ré

10/16/2012

PREPARER'S SIGNATURE

DATE

PHOTOGRAPHS TAKEN THIS DATE: 2.

SUBJECT : Ice in Pond 730.



CONTRACT NAME: JBER
 CONTRACT NO: FA8903-07-D-8589

ERF DAILY REPORT
 SOP CQMM-017, Version 1
 (ATTACH ADDITIONAL SHEETS IF NECESSARY)

REPORT DATE :10/17/12
 REVISION NO:
 REVISION DATE:
 REPORT NO:

| | | | |
|---------------------------------|---|------------------|---------------------|
| TASK ORDER NO: 0080021 | PROJECT NAME / LOCATION: Eagle River Flats - Ft. Richardson, Anchorage AK | | |
| PROJECT NUMBER: 457958 | PROJECT DESCRIPTION: Waterfowl Mortality Survey | | |
| PROJECT MANAGER: Mike Whitney | | SITE QC MANAGER: | Margaret Dombrowski |
| SITE MANAGER: Stacey Re' | | SAFETY MANAGER: | Josh Painter |
| AM WEATHER: sunny, light breeze | PM WEATHER: sunny, light breeze | MAX TEMP: 32 | MIN TEMP: 28 |

SUMMARY OF WORK PERFORMED TODAY

Today's task was to transport the canoe back from Area D. The flood tides made conditions safe enough to paddle the canoe from Area D back to Area C, thereby avoiding having to cut up the many trees down in the path the SUSVE would need to take to access the area. Despite the flood tide, there was about 75% ice cover from Area D back to Area C, which required additional effort in paddling. Ice thickness was up to 3/8". We were, however, able to paddle the canoe almost the whole way, with the exception of two shallow spots within cleared transects (Beluga trail.)

HEALTH AND SAFETY REPORT

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted):

TAILGATE TOPICS:

UXO safety. Do not exit canoe unless on transect if at all possible.

OPERATIONS / PRODUCTION REPORT

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

| Company | Cumulative Total of Work Hours From Previous Report | Total Hours Today | Total Work Hours From Start of Field Effort |
|---|---|-------------------|---|
| CH2MHILL Stacey Ré, Kristen Stevens - 2 | 266 | 4 | 270 |
| CRRREL | 354.5 | 0 | 354.5 |
| BSE | 82.5 | 0 | 82.5 |
| | | | |
| | | | |
| | | | |
| Total Hours worked project to date | 703 | 4 | 707 |

EQUIPMENT ON HAND

| Description of Equipment | Make/Model/Manufacturer | Equipment ID Number | Inspection Performed By |
|--------------------------|-------------------------|---------------------|-------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to access, site or weather conditions, etc.):

- None

VISITORS AND DISCUSSIONS:

-

QUALITY CONTROL REPORT

MATERIALS DELIVERED TO JOB SITE

| Quantity/Volume/Weight | Description of Materials Received | Make/Model/Manufacturer | Material Lot Number | Inspection Performed By |
|------------------------|-----------------------------------|-------------------------|---------------------|-------------------------|
| | | | | |



CONTRACT NAME: JBER
 CONTRACT NO: FA8903-07-D-8589

ERF DAILY REPORT
 SOP CQMM-017, Version 1
 (ATTACH ADDITIONAL SHEETS IF NECESSARY)

REPORT DATE :10/18/12
 REVISION NO:
 REVISION DATE:
 REPORT NO:

| | | | |
|-------------------------------|---|------------------|---------------------|
| TASK ORDER NO: 0080021 | PROJECT NAME / LOCATION: Eagle River Flats - Ft. Richardson, Anchorage AK | | |
| PROJECT NUMBER: 457958 | PROJECT DESCRIPTION: Waterfowl Mortality Survey | | |
| PROJECT MANAGER: Mike Whitney | | SITE QC MANAGER: | Margaret Dombrowski |
| SITE MANAGER: Stacey Re' | | SAFETY MANAGER: | Josh Painter |
| AM WEATHER: NA | PM WEATHER: sunny | MAX TEMP: 32 | MIN TEMP: 29 |

SUMMARY OF WORK PERFORMED TODAY

Woodland transect. No mortalities observed.

HEALTH AND SAFETY REPORT

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted):

TAILGATE TOPICS:

Slips and trips. Ann indicated there are some historic hunting cabins in the area with various wood and metal debris around them to be careful of, in addition to the normal woodland trip hazards.

OPERATIONS / PRODUCTION REPORT

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

| Company | Cumulative Total of Work Hours From Previous Report | Total Hours Today | Total Work Hours From Start of Field Effort |
|---|---|-------------------|---|
| CH2MHILL Stacey Ré, 1.5 | 270 | 1.5 | 271.5 |
| CRRREL Ann Staples 1.5 | 354.5 | 1.5 | 356 |
| BSE | 82.5 | 0 | 82.5 |
| | | | |
| | | | |
| | | | |
| Total Hours worked project to date | 707 | 3 | 710 |

EQUIPMENT ON HAND

| Description of Equipment | Make/Model/Manufacturer | Equipment ID Number | Inspection Performed By |
|--------------------------|-------------------------|---------------------|-------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

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CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to access, site or weather conditions, etc.):

- None

VISITORS AND DISCUSSIONS:

| |
|---|
| • |
|---|

QUALITY CONTROL REPORT

MATERIALS DELIVERED TO JOB SITE

| Quantity/Volume/Weight | Description of Materials Received | Make/Model/Manufacturer | Material Lot Number | Inspection Performed By |
|------------------------|-----------------------------------|-------------------------|---------------------|-------------------------|
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COMMENTS (acceptance status, inspection findings, etc.):

No mortalities recorded.

INSPECTIONS PERFORMED

| Transects Inspected | Number of Mortalities Recorded | Mortality ID #(s) | Type of Waterfowl (if known) |
|---------------------|--------------------------------|-------------------|------------------------------|
| Woodland | 0 | NA | NA |
| | | | |
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| | | | |

ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, etc.):

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Stacey Ré

10/18/2012

PREPARER'S SIGNATURE

DATE

PHOTOGRAPHS TAKEN THIS DATE: 3.
 SUBJECT : Ice in Area C – ditches, Clunie point.

Eagle River Flats
Sediment Sampling



Rite in the Rain.
ALL-WEATHER
UNIVERSAL
Nº 373

Sept 10, 2012 -
Project # 457958.09.HT.02

Rite in the Rain
ALL-WEATHER WRITING PAPER



Name CH2M HILL
Stacey Re'
Address 949 E 36th Ave
Anchorage, AK 99508
Phone 907-440-7667

Project Eagle River Flats
Sediment Sampling
457958.09.HY.02

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RiteintheRain.com

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| 4 | Pad sampling Ditches | 9/11/12 |
| 9 | Duck Pond and Pond 730 sampling | 9/12/12 |
| 11 | Multi Increment Sampling - Pond 146 + 109 | 9/13/12 |
| 13 | Multi Increment Sampling - Pond 183, 171, 155 Veg photos. | 9/14/12 |

Eagle River Flat; 9/10/12

Weather, breeze, 30s-60, Sunny

Safety moment: UKO - stay on path,
watch footing, Stacey, Mike, Don E, Maximilian W. Rich H.

0900 Meet at Bldg 47812 Safety
discussion.

1000 Arrive at EOD gate, Don calls in
to EOD pad, Stop at conex.

1020 Arrive at Clurey Pt.

Start sediment sampling

1105 SR - 03DIS11

21 increments - perimeter

1107 RH 03DIS08

1121 ~~RH 04DIS85~~
~~RH 04DIS84~~ SR 9/10/12

20 increments

1123 SR - 03DIS36

23 increments - perimeter

1141 SR 04DIS84

24 increments perimeter

1140 RH 04DIS84 South of cap

23 increments

1209 SR 04DIS82

22 increments perimeter

1211 RH 03DIS37 24 increments perim.

Scale: 1 square = _____

Return the Rain ¹

1330 RH #03 DIS38

24 Increments perimeter

1335 SR #03 DIS40

26 Increments - perimeter.

1350^{RH} #03 DIS42

28 Increments perimeter

1350 SR #04 DIS76

20 Increments - perimeter

1414 RH #03 DIS43

26 Increments - perimeter

1420 SR #03 DIS21

28 Increments - perimeter

1434 RH #04 DIS68

28 Increments - perimeter

1436 SR #03 DIS03

18 Increments perimeter

Morton 03DIS03 pad - feather pl
green wing teal,

1505 Return to EOD pad

Marianne goes out with Mike Walsh
and Jay Zufelt to mark capping
area for winter.

Rich goes to look at pump.

Rich + Stacey wait for mortality

(2)

Scale: 1 square = _____

crew to return to pad for ride back
to lab.

Depart EOD pad, Ann calls out
16:30 Arrive back at lab. End of day

Stacey pre

Scale: 1 square = _____

(3)
Rite in the Rain

Eagle River Flats

9/11/12

Sediment Sampling

Stacey Re, Mike Landon, Marianne Walsh, Don Ebercole

Safety moment - common WP anatomy + identification,

Weather 40's - 60's, breezy in the afternoon, partly cloudy

0900 meet at lab, safety discussion - identification of WP rounds

0925 Head for Range

0940 Don checks in to EOD pad.

1005 Don checks in to Area C

1045 SR ditch west side ^{SR 9/11} - east side
22 ^{outh} increments1045 ML # south ditch west-west side
20 increments1110 ML # BIPs 5-9 with SR 9/11
w/in 7m - west side
31 increments1115 SR # BIPs 5-9
w/in 7m - east side
20 increments1129 ML # BIP 16 w/in 20m
23 increments

1135 SR # BIP 11

w/in 7m.

23 increments

1148 ML # North Ditch Cap - East Side

23 increments

1200 SR # North Ditch Cap - West side

20 increments.

1215 Return to EOD Pad 5. Janu sits briefly.

1300 Head out to sample

1318 # Cross Ditch North side

26 increments

SR

1319 # Cross Ditch West side

20 increments

ML

p Discreet Anomaly

1315 West of cross ditch, west of ditch 2

355-219 E

6801535 N NA027

1338 SR Cross Ditch East side

20 increments

1335 South Ditch East - West side

ML 21 increments

Scale: 1 square = _____

Rite in the Rain

5

4

Scale: 1 square = _____

Discreet at anomaly
north of south ditch

E355275

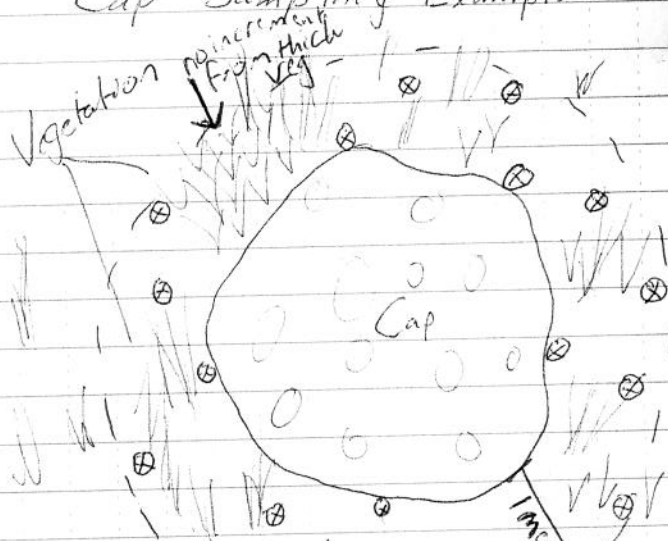
NG801524


Marianna's waypoint 51

13:45 South Ditch East, East + North Side

1 ML 20 increments

Cap Sampling Example



MI sampling location - 
(Typically 20-30 increments collected for each composite sample)

6

Scale: 1 square = _____

Discreet samples included sediment collected from immediately surrounding the anomaly. Sample bags labeled as "possibly hot/high white phosphorus concentrations" and kept separate from other samples.


Ditch cap sampling:

Ditch edges usually host thick vegetation; as a result, samples were generally just collected from the ditch itself, off the edge of gravel pad within a meter or so. Stainless steel spoons were used to help collect sediment from deeper spots. Depending on



size of pad, sometimes separate samples were collected from opposite sides. 20-30 increments made up each composite sample.

Scale: 1 square = _____

Rite in the Rain 

1430 Bomb crater - east
SR - 23 increments

1436 Bomb crater - west
AL 20 increments

1440 Back on Pad 5 - Don calls
out of Area D.

1500 Depart EOD pad, Don calls
out

Stacey
9/12/12

8

Scale: 1 square = _____

Eagle River Flats

9/12/12

Stacey Re, Don Ebersole/CRRTEL, Kristen
Stevens/CRRTEL, Marianne Walsh/CRRTEL

Weather: Rain overcast, 50's, calm
Safety moment - wear appropriate PPE
and bring appropriate layers
for changing conditions.

0855: Stacy arrives at Bldg 47812.
Checks in w/Marianne, takes
extra papers (PTSPs) to Ann for
mortality surveys.

09:10 Return to Bldg 47812, have
safety moment, gear up, discuss
plan.

09:45 Head to Range

10:35 Don calls in to EOD pad. Gear up.

10:45 Don calls in to Area C. Head to each ponds.

1108 #04DIS86

SR

25 increments

1120 #04DIS90 K.S. 25 increments

11:29 #04DIS06 SR 27 increments

1135^{SR 9/12} #04DIS97 K.S. 30 increments

1152 #04DIS96 SR 22 increments

1155 #04DIS93 K.S. 23 increments

Scale: 1 square = _____

Write in the Rain 9

1226 Pond 730 SW - West side perimeter
Cap - 23 increments SR
12³⁰ Pond 730 ~~NE~~^{SW} - east side perimeter
12⁴⁵ Cap - 27 increments KS
1255 Return to EOD pad. Lunch
1340 Head out toward 730. Add short
cuts from North ditch to SE
C/D transect and NE C/D transect
to pond 730.
1420 Arrive at N leaf of pond 730
Don marks temporary pad for
munition in N leaf.
Stacey + Kristen to sample an
inner + outer ring around the
temporary pad.
1450 Temp cap perimeter
1-2 annulus SR
25 increments
1450 Temp cap perimeter
0-1 annulus KS
25 increments
1520 Return to EOD pad Don calls off
1545 Depart EOD pad, Don calls out.
Return to lab. Done for day.

10

Scale: 1 square = _____

Eagle River Flats 9/13/12
Kristen Stevens (CH2M HILL) Don Ebersole,
Marianne Walsh, Ron Bailey (CRREL)
Weather: Partly sunny, cool low 50's
Safety moment: Slips/trips/falls
0930 meet Don, Ron, + Marianne at
EOD Pad Clunie Point
1000 Enter Pond 146. Don E. Clears
Paths + Sample Area.
1015 Don clears ordinance from bank.
1030 Stacey Arrives on site. Marianne
takes sample from ordinance area
1100 Continue sampling 1.82 meter
square grid. Stacey off site
1150 Collect Sample Pond 146 East
Rep 1 - MEW
1150 Collect Sample Pond 146 East
Rep 2 - Kis
1200 Don continues to clear
ordinance from sample Area.
1240 Collect Sample Pond 146 West
Rep 1 - MW or Rep 2 - Kis
1250 Demobe. Arrive at EOD Pad.
Break for lunch.
1330 Head for Bread Truck Transect

Scale: 1 square = _____

11
Rite in the Rain

1400 Arrive @ Pond 109 BT South.

Don clears sampling area

1440 Collect Pond 109 BT South

100m - Rep 1 (MW)

Collect Pond 109 BT South

100m - Rep 2 (KIS)

1510 Collect Pond 109 BT South

100m + Rep 2 (KIS)

Collect Pond 109 BT South

100m + Rep 1 (MW)

1515 Check out Bread Truck Transsect

1600 Arrive back to EOD Pad.

Don calls us in.

* Left grid, samplers + flags
off of Beluga Hwy.

Demobe.

1630 Done for the Day.

~~Key~~
9/13/12

12

Scale: 1 square = _____

Eagle River Flats - Sediment Sampling 9/14/12

Stacey Re / CH2M Hill Marianne Walsh / CRREL

Don Ebersole / BSE, Ron Bailey / CRREL

Weather - overcast, scattered showers,
calm

Safety moment - weather, wild life, UXO,
slips + trips

09:00 - Meet at lake. Safety moment +
plan day - sediment sampling in AM,
veg plots PM.

09:40 Head to ERF

10:00 Arrive at ERF. Don calls in to
EOD pad.

10:08 Call in to Area C

Collect samples

Pond 183 Gr. d (Rep 1 + 2)

Pond 171 C Marsh (Rep 1 + 2)

Pond 155 Gr. d (Rep 1 + 2)

1300 Return to EOD pad for lunch

1400 Depart pad for veg surveys,

Take photos of grids 5 + 10.

(See log)

1705 Stacey back to EOD pad.

Remaining team members stop to observe
a gully (dubbed galloping gully) before

13

Rate in the Rain

Scale: 1 square = _____

starting back soon after

~~Stand No.
9/14/12~~

14

Scale: 1 square = _____

Scale: 1 square = _____

Rite in the Rain

INCH
1
2
3
4
5
6
7

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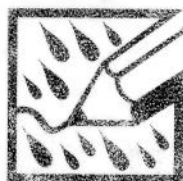
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Rite in the Rain
ALL-WEATHER
UNIVERSAL

No. 373

Eagle River Flats

August 2012 - October 2012

Mortality Surveys

Project #457958.09.HT.02

Stacey Re/CH2M Hill

Rite in the Rain
ALL-WEATHER WRITING PAPER



Name CH2M Hill
Stacey Re
Address 949 E 36th Ave Suite 500
Anchorage, AK 99508
Phone 907-440-7662

Project Eagle River Flats
Mortality Surveys
457958.09.HI.02

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| 24 | Area C Mortality Survey | 9/6/12 |
| 26 | Area C and Area D Mortality Surveys | 9/7/12 |
| 28 | Area C Mortality Survey | 9/10/12 |
| 30 | Area A Mortality Survey | 9/11/12 |
| 32 | Area C Mortality Survey | 9/12/12 |
| 34 | Area D Mortality Survey | 9/13/12 |
| 36 | Area C Mortality Survey | 9/14/12 |
| 38 | Area C Mortality Survey | 9/17/12 |
| 40 | Area C Mortality Survey | 9/20/12 |
| 42 | Area C Mortality Survey | 9/21/12 |
| 44 | Area C Mortality Survey | 9/24/12 |
| 46 | Area A Mortality Survey | 9/25/12 |
| 48 | Area C Mortality Survey | 9/26/12 |
| 50 | Area D Mortality Survey | 9/27/12 |
| 52 | Area C Mortality Survey | 9/28/12 |
| 57i | Area C Mortality Survey | 10/1/12 |

Eagle River Flats

8/15/12
SR 8/22

Stacey Re, Ann Staples CRREL, Jeff Bryant

Safety moment

- Stay on cleared path
- watch for wildlife

Weather - Partly cloudy, \approx 63

0830 Stacey visits Surveyor's Exchange

6950 Meet Ann @ CRREL

Visit key maker + acquire 3-3N70 keys.

1045 Arrive at ERF

1200 Began Pond 183 transect (C-Pond)

1200 Stop for quick lunch.

1225 Start transect clearing again.

1330 FP-Mort? GWT

North Ditch pad - Area C

Ann has photo

SR 354837-E 355220

6801924 N 6801650

1347 MØRE-1 Female Mallard - predated

feather pile + partial carcass

West side of T-Samp

E 355196

N 6801617

Scale: 1 square = _____

Rate in the Rain

②

8/15/12 cont

1415 Complete ditch transect clearance - did not fully stake; Jeff continued on while we collected mortality data, will return to stake.

Begin Duck Pond area survey

1600 Complete Duck Pond clearance surveys

1630 Return to EOD Pad

Mike V., Mark, + Jen still working on pump.

Jeff calls Ann + J out, remains on site with pump folks, (left around 1700)

Stacy
the
15 SC 8/22
8/14/12

②

Scale: 1 square = _____

Eagle River Flats

8/16/12

2 Teams - Pump/gravel - Mark, M. W.

Transect Clearing - Stacy, Kristina, Jeff, Ann
Weather: Over cast, scattered showers

Safety moment - Stay on cleared path

07:30 Meet at Bldg 54

0845 Depart Bldg 54, stop by lab + connex

0930 Arrive at ERE, Jeff radios in to EOD pad

0945 - PAD 5 to access Pond 730 via North ditch - Bengal + Jeff radios into flats

1120 Mort #3 FP

feather pile, mallard, no gizzard/tissue

Pond 730 West end

E 354654

NG 801811

1200 Arrive back at pad 5, head to ^{Clint SR 10/2} ~~cleaner~~ point

for lunch. Note: during Pond 730 survey, aerial survey observed.
Need to GPS corner changes that resulted from natural lake morphology changes.

1230 Discuss plan for canoe access - determine clearing with loader might not be agreeable to Range Control so will use Stave.

Mark operating loader; Mike Walsh indicates he's a little nervous because he isn't

③

Scale: 1 square = _____

Rate in the Rain

(4)

8/16/12

Very good. Stacey asks if he has had operator training. Mike Walsh said he had a few minutes. Stacey asks indicates we should have qualified operators, no reply, then indicates just clean up ^{SR 8/22} ~~remains~~ ^{KLm}

1240 Pick up stake bundles from ~~Glenn~~ ^{SR 8/22} ^{KLm} pad, Jeff calls us down to pad, then out and out ^{SR 8/22} Ann calls out of EOD.

1340 Stacey leaves site for day.

1405 Pick up SUSV from storage yard with Ann, Mark & Kristen.

1445 Clear road to Area D canoe transect.

1545 Arrive at boat launch site.

Ann & Kristen depart in canoe.

1620 Ann & Kristen arrive at boat launch site. No dead ducks found.

1715 Ann, Kristen & Mark drop off SUSV vehicle at storage yard.

1720 Move to CRREL office.

1725 Finish for day.

Jeff

(4)

Scale: 1 square = _____

Eagle River Flats

8/17/12 (5)

2 Teams

UXO Clearance - Jeff Bryant, Stacey, Kai, Ann

Stacyles, Kristen Stevens

Pump maintenance, ramp building

Weather: Overcast 50's - low 60's

Scattered showers

Safety discussion

UXO - Stay on cleared paths

Bees - checked for allergies,

watch out around food, cars, brush clearing

07:30 Stacey, Jeff, Mike Walsh at Bldg 521

Mark arrives shortly after, Kristen at

08:00, Have safety discussion, Jeff picks up

08:20 Ann arrives, Mike + Mark to EFT. ^{Get point key} ^{from range control}

Get organized, gas up vehicle

09:20 meet Jeff at Cole Points (Ann, Stacey, Kristen.)

09:40 Start trek to Area A

10:45 Arrive start of Area A transect

12:35 Arrive at end of Area A transect

Lunch

13:00 Return transect, including opposite side of pond 190

13:50 Complete Area A survey, Return to Area A ⁵

Scale: 1 square = _____

Rite in the Rain

(6)

8/17/12 cont'd

1440 Return to vehicles.

Change out of waders. Jeff radios out of Area A, and out of Cole Point at gate. Returns radio to Ann.

1500 Return to CRREL Bldg 54.

1530 demob complete. End of Day

~~Stacey Reilly
8/17/12~~

(6)

Scale: 1 square = _____

Eagle River Flats - Area C survey 8/20/12

Stacey Reilly Ann Staples / CRREL

Weather - Rain, calm, mid 50's to low 60's

Safety moment: Stay on cleared path, use boat hook to retrieve ducks if in reach only

11:15 Area C transect ^{Pond 193} 2 eagles on tower, 15-20 Canada Geese, 6-8 ducks

11:40 Duck Pond - 3 flocks of ducks, 6, 6 + 8

11:55 Start Pond 730

12:30 Mort-OH Mallard Pond 730 NE wingtip

35 4908 F

6801931 N

13:05 Return to vehicle

13:40 Head to Site 5 to access ditch transects.

1500 Complete ditch transect.

saw 30-50 Canada geese

3-5 ducks (singlest pairs)

1520 Return to vehicle

1600 Depart CRREL after demobbing wet gear.

~~Stacey Reilly
8/20/12~~

(7)

Scale: 1 square = _____

Rate in the rain

Eagle River Flats

8/22/12

Stacey Re + Ann Staples

Weather sunny - PG, upper 50's - low 60's

light breeze

Safety moment - skin protection - use sunscreen
including lip stuff.

Use bug dope as necessary.

Clean and care for bites as soon as possible

09:30 meet at CRREL

10:00 Head to Area C, Ann calls in at gate.

11:00 start ditch transects, Ann calls in to Area C

Observed ~35 Canada geese over Beluga trail

Observed flock of 15-20 ducks in ditch area + another 8 during ditch walk (may have been part of original flock)

12:00 Head to duck ponds

Observed 2 sandhills + 2 more
6 ducks near north ditch

12:10 start duck pond transects. Divide East + West

12:25 duck pond transects complete

Observed 2 sandhills + 3 sandhills
8 ducks

12:30 Begin pond 730 transect

13:30 Completed pond 730 transect

(8)

Scale: 1 square = _____

8/22/12 cont'd

Observed areas of preening feathers, but no ducks.

13:35 Start Pond 183 transect, Ann takes west side, Stacey takes east.

14:00 meet + return to Kluni pad via Beluga trail.

Ann calls out of Area C.

Remove wet gear. Deer flies abundant.

14:10 Ann calls out of Area C

14:20 Return to CRREL Bldg 54.

Demob wet gear.

14:40 Depart CRREL Bldg 54

~~Stacey
8/22/12~~

Scale: 1 square = _____

(9)
Rite in the Rain

Eagle River Flats - Mortality Surveys ^{Area C} 8/24/12
Stacey Re + Ann Staples ^{SR 8/24} Jon Zurek

Weather: PC-C, low-upper 50's

Safety moment: Changing weather conditions. Be aware + prepared.

09:00 Meet Jon at Bldg 54. Ann notable to go out because of a broken finger. (All staff not available)

09:45 Arrive. Jon radios in to EOD, then Area C

10:00 Start transects - begin w/ Pond 730

10:50 Complete pond 730. Jon found Mort 04 carcass
Observed 30-40 ducks in Pond 8 ^{nest out of sight from transect}
Several add'l singles + pairs.

Start duck ponds

11:05 Mort-05 GWT left wing no tissue + feather pile
E 0355017

N 6801660 (Stacey's GPS-005)

Duck Ponds 2 ^{SE side} E end of 1

Finish Duck Ponds

Observed

2 pairs sandhills

marsh hawk

2 single ducks.

11:10 Ditch transects

11:45 Complete ditch transects

Observed ducks in groups of 3, 1, 8

(10)

Scale: 1 square = _____

8/24/cont'd.

1 pair sandhill

11:50 Mort-06 feather pile + assorted bones, breast, spine, partial beak - GWT?

Along Beluga trail NE of pad 83.

E 0355048

N 6801502

(Stacey's GPS-006) 1 Photo

12:00 Start Pond 183 transect

Abundant preening feathers near north end of transect. Had observed large (25+?) Canada geese in this area earlier (upon arrival at site). 2 sandhills

12:40 Complete pond 183 and return to Klunk Pad. Jon radios out of Area C.

13:00 Depart Pad. Replace "Bear in Area" fence to deter potential ^{Trap} fuel thieves from taking pump fuel (has occurred in past.) Jon radios out.

13:20 Return to Bldg 54 + demob

13:45 Stacey departs base

~~Stacey~~
Oh. Pi
8/24/12

(11)

Scale: 1 square = _____

Rite in the Rain

Eagle River Flats - Mortality Surveys 8/27/12

Area C, Stacey Re + Kristen Stevens

Weather - Cloudy, showers, mid 50's - low 60's

Safety moment: Watch for metal pipe supports, paint tops of ones along transect for better visibility (may have to do this on a drier day.)

09:30 Meet Kristin at CH2M Hill Office.

Got CH vehicle, load gear.

10:20 arrive at Bldg 54, Get range radio, gear.

10:40 Head to ERF. Gate locked, 3N70 lock not part of chain. Call Ann - indicates we need to check out key for OP Fagan from range control

11:15 Arrive at range control, check out key. Inform them our key/lock was removed from chain. Ann indicated there used to be instructions at gate, but range control was not aware.

12:10 Arrive at OP Fagan - ERF. Stacey checks in w/ range control
Observed ~ 15 ducks from EOD pad / Kluni Pad
From beluga trail observed 30-40 ducks in Pond 183
5-6 sandhills.

(12)

Scale: 1 square = _____

8/27/12

12:30 Start ditch transects

Observe 15 ducks, 18 ducks, several singles + pairs. Stacey takes south ditch, Kristen takes north ditch.

13:30 complete ditch transects

13:45 Start duck pond transects.

Observed several singles + pairs of ducks, 7 sandhills.

14:05 Start Pond 730

14:45 Complete pond 730

Several ducks in singles/pairs

14:50 Start pond 183

Saw two large flocks of ducks, 30-40 in one, 40-50 in the other

15:05 Return to EOD pad Stacey calls out of Area C.

15:25 Arrive back at Bldg 54.

Pe mob

15:55 depart Bldg 54

~~Stacey Re
8/27/12~~

(13)

Scale: 1 square = _____

Return on the Rain

Eagle River Flats - Mortality Surveys, 8/28/12

Area A ^{SR 10/21/12}

Stacey Re / CHZM Hill, Ann Staples / CRRFL

Kristen Stevens / CHZM Hill

Weather: Sunny, high 65

Safety Moment: Stay hydrated. Drink water frequently to remain hydrated.

08:30 Meet at Bldg 54. Safety moment, mob.

09:00 Head to range control to pick up key for Cole Point range "Baumeister"

09:30 Arrive at Cole Point gate. Ann radios in.

09:55 Enter Area A, Ann radios in.

10:45 Start Area A transect - Pond 290

Observed \approx 5 sandhill cranes

6 ducks

flying - snow geese \approx 20? + 25 Canada geese

11:10 Start 258 - 2 mallards

11:20 Start 246 \approx 50 ducks

11:35 Start 226 \approx 4 ducks

evidence of swans preening.

11:45 Complete Area A transect.

12:00 Start return treck

12:40 Return to start of Area A observed 6

(14)

Scale: 1 square = _____

8/28/12 cont'd

sandhill cranes

+ 3 more sandhill cranes

1330 Clear of Area A, Ann radios in

1345 Ann calls in clear of Area A ^{SR} 8/28/12

Cole Point

Return key to Cole Point to Range Control

1400 Return to Bldg 54, demob

1420 Depart base

~~Stacey Re
8/28/12~~

(15)

Return on the train

Scale: 1 square = _____

Eagle River Flats - Mortality Surveys 8/29/12

Area C

Kristen Stevens/CH2M, Ann Staples/CRREL

Weather: Sunny, Cool, Low 60's

Safety Moment: Take frequent breaks for rest and water.

0900 Safety moment. mob.

1000 Ann radios in to Area C. Observed about 10 ducks from EOD pad.

1050 Finish Area Pond 183 Transect. Observed about 50 ducks in area.

1115 Finish Area Duck Ponds Transect. Observed about 20 ducks. Observed about 5 sandhill cranes.

1200 Finish Pond 730 area. Observed about 45 ducks. Observed preening feathers. Observed about 60 Canada geese.

1220 Break for lunch at EOD Pad.

1250 Mob to Area C Ditch Transect.

1300 Enter Ditch Transect.

1345 Finish Ditch Transect. Observed 2 swans. Very few preening feathers.

1400 Ann calls us out to EOD pad.

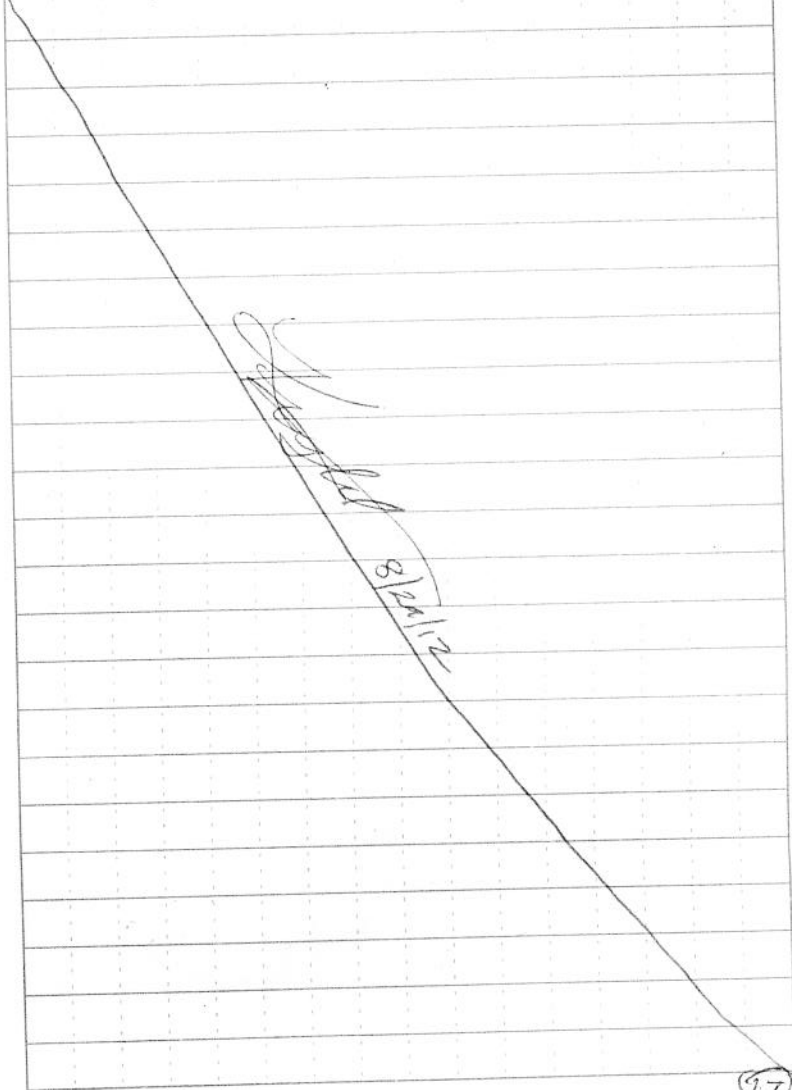
1405 Out of Area C mob back to Building 54. De mob

(16)

Scale: 1 square = _____

8/29/12 cont'd

1130 Depart base.



Scale: 1 square = _____

(17)
Rite in the Rain

Eagle River Flats

8/30/12

Mortality surveys, Canoe transects - Area D
 Stacey Reitz/Ann Staples/CRREL

Weather: mid 50's to mid 60's, breezy-windy,
 overcast, scattered showers

Safety Moment - wear life vests in
 canoe

0900 Meet Ann at CRREL Bldg 54

0920 Head to EOD

0940 Ann checks in to EOD pad.

0955 Arrive at canoe transect

1000 Ann checks in to Area D

1100 Depart canoe

Observed 10-12 swan (trumpeters)

30-40 ducks in one flock

3 Canada geese

another flock 8 ducks

several singles + pairs.

1110 Arrive at vehicle, Ann checks out
 of Area D. Checks out of EOD pad.

1130 Pick up sled from CRREL storage
 yard.

1145 Return to Bldg 54. Demoh

1200 Stacey departs base

Stacey Reitz

(18)

Scale: 1 square = _____

Eagle River Flats

8/31/12

Mortality Surveys - Area C

Stacey Reitz + Ann Staples

Weather: Overcast, scattered showers,
 mid to upper 50's, calm-light breeze

Safety moment: Gear maintenance. Keep
 gear clean and repair minor damage
 promptly.

08:30 Meet at Bldg 54. Safety moment
 0 mob gear.

09:00 depart Bldg 54, stop by sheppette
 for water on way to range.

09:30 Ann calls in to EOD.

1000 Ann calls in to Area C

Observed 8 ducks in 183 Pond Area

1020 Start C-D transects. Observe 2 marsh hawks

1030 Start Pond 730 transect

1050 Mort-07 carcass - female mallard
 (collected)

W side of north wing of Pond 730

E 354878

N 6801913

1120 finish Pond 730, start duck ponds

Observed several singles, pairs, and
 trios of ducks in pond 730 area

(19)

Scale: 1 square = _____

Rite in the Rain

8/31/12 contd.

also pair of cranes, 8-10 ducks flying

1130 Complete duck ponds. Head to

Pond 183 - 2 cranes, 6-8 ducks

1200 Return to EOD pad, quick break for lunch

1220 head to Pad 5 to start ditch transects,

gear up.

1240, Start ditch transects

1305 Ann finds dying duck - shows symptoms of white phosphorus poisoning, flapping wings + rotating head/neck. Decide to flag, complete ditch transects, and return to collect data - hopefully duck (male mallard) will die on its own.

MORT 08 - CARCASS - MALL - ♀

NORTH SIDE OF SOUTH DITCH EAST by gravel cap ~ 3 strides off trail → N

E 355282 N 6801529 - collected

1350 Complete ditch transect. Ann calls out of Area C

1405 Calls out of EOD pad;

1425 Return to Bldg 54 demob,

1440 Head to lab Bldg 47812 for

(20)

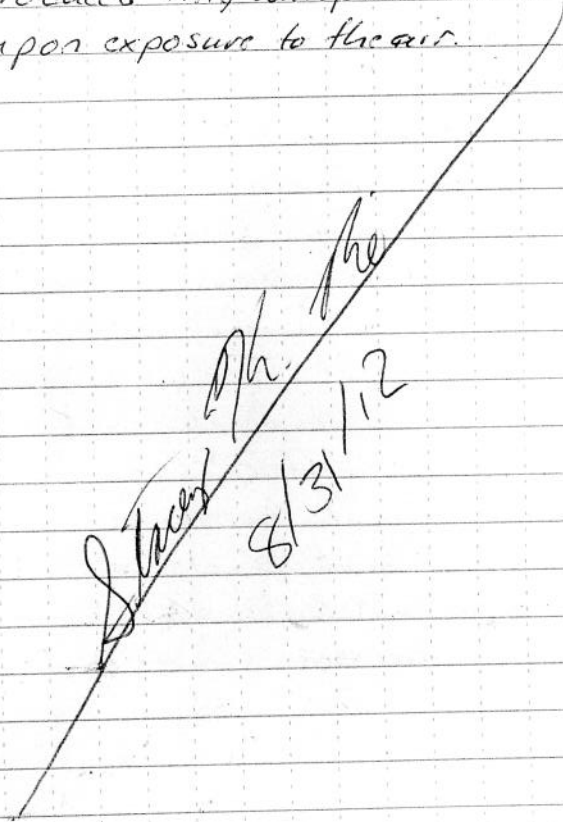
Scale: 1 square = _____

8/31/12 contd

gizzardectomy on morts 07+08

1530 depart lab.

Note: Mort 08 gizzardectomy strongly indicated white phosphorus was the cause of death. Gizzard contents produced tiny wisps of smoke upon exposure to the air.



Scale: 1 square = _____

(21)

Rite in the Rain

Eagle River Flats

9/4/12

Mortality Transects - Area C

Stacey Ke + Ann Staples

Weather: Partly-mostly cloudy low to mid 50's. Windy

Safety moment: High winds secure loose gear on packs, depart if area becomes hazardous

0955 Meet at Bldg 54, mob

1010 Arrive at EOD Pad, Ann calls in.

Eat snack, gear up

1030 Head to ditch transect

In Pond 183, (on the way) saw large ~125 flock of Canada Geese + a few ducks

Smaller flocks of ducks in ditch transect area, of 20-30 + 12-15 + 10 Swans to north.

1120 Complete ditch transects

10-15 ducks landed up beyond canoe transect (Swan hotel)

1130 Start ED transect

1140 Start Pond 730

1220 Mort-09 carcass/feather pile

East side of north leaf pond 730

(22)

Scale: 1 square = _____

9/4/12 cont'd

E 354898

N 6801846 SR944

12:35 ~~AD~~ gizzard. Collected partial gizzard, Mort-10 - feather pile + partial Carcass (wing)

Species unknown

Tip of east leaf of Pond 730

E 354969

N 6801823

Nothing to collect. Possible wing from

Mort-09? Speculum + color appeared different

1310 Mort-11 feather pile species/sex unknown

Found at tower in Pond 183

E 355025

N 6801181 (Point or in SR GPS)

12:45 Start duck pond transect

12:50 Complete duck pond transect

1300 Start Area SR 9/4 Pond 183 transect

1330 Return to EOD pad, Ann calls

out to pad (out of Area C)

1350 Ann calls out of EOD pad.

1405 Stop by Bldg 47812 to drop off gizzard from Mort-09. Return to Bldg 54

1430 Stacey departs Bldg 54.

Stacey Ke 9/4/12

(23)

Scale: 1 square = _____

Rite in the Rain

Eagle River Flats

9/6/12

Mortality Surveys - Area C

Stacey Retatt Ann Staples / CEREL

Weather - Partly cloudy, breezy,
low-mid 50's, 15-20 mph breeze

Safety moment: After major storms
be cautious of downed trees and
other debris while driving back
roads (especially)

1240 Meet at Bldg 54. Have safety
moment. Depart for EOD pad.

1305 Enter EOD pad, Ann calls in.

1330 Enter Area C - Ann calls in.

1340 Star + Pond 183

75-100 ducks in several flocks

1355 Start duck ponds, Canada geese flying

1405 Start Pond 730 transect

marsh hawk + eagle observed

swans observed in canoe transect
area.

1450 Complete Pond 730 transect saw
several singles/pairs of ducks.

Start C/D transect

1500 Complete C/D transect, saw
flock \approx 25 ducks.

(24)

Scale: 1 square = _____

9/6/12 cont'd

Start ditch transect,

Observe 2 flocks \approx 25 ducks each
2 sandhills

little duck flocks of 5+8 from
some areas of 25 count flocks.

1540 Complete ditch transect

Observed 15-20 ducks + several
singles + pairs

1550 Return to EOD pad, Ann calls
out of Area C

1620 Return to Bldg 54, demob

(25)

Return in the Rain

Scale: 1 square = _____

Eagle River Flats

9/7/12

9/7/12 cont

Mortality Surveys - Area C + Area D

Kristen Stevens / CH2M, Ann Staples / PEREL

Weather - Sunny; PK, slight breeze low-mid @

Safety Moment: After Storm debris

Slips/Trips/Falls

915 Safety moment @ Building 54, mobe

945 Ann's calls us in to Area C / EOD Pad

1020 Ann calls us in to Area C

1105 Bird Population Survey plane flying in Area.

1110 Finish Ditch Transect

1115 Start Pond 730 Transect.

Observed ~ 10 Trumpeter swans.

Observed ~ 20 ducks. ~ 40 geese.

1155 Finish Pond 730 Transect.

1215 Finish Duck Ponds Transect.

Observed ~ 15 ducks. ~ 20 geese.

1235 Finish Pond 183 Transect.

Observed ~ 40 Canadian geese. Observed preening feathers.

1250 Ann calls us back to EOD Pad

1300 Call Stacey no answer. Mob to building 54.

1400 Stacey meets Ann at Bldg 54

26

Scale: 1 square = _____

1410 Ann calls in to EOD pad

1420 Ann calls into Area D for canoe transect

1520 Return to shore, feather pile

found beside canoe spots Ann calls out of Area D.

Mort-12 Feather pile + wing

Canoe transect - N of parking spot ~ 2ft

E 355334

N 6801971

Nothing to collect

1535 Stop to talk to Mike, Mariannet + Jan at pump. Plan Monday start time 9am at lab bldg.

1550 Return to Bldg 54, demob.

1600 Depart, End of day.

~~Stacey
9/8/12~~

Scale: 1 square = _____

Rate in the rain

27

Eagle River Flats 9/10/12

Mortality Survey Area C

Kristen Stevens/CH2M, Ann Staples/CP&L

Mike Underem/CRREL

Weather - Sunny Cool

1230 Safety moment at Building
54. Mobil

1300 Ann calls in to EOD PAD

1330 Enter Area C. Start Pond 183
Transect. Sediment Samplers on site.

1345 Found feather pile of mallard
(E 354828 N 6801574) Just S of duck pond
Nothing to collect. Off of shortcut
from Pond 183. Mort 13

Continue transect

1415 Start Duck Ponds Transect.
Population Survey Plane overhead.
Preening feathers observed.
Observed ~ 15 ducks

1430 Start Pond 730 Transect

1500 Stacey calls to say there
is a feather pile on gravel pad.

1515 Start Ditch Transect
Sediment Samplers in area.

(28)

Scale: 1 square = _____

9/10/12 cont'd

1545 Arrive at pad 03 DIS 03

feather pile. Nothing to collect

E 355186 N 6801458

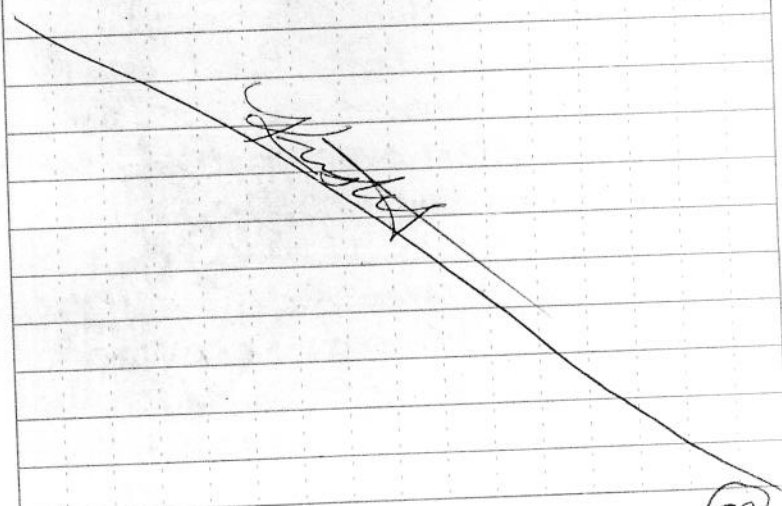
off of Beluga Trail where sediment
samplers were. Mort 14.

1600 Arrive at EOD pad meet w/
Stacy Ré & Rich Horn. Demobe.

1620 Ann calls the 5 of us out
of Area C gate.

1640 Drop off Stacey & Rich at
their vehicles at Lab.

1650 Arrive at Building 54.
Demobe. Done for the day.



(29)

Scale: 1 square = _____

Rite in the rain

East River Flats 9/11/12

Mortality Survey - Area A

Kristen Stevens/CH2M, Jennifer Ulrich/CH2M

Mike Under/CRRZL

Weather - Overcast, cool breeze 50's

Safety Moment - Frequent rest/water breaks

0900 Meet Jenn @ CH2M office pick up work truck.

0930 Arrive at Range Control to pick up Cole Point Key. Man there signed us in to Area A told us not to call in the 3 personnel just to call out.

0945 Arrive at Building 54 to pick up Mike. Mobe

1045 Arrive at Cole Point Area A.

1115 Start Transect.

1130 Tree-fallen over on trail. Might need chainsaw to clear path.

1140 Take Break before Pond Transect Area A

1245 End of Transect. Take Break

1300 Make way back on Shortcut Trail
Finish Pond transect
take Northside of Pond trail

30

Scale: 1 square = _____

9/11/12 cont'd.

1405 Back to vehicle. Demobe
Mike calls us back.

1425 Drop key off at Range Control.

1445 Back to Building 54.
Demobe. Jenn + Kristen head back to CH2M office.
Done for the day

~~31~~

Scale: 1 square = _____

31

Rite in the Rain

Eagle River Flats

9/12/2012

Mortality Survey - Area C (Core)

Jennifer Ulrich (CH2M Hill) &

Ann Staples (CRREL)

WEATHER: Overcast, 5-10 AM 42°F,

light rain, calm

Safety moment: Proper PPE

(gloves, waders, boots, safety glasses, orange vests)

0940 - meet Ann @ CRREL office
mode for day event.1019 - @ gate to Core Area. Call
Range control for access. OK
(6 personnel)1023 - Arrive @ Honey pt, Area C
will start @ transect Pond
183. observe flock of
~160 ducks.1045 - observed flock of 14 geese
N end of pond 183, ^{29/14}1125 - onsite mort # ~~14~~¹⁵ FP (wing)Duck pond transect: cap
directly east of duck pond
start v

32

Scale: 1 square = _____

ERF

9/12/12 cont'd

Coordinates (UTM NAD27)

(E 354 859N 6801624)

↳ nothing to collect (no fatty
tissue, no GI tract, etc.)- observe 5 trumpeter swans
near East side of pond 7301530 - return to ^{Cloney idk} Cloney point. Call
in 2 personnel to range
control.

33

Rite in the Rain

Scale: 1 square = _____

Eagle River Flats - Area D mortality survey 9/13/12

Stacey Re + Jeremy Blei

Weather: Partly Cloudy, 50's, calm
light breeze

Safety moment: Bears, wear life jackets,
beware of windy conditions

08:30 Mtg Jeremy at Bldg 54.

Safety moment + Planning

09:00 Arrive at ERF. Stacey calls in.

09:05 Park on road to Area D, walk
in.

09:20 At Area D, Stacey calls in to
range control.

Conduct Area D canoe transect
No mortalities recorded. Observed
≈ 15 swans, two flocks of 20-30
ducks, + a few singles + pairs.

10:20 Arrive back at canoe parking
spot. Stacey calls out of Area D

10:35 Arrive back at vehicles.

10:45 Jeremy heads back to office. Stacey
calls Jeremy out of EOD pad,
goes to visit sampling team off
of Blaney pad. Don finds +
removes several anomalies, including

34

Scale: 1 square = _____

9/13/12 contd

what appears to be an ^{mortality} MP round.
Grid sampling continues. Stacey observes
technique.

11:45 Stacey departs EOD pad.

~~Stacey Re
10/2/12~~

Scale: 1 square = _____

35

Write in the Rain

Eagle River Flats

9/14/12

Kristen Stevens (CH2M), Mike Underwood (Ceres)

Weather: Rain 50's

Safety Moment: Slips/Trips/Falls

Area C Mortality Survey

0930 Meet Mike @ Building 54. Move

1000 Arrive at Clumpy Point EOD PAD

1030 Mike calls us into Area C.

Leave EOD Pad for Pond 183.

1100 Finish Pond 183 Transect

1115 Arrive At Duck Ponds Transect

1130 Pond 730 Transect. Observed

~ 30 Canadian Geese, Observed

~ 20 ducks in small flocks.

1155 Finish Pond 730 Transect.

Finish Duck Ponds Transect.

Begin Ditch Transect.

1220 Finish Ditch Transect.

Preening feathers observed.

Sediment Sample Team on site.

1230 Back to EOD Pad. Demobe

1250 Mike calls us out of Area C

Safety Behavior Observation

form filled out.

1315 Arrive at Lab

(36)

Scale: 1 square = _____

9/14/12 contd.

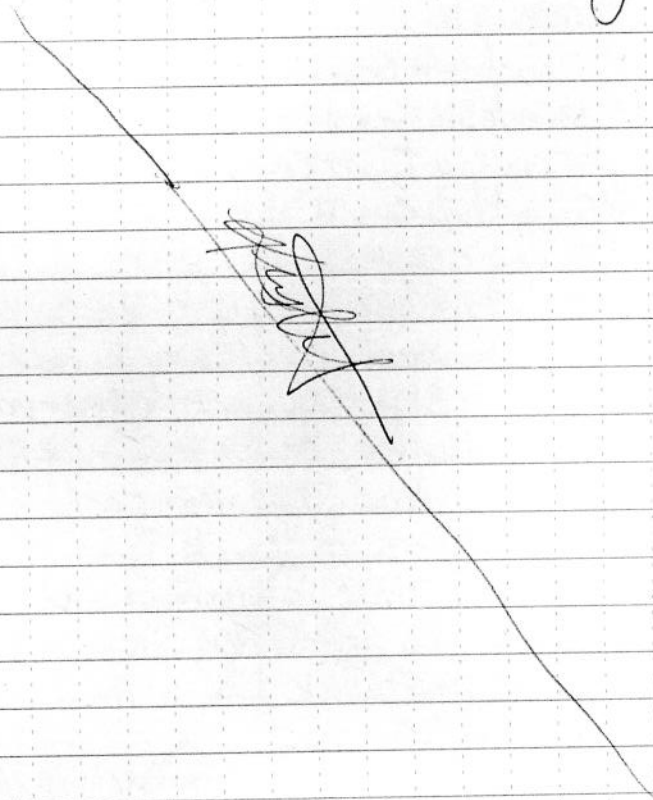
1325 Collect Sample Mort 9

from Pond 730 Feather Pile

+Caro 9/14/12 AS/SR

1345 Arrive back at Building 54.

Demobe done for day!



(37)

Scale: 1 square = _____

Return to the main

Eagle River Flats Area 9/17/12

Kristen Stevens, Stacey Re (CH2M)
Mike Under (CREL)

Weather: Rain, cool, low 50's, breeze

Safety Moment: Flood Tides

1000 Leave Building 54 to Area C
Mike calls us in. Arrive
at Pad Area looks too deep
to walk in. Leave EOD PAD

1015 Arrive at Area D for canoe
use. Move. Walk down to site.

1045 Stacey leaves site. Mike calls
her out. Mike + Kristen start
canoe transect. Make way across
to Pond 730 transect. Observed
about 40 ducks, ~ 10 trumpeter swans

1105 Finish Pond 730 transect.
Follow markers to Duck Pond
transect. Trail is narrow and
shallow. Mike and Kristen step out
of canoe and walk Duck Pond
Transect w/canoe.

1130 Finish Duck Pond Transect. Head
to Pond 183 Transect. Pond is
shallow but canoe is still

38

Scale: 1 square = _____

9/17/12 contd.

a float. Observed ~ 15 ducks

1200 Finish Pond 183 transect.

1220 Start Ditch transects.

Observed about 5 trumpeter swans

Observed ~ 30 ducks.

Finish Ditch transects.

1245 Head back to Area D canoe

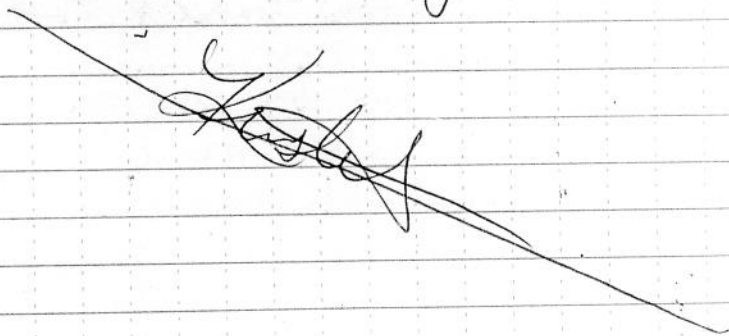
1245 launch area. Head back to
vehicle.

1315 Mike calls us out of Area.
Move to Building 54.

1330 Arrive at Building 54.

Demob. Mike moves Radio
Charger to Lab.

1345 Done for day.



39

Scale: 1 square = _____

Rate in the Rain

Eagle River Flats 9/20/12

Kristen Stevens (CH2M), Mike
Vindem (CRREL) - Area C mort. survey

Weather: Heavy Rain, low 50's

Safety Moment: Stay dry, proper PPE

930 Meet Mike at Building 54
Move.

1000 Arrive at Clume Point BDD PAD
Water high decide to take
canoe out to Area C.

1045 Arrive at Canoe launch
Mike calls us in. Take canoe
out, observed about 5 swans,
observed about 20 ducks.

1100 Start Pond 730 Transect.

1115 Finish Pond 730. Start Duck Pond

1130 Finish Duck Pond transect. Start
Pond 183.

1150 Finish Pond 183. Take Beluga
Hwy to Ditch transect.

1230 Finish Ditch transect.
Make way through Area D
to canoe launch Area

1245 Back to canoe launch
Move to vehicle.

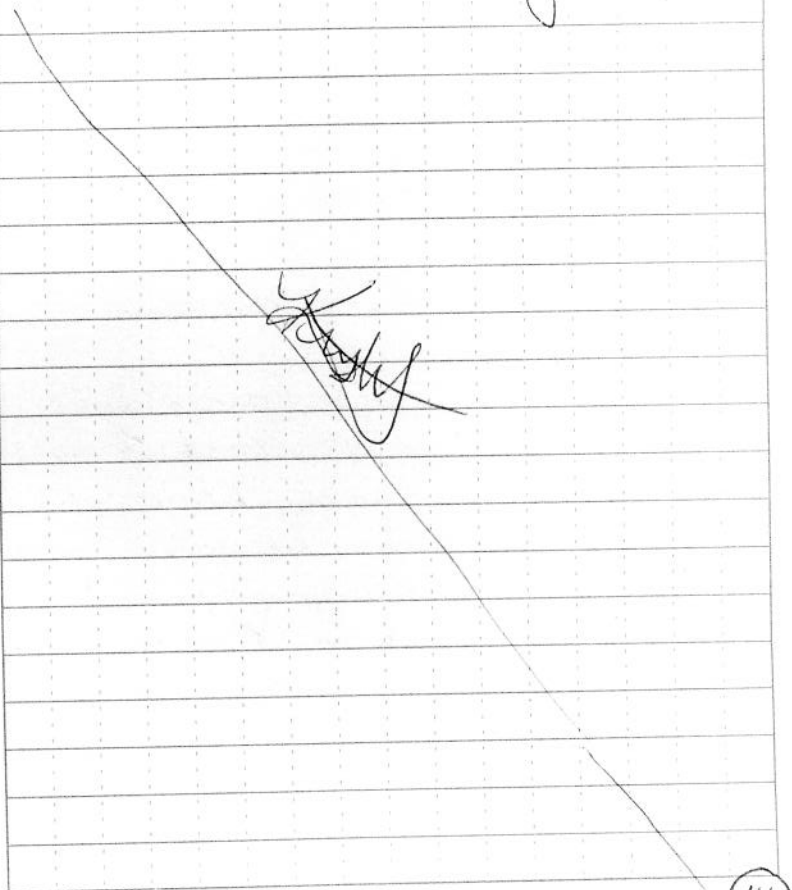
(40)

Scale: 1 square = _____

9/20/12 contd.

1300 Mike calls us out of
Area Demobe. Head
back to building 54.

1330 arrive at building 54. demobe
done for the day.



Scale: 1 square = _____

Rate in the _____

(41)

Eagle River Flats 9/21/12

Kristen Stevens + Stacey Re (OTZM)

Activity: Area C Mortality Survey

Weather: Sunny, low 50's - partly cloudy PM

Safety Moment: Near sunglasses

1000 Go to Bldg 54 to pick up radio.

1030 Arrive at ERF EOP pad, Stacey calls in.

1045 Call in to Area A/D, start with
Canoe transect, saw 5-7 swans

11:45 Head to Pond 730 with canoe
one flock of 10-15 ducks
five swans flew over

1200 Start Duck ponds, leave canoe at
NE corner.

Saw several singles + pairs of ducks

1210 Head to Pond 183, conduct most
of survey by canoe, Kristen walks
south side where too shallow, Stacey
paddles canoe through deeper area

1245 Head to ditch transects by canoe
see one 10-15 Canada geese +
single + pairs of ducks.

1320 Head to CID transect

1340 Complete CID. Observe aerial
survey taking place.

(42)

Scale: 1 square = _____

9/21/12 cont.

Head back to Area D via Pond 730, w
wing + crossing ^{SR} through bullrushes.

1430 Stacey calls out of Area A/D.

1445 Stacey calls out of EOP pad, done
for day.

1500 Drive by lab to make sure forbes
were picked up.

1505 Drop off radio. Ann Staples in office.
Kristen checks in to arrange Monday's
survey.

1515 Depart Bldg 54.

~~Stacey Re~~

(43)

Scale: 1 square = _____

Return to the Room

Eagle River Flats 9/24/12

Kristen Stevens + Stacey Re (CH2M)

Activity: Area C Mortality Survey

Weather: Overcast, cool low 50's

Safety Moment: Complacency, don't rush

945 Mobe vehicle at Building 54

1000 Arrive at EOD PAD, Stacey calls us in
Area more water than expected
decide to use canoe for transects

1015 Mobe for transects, hike to canoe
transect area

1025 Stacey calls us in. Take off
with canoe to transects

1045 Pond 730 Transect. Water
shallow leave canoe @ Pond
730. Walk to Ditch Transect.

1115 Mort 16 off of C/D trail
E 355000 N 6801720
2 wings, some fatty tissue found
on grassy mound. Stacey collects
wing w/ fatty tissue.

1150 NE side of cross ditch
Mort 17 rotten carcass
355213 6801592
Observed ~ 55 ducks,

9/24/12 contd.

~ 6 trumpeter swans, another flock
of about 25 ducks. ALSO ~ 8
ducks pairs or single.

1155 Finish Ditch transects. Check
Gravel Pads.

1205 Gravel cap off of South Ditch
Mort 18 small feather pile,
some flesh. Nothing to collect
355232 6801448
Observed 2 flocks of ducks
~ 25 each.

1230 Finish Pond 183 Transect

1245 Take shortcut to Duck
Pond Transect. Finish at
canoe @ C/D Pond Transect.

1315 Finish Transects arrive
at canoe launch

1330 Back to vehicle

1350 Arrive at Building 54. Demobe
Stacey brings samples to
Arrive to transfer to fridge
at build 47812

Stacey Re

(44)

Scale: 1 square = _____

Scale: 1 square = _____

(45)

Rate in and Rain

Eagle River Flats 9/25/12

Mortality transects, Area A

Weather - Overcast, low 40's

Safety moment: high wind warning in PM for higher elevations, if high winds appear, vacate area quickly + safely.

Stacey Re, Kristen Stevens, Ann Staples, Mike Udem

09:30 Meet at Bldg 54. Have safety session. Discuss plan + mob.

10:05 Head to range control for key to Cole Point.

10:40 Arrive at gate. Ann calls in to Cole Point.

10:58 Ann calls into Area A.

11:40 Arrive at start of A transect. Start survey
flock of 15-20 ducks

~8-10 swans in Area B.

Not much activity at first pond, no preening feathers.

From 2nd area, saw singles, pairs, small
flocks groups of ducks, 5-15

~80 cranes

~15-20 geese.

46

Scale: 1 square = _____

9/25/12 contd

12:30 Complete Area A survey, head back to Cole Point.

13:15 Back to beginning of transect

13:50 Arrive at vehicle. Ann calls out of Area D.

14:05 Arrive at Bldg 54. Demob

14:30 Depart Bldg 54

End of day

Note: Ann able to obtain add'l canoe for Area C surveys during flood tides to be picked up 9/28. from Natural Resources.

~~Stacey
9/25/12~~

47

Scale: 1 square = _____

Write in the rain

Eagle River Flats

9/26/12

Mortality Survey - Area C Stacey R. & Kristen Stevens

Weather: Sunny, ^{mid} low 40's to 50's, breezy.

Safety Moment: Do not eat while out in Area C. Wait till return to EOD pad area.

09:30 Meet at Bldg 54, safety discussion.

09:40 Depart for range.

09:55 Check in with Range Control to EOD pad.

10:15 Stacey calls in to Area C

10:20 Head to Pond 183

Observe: 1 flock of ducks in Pond 185

1 flock 20 ducks in Duck pond area

1 pair ducks in Pond 183

10:35 Head to Duck Ponds

10:50 Complete Duck Ponds. Head to Pond 730
single duck observed

11:25 Complete Pond 730

flock \approx 25 ducks

flock \approx 30 ducks in Area D

flock 3 ducks

12:30 Start ditch transect

Observed 9 single ducks

48

Scale: 1 square = _____

9/26/12

on 18.

flock of 240 ducks

flock of 6 geese

flock of \approx 40 geese in Pond 183 area

12:05 complete ditch transects, survey

caps on way out

12:25 Stacey calls out of Area C

3 sandhill cranes observed

12:40 Stacey calls out of EOD pad

return to Bldg 54, de mob.

13:00 Depart base. Done for day

~~Stacey R. & Kristen Stevens~~

49

Write in the Rain

Scale: 1 square = _____

Eagle River Flats

9/27/12

Mortality Survey Area D - Stacey Re,
Kristen Stevens (CH2M)

Weather: overcast, 45°

Safety Moment: Bug bites, prevention
+ proper care and procedure

1000 Meet at Building 54. Safety
Moment. Mobilize

1030 Arrive at Cluney Point Gate
Stacey calls us in.

1045 Head for canoe transect launch
Area.

1100 At Canoe launch area. Stacey
calls us in. Head to transects
with canoe.

~~1115 North End~~ ^{KS}

Observed ~ 10 ducks at start.

Observed ~ 5 trumpeter swans.

Observed ~ 8 ducks.

1115 North End of D Transect
Mort 19 File of Trumpeter
Swan Feathers and Wing and
Bones. Nothing to collect
E 355187 N 6802401

50

Scale: 1 square = _____

9/27/12 contd.

1125 Continue Area D Transects
Observed ~ 40 Canada Geese
flying from Area A area. Observed
preening feathers in multiple
areas. Observed ~ 5 ducks
flying solo.

1155 Arrive at canoe launch area.
Stacey calls us in. We collect
life preservers and oars. Head
back to vehicle.

1205 Back to vehicle. Demobilize.

1215 Leave Cluney Point Gate area
Kristen calls us out.

1235 Back to Building 54. Demobilize
vehicle. Preparations for
tomorrow. Done for day.

~~Kristen~~

9/27/12

51

Rite in the Rain

Scale: 1 square = _____

Eagle River Flats

9/28/12

Mortality Surveys Area C

Stacey Kei, Ann Staples, Mike Underm

Weather: Rain, overcast, calm low to mid 40's

Safety Moment - Team lift heavy objects (like canoes)

12:20 Meet at Bldg 54. Safety moment

12:30 Head to ERF,

12:50 Arrive at ERF. Ann calls in to EOD pad

13:05 Call in to Area C

Observed 25 ducks + singles + pairs

Start 183 transect

13:30 complete 183 transect, Head to duck ponds.

13:35 Start duck ponds

13:40 Start Pond 730

See 15-20 ducks

50-75 Canada geese.

14:15 Complete Pond 730/Start C/D transect

15:15 Start ditch transects

See single + pairs of ducks

15-20 ducks. Lots of preening

(52)

Scale: 1 square = _____

9/28/12 contd.

Feathers,

15:35 Complete transects (checked caps on return trip.)

1600 End of day.

~~Stacey Kei
9/28/12~~

(53)

Write in the Rain

Scale: 1 square = _____

Eagle River Flats - Mortality 10/1/12

Surveys - Area C

Stacey Re + Ann Staples

Weather: Sunny - mid 30's to low 40's,
calm

Safety moment: ice + frost. Beware of
slippery surfaces. Ice can bruise
shins when it begins to thicken on
the marsh.

1000 Meet at Bldg 54.

Have safety moment, gear up.

10:35 Stop by Shopette so Ann can grab
water.

11:00 Arrive at ERF. Ann calls within
layer of ice on water.

11:35 Start transect. Ann calls in to Area
C. observe 9 swans, 8 ducks.
Ice up to 1/4 inch thick in places,
some areas clear.

Add 4 singles + pairs of ducks.

11:57 Complete pond 1831

12:05 Start duck ponds. (little ice)

12:15 Start Pond 730 - 75% icy up to 1/4"

12:50 Start C/D transect

(54)

Scale: 1 square = _____

10/1/12 cont.

observe 4 shore birds,

1300 Complete C/D transect

1315 Start ditch transects

See lots of preening feathers, no
ducks, 95% of North ditch iced
up. South ditch ~ 50% iced.

1350 Arrive back on EOD pad, Ann
calls out.

1405 Depart EOD pad

1425 Arrive at Bldg 54. Demob

1445 Depart base End of field day

~~Stacey Re~~
10/1/12

Scale: 1 square = _____

(55)

Rite in the Rain

Eagle River Flats - Mortality 10/3/12

Surveys Area C

Kristen Stevens (CH2M), Ann Staples (CER)

Weather: Overcast, low 40's

Safety Moment: Slips/Trips/Falls
watch out for icy areas

1100 Meet Ann at Building 54.

Safety moment. Move vehicle

1140 Arrive at Cluney Point EOD Pad.

Ann calls us in. Observed
~15 Trumpeter Swans @ Pond
183. ~20 ducks in area.

Water does not look high enough
for canoe.

1205 Leave EOD Pad. Ann calls
us out.

1250 Finish Ditch Transect.
Signs of dabbling &
preening feathers. Take
cleared shortcut to
Duck pond End.

1300 Pond 730 Transect.
Swan preening feathers.

1340 Duck Pond Transects
Feather pile on gravel

56

Scale: 1 square = _____

cap N. cross transect.

Flagged no color of feathers
does not look like duck

may be shore bird. Continue
Duck Pond Transect.

1350 Finish Duck Pond Transect.

Take cleared shortcut to
Pond 183. ~5 Trumpeter
Swans. ~30 Canada geese.

1415 Finish Pond 183 Transect.
Population Survey Plane
Overhead.

1420 Back to EOD Pad. Ann
calls us back. Demobe.

1440 Leave Cluney Point Gate.

1500 Back @ Building 54. Demobe
Done for day.

~~by
Kusler~~

57

Scale: 1 square = _____

Rate in the Rain

10/4/12 Eagle River Flats - Area D

Stacey Re / CURM Hill Ann Staples / CRRICK

Weather: overcast, scattered showers, low 50's.

Safety moment: wet floors in Bldg 54,
watch weather today - potentially
windy.

12:25 Meet Ann at Bldg 54, Mob.

13:00 Arrive at EOD pad, Ann calls
in, observe flock of 50-100 ducks, 7 swans.

1330 Start Transect D

1355 Mort 20 - Mallard Feather Pile
Southern most pond (southwest)
E 355110 leg + breast bone
N 6802063 present

Breeze picks up to \approx 10 mph w gusts,
making paddling more challenging.

1420 back at canoe takeout.

1430 back to vehicle. Ann calls out of
Area D. Observe flock \approx 50 ducks.

1435 Depart EOD pad. Ann calls out.

1450 Stop by lab to dispose of Mort-17
wing + liver

15:05 Return to Bldg 54

15:15 Depart base, end of day.

58

Scale: 1 square = _____

Eagle River Flats

10/5/12

Mortality Survey Area C

Stacey Re + Jon Zufelt

Weather - Overcast, scattered shower/stain
50's.

Safety moment: safe driving on base.

Obey speed limits, no cell phone
use, come to complete stop at
stop signs.

09:30 Meet Jon at Bldg 54. Mob,
safety moment.

1000 Jon calls in to Chase Pad

10:10 Jon calls in to Area C
15 ducks +

6 swans off Chase Pad.

Start 183 Transect

10:30 Complete 183. Start duck ponds
observe 3 swans, \approx 100 ducks

10:40 Start Pond 730

- observe \approx 100 Canada geese

11:07 Start C/D

11:18 Start Ditches

11:20 Mort 21 male mallard

West end N ditch

59

Scale: 1 square = _____

Write in the Rain

E 355099

N 6801589

11:55 Complete ditches. Back on EOD pad
6 swans ~ 15 ducks.

12:15 Return to Bldg 54; demob.

Offer to stay + help with gizzard-
ectomy on Mort 21, but Jon says
he'll take care of it after lunch.

12:30 Stacey departs base

~~Stacey Re
10/15/12~~

60

Scale: 1 square = _____

Eagle River Flats Mortality Survey Area 10/8/12

Stacey Re + Michael Landon (CH2M Hill)

Weather Overcast - MC, slight breeze, low
50's

Safety moment: UXO cleared paths
Wildlife.

10:45 Depart CH2M Hill office. Stop by
Fred's to get gloves for Michael.

11:20 On base, but forgot gatekey at office.

12:30 Back on base + at EOD pad. Stacey calls in

12:50 Call in to Area C, begin surveys

13:15 Complete Pond 183 - 5 ducks 6 shorebirds observed

13:20 Start Duck Ponds, 5 swans observed

13:30 Start Pond 730

13:45 Mort 22 Juv Swan carcass - gizzard collected
- E 354890 N. 6801859

14:20 Start 90 transect no bird observations

15:10 Back on EOD pad, no add'l birds
observed

15:30 Return to Building 54.

~~Stacey Re
10/8/12~~

61

Scale: 1 square = _____

Return on 10/12/12

Phone Numbers

Jon Zufelt/CRREL 384-0511

Kristen Stevens/CH2MHill 952-6479

Jeremy Blej/Work - 762-1357
CH2MHill Cell 854-6362

Range Control 384-6230

Range Scheduler, John Cline 384-3508
or 384-6230

Stacey Reif/Work - 762-1519
CH2MHill Cell 440-7662

Ann Staples/CRREL Work 384-0512
Cell 317-1864

Michael Landon/KRM Work 762-1187
Hill Cell 984-3899

Mike Walsh/CRREL 603-286-0433

Marianne Walsh/603-646-4666
CRREL 603-667-0174

Mike Under/CRREL 320-309-9876

Jennifer Ulrich/CH2MHill 907-792-9635

62

Scale: 1 square =

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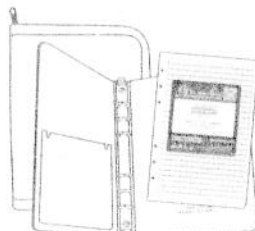
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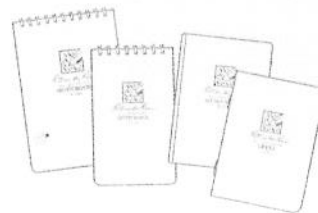
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№ 373

Eagle River Flats

October 2012 -

Mortality Surveys

Project # 457958.09.HI.02

Stacey Re / CHZMH.11

Rite in the Rain
ALL-WEATHER WRITING PAPER



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Project: Eagle Rivers Flats
Mortality Surveys
457958.09.HT.02

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Eagle River Flats

10/9/12

Mortality Surveys Area A

Stacey Re, Jennifer Ulrich, Mike London (CH2M/HILL)

Weather: Overcast, misty, breeze, low 50's

Safety moment - transect width, bears, slips
+ trips (wet leaves/logs)

11:00 Stop by Bldg 54, grab radio, walking sticks

11:30 Depart for Cole Point.

11:45 Mike calls in to Cole Point -

12:00 Stacey calls in to Area A.

10 swans observed

12:35 Start Area A transect

13:00 Reach end of Area A

Observed 2 ducks

~100 ^{SP.104} Canada geese

13:40 Head back. Observe ~12 ducks

14:05 Return to start of Area A

No add'l observations of birds

14:30 Return to Bldg 54, drop off radios

+ walking sticks

15:00 Depart base.

15:40 Return to office, Demob.

Stacey Re
10/19/12

Scale: 1 square =

①
Rite in the Rain

Eagle River Flats

10/10/12

Area C Mortality survey + gizzardectomies
for Mort 21 + 22

Stacey Re, ^{from Hill} Ann Staples / CRREL, Mike
Landon / CH2MHill

Safety Moment: Gizzardectomies.

Wear proper PPE - gloves/eye protection,
because of sharps.

Weather: Low 50's, morning fog clearing
later.

09:45 Stacey at Bldg 54, meet Ann.

10:00 Prep for gizzardectomy - get mailing
label, head to Bldg 47812.

10:30 Perform gizzardectomy on Mort 21,
male mallard.

10:45 Perform gizzardectomy on Mort 22
juvenile swan.

11:20 Arrive at ERF, Stacey calls in.

11:35 Stacey calls in to Area C.

Observe ~ 200 Canada geese.

Head to Pond 183.

11:55 Complete Pond 183 transect

Large flocks of geese continuing to circle
in area.

(2)

Scale: 1 square =

10/10/12 cont'd.

1200 Start duck pond transect.

1205 Start Pond 730

1232 Complete Pond 730, start C/D transect

1240 Complete C/D transect.

No add'l bird observations.

1245 Start Ditch surveys

1310 Return to EOD pad, Stacey calls
out.

1330 Stacey calls out of EOD pad.

1345 Return to Bldg 54, demob.

1400 Depart base. Done for day

~~Stacey Re
10/11/12~~

Scale: 1 square =

(3)
Rite in the Rain

Eagle River Flats 10/11/12

Area D - Mortality Survey

Kristen Stevens/CH2M + Ann Staples/CRREL

Safety Moment: Health: Water breaks,
warm clothes, over exertion

Weather: Sunny, high 30s, low 40s

1300 Meet Ann @ Building 54.

Safety moment. Mobile
vehicle.

1340 Arrive at Clunie Point Gate

Ann calls us in. Check

EOD Pad for ducks, none.

Check ditches for ducks

none observed.

1405 Head out to canoe launch
area.

1415 Area D Transect in canoe.

~7 ducks observed. Ice

on edges of water. Another

flock of ~4 ducks. Observed

2 Trumpeter swans.

~15 ducks.

1515 Back to canoe launch

area.

1525 Back to vehicle. demobe.

Ann calls us in.

1530 Leave gate area. Ann
calls in.

1550 Back to Building 54.

Done for the day.

Flush

④

Scale: 1 square = _____

Scale: 1 square = _____

⑤

Return to Area

Eagle River Flats

10/15/12

Mortality Survey, Area C

Weather - Mostly cloudy, low clouds, mid to upper 30's.

Stacey Re~~the~~ + Ann Staples (CRREL)

Safety Moment: Stay healthy, get enough sleep + take vitamins to prevent + recover from sickness.

12:30: Meet Ann at Bldg 54, discuss safety moment, mob.

13:25 Arrive at EOD pad. Ann calls in, head to Clinic Point. Ice around pad. Head over to Site 5 to and in Pond 183

check out ditch transect. Appear to be 75% ice & over. Took photos (2).

13:45 Depart site. Ann calls out.

Tuesday will be high flood tide, should be able to use canoe to contact Area C surveys. No waterfowl observed.

14:00 Back at Bldg 54.

14:15 Depart base.

Stacey Re
10/15/12.

6

Scale: 1 square =

Eagle River Flats

10/16/12

Mortality Survey, Area C

Stacey Re + Ann Staples

Visitors: Josh Painter, Jennifer Ulrich

Weather: Low 30's; Partly cloudy

Safety moment - Winter driving conditions

First ice + snow. Base reduces speed limits, beware of inexperienced drivers, give extra space, Use properly equipped vehicles.

10:00 Stacey arrives at Bldg 54 for radio. Jennifer calls to say they are just arriving for range control briefing.

10:40 Jenn arrives at Bldg 54. Josh remains in vehicle on conference call. (estimated 20min)

11:15 Head towards ERF, stop by Otter Lake Drum Site.

11:40 Arrive at ERF. Ice appears light enough to canoe. Observe 5 ducks, 10 swans. Stacey calls in to EOD pad. Show Josh maps, safety plan, + munition collection on pad while waiting for Ann to arrive.

12:20 Ann arrives at ERF, Josh + Jenn

7

Scale: 1 square =

Return on return

depart. Stacey calls out. Ann called herself in.

12:30 Start Area C transects by canoe. Pond 183 first. Observe \approx 2 dozen swans in Area D.

13:00 Start C/D + duck ponds transects. (partially walked, partially by canoe.)

13:20 Start Pond 730. Observe \approx 2 dozen swans in Area D. (conducted by canoe)

13:50 Return to Beluga trail, paddle to North ditch access from Beluga trail.

14:00 Conduct ditch transect surveys.

14:25 Complete ditch transects.

14:35 Return to EOD pad. Ann calls out. Patchy ice encountered on Beluga Trail, Pond 730, and ditch transect, despite flood tide peaking a little after 8am. 200 swans in ~~Area~~ ^{Beluga}

14:40 Depart EOD pad. Ann calls out.

15:00 Return to Bldg 54. Demob.

15:05 Stacey departs, bus.
Stacey 7ae

10/16/12

6

Scale: 1 square =

Eagle River Flats 10/17/12

Canoe retrieval + Pump Winterization
Stacey Re, Mike Rozak, Kristen Stevens.
Safety Moment: Avoid exiting canoe off of transects.

Weather: Overcast, upper 20's low 30's
calm, (Partly cloudy part of time)

10:10 Stacey meets Mike at Sheppette, Kristen goes to Bldg 54 to load, Ann not in office. Stacey calls after arriving, Ann comes from lab to allow access to radio + canoe supplies.

10:30 Depart Bldg 54 for ERE.

10:45 Stacey calls in to EOD pad. Show Mike gen set, leave Mike truck at Clinic Point, have Mike drive us to Canoe transect access road, then take CH truck back to Clinic Point, goes to clean out grease cups.

11:10 Stacey calls in to Area C/D. Stacey + Kristen bring canoe back to Clinic Point. Ice cover on \approx 75% of route back, up to $\frac{3}{8}$ " thick, but passable. Cut back through Pond 730 to Beluga trail. Only exited canoe twice on Beluga trail.

Scale: 1 square =

Ret in the Rain 9

at shallow spots.

Observed three ducks - 1 pair, 1 single.

~ 25 swans.

12:15 Arrive at Cluse Point with canoes

Stage canoes. Depart EOD pad.

Stacey calls out (Mike, who has departed shortly before, Stacey + Kristen)

12:30 Return to Bldg 54. Demob

12:50 Done for day

~~Stacey Re
10/17/12~~

10

Scale: 1 square = _____

Eagle River Flats

10/18/12

Woodland Transect Survey

Ann Staples + Stacey Re

Safety Moment: Slips + trips, wildlife

Weather: Sunny, mid-upper 20's
calm.

13:00 meet Ann at Bldg 54. Mob for
Woodland transect.

13:20 Stop by fuel yard to check Ann's
fuel log (for fueling SUSVE, if needed)

13:35 Check in to EOD pad

Photograph high tide ice, was almost
at +34 yesterday evening.

13:45 start woodland transect.

14:30 Complete transect. No mortalities
observed. No waterfowl observed.

14:50 Return to Bldg 54, demob.

15:00 Stacey departs.

~~Stacey Re
10/18/12~~

11

Scale: 1 square = _____

Return on River

Live Bird Estimates from Surveys

| | Area C | | | Area A | | | Area D | | |
|---------|------------------|--------------|-----------------|--------|-------|-------|--------|-------|------------------|
| | Ducks | Geese | Swans | Ducks | Geese | Swans | Ducks | Geese | Swans |
| 8/26/12 | 31 | 80 | 0 | | | | | | |
| 8/27/12 | 35 | 35 | 0 | | | | | | |
| 8/28/12 | 49 | 25 | 0 | | | | | | |
| 8/29/12 | 173 | 0 | 0 | | | | | | |
| 8/28/12 | | | | 64 | 45 | 0 | | | |
| 8/29/12 | 125 | 60 | 2 | | | | | | |
| 8/30/12 | | | | | | | 43 | 3 | 11 |
| 8/31/12 | 34 | 0 | 0 | | | | | | |
| 9/1/12 | 52 | 125 | 10 | | | | | | |
| 9/6/12 | 297 | 8 | 6 | | | | | | |
| 9/7/12 | 35 | 100 | 10 | | | | | | |
| 9/10/12 | 15 | 0 | 0 ^{sr} | | | | | | |
| 9/11/12 | 0 | 0 | 0 | 0 | 0 | 0 | | | |
| 9/12/12 | 160 | 14 | 5 | | | | | | 15 ^{sr} |
| 9/13/12 | 55 ^{sr} | | | | | | 55 | 0 | 15 |
| 9/14/12 | 20 | 30 | 0 | | | | | | |
| 9/17/12 | 85 | 0 | 15 | | | | | | |
| 9/20/12 | 20 | 0 | 5 | | | | | | |
| 9/21/12 | 16 | 13 | 11 | | | | | | |
| 9/24/12 | 138 | 0 | 6 | | | | | | |
| 9/25/12 | 35 | | 4 ^{sr} | 35 | 18 | 9 | | | |
| 9/26/12 | 136 | 46 | 0 | | | | 23 | 40 | 5 |
| 9/27/12 | | | | | | | | | |

(12)

Scale: 1 square = _____

Live Bird Estimates from Ground Surveys (cont'd)

| | Area C | | | Area A | | | Area D | | |
|----------|--------|-------|-------|--------|-------|-------|--------|-------|--------------|
| | Ducks | Geese | Swans | Ducks | Geese | Swans | Ducks | Geese | Swans |
| 9/28/12 | 72 | 63 | 0 | | | | | | |
| 10/1/12 | 14 | 0 | 9 | | | | | | |
| 10/3/12 | 20 | 30 | 20 | | | | | | |
| 10/4/12 | | | | | | | | 125 | 0 7 |
| 10/5/12 | 130 | 100 | 15 | | | | | | |
| 10/8/12 | 5 | 0 | 5 | | | | | | |
| 10/9/12 | | | | | | | 14 | 100 | 10 |
| 10/10/12 | 0 | 200 | 0 | | | | | | |
| 10/11/12 | | | | | | | | 26 | 0 2 |
| 10/15/12 | 0 | 0 | 0 | | | | | | |
| 10/16/12 | 5 | | 258 | | | | | | |
| 10/17/12 | 3 | 0 | 25 | | | | | | |
| Totals | 1670 | 929 | 402 | | | | 113 | 163 | 19 272 43 40 |

Ducks - 2055

Geese 1135

Swans 461

(13)

Put in the Rain

Scale: 1 square = _____

Phone Numbers

Jon Zufelt / CRREL 384-0511, ^{cell} 317-6762

Kristen Stevens / CH2M Hill cell 952-6479

Jeremy Blei work 762-1357
CH2M Hill cell 854-6362

Range Control 384-6230

Range Scheduler 384-3508 (John Cline)

Stacey Reil work 762-1519
CH2M Hill cell 440-7662

Ann Staples / CRREL work 384-0512
cell 317-1864
home 716-7073

Michael Landon work 762-1187
CH2M Hill cell 884-3899

Mike Walsh / CRREL 603-286-0433

Marianne Walsh / CRREL 603-646-4666
603-667-0124

Mike Undam / CRREL 320-309-9876

Jennifer Ulrich / CH2M Hill 907-792-9635

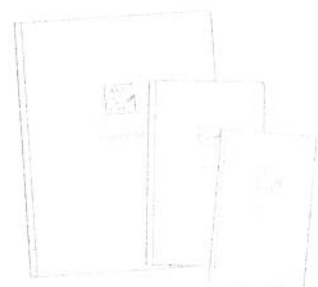
Scale: 1 square = _____

Rite in the Rain 
ALL-WEATHER WRITING PAPER

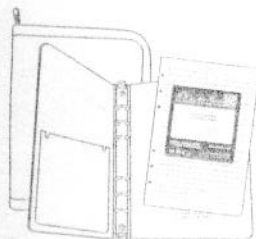
Outdoor writing products
for Outdoor writing people



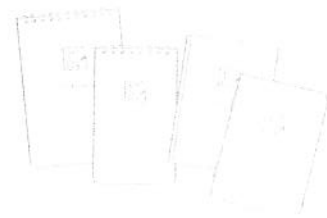
Copier & Ink-Jet Paper



Bound Books



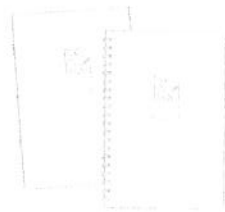
Loose Leaf
with Ring Binder



Memo Books



All-Weather Pens



Notebooks

RiteintheRain.com



CONTRACT NAME: JBER
 CONTRACT NO: FA8903-07-D-8589

ERF DAILY REPORT
 SOP CQMM-017, Version 1
 (ATTACH ADDITIONAL SHEETS IF NECESSARY)

REPORT DATE :02/06/13
 REVISION NO:
 REVISION DATE:
 REPORT NO:

| | | | |
|-------------------------------|---|------------------|---------------------|
| TASK ORDER NO: 0080021 | PROJECT NAME / LOCATION: Eagle River Flats - Ft. Richardson, Anchorage AK | | |
| PROJECT NUMBER: 457958 | PROJECT DESCRIPTION: Waterfowl Mortality Survey | | |
| PROJECT MANAGER: Mike Whitney | | SITE QC MANAGER: | Margaret Dombrowski |
| SITE MANAGER: Stacey Re' | | SAFETY MANAGER: | Josh Painter |
| AM WEATHER: Cloudy/snow, calm | PM WEATHER: Cloudy/snow, calm | MAX TEMP: 27 | MIN TEMP: 25 |

SUMMARY OF WORK PERFORMED TODAY

Capping operations – UXO and range control briefings, clearing snow down to ice to make roads to capping locations.

HEALTH AND SAFETY REPORT

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted):

TAILGATE TOPICS:

Slips and trips, cold stress, buddy system.

OPERATIONS / PRODUCTION REPORT

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

| Company | Cumulative Total of Work Hours From Previous Report | Total Hours Today | Total Work Hours From Start of Field Effort |
|---|---|-------------------|---|
| CH2MHILL Stacey Ré, 8 | 8 | 8 | 8 |
| CRRREL Mike Walsh, Jon Zufelt, Art Gelvin, 8 each | 24 | 24 | 24 |
| BSE Jeff Bryant 8 | 8 | 8 | 8 |
| | | | |
| | | | |
| | | | |
| Total Hours worked project to date | | | 40 |

EQUIPMENT ON HAND

| Description of Equipment | Make/Model/Manufacturer | Equipment ID Number | Inspection Performed By |
|--------------------------|-------------------------|---------------------|-------------------------|
| Loader | Deere, 450 J LGP | #I256 | Mike Walsh |
| Small bulldozer | Deere, 544 K | #2-283 | Art Gelvin |
| 5 yard Dump truck | GMC | #7-280/FLJ404 | Jon Zufelt |
| | | | |
| | | | |

COMMENTS (acceptance status, inspection findings, etc.):

CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to access, site or weather conditions, etc.):

- None

VISITORS AND DISCUSSIONS:

- Marianne Walsh and Ann Staples also attended briefings in morning for range and EOD

QUALITY CONTROL REPORT

MATERIALS DELIVERED TO JOB SITE

| Quantity/Volume/Weight | Description of Materials Received | Make/Model/Manufacturer | Material Lot Number | Inspection Performed By |
|------------------------|-----------------------------------|-------------------------|---------------------|-------------------------|
| | | | | |
| | | | | |
| | | | | |
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| | | | | |
|--|--|--|--|--|
| | | | | |
|--|--|--|--|--|

COMMENTS (acceptance status, inspection findings, etc.):

300 cubic yards of cobble on site for capping.

INSPECTIONS PERFORMED

| Transects Inspected | Number of Mortalities Recorded | Mortality ID #(s) | Type of Waterfowl (if known) |
|---------------------|--------------------------------|-------------------|------------------------------|
| NA | NA | NA | NA |
| | | | |
| | | | |
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| | | | |
| | | | |

ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as "not applicable". Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

Stacey Ré


2/6/13

PREPARER'S SIGNATURE

DATE

PHOTOGRAPHS TAKEN THIS DATE:7 .

SUBJECT :Clearing ice roads.

| | | | | | |
|--|-----------------------------------|---|---------------------|---|--|
|  | | ERF DAILY REPORT SOP CQMM-017, Version 1 (ATTACH ADDITIONAL SHEETS IF NECESSARY) | | REPORT DATE :02/07/13 REVISION NO: REVISION DATE: REPORT NO: | |
| CONTRACT NAME: JBER CONTRACT NO: FA8903-07-D-8589 | | PROJECT NAME / LOCATION: Eagle River Flats - Ft. Richardson, Anchorage AK | | | |
| TASK ORDER NO: 0080021 | | PROJECT DESCRIPTION: Waterfowl Mortality Survey | | | |
| PROJECT NUMBER: 457958 | | PROJECT MANAGER: Mike Whitney | | SITE QC MANAGER: Margaret Dombrowski | |
| SITE MANAGER: Stacey Re' | | SAFETY MANAGER: | | Josh Painter | |
| AM WEATHER: Cloudy, calm, occasional breeze | | PM WEATHER: Cloudy/snow, calm | | MAX TEMP: 25 MIN TEMP: 22 | |
| SUMMARY OF WORK PERFORMED TODAY | | | | | |
| Capping operations – placing geotextile fabric, transporting and placing cobble. | | | | | |
| HEALTH AND SAFETY REPORT | | | | | |
| SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted): Loader and Dozer noted not having fire extinguishers, spares were brought from on-site storage (pressure verified). | | | | | |
| TAILGATE TOPICS: Slippery surfaces – ice and on (snowy) equipment, blade safety (cutting geotextile) | | | | | |
| OPERATIONS / PRODUCTION REPORT | | | | | |
| WORK FORCE – CONTRACTOR AND SUBCONTRACTOR | | | | | |
| Company | | Cumulative Total of Work Hours From Previous Report | Total Hours Today | Total Work Hours From Start of Field Effort | |
| CH2MHILL Stacey Ré, 8 | | 8 | 8 | 16 | |
| CRRREL Mike Walsh, Jon Zufelt, Art Gelvin, 8 each | | 24 | 24 | 48 | |
| BSE Jeff Bryant 8 | | 8 | 8 | 16 | |
| | | | | | |
| | | | | | |
| | | | | | |
| Total Hours worked project to date | | | | 80 | |
| EQUIPMENT ON HAND | | | | | |
| Description of Equipment | | Make/Model/Manufacturer | Equipment ID Number | Inspection Performed By | |
| Loader | | Deere, 450 J LGP | #1256 | Mike Walsh | |
| Small bulldozer | | Deere, 544 K | #2-283 | Art Gelvin | |
| 5 yard Dump truck | | GMC | #7-280/FLJ404 | Jon Zufelt | |
| | | | | | |
| | | | | | |
| COMMENTS (acceptance status, inspection findings, etc.): | | | | | |
| CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to access, site or weather conditions, etc.): <ul style="list-style-type: none"> None | | | | | |
| VISITORS AND DISCUSSIONS: <ul style="list-style-type: none"> | | | | | |
| QUALITY CONTROL REPORT | | | | | |
| MATERIALS DELIVERED TO JOB SITE | | | | | |
| Quantity/Volume/Weight | Description of Materials Received | Make/Model/Manufacturer | Material Lot Number | Inspection Performed By | |
| | | | | | |
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| | | | | | |

| | | | | |
|--|--|--|--|--|
| | | | | |
| | | | | |

COMMENTS (acceptance status, inspection findings, etc.):

300 cubic yards of cobble on site for capping.

INSPECTIONS PERFORMED

| Transects Inspected | Number of Mortalities Recorded | Mortality ID #(s) | Type of Waterfowl (if known) |
|---------------------|--------------------------------|-------------------|------------------------------|
| NA | NA | NA | NA |
| | | | |
| | | | |
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| | | | |

ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as "not applicable". Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

Stacey Ré


2/7/13

PREPARER'S SIGNATURE

DATE

PHOTOGRAPHS TAKEN THIS DATE:20 .

SUBJECT :Placing geotextile, transporting cobbles, placing caps.

| | | | | | |
|--|-----------------------------------|---|-------------------------|---|-------------------------|
|  | | ERF DAILY REPORT SOP CQMM-017, Version 1 (ATTACH ADDITIONAL SHEETS IF NECESSARY) | | REPORT DATE :02/08/13 REVISION NO: REVISION DATE: REPORT NO: | |
| CONTRACT NAME: JBER CONTRACT NO: FA8903-07-D-8589 | | PROJECT NAME / LOCATION: Eagle River Flats - Ft. Richardson, Anchorage AK | | | |
| TASK ORDER NO: 0080021 | | PROJECT DESCRIPTION: Waterfowl Mortality Survey | | | |
| PROJECT NUMBER: 457958 | | PROJECT MANAGER: Mike Whitney | | SITE QC MANAGER: Margaret Dombrowski | |
| PROJECT MANAGER: Mike Whitney | | SITE MANAGER: Stacey Re' | | SAFETY MANAGER: Josh Painter | |
| AM WEATHER: Cloudy, calm | | PM WEATHER: Cloudy, calm | | MAX TEMP: 30 MIN TEMP: 28 | |
| SUMMARY OF WORK PERFORMED TODAY | | | | | |
| Capping operations – Confirming cap locations/extent and using remaining gravel to augment as needed | | | | | |
| HEALTH AND SAFETY REPORT | | | | | |
| SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted): Difficulties encountered getting dump truck and loader up hill from Clunie Point to OP Fagin gate. Chains applied to dump truck rear, outer wheels proved successful. Loader did not have chains, but chains rated for smaller vehicles were used in combination (connected by bungee cords) to provide enough traction to get loader up the hill as well. Ideally should request appropriate-sized chains for loader. | | | | | |
| TAILGATE TOPICS: Freezing rain warning, stay dry, vehicle slippage. | | | | | |
| OPERATIONS / PRODUCTION REPORT | | | | | |
| WORK FORCE – CONTRACTOR AND SUBCONTRACTOR | | | | | |
| Company | | Cumulative Total of Work Hours From Previous Report | Total Hours Today | Total Work Hours From Start of Field Effort | |
| CH2MHILL Stacey Ré, 6 | | 16 | 6 | 22 | |
| CRRREL Mike Walsh, Jon Zufelt, Art Gelvin, 6 each, Marriane Walsh 2 | | 48 | 20 | 68 | |
| BSE Jeff Bryant 6 | | 16 | 6 | 22 | |
| | | | | | |
| | | | | | |
| | | | | | |
| Total Hours worked project to date | | | | 112 | |
| EQUIPMENT ON HAND | | | | | |
| Description of Equipment | | Make/Model/Manufacturer | Equipment ID Number | Inspection Performed By | |
| Loader | | Deere, 450 J LGP | #1256 | Mike Walsh | |
| Small bulldozer | | Deere, 544 K | #2-283 | Art Gelvin | |
| 5 yard Dump truck | | GMC | #7-280/FLJ404 | Jon Zufelt | |
| | | | | | |
| | | | | | |
| COMMENTS (acceptance status, inspection findings, etc.): | | | | | |
| | | | | | |
| CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to access, site or weather conditions, etc.): | | | | | |
| <ul style="list-style-type: none"> • None | | | | | |
| VISITORS AND DISCUSSIONS: | | | | | |
| <ul style="list-style-type: none"> • | | | | | |
| QUALITY CONTROL REPORT | | | | | |
| MATERIALS DELIVERED TO JOB SITE | | | | | |
| Quantity/Volume/Weight | Description of Materials Received | | Make/Model/Manufacturer | Material Lot Number | Inspection Performed By |
| | | | | | |
| | | | | | |
| | | | | | |

Eagle River Flats

Sediment Sampling
+ Capping Operations



Rite in the Rain.

ALL-WEATHER
UNIVERSAL

Nº 373

Sept 10, 2012 - Sep 14, 2012
Feb 6, 2013 - Feb 8, 2013
Project # 457958.09.HT.02

Eagle River Flats

2/6/13

Capping Operations

Stacey Re, Mike Walsh, Jon Zafelt,
Art Teff Bryant

Weather: Snow, upper 20's - low 30's calm

Safety Moment: Heavy equip, PPE -
hard hat in close prox to elevated loads,
reflective vests, hearing protection

08:20 Meet at Bldg 59004 Range Control.

Stacey late b/c of bad road conditions/
accidents. Range Control Brief conducted.

08:45 Head to Army EOD brief.

09:00 EOD brief + discussion of other

CRREL project involving testing for
explosive residues. Mike mentions will have dozer

10:00 Call from AER (voicemail). Difficulties ^{to that pt.}

getting equipment delivery up the hill
after Bravo Bridge. Return call, delivery
person planning to drop loader at bottom
of hill + try to bring dozer closer. I
advise not to do anything unsafe.

Called back to say ended up leaving
dozer at bottom of hill as well on advice
from range control.

Scale: 1 square = _____

15
Rite in the Rain

1020 Back at Bldg 54.

Safety brief with Jeff Bryant, Jr. and Art (Marianne + Mike still with EOD).

1045 Stacey departs for (unrelated) meeting.

1215 Return to office for laptop

1330 Depart office to meet team at ERF.

1400 meet at upper area OP Eager with Mike, Jon, Jeff. Art coming with range radios + plow truck. Look at equip.

1415 Art Arrives, Jeff calls in. Mike uses dozer to clear trail down hill to Clunie Point.

Stacey parks at EOD pad, rides with Art for clearing to pad.

Use plow truck to clear to all

six capping locations. Stacey navigates

Mike expands/clears ^{WGPS to find loc.} wider area

for maneuvering for dump truck.

Clear around all but 155 + Pond 730.

1620 ~~St~~ Depart, Jeff calls out Stacey +
2/7/13

Scale: 1 square =

Eagle River Flats

2/7/13

Capping Operations

Stacey Ke, Jeff Bryant, Jon Zafelt,
Art Gelvin, Mike Walsh

Weather: upper 20's to mid 30's, calm,
snow in afternoon

Safety mtg. Beware of slippery surfaces
on equipment/vehicles.

blade safety (cutting liner)

0800 Safety brief at 47512.

Mike arrives at 820, had to drive

Marianne because the vehicle she
was driving (gov) was rear-ended
yesterday + had some damage

0900 Arrive at ERF gate, Jeff calls
in. Go down to connex, get ear plugs
+ hard hats for all

Begin spreading geotextile at first four
locations for capping. Mike clears ditch barrier.

1015 Start loading + transporting gravel

Load count IIII II

04DIS84

Load count IIII + II ^{2/8/13} Drainage Ditch S.

1150 Stacey + Jeff get spare fire extinguisher
from connex for dump truck.

Scale: 1 square =

17
Rate in the Rain

1250

03DTS18

Load count IIII + 1 ^{2/8/13}

1320

Pond 155

Load count IIII

1420

Pond 730

Load count III + 1 ^{2/8/13}

1500

Ditch

Load count IIII

1620 off site

~~Stand 2/8/13~~

Eagle River Flats

2/8/13

Capping operations

Stacey Re, Jon Ziefel, Jeff Bryant,
Mike Walsh, Marianne Walsh

Weather, scattered snow/freezing rain
upper 20's, mid-30's

Safety moment - Freezing rain

0830 Meet at Bldg 47812. Have
safety briefing

0910 Arrive at ERF. Jeff calls in.

Take pictures of all caps. Marianne
double checks caps with coordinates.

All areas covered, approximately ^{by Marianne}
5 loads remaining. Decide to ^{called off site} distribute

between caps - pond 730, ditch 03DIS18

Drainage ditch S, 04DIS84


1 load each except 04DIS84, which
got 2

1115 Return to pad. Empty few remaining
rocks from dump bed.

1130 Begin moving vehicles/equipment
back up hill to OP Fagin gate.

Dump truck does not make it up
hill, apply chains to two outermost

Scale: 1 square = _____

Rite in the Rain 

2/8/13 contd

rear tires, back truck down to bottom, + attempt again. Some slippage even with chain, but truck makes it up. Stacey, gov vehicles, + loader follow. Stacey + John drive dump truck back to Airport Equipment Rentals + leave Mike, Art, + Jeff onsite (Jeff calls Tom + Stacey off site.)

12:30 Drop off dump truck, arrange for afternoon pickup of rest of equipment. Tom calls Art + Mike to request loader + dozer be staged at boat ramp for easier pickup (dozer can avoid the last hill and have a good turnaround spot.)

They indicate the dozer was staged no problem, but loader was having difficulty making it up the hill - kept sliding backwards. Mike + Art planned to use available fire chains (for smaller vehicles) and splice them together with bungee cords to try to get enough traction.

The alternative if that didn't work

(20)

Scale: 1 square = _____

2/8/13 contd

was going to be using tow straps with the dozer.

1300 Stop by Cd2M Hill so Stacey can return laptop.

1310 Head back to ERF, Loader has successfully made it up the hill with spliced chains.

Loader is parked at boat launch when Tom + Stacey pass. Dozer is crossing Bravo Bridge as we cross from opposite direction, Jeff is following in his truck with orange flashing light on top. All gov vehicles are outside gate.

1345 Stacey drops John off at gate and heads out. Jeff has called every one out of ERF and will work on getting an earlier plane ticket home.

~~Stacey Re~~
2/8/13

(21)

Scale: 1 square = _____

Rite in the Rain

Eagle River Flats

2/28/13

GPS location verification

Stacey Re + Ann Staples / CREH

Weather mid-upper 30's, calm, overcast.

Safety Moment:

Slips trips falls - ice under snow

Loc 1 - Tower at OP Fagin

Garmin GPSmap 60CSx Trimble

WGS 84 dtd

N 61.31936

W 149.69183 E

batteries gone

WGS 84 dtd

WGS 84 UTM

6801329.94 N

355896.51 E

WGS 84 Lat Long

61° 19.161213 N

149° 41.517588 W

~~US State Plane 1927~~

NAD 27

843506.78 m N

944251.12 m E

22

Scale: 1 square = _____

Loc 2 - OB/OD pad Corner, NW corner,

Trimble ProXH

State Plane 83 NAD 27 AK 6

843280.58 m N

943965.01 m E

WGS 84 Lat Long

61° 19.066257 N

149° 41.859774 W

WGS 84 UTM

6801166.60 m N

355583.35 E

Loc 3 Northmost tip of turn around d/d off tower

WGS 84 UTM

6801799.32 m N

355291.18 m E

WGS 84 Lat Long

61° 19.401004 N

149° 42.215678 W

State Plane 83 NAD 27 AK 6N

6801800.72 N

355291.23

23

Scale: 1 square = _____

Rate in the Rain

Appendix C
Eagle River Flats 2012 UXO Clearance
Survey Report

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FA8903-09-D-8589
Eagle River Flats, AK
Cumulative After Action Report

EAGLE RIVER FLATS 2012 UXO CLEARANCE SURVEY REPORT

CH2M HILL Project # 457958.09.HT.02

CONTRACT # FA8903-09-D-8589

August 2012-February 2013

Prepared for:



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ACRONYMS

| | |
|-----------------|--|
| EOD | Explosive Ordnance Disposal |
| ERF | Eagle River Flats |
| GPS | Global Positioning System |
| HAZWOPER | Hazardous Waste Operations and Response |
| JBER | Joint Base Elmendorf-Richardson |
| SSHP | Site Safety and Health Plan |
| UXO | Unexploded Ordnance |
| WP | Work Plan |



This is a cumulative after action report encompassing unexploded ordnance (UXO) support by Bering Sea Environmental, LLC (BSEn) to the prime contractor CH2M Hill for contract # FA8903-09-D-8589. UXO support was provided in effort to provide a safe work environment to engineers and scientists accomplishing remedial activities at Eagle River Flats, Alaska. The following deliverables were provided and approved by CH2M Hill:

- UXO Work Plan (WP)
- Site Specific Health and Safety Plan (SSHP)
- UXO certifications for field technicians
- Hazardous Waste Operations and Emergency Response (HAZWOPER) certification for field technicians

The following UXO Technician III's were deployed upon request to provide UXO technical services to the Eagle River Flats project for the following deployment dates (Table 1):

| Deployment Dates | UXO Technician III | Deployment Description |
|------------------|--------------------|--|
| 8/13/12-8/19/12 | Jeffrey Bryant | Site Access and Mortality Transect Clearance |
| 9/6/12-9/16/12 | Donald Ebersole | Sediment Sampling and Pumping Operations |
| 2/11/13-2/16/13 | Jeffrey Bryant | Capping Operations |

Table 1 Deployment Dates

1.0 Pre-operational Requirements

Annually, prior to personnel entering Eagle River Flats (ERF) an annual Joint Base Elmendorf-Richardson (JBER) Range Brief and Explosive Ordnance Disposal (EOD) brief is required. The briefs occur on the first field day of each deployment. Additionally, personnel are given a familiarization of the hospital route in the event of an emergency. All training was documented and checked prior to allowing any personnel to enter ERF. The following areas were cleared prior to operations on ERF (Figure 1).

Daily, UXO Safety briefs were conducted by the UXO Tech III acting as Site Safety Officer/Range Safety Officer. The daily safety briefs discussed any pertinent conditions affecting the mission such as in climate weather, dangerous wildlife, unsafe conditions, and all items identified in the SSHP. The brief also covered locations of safety equipment, evacuation, and loss of communications procedures. The UXO Safety Briefs were documented using the UXO Tailgate Safety Brief Meeting Form (UD 804).



2.0 Equipment Checkout

Anomaly Avoidance procedures by the UXO Tech III was accomplished utilizing the Schonstedt Ga-72cd Magnetic Locator. UXO Technicians completed equipment checkout prior to daily operations and documented the checkout in the equipment checkout log.

Two Global Positioning System (GPS) devices were used to record areas cleared and record locations of UXO. One Delorme PN60n and one Garmin Etrex 20 handheld GPS was used during these deployments using WGS84 geodetic datum.

3.0 Operations

Prior to entering ERF and plan of the day was discussed and team assignments were made. UXO Technicians cleared the following areas during this contract (Table 2):

| Area Description | Aug-12 | Sep-12 | Feb-13 |
|---|--------|--------|--------|
| OP Fagan | X | X | X |
| Road to EOD Pad | X | X | X |
| EOD Pad & Bomb Crater Road | X | X | X |
| Gravel Pile | X | X | X |
| EOD to Clunie Point Road | X | X | X |
| Generator Pad | X | X | X |
| Access Routes to Cap Locations | X | X | X |
| Area A Ponds | X | X | |
| Area C Ponds | X | X | |
| OP Cole Lower | X | X | |
| Clunie Point to Eagle River Mouth Trail | X | X | |

Table 2 Areas UXO Cleared During 2012 Deployments



Figure 1 Pre-operational UXO Clearance Areas for ERF

3.1 August 13, 2012 to August 19, 2012 Deployment

The objectives of the UXO Technician III, Jeffrey Bryant, was to provide UXO clearance of all operational areas needed for establishing the pump system and also provide a UXO clearance of all of the mortality transects. Following training and safety briefs, Mr. Bryant cleared all of the roads and staging areas. During the clearance of the road from OP Fagan to the EOD Pad, a piece of detonation cord was discovered (Figure 2). The road to the EOD Pad was thoroughly checked for additional hazards. Numerous small arms ammunition and munitions debris was discovered (Figure 3). All items were consolidated and placed on the EOD Pad next to the ordnance ID line. Range Control was notified by telephone at the end of the day and briefed on the detonation cord. EOD response was not initiated because the items posed no hazard to operations.



Figure 2 Detonation Cord discovered August 14, 2012



Figure 3 Munitions Debris (.50 caliber, frag, and fuze body components) discovered on EOD Pad August 14, 2012

Once UXO clearance of operational areas was completed, mortality transects were cleared for the remaining portion of the deployment. Areas A, C, and Racine Island were cleared for this deployment. Schonstedt Magnetic Locator was used to assist visual surface clearance and avoid anomalies. Mr. Bryant noted nothing of UXO significance or safety related for the remainder of the deployment.

3.2 September 6, 2012 to September 16, 2012 Deployment

The objectives of the UXO Technician III, Donald Ebersole, were to provide UXO clearance of all areas selected for sediment collection and pumping operations. Following required training, UXO clearance of the operational areas indicated in (Table 2). Once operational areas were cleared areas requiring UXO clearance prior to sampling were cleared just before sediment



sampling to provide the greatest safety factor. Ponds 155, 171, and 730 were chosen for sampling during this deployment. Additionally, locations capped in 2011 were sampled along their circumference. One large anomaly was discovered near one of the recent cap locations adjacent to Pond 730. The anomaly was approximately 30cm deep and covered by 10cm of water. Since investigation of anomalies is prohibited, the anomaly was avoided and the team continued to sample. Pump equipment was removed from ERF and placed in storage. Mr. Ebersole noted nothing of UXO significance or safety related for the remainder of this deployment. The following anomalies (Table 3) were avoided during sediment sampling:

| Description | Date | Easting | Northing |
|--------------------------------------|-------------|----------------|-----------------|
| Anomaly Adjacent to Cap | 10-Sep-12 | 355248 | 6801435 |
| Anomaly West of Cross Ditch | 11-Sep-12 | 355219 | 6801535 |
| Anomaly near South Sump | 11-Sep-12 | 355275 | 6801524 |
| 81mm Fin at Old Site 53 | 13-Sep-12 | 355331 | 6801175 |
| Empty WP projectile West of Pond 146 | 13-Sep-12 | 355292 | 6801164 |

Table 3 Anomaly Locations Sept. 2012 Deployment

3.3 February 11, 2013 to February 16, 2013 Deployment

The objective of the UXO Technician III, Jeffrey Bryant, was to provide UXO assistance to the Capping Team. Annual training was re-accomplished and crew certifications were inspected. The operational areas were cleared on the first field day, February 12, 2013. The gravel pile and areas where the team planed to operate were cleared for UXO. The team placed textile cloth on six locations determined by previous deployments for capping procedures (Figure 4). Capping operations continued for two days.



Figure 4 Areas Capped during Feb 2013 Deployment

4.0 UXO Discovery

No UXO or confirmed anomaly was identified during these deployment periods. Detonation Cord discovered during August's deployment was not confirmed to be explosive and most likely a component of a training aid.

5.0 Lessons Learned

Due to the recent move of buildings for the project personnel, safety equipment is not readily available. Lack of safety gear did not impact the mission but overall the equipment is becoming scarce. In the future, if the project becomes active some safety gear will need to be replaced.

Vehicle and Equipment checkout forms need to be added to the work plan for operators to utilize during equipment operations.

Chains for wheeled heavy equipment are needed for access to ERF if road conditions are icy (Figure 5).

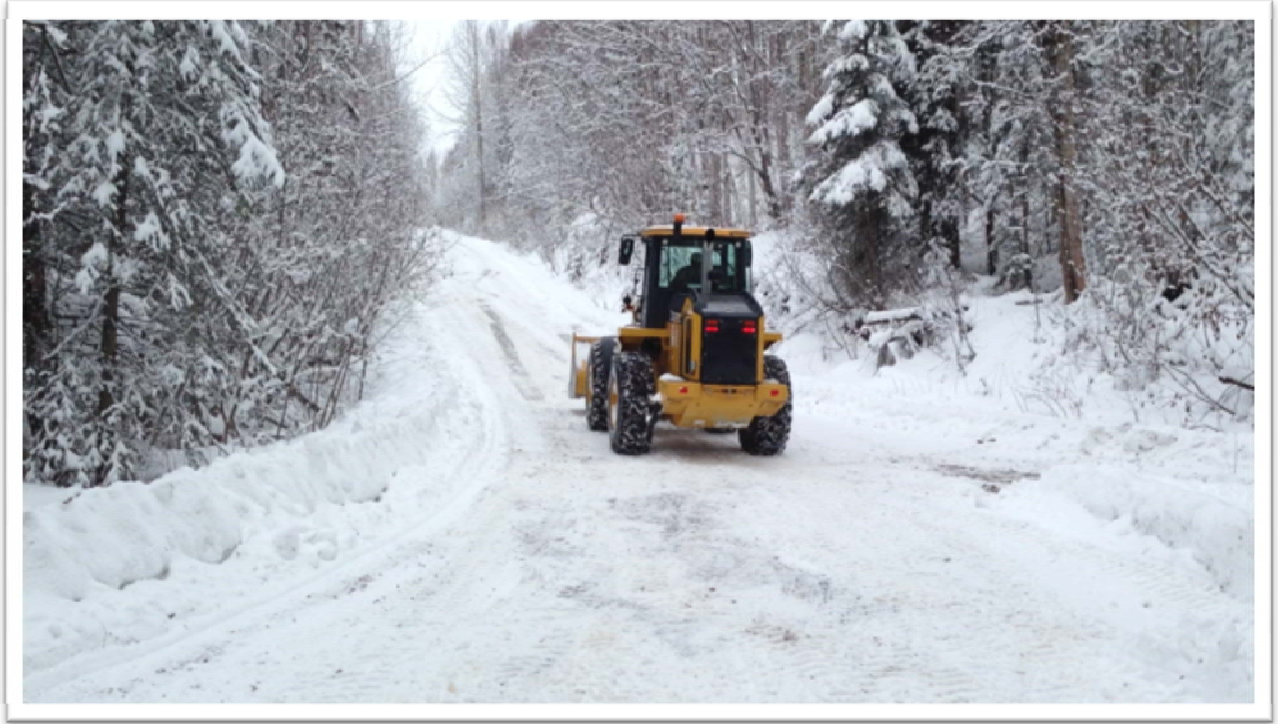


Figure 5 Icy Road Conditions

Appendix D
Waterbird Use of Eagle River Flats from
Aerial Surveys, August–October, 2012

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II-1. WATERBIRD USE OF EAGLE RIVER FLATS FROM AERIAL SURVEYS, AUGUST–OCTOBER, 2012

Dennis K. Marks and William D. Eldridge

U.S. Fish and Wildlife Service, Anchorage, AK

INTRODUCTION

Aerial surveys to monitor waterbird use of Eagle River Flats (ERF) during late summer and fall of 2012 were conducted by the U.S. Fish and Wildlife Service as part of the ongoing mortality and monitoring studies sponsored by the U.S. Army at Fort Richardson, Anchorage, Alaska. The purpose and history of these investigations have been presented elsewhere (Racine and Cate, Eds. 1996).

STUDY AREA

Eagle River Flats is a 870 hectares (ha) salt marsh complex on the south side of Knik Arm, approximately 10 kilometers (km) east of Anchorage. Sedge marshes, permanent and temporary ponds, mudflats, river channels and sloughs provide ample habitat for the fish and invertebrates, emergent and upland plants needed to support the more than 100 species of birds found on ERF (Steele et al. 2005). A detailed description of this area is presented in Racine and Cate, Eds. (1996).

METHODS

Aerial surveys of ERF were flown from 16 August to 29 October, 2012. Surveys were scheduled to be conducted twice a week, and were flown with a fixed-wing aircraft at an airspeed of 130 to 170 km/hr and an altitude of 30 to 75 m. Total coverage of ERF was obtained by overlapping transects. Numbers of waterbirds were counted or estimated and recorded by species or species group with a voice recorder; bird numbers were classified by locations on ERF using standardized study areas developed for the ERF database by the Cold Regions Research and Engineering Laboratory (CRREL, Fig. II-1-1). Areas (ha) of permanent and intermittent ponds and standardized areas were obtained from digitized maps provided by CRREL and used to convert bird numbers to densities within the study areas. When possible, waterfowl were recorded by individual ponds within each study area using a standardized pond-numbering system. Pond areas were

used to calculate duck and swan densities, whereas total area was used to calculate goose densities as geese primarily use upland habitat on ERF.

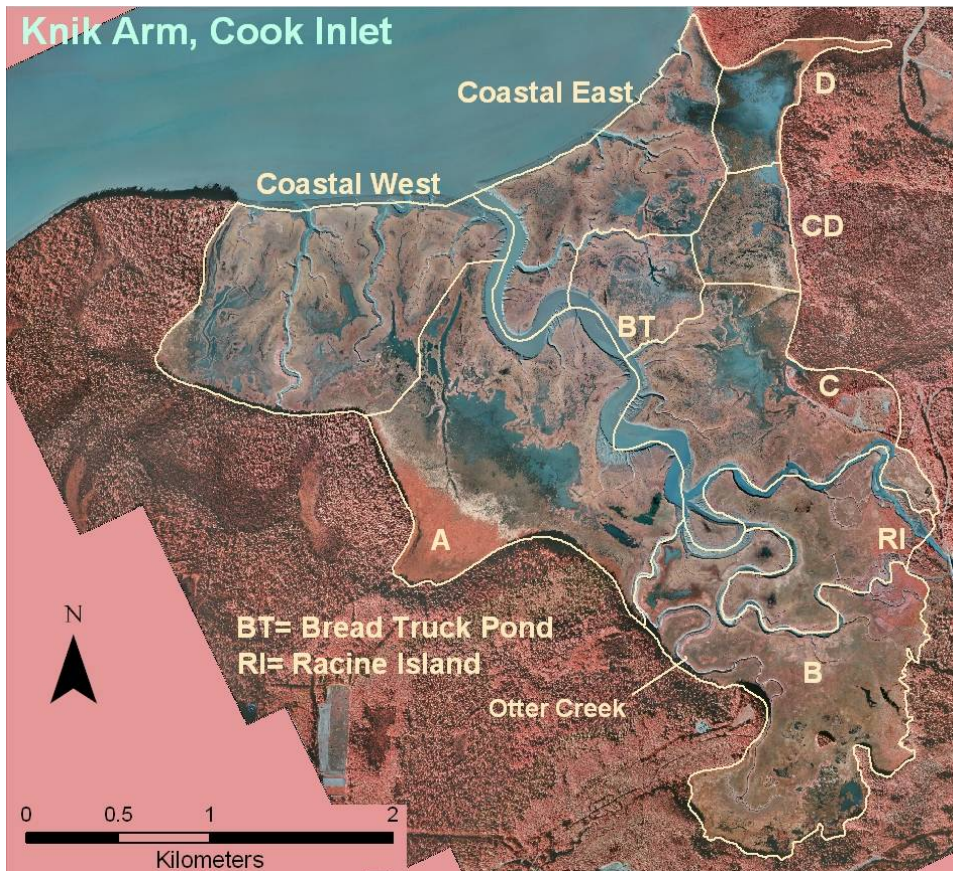


Figure II-1-1. ERF study area with standardized survey areas, ponds, sloughs and Eagle River.

RESULTS AND DISCUSSION

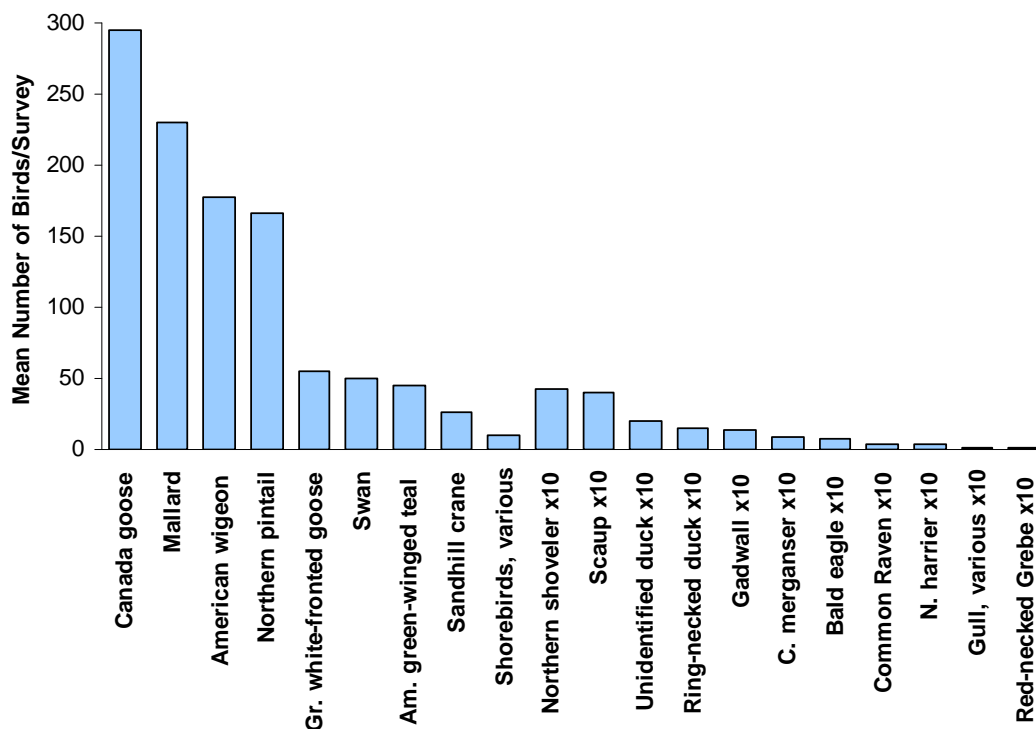
Environmental Conditions

In winter 2011-2012, the Anchorage area experienced a heavy snowfall that resulted in a large amount of fresh water in ERF area and greatly expanded the area covered by ponds; the flats remained wetter than usual through summer and fall, when flooding tides occurred. Above average rainfall during August through early October added to the fresh water flow (H.Griese, JBER, pers. comm.). Flood tides occurred in mid-August, mid-September and mid-October.

Temperatures dropped rapidly in mid October and water bodies on ERF froze earlier than in past years. No ice was observed on 10 October. On the following survey, on 12 October, first ice was observed and already covered around 80% of

most ponds. There was a slight warming and thawing in ERF after this but by 18 October, 80% of the ponds were again frozen. By 22 October, all ponds on ERF were completely frozen, and stayed frozen, and only Eagle River and tidal sloughs contained open water.

Figure II-1-2. Relative abundance (mean birds/survey) of all species or groups



counted during ERF aerial surveys in 2012, listed in order of abundance. For better resolution, bars of less common species were expanded to represent numbers of individuals multiplied by 10.

Abundance and Distribution of Waterbirds on ERF

A total of 21 aerial surveys were conducted over the ERF in the fall of 2012 (Figure II-1-3, Appendix II-1-A). Surveys were spaced an average of 3.7 days apart including week-long interruptions in late August and early September due to airspace restrictions within the ERF Restricted Area and once in late September due to a severe wind storm. The final five fall surveys were not included in density estimates because ponds were more than 80% frozen and the bulk of the migration had occurred (Figure II-1-3). For the final three surveys, all ponds were completely frozen and the few birds present were restricted to tidal sloughs, creeks and Eagle River. Of all birds recorded, nearly 99% were identified to species. Species composition for all birds surveyed in 2012 was comparable to that of previous years (Marks and Fischer 2010; Fig. II-1-2)

though abundance continued to vary significantly between years for ducks, geese and swans and was higher in 2012 than in 2011 (Fig. II-1-4).

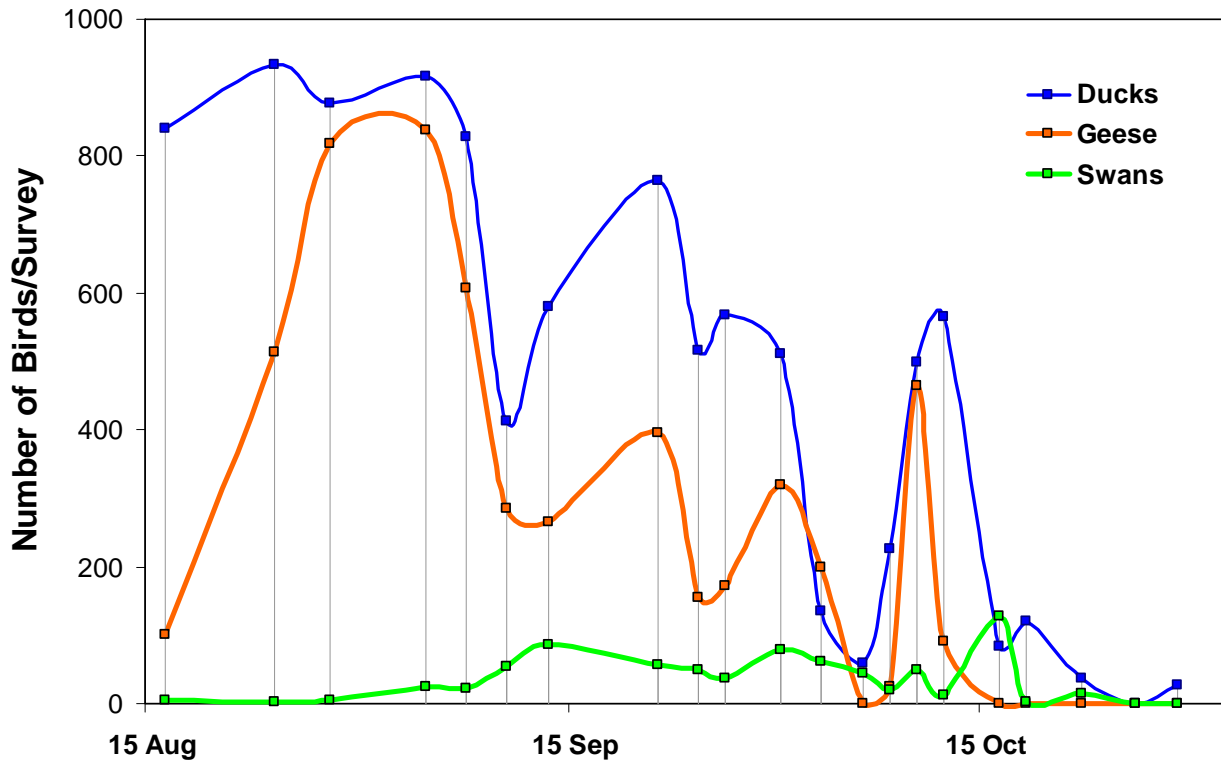


Figure II-1-3. Numbers of swans, geese, and ducks counted on ERF during aerial surveys in 2012. Vertical lines mark survey dates.

A major influx of waterfowl to ERF typically begins to arrive late July to early August and peaks mid August to late September (Marks and Fischer 2010); early migration was likely missed in 2012. Use of the nine study areas of ERF by waterfowl was similar to past years with highest concentrations observed in areas A, B, CD and D. Number, mean, percent of total and density within each standardized area for waterfowl groups are presented in Appendix II-1-C.

Ducks

Fall migration phenology for ducks during 2012 was very similar to previous years (Marks and Fischer 2010), with peak numbers occurring late August to mid September, and large numbers of ducks were present on ERF from mid August into mid October (Fig. II-1-3).

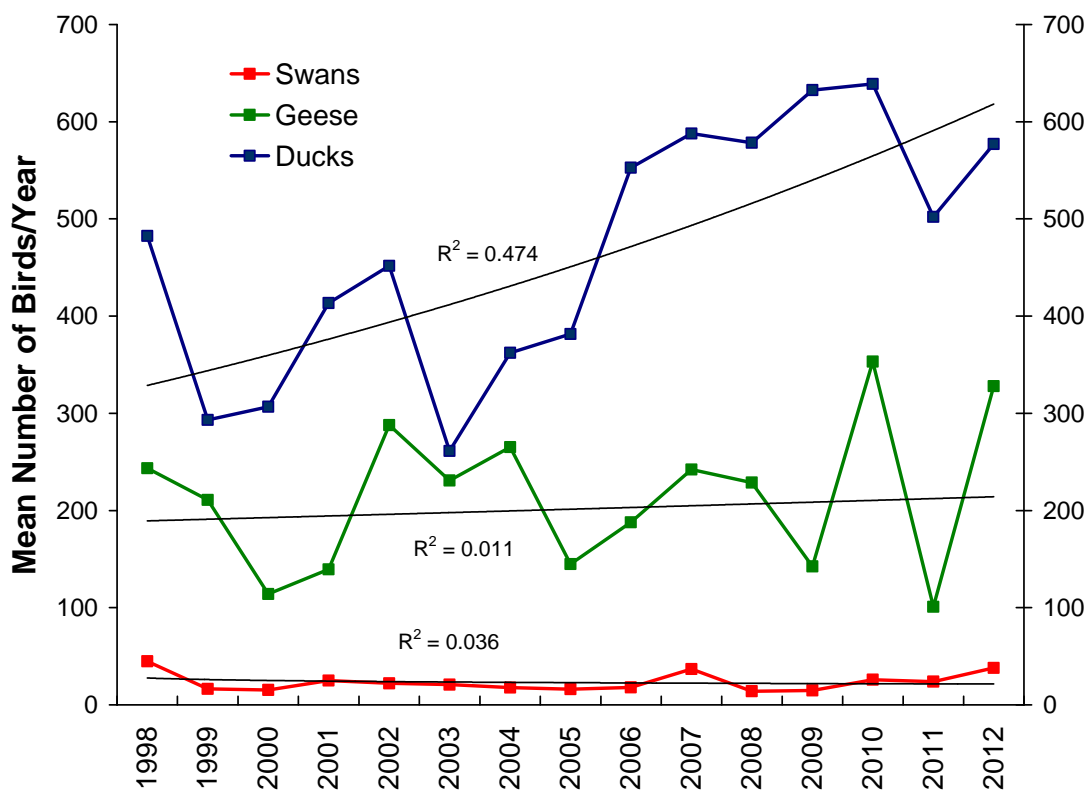


Figure II-1-4. Numbers of waterfowl counted during fall aerial surveys of ERF, 1998-2012, for ducks, geese and swans.

Eight species of duck were identified on ERF in 2012 (Fig. II-1-2). Species composition was very similar to previous years and dabbling ducks comprised almost 99% of all identified ducks counted throughout the season. Mallards (*Anas platyrhynchos*), northern pintail (*A. acuta*), American wigeon (*A. americana*) and American green-winged teal (*A. crecca*) accounted for more than 98% of all ducks recorded; northern shoveler (*A. clypeata*), Gadwall (*Anas strepera*), Scaup (*Aythya sp.*) and ring-necked ducks (*Aythya collaris*) made up the remainder of identified ducks on ERF in 2012. Common mergansers (*Mergus merganser*) and red-necked grebes (*Podiceps grisegena*) were also observed on the water on ERF in 2012.

Average number of ducks for all surveys in 2012, at 577 ducks/survey, was higher than in 2011 (426 ducks/survey) but was similar to the previous five years before that (725, 582, 641, 578 and 670 for 2006-2010; Fig. II-1-4). High duck count for any survey was 933 ducks on 24 August (vs. 873 ducks on 25 August 2011, and 2601 on 24 August 2010).

Duck use among study areas has changed throughout the years due to variation in weather and water levels, treatability study activities, a rotation of pond remediation and other efforts to reduce exposure of ducks to white phosphorus. Long- and short-term changes in pond shorelines due to pumping and natural flooding make it difficult to consistently identify pond boundaries and to assess use. Further, perennially high water levels in 2012 erased the boundaries of many ponds. Of the four major habitat types used to classify duck locations in 2012 (ponds, river, slough and shoreline), ponds, as expected, were by far the most important.

Similar to previous years, the distribution of ducks in fall showed highest numbers and densities in areas A, B, CD and D and while making up less than half the land and pond area on ERF, accounted for almost 75% of the fall ducks counted in 2012. Areas D and CD had the highest concentrations of ducks. Combined, areas A and D made up only a third of the pond coverage on ERF but had the highest numbers of ducks and together comprised 51 percent of all ducks recorded in 2012 (Fig. II-1-5; Appendix II-1-C). Areas CW, CE, Bread Truck, Racine Island and Area C were consistently used by smaller numbers of ducks.

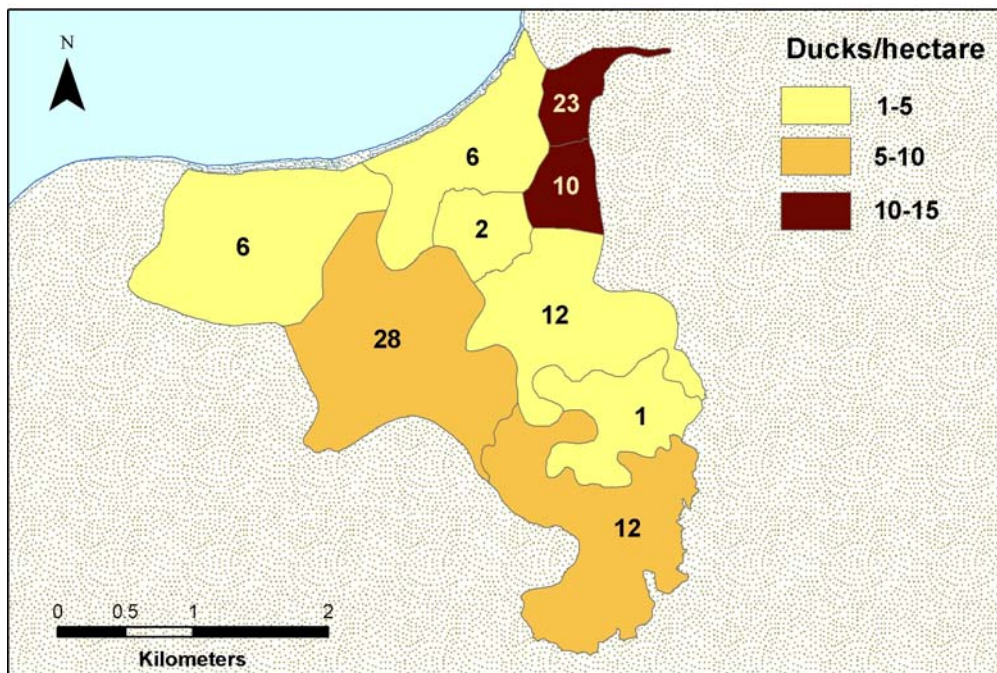


Figure II-1-5. Mean densities (ducks/ha.) and distribution of ducks on ERF study areas in 2012. Numbers are the percent of total ducks observed in each area. The area (ha) of permanent and intermittent ponds was used to calculate densities.

Geese

Fall geese usually occupy ERF by late July (Marks and Fischer 2010). With late summer and fall surveys in 2012, fall goose migration appeared similar to other years with the main influx of geese arriving in mid to late August and persisting through mid October. Goose numbers were up in 2012, at 328/survey, higher than 2011 counts but similar to the high number recorded in 2010 (Figure II-1-4). Canada geese (*Branta canadensis*) were the most abundant goose counted and accounted for 84 percent of fall geese, while greater white-fronted geese (presumably the “tule” subspecies *Anser albifrons elgasi*) made up the remainder. Snow geese are often present in small numbers briefly on ERF in the fall, but were not observed in fall 2012. As in the past, the heavy use by geese occurred near the coast and in 2012, geese were heaviest in areas CE, CW and A, mostly in the upland areas and the mud banks of Eagle River (Fig. II-1-6). Only a small number of Canada geese use ERF during summer for nesting or brood-rearing.

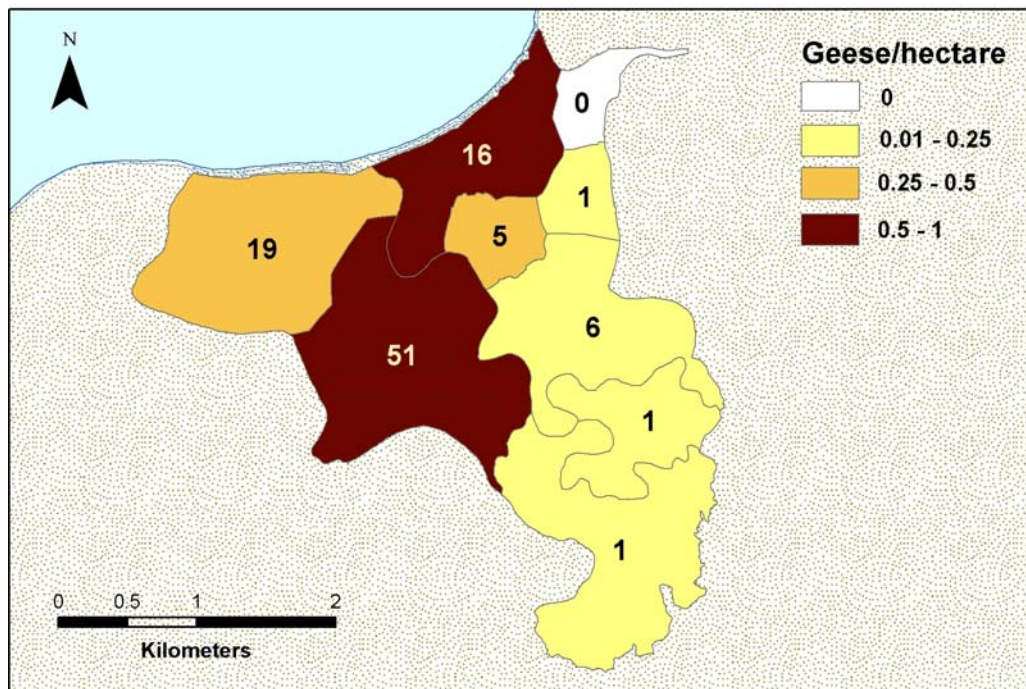


Figure II-1-6. Mean densities of geese on ERF study areas in late summer and fall 2012. Numbers within areas are the percent of total geese observed in each area. Most geese are in upland areas and total area was used to calculate densities.

Swans

Both trumpeter swans (*Cygnus buccinator*) and tundra swans (*C. columbianus*) occur on ERF. While the two species cannot be distinguished from the air, trumpeter swans are considered more common; tundra swans were

considered uncommon on ERF by Steele et al. (2005). Swans typically use ERF in small numbers during spring and are much more abundant in fall (Marks and Fischer 2010). More swans were observed in 2012 surveys (n=38/survey) than since 2007 which was another high year (37, 14, 15, 26 and 24 for 2007-2011; Figure II-1-4). Numbers were elevated in early September through mid October with the high number of 128 individuals recorded on October 16, just prior to decreasing again in late October. Fifteen swans were observed on Otter Creek (Figure II-1-1) on October 22 after all ponds were frozen. Swans were primarily observed, frequently with cygnets, on ponds in areas D and B, though small groups were also consistently observed on ponds in area CD (Fig. II-1-7).

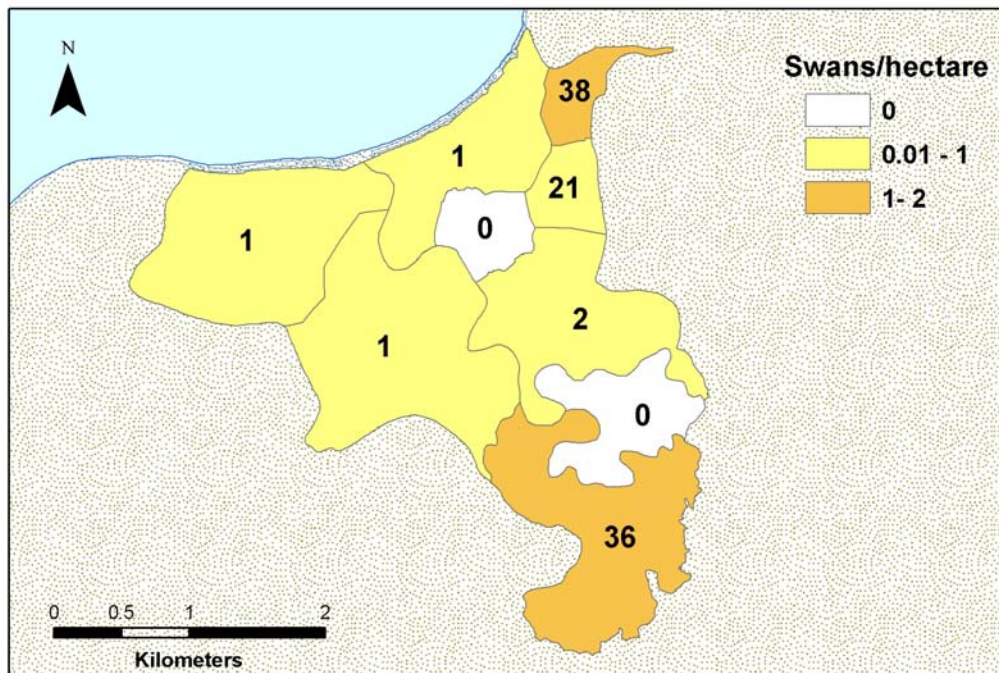


Figure II-1-7. Mean densities of swans on ERF study areas in late summer and fall 2012. Numbers within areas are the percent of total swans observed in each area. The area (ha) of permanent and intermittent ponds in each area was used to calculate densities.

Bald Eagles, other Raptors and Corvids

Numbers of bald eagles (*Haliaeetus leucocephalus*) recorded were low in 2012 (n=11) as in 2010 (n=14), and were observed on almost a half of all surveys flown and was comparable to recent years (n=14, 10 for 2010, 2011). One or two eagles were observed on a given survey though generally only a single bird was recorded. Though never abundant in recent years, lower eagle numbers may be due to decreased mortality of waterbirds and scavenging opportunities on ERF. Northern harriers (*Circus cyaneus*) were observed on only three surveys, down from recent years; in past years, CRREL personnel observed them on a daily

basis. Common ravens (*Corvus corax*) were observed on only three surveys in fall 2012; the last observation was of a group of four.

Shorebirds

All species of shorebirds were combined as they are difficult to identify from aircraft. Shorebirds are typically present on ERF in higher numbers in spring and summer and depart the area mid August (Marks and Fischer 2010, Fig. 8). Relatively few shorebirds were observed in 2012 compared to many previous years (257 in 2012, 2022, 2380, 969, 1200, 265, 244 for 2006 to 2011, Appendix II-1-A). Only one shorebird was recorded after 21 September. Shorebird species previously identified on ERF include greater and lesser yellowlegs (*Tringa* spp.), least sandpiper (*Calidris minutilla*), semi-palmated plover (*Charadrius semipalmatus*), short-billed dowitcher (*Limnodromus griseus*), pectoral sandpiper (*Calidris melanotos*) and red-necked phalarope (*Phalaropus lobatus*, Steele et al. 2005).

Gulls and Terns

Gulls and terns generally depart the area mid July to mid August and only two gulls were recorded on the first survey on 16 September (Appendix II-1-A). In past years, the most common species on ERF were mew gulls (*Larus canus*) and herring gulls (*L. argentatus*) but glaucous-winged (*L. glaucescens*) and Bonaparte's gulls (*Larus philadelphia*) were also observed. As of 2006, the mew gull colony formerly in area D has only consisted of a few pairs.

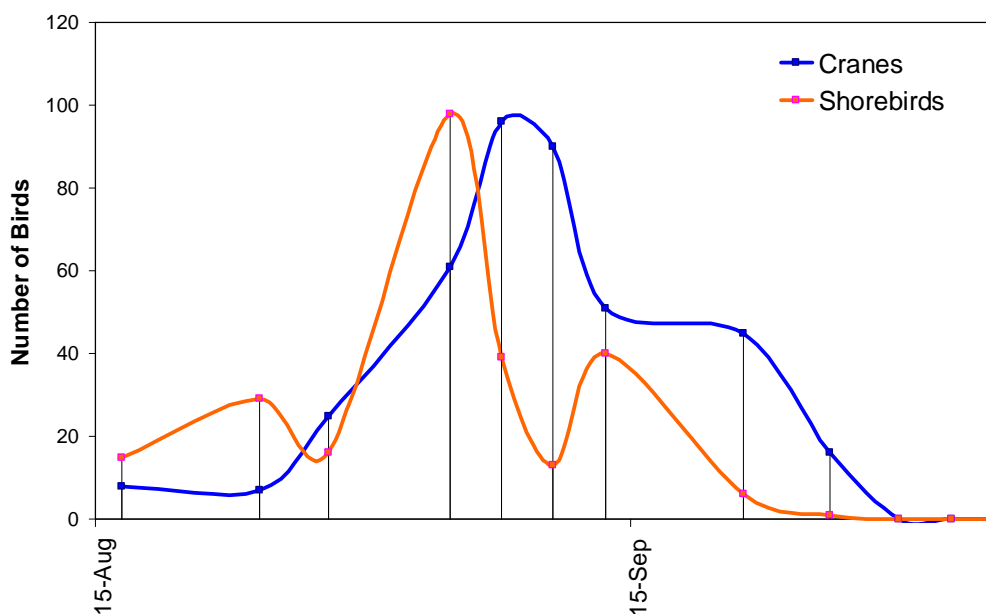


Figure II-1-8. Numbers of cranes and shorebirds counted on ERF during aerial surveys in 2012. Vertical lines mark survey dates.

Sandhill Cranes

Sandhill cranes (*Grus canadensis*) are present on ERF from spring through September (Marks and Fischer 2010) and were regularly observed in fall 2012 on ERF in relatively large numbers (Appendix II-1-A, Fig. 8). In 2012, the last crane was observed on 26 September and numbers totaled 399 for all 2012 surveys (117, 353, 121, 319 and 237 for all surveys 2007-2011). Cranes are known to nest on the ERF and two nesting pairs were observed in 1978 (H.Griese, JBER, pers. comm.). Another pair of cranes was observed nesting in area C in 2006 by Fort Richardson staff (Eldridge, USFWS pers. comm.).

ACKNOWLEDGEMENTS

Thanks to Julian Fischer, Bob Platte and Bob Stehn, U.S. Fish and Wildlife Service, Anchorage, and Paul Anderson, U.S. Park Service, Anchorage, for flying, other assistance with surveys and project logistics.

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Appendix II-1-A. Number of birds, by species or species group, observed for each aerial survey of ERF in 2012 (page 1 of 2).

| | 8/16 | 8/24 | 8/28 | 9/4 | 9/7 | 9/10 | 9/13 | 9/21 | 9/24 | 9/26 | 9/30 |
|-------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Ducks | | | | | | | | | | | |
| Mallard | 295 | 62 | 216 | 105 | 111 | 252 | 200 | 129 | 342 | 120 | 357 |
| Northern pintail | 87 | 375 | 354 | 492 | 287 | 80 | 187 | 196 | 50 | 95 | 49 |
| American wigeon | 182 | 439 | 277 | 307 | 431 | 30 | 181 | 254 | 30 | 284 | 64 |
| Am. green-winged teal | 217 | | 28 | 4 | | 52 | 5 | 135 | 93 | 60 | 40 |
| Northern shoveler | 30 | 12 | 3 | 6 | | | 8 | 3 | | 2 | |
| Gadwall | | | | 2 | | | | 9 | | | |
| Scaup | | 45 | | | | | | 15 | | | |
| Ring-necked duck | | | | | | | | 23 | | | |
| C. merganser | | | | | | | | | | 6 | |
| Unidentified duck | 30 | | | | | | | | | | |
| Total Ducks | 841 | 933 | 878 | 916 | 829 | 414 | 581 | 764 | 515 | 567 | 510 |
| Geese | | | | | | | | | | | |
| Canada goose | 33 | 499 | 762 | 475 | 335 | 285 | 250 | 375 | 155 | 164 | 320 |
| Gr. white-fronted goose | 67 | 15 | 57 | 364 | 272 | | 15 | 20 | | 8 | |
| Total Geese | 100 | 514 | 819 | 839 | 607 | 285 | 265 | 395 | 155 | 172 | 320 |
| Swans | | | | | | | | | | | |
| | 4 | 2 | 6 | 24 | 23 | 55 | 87 | 56 | 50 | 36 | 78 |
| Other Birds | | | | | | | | | | | |
| Bald eagle | 1 | | 1 | 1 | 2 | 1 | | 2 | | | |
| Common Raven | | | | | | | 1 | | | | |
| N. harrier | | | 2 | | 1 | | | 2 | | | |
| Gull, various | 2 | | | | | | | | | | |
| Red-necked grebe | | | | | | | | | | | |
| Sandhill crane | 8 | 7 | 25 | 61 | 96 | 90 | 51 | 45 | | 16 | |
| Shorebirds, various | 15 | 29 | 16 | 98 | 39 | 13 | 40 | 6 | | 1 | |

Gull species typically present are mew, herring, glaucous-winged and Bonaparte's

The most common species of shorebird observed is the greater and lesser yellowlegs

Appendix II-1-A (cont.). Number of birds, by species or species group, observed for each aerial surveys of ERF in 2012 (page 2 of 2).

| | 10/3 | 10/6 | 10/8 | 10/10 | 10/12 | 10/16 | 10/18 | 10/22 | 10/26 | 10/29 | All Surveys |
|-------------------------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------------|
| Ducks | | | | | | | | | | | |
| Mallard | 112 | 43 | 183 | 227 | 442 | 73 | 121 | 36 | | 28 | 3454 |
| Northern pintail | | | 20 | 103 | 115 | 3 | | | | | 2493 |
| American wigeon | 23 | 15 | | 132 | 8 | | | | | | 2657 |
| Am. green-winged teal | | | 15 | 26 | | 7 | | | | | 682 |
| Northern shoveler | | | | | | | | | | | 64 |
| Gadwall | | | | 10 | | | | | | | 21 |
| Scaup | | | | | | | | | | | 60 |
| Ring-necked duck | | | | | | | | | | | 23 |
| C. merganser | | | 8 | | | | | | | | 14 |
| Unidentified duck | | | | | | | | | | | 30 |
| Total Ducks | 135 | 58 | 226 | 498 | 565 | 83 | 121 | 36 | | 28 | 9498 |
| Geese | | | | | | | | | | | |
| Canada goose | 200 | 0 | 25 | 465 | 90 | | | | | | 4433 |
| Gr. white-fronted goose | | | | | | | | | | | 818 |
| Total Geese | 200 | 0 | 25 | 465 | 90 | | | | | | 5251 |
| Swans | | | | | | | | | | | |
| | 62 | 45 | 20 | 48 | 12 | 127 | 3 | 15 | | | 753 |
| Other Birds | | | | | | | | | | | |
| Bald eagle | | | | 1 | | 1 | 1 | | | | 11 |
| Common Raven | | | | 1 | | | | 4 | | | 6 |
| N. harrier | | | | | | | | | | | 5 |
| Gull, various | | | | | | | | | | | 2 |
| Red-necked grebe | | | | 1 | | | | | | | 1 |
| Sandhill crane | | | | | | | | | | | 399 |
| Shorebirds, various | | | | | | | | | | | 257 |

Gull species typically present are mew, herring, glaucous-winged and Bonaparte's
The most common species of shorebird observed is the greater and lesser yellowlegs

Appendix II-1-B. Waterbird and habitats observed in Eagle River Flats(from web site: <http://www.crrel.usace.army.mil/erf/ecology/ecology-birds.html>)

| Species | Status | Habitat |
|--------------------------------|---------------|-------------------|
| Red-Throated Loon | r | Permanent Pond |
| Common Loon | r | Permanent Pond |
| Horned Grebe | u | Permanent Pond |
| Great Blue Heron | + | |
| Trumpeter Swan | c | Permanent Pond |
| Tundra Swan | u | Permanent Pond |
| Canada Goose | c | Vegetated Mudflat |
| Cackling Goose | u | Vegetated Mudflat |
| Brant | u | Vegetated Mudflat |
| Greater White-Fronted Goose | c | Vegetated Mudflat |
| Snow Goose | c | Vegetated Mudflat |
| | | Bulrush Marsh |
| Mallard | c, B | Permanent Pond |
| | | Permanent Pond |
| Northern Pintail | c | Temporary Pond |
| | | Permanent Pond |
| American Wigeon | c, B | Temporary Pond |
| | | Permanent Pond |
| Eurasian Wigeon | r | Temporary Pond |
| | | Permanent Pond |
| Northern Shoveler | c | Temporary Pond |
| Cinnamon Teal | + | |
| | | Permanent Pond |
| Blue-Winged Teal | r | Temporary Pond |
| | | Permanent Pond |
| Green-Winged Teal | c, B | Temporary Pond |
| Ring-Necked Duck | r | Permanent Pond |
| Greater Scaup | r | Permanent Pond |
| Lesser Scaup | r | Permanent Pond |
| Long-Tailed Duck (Oldsquaw) | r | Permanent Pond |
| Common Goldeneye | r | Permanent Pond |
| Bufflehead | r | Permanent Pond |
| Common Merganser | r | Permanent Pond |

c = common, **u** = uncommon, **r** = rare, **+** = casual or accidental, **B** = confirmed breeder in ERF, **b** = probable breeder in ERF

Appendix II-1-C. Number, mean, percent of total, and density for each standardized area for waterfowl groups surveyed in 2012. Data are presented by season and standardized area. Density of ducks and swans used pond area; for geese, total area of each survey area was used.

| Survey Area | Number (mean) | | | Percent | | | Density (No./Ha) | | |
|-------------|---------------|-------|------|---------|-------|------|------------------|-------|------|
| | Duck | Goose | Swan | Duck | Goose | Swan | Duck | Goose | Swan |
| A | 166.5 | 168.1 | 0.7 | 28.5 | 51.2 | 1.5 | 6.85 | 0.89 | 0.03 |
| B | 66.6 | 2.0 | 14.9 | 11.5 | 0.6 | 36.9 | 7.27 | 0.01 | 1.62 |
| BT | 13.6 | 17.8 | 0.0 | 2.3 | 5.4 | 0.0 | 1.24 | 0.34 | 0.00 |
| C | 68.9 | 18.5 | 0.9 | 11.6 | 5.6 | 1.9 | 4.59 | 0.17 | 0.06 |
| CD | 55.3 | 2.4 | 4.1 | 9.6 | 0.7 | 20.7 | 11.82 | 0.08 | 0.88 |
| CE | 25.1 | 52.2 | 0.1 | 5.9 | 15.9 | 0.3 | 3.30 | 0.64 | 0.02 |
| CW | 33.6 | 62.8 | 0.1 | 5.9 | 19.1 | 0.5 | 2.12 | 0.40 | 0.00 |
| D | 142.1 | 0.0 | 17.3 | 23.9 | 0.0 | 38.2 | 12.12 | 0.00 | 1.47 |
| RI | 5.3 | 4.4 | 0.0 | 0.9 | 1.3 | 0.0 | 3.74 | 0.06 | 0.00 |

Appendix II-1-D. Percent use of ERF study areas and major habitat types by ducks in fall for years 1997-2012.

| Area | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|---------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Coastal West | 9.9 | 17.6 | 18.8 | 7.9 | 6.0 | 3.4 | 7.2 | 4.7 | 5.6 | 2.5 | 1.6 | 4.5 | 5.4 | 6.4 | 4.1 | 5.9 |
| Area A | 14.6 | 5.6 | 14.9 | 23.5 | 18.7 | 16.9 | 10.3 | 18.2 | 24.6 | 23.7 | 27.1 | 33.1 | 31.4 | 23.7 | 25.3 | 28.5 |
| Area B | 25.0 | 19.2 | 20.1 | 19.0 | 10.5 | 21.4 | 33.0 | 19.3 | 9.8 | 14.3 | 6.0 | 5.0 | 7.2 | 10.7 | 12.2 | 11.5 |
| Racine Island | 0.6 | 1.1 | 1.5 | 0.7 | 0.2 | 0.1 | 0.6 | 1.0 | 0.4 | <0.1 | 0.9 | 0.9 | 0.6 | 0.4 | 0.9 | 0.9 |
| Area C | 17.9 | 4.8 | 4.8 | 10.0 | 25.4 | 21.1 | 15.1 | 13.0 | 17.2 | 10.1 | 15.4 | 14.2 | 11.0 | 19.3 | 6.3 | 11.6 |
| Area CD | 11.4 | 15.3 | 8.5 | 9.0 | 12.5 | 17.5 | 17.4 | 14.0 | 13.0 | 15.9 | 14.8 | 11.9 | 13.2 | 6.0 | 14.1 | 9.6 |
| Bread Truck | 1.3 | 1.9 | 2.3 | 3.7 | 0.0 | 0.1 | 0.3 | 3.5 | 2.0 | 2.0 | 4.1 | 2.3 | 0.9 | 0.8 | 1.2 | 2.3 |
| Coastal East | 9.1 | 21.1 | 9.1 | 6.6 | 3.6 | 0.7 | 4.4 | 7.2 | 11.6 | 7.2 | 4.4 | 4.6 | 4.9 | 5.2 | 3.0 | 5.9 |
| Area D | 10.7 | 13.4 | 20.0 | 19.7 | 23.1 | 19.0 | 11.8 | 19.0 | 15.7 | 24.3 | 25.8 | 23.5 | 25.4 | 27.6 | 32.8 | 23.9 |

Appendix E
Aerometric Flight Report

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Geospatial Solutions

2014 Merrill Field Drive
Anchorage, AK 99501-4116
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March 4, 2013

Stacey K. Ré
Environmental Scientist
CH2M HILL
949 E. 36th Avenue
Anchorage, AK 99508
Direct 907.762.1519
Cell 907.440.7662

Project: 2012 Eagle River Flats CIR

Project Objectives and Summary

The overall objective of the project was to create a 0.25-foot color infrared ortho photo of the ERF area. To create the image, we flew 5 flight lines across the area, as shown on Figure 1. The imagery was captured on August 29, 2012.

25 exposures were taken utilizing a large format Z/I Imaging Digital Mapping Cameras (DMC) to acquire digital imagery at a scale of 1-inch = 600-feet. All flight lines were flown at an altitude of 13,300'. The imagery was captured digitally as 12-bit data and reprocessed into 8 bit data for delivery and viewing. The DMC is a large format, metric quality, digital frame mapping camera capable of recording high-resolution panchromatic images with red, green, and blue (RGB) and near infrared (NIR) multi-spectral data simultaneously. The system produces the sharpest images available and captures the image at the final desired pixel size without the degradation associated with scanning and resampling from a film-based approach. This method eliminates scanning and represents higher image quality and a reduced production effort.

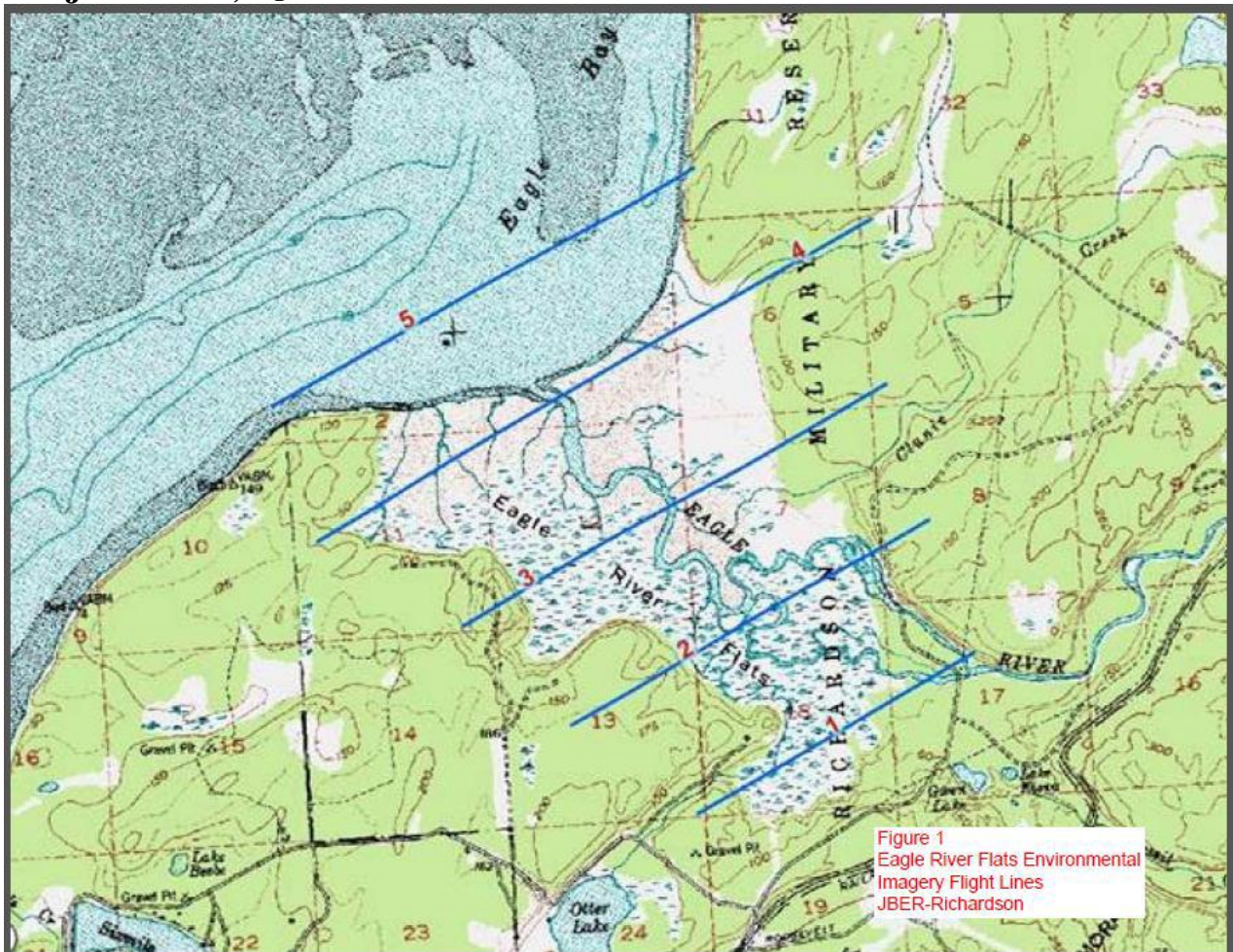


Aircraft description:



Aircraft Type: KingAir E-90
Aircraft Tail Number: N898WW
Fuel Type: Jet
True Airspeed: 245 knots
Max Altitude: 28,000'
Range: 1100 nautical miles
Max Endurance: 5.5 hours
Color: Blue / White

Project Area; figure 1



Control Surveying

The aerial photography was completed with ABGPS control which was used for the base control for the geo-referencing of the aerial imagery. AeroMetric processed the ABGPS data using COR stations and reference it to the project control datums:

- Horizontal: NAD 83 Alaska State Plane Zone 4
- Vertical: North American Vertical Datum of 1988 (NAVD 88) and ellipsoid heights



Sean Bolender, PLS, CP Account Manager 2014 Merrill Field Drive, Anchorage, AK 99501 **P:** 907-272-4495 | **F:** 907-274-3265 | **M:** 907-830-5102 www.aerometric.com

| | |
|--|---|
| Activity: Imagery Collection and digital processing | Date: 8/6/12 |
| | Project Name: Eagle River Flats CIR |
| Description of the work: CIR Acquisition and Compilation Mapping | Site Supervisor: Glen Morthorpe |
| | Site Safety Officer: Chantal Brooks |
| | Review for latest use: Before the job is performed |

| Work Activity Sequence (Identify the principal steps involved and the sequence of work activities) | Potential Health and Safety Hazards (Analyze each principal step for potential hazards) | Hazard Controls (Develop specific controls for each potential hazard) |
|--|---|--|
| Acquisition Terrain | Danger of collision with terrain that may result in total loss of life and aircraft. | <ol style="list-style-type: none"> 1. Pilots will follow FAA regulations requiring minimum altitudes and clearance from obstacles. 2. Training: pilot training indoc and recurrent. Annual Medallion CFITA training and records of same. 3. Standard operating procedures including Crew Resource Management utilizing Sensor Operators ATC monitoring. Use of Flight Watch |

| Work Activity Sequence (Identify the principal steps involved and the sequence of work activities) | Potential Health and Safety Hazards (Analyze each principal step for potential hazards) | Hazard Controls (Develop specific controls for each potential hazard) |
|--|---|--|
| Acquisition Mid Air Collision | Risk of total loss of life and aircraft | <ol style="list-style-type: none"> 1. FAA Regulations, FAA require lookout, radio contact, Flight Following. 2. Training, including stressing lookout. 3. Standard Operating Procedures, Crew Resource management, as above. Sensor Operator lookout assistance, crew communications. Use Flight Watch. 4. Admin, notices, reminders to crews. Instruct Flight Following usage on all flights. 5. Experience, crews are able to fly the photo lines while still watching for other traffic. |
| Acquisition Equipment failures, including engine failure, fire, radio failure | Possible loss of control, loss of contact with ATC, distractions | <ol style="list-style-type: none"> 1. Regulations, FAA, maintenance requirements. 2. Training, regular and consistent training in the various emergency scenarios. 3. Standard Operating Procedures, including guidance in the procedures, up to date checklists. 4. Admin, develop good alternate procedures. |

| Work Activity Sequence (Identify the principal steps involved and the sequence of work activities) | Potential Health and Safety Hazards (Analyze each principal step for potential hazards) | Hazard Controls (Develop specific controls for each potential hazard) |
|--|---|--|
| Acquisition Fatigue | could cause loss of concentration, possible accident | <ol style="list-style-type: none"> 1. Regulations, company General Operations Manual. Fatigue prevention with restricted duty time, rest periods. 2. Training, not applicable. 3. Standard Operating Procedures, including knowledge and application of the rest requirements. All personnel aware and follow the rules, including dispatcher. 4. Admin, remind crews of the rest requirements, avoid pressuring crews to fly when tired. Watch for signs of fatigue. Ensure adequate crew resources, double crew etc. |
| Acquisition Weather problems | Not likely so close to Merrill, and weather needs to be good for the photo job | <ol style="list-style-type: none"> 1. All flights subject to weather checks, monitoring of weather during flight. |

| <p align="center">Work Activity Sequence</p> <p align="center">(Identify the principal steps involved and the sequence of work activities)</p> | <p align="center">Potential Health and Safety Hazards</p> <p align="center">(Analyze each principal step for potential hazards)</p> | <p align="center">Hazard Controls</p> <p align="center">(Develop specific controls for each potential hazard)</p> |
|---|--|---|
| <p>Acquisition Fuel Exhaustion</p> | <p>Engines could fail if fuel is not monitored, tanks not switched.</p> | <ol style="list-style-type: none"> 1. Regulations, FAA requirements, company requirements. Minimum fuel requirements over and above FAA regulations. 2. Training, indoC and recurrent, practice 3. SOPs, including GOM guidance. Use of timing, monitoring. 4. Admin, watch for over-long flight times, which could indicate crews pushing the fuel limits. Maintenance to ensure fuel gauges for accuracy. |

| <p align="center">Work Activity Sequence</p> <p align="center">(Identify the principal steps involved and the sequence of work activities)</p> | <p align="center">Potential Health and Safety Hazards</p> <p align="center">(Analyze each principal step for potential hazards)</p> | <p align="center">Hazard Controls</p> <p align="center">(Develop specific controls for each potential hazard)</p> |
|---|--|---|
| <p>Acquisition Airplane Performance</p> | <p>Airplane performance suffers if the airplanes are overweight or out of balance.</p> | <ol style="list-style-type: none"> 1. Regulations, FAA and company requirements. All flights include a weight and balance calculation. 2. Training, especially in pre-flight procedures 3. SOPs, requirement to conduct Flight Release procedures. All flights subject to Risk Analysis and risk management. 4. Admin, provide and require the use of the documentation and risk, performance and W&B calculators. Records kept and trended by Chief Pilot. Watch for over loading. |

| Work Activity Sequence (Identify the principal steps involved and the sequence of work activities) | Potential Health and Safety Hazards (Analyze each principal step for potential hazards) | Hazard Controls (Develop specific controls for each potential hazard) |
|--|---|--|
| Acquisition Pilot Errors | Could lead to loss of life and airplane. | <ol style="list-style-type: none"> 1. Regulations, company General Operating Procedures, safety reminders. 2. Training, indoc and recurrent. Experience requirements. 3. SOPs, GOM and Training Manual refer to requirements, Line checks. 4. Admin, Chief Pilot training records, competency logs, flight check records maintained. Watch for commercial pressure, rushing departures, etc. |
| Acquisition Military Traffic | Flight in proximity to Restricted airspace | <p>. Proximity to Bryant Army Air Field. Helicopter traffic in vicinity not always announced. Protections:</p> <ol style="list-style-type: none"> 1. Regulations. FAA clearance required. 2. Training. How to identify, remain clear. 3. SOPs. GOM requirements, call before takeoff, use resources available. Flight plans or Flight Watch. 4. Admin, timely reminders. |

| Work Activity Sequence (Identify the principal steps involved and the sequence of work activities) | Potential Health and Safety Hazards (Analyze each principal step for potential hazards) | Hazard Controls (Develop specific controls for each potential hazard) |
|--|---|--|
| Acquisition Wild life. | Risk of collisions with birds: Many raptors, seagulls in area due to forest areas, water and nearby landfill. Depends on altitude but worse at low altitudes. | Standard operating procedure: Brief for lookout by Sensor Operators, pilot, communication. Constant lookout needed. |
| Compilation Mapping Office | Extended sitting periods Eye strain Musculoskeletal disorders | <ol style="list-style-type: none"> 1. Computer workstations are adjustable to employees' specifications. This includes the work surface, keyboard, mouse, monitors and chairs. 2. Breaks are allowed and encouraged to allow for rest and recovery 3. All employees are trained to be aware of ergonomic risk factors and eye strains |

| Equipment to be used (List equipment to be used in the work activity) | Inspection Requirements (List inspection requirements for the work activity) | Training Requirements (List training requirements including hazard communication) |
|--|--|--|
| Acquisition Aircraft Flight Plans Weather Briefings Risk Analysis Weight and balance Maintenance Requirements | Flight release program to check all elements have been completed and documented for various inspections. | Risks analysis process for every flight by all aviation employees. Documented training for all flight crews. |
| Compilation Mapping Equipment to be used: Computers related items, Chairs & Desks | Office equipment and areas are inspected and monitored by the supervisors and safety officer to ensure all equipment are adequate and are being utilized properly. | Safety meetings and toolbox talks conducted monthly to educate and provide awareness to all employees. |

PRINT NAME

SIGNATURE

Supervisor Name: Glen Morthorpe

[Signature]

Date/Time: 8/7/2012 2:37pm

Safety Officer Name: Chantal Brooks

[Signature]

Date/Time: 8/7/2012

Employee Name(s): _____

Date/Time: _____

Date/Time: _____

Date/Time: _____

Date/Time: _____

Date/Time: _____

Date/Time: _____

Date/Time: _____

Date/Time: _____

Date/Time: _____

UNITED STATES OF AMERICA

XI

DEPARTMENT OF TRANSPORTATION • FEDERAL AVIATION ADMINISTRATION



IV NAME

GLEN ERROL MORTHORPE

V ADDRESS

24415 WILMA CIR
EAGLE RIVER AK 99577-9680

VI NATIONALITY USA

IVa D.O.B. 17 JUN 1944

| SEX | HEIGHT | WEIGHT | HAIR | EYES |
|-----|--------|--------|------|------|
| M | 67 | 175 | GRAY | GRAY |

IX HAS BEEN FOUND TO BE PROPERLY QUALIFIED TO EXERCISE THE PRIVILEGES OF

II AIRLINE TRANSPORT PILOT

III CERTIFICATE NUMBER 2592416

X DATE OF ISSUE 22 JUL 2009

XIV

VIII

J. P. Baber
ADMINISTRATOR



GLEN ERROL MORTHORPE

2592416

AIRLINE TRANSPORT PILOT
AIRPLANE SINGLE & MULTIENGINE LAND
COMMERCIAL PRIVILEGES
AIRPLANE SINGLE ENGINE SEA

XII RATINGS

ENGLISH PROFICIENT.

XIII LIMITATIONS

VII SIGNATURE
OF HOLDER



Glen Errol Morthorpe

68708 11/08

Appendix F
Historical Sampling Results

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Table F-1: Multi-increment Sediment Samples from Established Grids

| Area | Location | Position | Easting | Northing | Date Collected | Field Rep | Sample Mass (kg) | WP Conc. (µg/g) | Notes |
|----------|-------------|----------|--------------|-----------------------------|----------------|-----------|------------------|-----------------|-----------------------------|
| C | Pond 171 | C Marsh | 355160 | 6801419 | 9/18/2010 | Rep 1 | 1.5 | ND | |
| | | | | | | Rep 2 | 1.4 | ND | |
| | | | | | 9/12/2011 | Rep 1 | 1.3 | ND | |
| | | | | | | Rep 2 | 1.5 | ND | |
| | Pond 155 | SW Grid | 355115 | 6801543 | 9/18/2010 | Rep 1 | 1.6 | 0.0003 | |
| | | | | | | Rep 2 | 2 | 0.0009 | |
| | | | | | 7/21/2011 | Rep 1 | 1.3 | ND | |
| | | | | | | Rep 2 | 1 | ND | |
| | | | | | | Rep 3 | 1.6 | 0.00043 | |
| | | | | | | Rep 4 | 1.4 | 0.00008 | |
| | | | | | | Rep 5 | 1.6 | ND | |
| | | | | | | Rep 6 | 1.3 | ND | |
| | | | | | | Rep 7 | 1.6 | ND | |
| | | | | | | Rep 8 | 1.4 | ND | |
| | | | | | | Rep 9 | 1.9 | 0.00012 | |
| | | | | | | Rep 10 | 1.6 | ND | |
| | | | | | | Rep 11 | 1.8 | ND | |
| | | | | | | Rep 12 | 2.9 | ND | In open water south of grid |
| | Rep 13 | 2.6 | ND | In open water south of grid | | | | | |
| | 9/11/2011 | Rep 1 | 1.6 | 0.004 | | | | | |
| Rep 2 | | 2 | 0.054 | | | | | | |
| Pond 183 | C 100 m + | 355026 | 6801315 | 9/23/2010 | Rep 1 | 1.9 | ND | | |
| | | | | | Rep 2 | 2.1 | ND | | |
| | | | | 9/13/2011 | Rep 1 | 1.6 | ND | | |
| | | | | | Rep 2 | 1.3 | ND | | |
| Pond 146 | Canoe Pt -1 | 355322 | 6801172 | 9/13/2011 | Rep 1 | 1.5 | ND | | |
| | | | | | Rep 2 | 1.7 | ND | | |
| | Canoe Pt -2 | 355302 | 6801169 | 9/13/2011 | Rep 1 | 1.8 | ND | | |
| | | | | | Rep 2 | 2 | ND | | |

Table F-1: Multi-increment Sediment Samples from Established Grids

| Area | Location | Position | Easting | Northing | Date Collected | Field Rep | Sample Mass (kg) | WP Conc. (µg/g) | Notes |
|------|----------|------------------|---------|----------|----------------|-----------|------------------|-----------------|-------|
| BT | Pond 109 | BT South 100 m + | 354521 | 6801735 | 9/23/2010 | Rep 1 | 1.5 | ND | |
| | | | | | | Rep 2 | 1.4 | ND | |
| | | BT South 100 m - | 354521 | 6801715 | 9/23/2010 | Rep 1 | 1.7 | ND | |
| | | | | | | Rep 2 | 1.7 | ND | |
| | | BT South 100 m + | 354521 | 6801735 | 9/13/2011 | Rep 1 | 1.6 | ND | |
| | | | | | | Rep 2 | 1.8 | ND | |
| | | BT South 100 m - | 354521 | 6801715 | 9/13/2011 | Rep 1 | 1.5 | ND | |
| | | | | | | Rep 2 | 1.4 | ND | |

Table F-2: Multi-increment Sediment Samples to Locate Areas with White Phosphorus

| Area | Location | Position | Easting | Northing | Date Collected | Sample Mass (kg) | WP Conc. (µg/g) | Notes |
|----------------------|----------------------------------|------------|---------|-----------|----------------|------------------|-----------------|-------|
| C | Cross Ditch | 0 to 5 m | 355228 | 6801543 | 5/14/2010 | 0.8 | ND | |
| | | 5 to 10 m | 355227 | 6801548 | 5/14/2010 | 0.4 | ND | |
| | | 10 to 15 m | 355226 | 6801553 | 5/14/2010 | 0.5 | ND | |
| | | 15 to 20 m | 355224 | 6801558 | 5/14/2010 | 0.6 | ND | |
| | | 20 to 25 m | 355223 | 6801563 | 5/14/2010 | 0.6 | ND | |
| | | 25 to 30 m | 355222 | 6801567.5 | 5/14/2010 | 0.7 | ND | |
| | | 30 to 35 m | 355221 | 6801572.5 | 5/14/2010 | 0.6 | ND | |
| | | 35 to 40 m | 355220 | 6801577 | 5/14/2010 | 0.7 | ND | |
| | | 40 to 45 m | 355219 | 6801582 | 5/14/2010 | 0.7 | ND | |
| | | 45 to 50 m | 355218 | 6801587 | 5/14/2010 | 0.6 | ND | |
| | | 50 to 55 m | 355217 | 6801592 | 5/14/2010 | 0.9 | ND | |
| | | 55 to 60 m | 355216 | 6801597 | 5/14/2010 | 0.7 | ND | |
| | | 60 to 65 m | 355215 | 6801602 | 5/14/2010 | 0.9 | ND | |
| | 65 to 70 m | 355214 | 6801607 | 5/14/2010 | 0.8 | ND | | |
| | North Ditch, west of sump | 0 to 10 m | 355111 | 6801588 | 9/20/2010 | 1.7 | ND | |
| | | 10 to 20 m | 355120 | 6801593 | 9/20/2010 | 1.7 | ND | |
| | | 20 to 30 m | 355129 | 6801598 | 9/20/2010 | 2 | ND | |
| | | 30 to 40 m | 355138 | 6801602 | 9/20/2010 | 2 | ND | |
| | | 40 to 50 m | 355147 | 6801606 | 9/20/2010 | 1.8 | ND | |
| | | 50 to 60 m | 355156 | 6801611 | 9/20/2010 | 1.7 | ND | |
| 60 to 70 m | | 355165 | 6801616 | 9/20/2010 | 1.7 | ND | | |
| 70 to 80 m (at sump) | | 355173 | 6801621 | 9/20/2010 | 2.2 | ND | | |
| | Lobe (3- by 3-m) N of 70 to 80 m | 355177 | 6801622 | 9/20/2010 | 2.4 | ND | | |

Table F-2: Multi-increment Sediment Samples to Locate Areas with White Phosphorus

| Area | Location | Position | Easting | Northing | Date Collected | Sample Mass (kg) | WP Conc. (µg/g) | Notes |
|------|---|----------|----------------------|------------------------|----------------|------------------|-----------------|---------------------------|
| | North Ditch, open water to the north of the ditch | CMN-1 | 355355 | 6801774 | 9/8/2011 | 2.8 | ND | |
| | | | | | | 2.3 | ND | |
| | | CMN-2 | 355326 | 6801768 | 9/8/2011 | 3.8 | ND | |
| | | | | | | 2.4 | ND | |
| | | CMN-3 | 355326 | 6801784 | 9/8/2011 | 2.5 | ND | |
| | | | | | | 1.9 | ND | |
| | | CMN-4 | 355293 | 6801791 | 9/8/2011 | 2.6 | ND | |
| | | | | | | 2.1 | ND | |
| | | CMN-5 | 355283 | 6801805 | 9/8/2011 | 2.5 | ND | |
| | | | | | | 2.2 | ND | |
| | | CMN-6 | 355294 | 6801817 | 9/8/2011 | 2 | ND | |
| | | | | | | 2.2 | ND | |
| | | CMN-7 | 355300 | 6801824 | 9/11/2011 | 2.5 | ND | |
| | | | | | | 2.3 | 0.0014 | |
| BT | W of Pond 730 | Pool 1 | 354777 E to 354766 W | 6801816 E to 6801819 W | 5/17/2010 | 0.85 | ND | Looks like relic drainage |
| | | Pool 2 | 354770 | 6801823 | 5/17/2010 | 0.74 | ND | Round pool with bulrush |
| | | Pool 3 | 354761 | 6801820 | 5/17/2010 | 0.72 | ND | Round |
| | | Pool 4 | 354757 | 6801833 | 5/17/2010 | 0.65 | ND | Figure-eight shape |
| | | Pool 5 | 354771 | 6801811 | 5/17/2010 | 0.58 | ND | Looks like a crater |

Table F-2: Multi-increment Sediment Samples to Locate Areas with White Phosphorus

| Area | Location | Position | Easting | Northing | Date Collected | Sample Mass (kg) | WP Conc. (µg/g) | Notes | | | | | |
|-----------|------------------------------------|--------------------------------|--------------------------------|----------|----------------|------------------|-------------------------|--|-------------------------------|---------------------------------------|-----|----|---------------|
| | Pond 730 southwest arm (0 to 10 m) | SW quadrant 5- by 8.25-m | 354787 | 6801812 | 5/17/2010 | 2 | ND | Starting at Mortality Transect Point 730-5 (354783, 6801808) | | | | | |
| | | SE quadrant 5- by 8.25-m | 354791 | 6801810 | 5/17/2010 | 3.1 | 0.00015 | WP ordnance anomaly | | | | | |
| | | NW quadrant 5- by 8.25-m | 354791 | 6801819 | 5/17/2010 | 1.9 | ND | | | | | | |
| | | NE quadrant 5- by 8.25-m | 354794 | 6801816 | 5/17/2010 | 1.5 | 0.009 | WP ordnance anomaly | | | | | |
| | | Pond 730 0 to 10 m around | 354791 | 6801813 | 9/22/2010 | 1.6 | ND | | | | | | |
| | | Temporary cap | 354791 | 6801813 | 9/22/2010 | 1 | ND | | | | | | |
| | Death Cove | Near 2001 mortalities 1 and 10 | | | | 9/12/2011 | 2.1 | ND | | | | | |
| | | | | | | | 1.7 | ND | | | | | |
| | Pond 730 North | 1.5 × 2.5 area around tail fin | | | | 9/12/2011 | 0.6 | 702 | WP mortar fin | | | | |
| | | | | | | | 2 m annulus above fin | 354885 | 6801896 | 9/12/2011 | 1.1 | ND | WP mortar fin |
| | | | | | | | Annulus around temp cap | 354885 | 6801896 | 9/12/2011 | 1.9 | ND | WP mortar fin |
| | | | | | | | | | | | 0.9 | ND | WP mortar fin |
| | Racine Island | 10RI_DU01 | Racine Island Crater Cluster 1 | | | 5/20/2010 | 3.1 | ND | ~10 craters (GPS Points 5-8) | | | | |
| | | | | | | | 2.2 | ND | | | | | |
| | | 10RI_DU02 | Racine Island Crater Cluster 2 | | | 5/20/2010 | 3.1 | ND | ~20 craters (GPS Points 9-13) | | | | |
| 2.4 | | | | | | | ND | | | | | | |
| 10RI_DU03 | | Pool | | 355363 | 6800554 | 5/20/2010 | 1.4 | ND | (GPS Point 14) | | | | |
| 10RI_DU04 | | Crater Cluster 3 | | 355360 | 6800540 | 5/20/2010 | 1.9 | 0.016 | 6 craters (GPS Point 15) | | | | |
| 0RI_DU05 | | Water-Sedge | | | | 9/22/2010 | 3.2 | ND | 62 m ESE of GPS Point 15 | | | | |
| | | | | | | | 3.2 | ND | | | | | |
| | | | | | | | 1.8 | 0.012 | | With sediment co-located with anomaly | | | |

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Table F-3: White Phosphorus Concentrations Detected at Locations that Have Been Capped

| Sample ID | Capped (mon-year) | Easting | Northing | Collection Date | Area | Depth | WP Conc. (µg/g) | Field Notes |
|---------------------------------------|-------------------|---------|----------|-----------------|------|-----------|-----------------------|---|
| 03DIS03 | | 355187 | 6801456 | 5/23/2003 | C | 0 to 5 cm | 1.3 | 4.9 m × 2.5 m. WP mortar fin. |
| | | | | 5/29/2007 | C | 0 to 5 cm | 4.04 | Sampled E of drainage ditch and N of metal stake. Log across area. Water depth 15 cm. |
| 03DIS03 cap perimeter | Feb-08 | 355185 | 6801454 | 6/10/2008 | C | 0 to 5 cm | 0.0008, 0.003 | |
| | | | | 5/16/2009 | C | 0 to 5 cm | 0.065, 0.002 | Center point UTM coordinates based on Aero-Metric 20 Aug 2009 image |
| 03DIS03 drainage channel west of cap | | 355181 | 6801456 | 5/21/2010 | C | 0 to 5 cm | ND | Water-filled depression. 0 to 7.3 m N |
| | | 355185 | 6801449 | 5/21/2010 | C | 0 to 5 cm | 0.0067 | Water-filled depression. 0 to 9 m S |
| 03DIS18 | | 355210 | 6801429 | 5/28/2003 | C | 0 to 5 cm | 400 | WP mortar fin. Two pools: east and west. |
| 03DIS18 East | | 355209 | 6801430 | 7/9/2003 | C | 0 to 5 cm | 240 | |
| | | | | 8/27/2004 | C | 0 to 5 cm | 0.002 | |
| | | | | 9/8/2005 | C | 0 to 5 cm | 0.08 | |
| | | | | 8/30/2006 | C | 0 to 5 cm | 0.007 | Surface sediment from drainage channel. |
| | | | | 5/29/2007 | C | 0 to 5 cm | 0.69 | Surface sediment from water-filled drainage channel. |
| | | | | 8/23/2007 | C | 0 to 5 cm | 0.0055 | |
| 03DIS18 cap perimeter | Mar-09 | 355208 | 6801428 | 5/16/2009 | C | 0 to 5 cm | 0.0001, 0.0011 | Center point UTM coordinates based on Aero-Metric 20 Aug 2009 image |
| 03DIS18 drainage channel south of cap | | 355207 | 6801425 | 5/21/2010 | C | 0 to 5 cm | 0.0001 | 0 to 5 m W, E, and S |

Table F-3: White Phosphorus Concentrations Detected at Locations that Have Been Capped

| Sample ID | Capped (mon-year) | Easting | Northing | Collection Date | Area | Depth | WP Conc. (µg/g) | Field Notes |
|---|-------------------|---------|----------|-----------------|------------|--------------|---|--|
| 04DIS068 | | 355177 | 6801438 | 5/22/2004 | C | 10 to 15cm | 29.1 | Approximately 1 m from 03DIS30 (toward pond 171 logger). Mortar Body 20 cm deep with smoke. Two samples: Surface 0 to 10 cm and Subsurface 10 to 15 cm deep. |
| | | | | C | 0 to 10 cm | 0.14 | | |
| | 5/29/2007 | | | C | 0 to 5 cm | ND | 1.7-m x 1-m isolated crater. Metal detected 1 m SW of crater. Subsurface was frozen in May. Excavated in Aug and WP frag found. | |
| 1 m SW of 04DIS68 | | 355176 | 6801437 | 5/29/2007 | C | 0 to 5 cm | 41 | WP ordnance scrap. |
| 04DIS68 cap perimeter | Mar-09 | 355175 | 6801437 | 5/16/2009 | | 0 to 5 cm | 0.0008, 0.001 | Center point UTM coordinates based on Aero-Metric 20 Aug 2009 image |
| 04DIS068 drainage channel south of cap | | 355173 | 6801434 | 5/21/2010 | C | 0 to 5 cm | ND | Water-filled depression. |
| 04DIS125 | | 355228 | 6801523 | 8/25/2004 | C | at UXO scrap | 950 | Location of WP fin found in May. |
| | | | | | | 9/12/2005 | | 5 cm |
| 04DIS125 Ditch Bottom | | 355226 | 6801523 | 5/23/2006 | C | 5 cm | 84 | |
| 04DIS125 | | | | 8/30/2006 | | 5 cm | ND | Intersection of cross-ditch and S ditch. Location was blasted to deepen ditch on 11 July 2006. |
| | | | | 5/29/2007 | C | 0 5cm | 0.0058 | In south cross-ditch. Surface sediment from walls and bottom of ditch east of datalogger sensors. |
| 04DIS125 cap perimeter at jct. of the south and cross ditches | Feb-08 | 355224 | 6801525 | 6/10/2008 | C | 0 to 5 cm | ND, ND | |
| | | | 6801523 | 5/16/2009 | C | 0 to 5 cm | 1.65 | Center point UTM coordinates based on Aero-Metric 20 Aug 2009 image |

Table F-3: White Phosphorus Concentrations Detected at Locations that Have Been Capped

| Sample ID | Capped (mon-year) | Easting | Northing | Collection Date | Area | Depth | WP Conc. (µg/g) | Field Notes |
|--|-------------------|---------|----------|-----------------|------|--------------|-----------------|--|
| South and Cross Ditch cap perimeter | | | | | C | | | |
| North side, 0 to 1 m from cap | | 355224 | 6801533 | 9/16/2009 | C | 0 to 5 cm | 0.022 | |
| North side, 1 to 2 m from cap | | 355224 | 6801534 | 9/16/2009 | C | 0 to 5 cm | 0.012 | |
| East side, 0 to 1 m from cap | | 355226 | 6801518 | 9/16/2009 | C | 0 to 5 cm | ND | |
| East side, 1 to 2 m from cap | | 355227 | 6801518 | 9/16/2009 | C | 0 to 5 cm | ND | |
| West side, 0 to 1 m from cap | | 355223 | 6801517 | 9/16/2009 | C | 0 to 5 cm | ND | |
| West side, 1 to 2 m from cap | | 355222 | 6801517 | 9/16/2009 | C | 0 to 5 cm | 1.3 | |
| West side, 9 to 11 m from cap | | 355212 | 6801519 | 5/21/2010 | C | 0 to 5 cm | ND | 0 to 9 m was marked for capping in March 2011 |
| West of cap | | 355123 | 6801518 | 7/21/2011 | C | 0 to 5 cm | ND | |
| North of cap | | 355224 | 6801544 | 7/21/2011 | C | 0 to 5 cm | ND | |
| 04DIS126 | | 355167 | 6801527 | 8/25/2004 | C | at UXO scrap | 2033 | South ditch, west (in Segment 1). Thick metal fragment. WP odor in peat layer. |
| 04DIS126 Ditch Bottom | | | | 5/19/2006 | C | 5 cm | 40 | |
| 04DIS126 High Wall | | 355167 | 6801529 | 5/19/2006 | C | 5 cm | 0.001 | |
| 04DIS126 Mid Wall | | 355167 | 6801528 | 5/19/2006 | C | 5 cm | 0.07 | |
| 04DIS126 South Wall | | | | 8/30/2006 | C | 5 cm | 14.4 | |
| 04DIS126 | | | | 5/29/2007 | C | 0 to 5 cm | 48 | Surface sediment from south wall of south ditch. |
| 04DIS126 cap perimeter in south ditch, west side | Feb-08 | 355166 | 6801523 | 6/10/2008 | C | 0 to 5 cm | ND, ND | |
| 04DIS126 cap perimeter | Expanded Mar-2009 | 355167 | 6801527 | 5/16/2009 | C | 0 to 5 cm | 0.0045 | Center point UTM coordinates based on Aero-Metric 20 Aug 2009 image |
| East of cap 0 to 5 m | | 355173 | 6801527 | 5/21/2010 | C | 0 to 5 cm | ND | |
| East of cap 5 to 10 m | | 355178 | 6801525 | 5/21/2010 | C | 0 to 5 cm | ND | |
| West of cap 0 to 5 m | | 355156 | 6801535 | 5/21/2010 | C | 0 to 5 cm | ND | |
| West of cap 5 to 10 m | | 355161 | 6801532 | 5/21/2010 | C | 0 to 5 cm | ND | |

Table F-3: White Phosphorus Concentrations Detected at Locations that Have Been Capped

| Sample ID | Capped (mon-year) | Easting | Northing | Collection Date | Area | Depth | WP Conc. (µg/g) | Field Notes |
|--|-------------------|---------|----------|-----------------|------|-----------|-----------------------|---|
| BIP 11 | | 355169 | 6801590 | 6/1/2005 | C | 5 cm | 511 | |
| | | | | 8/31/2006 | C | 5 cm | 31 | Crater 1.6-m to 2-m across. Depth in center is 67 cm. |
| | | | | 5/29/2007 | C | 0 to 5 cm | 0.019 | Surface sediment inside rim. |
| BIP 11 cap perimeter | Feb-08 | 355166 | 6801586 | 6/10/2008 | C | 0 to 5 cm | ND | |
| | Expanded Mar-2009 | 355167 | 6801588 | 5/16/2009 | C | 0 to 5 cm | 0.018 | Center point UTM coordinates based on Aero-Metric 20 Aug 2009 image |
| BIP_11 and nearby craters | | 355167 | 6801588 | 5/21/2010 | C | 0 to 5 cm | ND | |
| Edge of C Marsh Pond 23 (E of Line 2.5 120m S) | | 355292 | 6801535 | 8/24/2002 | C | 5 cm | 0.161 | |
| | | | | 5/30/2007 | C | 0 to 5 cm | 1.3 | Surface sediment from walls and bottom of pool. UXO tech found 105-mm UXO. EOD removed projectile, which they identified as a practice round. |
| | Feb-08 | 355290 | 6801531 | 6/10/2008 | C | 0 to 5 cm | 0.0011, 0.0006 | Center point UTM coordinates based on Aero-Metric 20 Aug 2009 image |
| | | | 6801532 | 5/16/2009 | C | 0 to 5 cm | 0.051, 0.0003 | |
| | | | | 5/21/2010 | C | 0 to 5 cm | 0.0026 | Sampled depressions with standing water. |
| Bomb Crater Ditch Segment 18 | Mar-11 | 355355 | 6801672 | 7/20/2011 | C | 0 to 5 cm | ND | |
| Pond 730 Southwest Arm 0-10m | Mar-11 | 354792 | 6801812 | 7/20/2011 | C | 0 to 5 cm | ND | |
| | | | | | | 0 to 5 cm | ND | Duplicate |
| | | | | | | 0 to 5 cm | ND | |
| Pond 155 | Mar-11 | 355118 | 6801546 | 9/14/2011 | C | 0 to 5 cm | ND | East of Temp Cap (1 to 2 m) |
| | | 355116 | 6801545 | 9/14/2011 | C | 0 to 5 cm | 0.0006 | West of Temp Cap (1 to 2 m) |

Table F-4: Multi-increment Sieved Samples (>0.59 µm)

| Area | Location | Position | Easting | Northing | Date Collected | Sample Mass (kg) | WP Mass (µg) |
|----------------|---|---------------------------|-----------|-----------|----------------|------------------|--------------|
| A | Pond 226 | 10-m radius around center | 353681 | 6801015 | 9/21/2010 | 0.077 | 0.036 |
| | | | | | | 0.17 | 0.036 |
| | | | | | | 0.19 | 0.077 |
| | | | | | 7/24/2011 | 0.172 | ND |
| | | | | | | 0.206 | ND |
| | | | | | | 0.197 | ND |
| | Pond 258 | 10-m radius around center | 354009 | 6800667 | 9/21/2010 | 0.194 | 0.068 |
| | | | | | | 0.144 | 0.049 |
| | | | | | | 0.264 | 0.035 |
| | | | | | 7/24/2011 | 0.34 | ND |
| 0.28 | | | | | | ND | |
| 0.305 | | | | | | ND | |
| C | C Marsh North / CD South | Water N. of North Ditch | 355355 | 6801774 | 9/8/2011 | 0.7 | ND |
| | | | | | | 0.7 | ND |
| | | | 355326 | 6801768 | 9/8/2011 | 0.3 | ND |
| | | | | | | 0.9 | ND |
| | | | | | | 3 | ND |
| | | | | | | 1.5 | ND |
| | | | 355293 | 6801791 | 9/8/2011 | 1.9 | ND |
| | | | | | | 1 | ND |
| | | | 355283 | 9801805 | 9/9/2011 | 1.2 | ND |
| | | | 355394 | 6801817 | 9/9/2011 | 1.3 | ND |
| | 355300 | 6801824 | 9/11/2011 | 0.9 | ND | | |
| Pond 730 North | Death Cove (2011 – mortalities 1 and 10 found nearby) | 354789 | 6801768 | 9/12/2011 | 0.4 | ND | |

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Table F-5: Discrete Samples

| Area | Position | Easting | Northing | Date Collected | WP Conc. (µg/g) | Comments |
|--|--|---------|-----------|----------------|---------------------------|--|
| BT | Pond 730 May_Anomaly 1 | 354790 | 6801814 | 5/17/2010 | 0.0001 | Surface |
| | | 354790 | 6801814 | 5/17/2010 | 33.4 | Subsurface |
| | Pond 730 May_Anomaly 2 | 354792 | 6801812 | 5/17/2010 | 0.069 | Surface |
| | | 354790 | 6801814 | 5/17/2010 | 1,826 | Subsurface |
| | Pond 730 Sept_Anomaly_01 | 354820 | 6801792 | 9/22/2010 | ND | Looks like a doorknob |
| | Pond 730 Sept_Anomaly_02 | 354826 | 6801797 | 9/22/2010 | ND | Looks like a meteorite |
| | Pond 730 Sept_Anomaly_03 – Surface Sediment | 354819 | 6801798 | 9/22/2010 | ND | Deep. Thin-walled ordnance scrap. |
| | Pond 730 Co-located with metal | 354819 | 6801798 | 9/22/2010 | ND | |
| | Pond 730 Under metal | 354819 | 6801798 | 9/22/2010 | ND | |
| | Pond 730 North 11DIS04 | 354885 | 6801896 | 9/12/2011 | 130 | WP mortar fin co-located to sediment |
| | Pond 730 North 11DIS05 | 354885 | 6801896 | 9/12/2011 | 3,000 | Sediment from within the mortar tail fin |
| | Pond 155 11DIS03 | 355117 | 6801545 | 9/11/2011 | ND | Deep Anomaly at Grid Row 4 |
| | 11DIS01 Duck Pond Drainage Anomaly (7 m upstream from tide gate) | 354790 | 6801814 | 7/22/2011 | 3.15 | From area next to munitions anomaly |
| 11DIS02 Pond 183 Anomaly - Dry sediment from with “bell” | 354790 | 6801633 | 7/25/2011 | ND | Sediment near the anomaly | |
| C | C Marsh Anomaly 4.2-inch mortar projectile 01DIS01 | 355145 | 6801497 | 5/21/2010 | ND | |
| Racine Island | Inside 10RI_DU05 | 355421 | 6800517 | 9/22/2010 | 0.079 | Rectangular plate. Looks like WP ordnance scrap. |
| | 11RI_DU06 Racine Island | 355141 | 6800523 | 7/22/2011 | ND | Crater Cluster West of AquaBlok Pond |
| Coastal East | Crater from 12 July 2010 UXO detonation | 353902 | 6802188 | 5/15/2010 | 0.34 | In gully. Inside crater |
| | | 353902 | 6802188 | 5/15/2010 | 4.47 | In gully. Within 1 m of crater edge |
| | | 353902 | 6802188 | 9/18/2010 | 103 | Subsurface sediment. |

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Appendix G
Data Quality Information

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Appendix G-1
Data Quality Narrative and
Quality Control Sample Results

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APPENDIX G1 – DATA QUALITY NARRATIVE AND QUALITY CONTROL SAMPLE RESULTS

Laboratory Analysis of Sediments for White Phosphorus Residues ERF 2012

All samples were stored at 4°C in the dark and were tightly sealed to prevent loss of moisture. Samples were analyzed using procedures described in EPA SW-846 Method 7580 [White Phosphorus (P₄) by Solvent Extraction and Gas Chromatography]. Each whole sediment multi-increment sample (mean mass 1.3 kg; range 0.3 to 2.6 kg) was thoroughly mixed by stirring and kneading. The wet sample was spread to a thickness of 1 cm, then at least 30 small aliquots were taken to form a ~200-g subsample. (Subsample masses are larger than those in the original method. Larger subsamples were taken to reduce subsampling uncertainty). Sufficient water was then added to form a slurry. Discrete samples were not subsampled. Instead, the entire sample was transferred to a sufficiently large glass jar and enough water added to cover the sample.

The presence of white phosphorus was determined using solid-phase micro-extraction and gas chromatography. If white phosphorus was detected, the white phosphorus concentration was estimated by extracting the white phosphorus from the sample with solvent (isooctane) and analyzing the extract by gas chromatography (nitrogen–phosphorus detector). The gas chromatograph was calibrated daily using freshly prepared standards in the range of 1.8 to 92 µg/L. A linear calibration model was used to calculate the white phosphorus concentrations in the sediment extracts. If needed, extracts were diluted with isooctane to be within the calibration range.

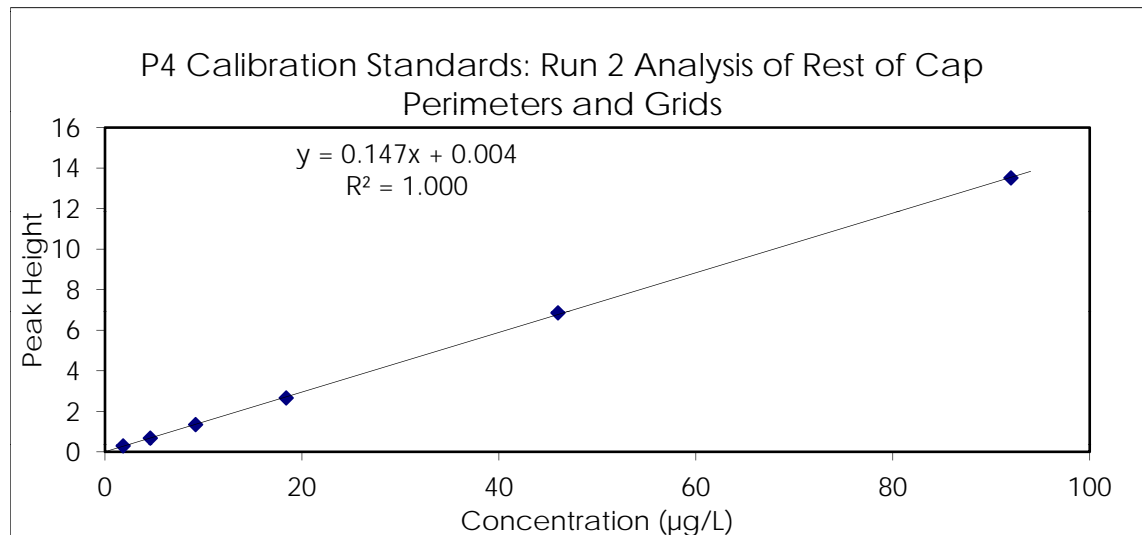
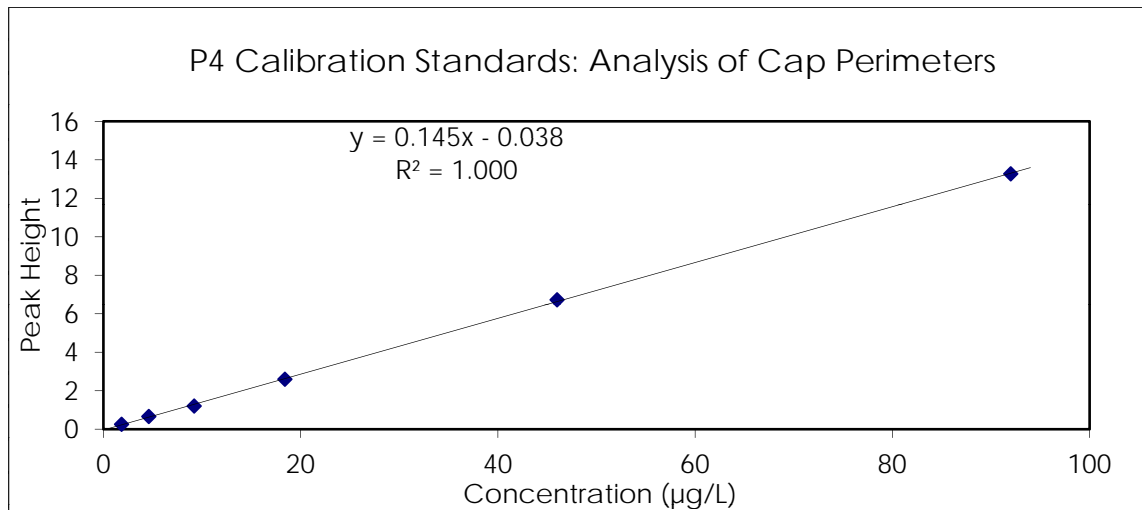
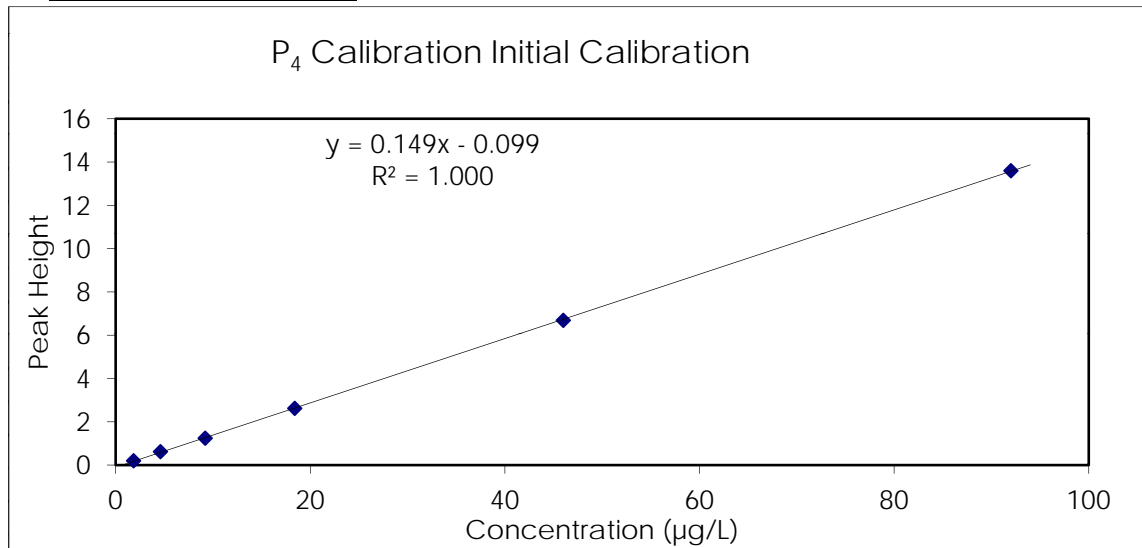
Specific Comments

The sample analysis was routine with no irregularities. There were three sets of analyses for the iso-octane extracts. During Run 1, the GC-NPD was calibrated with a fresh set of standards (1.8 to 92 µg/L). During Runs 2 and 3, iso-octane extracts of cap perimeter and grid samples were analyzed following the daily calibration of the GC-NPD. Recoveries from Laboratory Control samples and Matrix Spike samples were acceptable and no P₄ was detectable in any of the blank samples.

One discrete sample (12DIS01) required a dilution by a factor of 10,000 times. This sample was co-located with WP ordnance scrap.

APPENDIX G1 - QA/QC DATA

I. Calibration Standards



II. Laboratory Control and Matrix Spiked Samples

| Spiked Samples (Target Concentration 0.07 µg/g) | Found Concentration (µg/g) | | Recovery | |
|--|----------------------------|-------|----------|-------|
| | Run 1 | Run 2 | Run 1 | Run 2 |
| MS (used 03DIS03) | 0.069 | 0.066 | 99% | 94% |
| MSD (used 03DIS11) | 0.066 | 0.064 | 94% | 92% |
| LCS (Lebanon Landfill Silty Loam) | 0.068 | 0.070 | 98% | 100% |

III. Blanks

| | Found Concentration | |
|-----------------------------|---------------------|---------------|
| | Run 1 | Run 2 |
| Trip Blank (Water) | < 0.02 µg/L | NA |
| Solvent Blank | < 2 µg/L | < 2 µg/L |
| Lebanon Landfill Silty Loam | < 0.0002 µg/g | < 0.0002 µg/g |

Appendix G-2
ADEC Data Checklist

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Laboratory Data Review Checklist

Completed by:

Title: Date:

CS Report Name: Report Date:

Consultant Firm:

Laboratory Name: Laboratory Report Number:

ADEC File Number: ADEC RecKey Number:

1. Laboratory

- a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
Yes No X NA (Please explain.) Comments:

- b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
Yes X No NA (Please explain.) Comments:

2. Chain of Custody (COC)

- a. COC information completed, signed, and dated (including released/received by)?
 Yes No NA (Please explain.) Comments:

- b. Correct analyses requested?
 Yes No NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation

- a. Sample/cooler temperature documented and within range at receipt ($4^{\circ} \pm 2^{\circ}$ C)?
 Yes No NA (Please explain.) Comments:

- b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
 Yes No NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes No NA (Please explain.) Comments:

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes No NA (Please explain.) Comments:

e. Data quality or usability affected? (Please explain.)

Comments:

4. Case Narrative

a. Present and understandable?

Yes No NA (Please explain.) Comments:

Not needed.

b. Discrepancies, errors or QC failures identified by the lab?

Yes No NA (Please explain.) Comments:

No QC failures.

c. Were all corrective actions documented?

Yes No NA (Please explain.) Comments:

d. What is the effect on data quality/usability according to the case narrative?

Comments:

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes No NA (Please explain.) Comments:

b. All applicable holding times met?

Yes No NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?
 Yes No NA (Please explain.) Comments:

Samples for P4 analysis must be maintained saturated.

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
 Yes No NA (Please explain.) Comments:

e. Data quality or usability affected? Comments:

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?
 Yes No NA (Please explain.) Comments:

ii. All method blank results less than PQL?
 Yes No NA (Please explain.) Comments:

iii. If above PQL, what samples are affected? Comments:

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
 Yes No NA (Please explain.) Comments:

v. Data quality or usability affected? (Please explain.) Comments:

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
 Yes No NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes No NA (Please explain.) Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes No NA (Please explain.) Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes No NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No NA (Please explain.) Comments:

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

Yes No NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

Yes No NA (Please explain.) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

Yes No NA (Please explain.) Comments:

iv. Data quality or usability affected? (Use the comment box to explain.)

Comments:

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes No NA (Please explain.) Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes No NA (Please explain.) Comments:

iii. All results less than PQL?

Yes No NA (Please explain.) Comments:

iv. If above PQL, what samples are affected?

Comments:

v. Data quality or usability affected? (Please explain.)

Comments:

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes No NA (Please explain.) Comments:

ii. Submitted blind to lab?

Yes No NA (Please explain.)

Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs?
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

Yes No NA (Please explain.)

Comments:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

f. Decontamination or Equipment Blank (If not used explain why).

Yes No NA (Please explain.)

Comments:

i. All results less than PQL?

Yes No NA (Please explain.)

Comments:

ii. If above PQL, what samples are affected?

Comments:

iii. Data quality or usability affected? (Please explain.)

Comments:

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes No NA (Please explain.)

Comments:

Appendix H
White Phosphorus Analytical Method

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Development of an Analytical Method for White Phosphorus (P₄) in Water and Sediment Using Solid-Phase Microextraction

Marianne E. Walsh, Susan Taylor and Philip G. Thorne

August 1996

Abstract: Headspace solid-phase microextraction (SPME) methods were developed for white phosphorus in water and sediment/soil to minimize waste generated by methods based on solvent extraction. Headspace SPME provided a rapid, non-exhaustive extraction, based on equilibrium, of white phosphorus. Comparison of results obtained by headspace SPME

and solvent extraction shows that headspace SPME may be used quantitatively for some water matrices and qualitatively for more complex matrices such as sediment/soil. Because detection limits appear to be similar to those obtained by solvent extraction, headspace SPME can be used to rapidly screen samples for contamination, eliminating the need to solvent-extract most samples.

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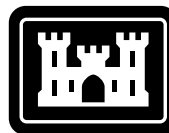
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Development of an Analytical Method for White Phosphorus (P₄) in Water and Sediment Using Solid-Phase Microextraction

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PREFACE

This report was prepared by Marianne E. Walsh, Chemical Engineer, Applied Research Division; Susan Taylor, Research Physical Scientist, and Philip G. Thorne, Research Physical Scientist, Geological Sciences Division; Research and Engineering Directorate, U.S. Army Cold Regions Research and Engineering Laboratory (CRREL), Hanover, New Hampshire. Funding for this work was provided by the U.S. Army Engineer Waterways Experiment Station (WES), Vicksburg, Mississippi, through Environmental Quality Technology Project AF25, Ann Strong, Project Monitor.

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Development of an Analytical Method for White Phosphorus (P₄) in Water and Sediment Using Solid-Phase Microextraction

MARIANNE E. WALSH, SUSAN TAYLOR AND PHILIP G. THORNE

INTRODUCTION

Analytical methods have been developed for white phosphorus (P₄) residues in sediment and water (Walsh and Taylor 1993, Walsh 1995, USEPA 1995). Both methods rely on solvent extraction prior to gas chromatographic analysis. The extracting solvents are isooctane and diethyl ether for soils/sediments and water, respectively. The method for soils/sediments has been performed successfully in field laboratories (Racine et al. 1993), but the safety hazards associated with diethyl ether restrict the analysis of water samples to laboratories with fume hoods. In this study, we describe methods that minimize or eliminate the use of organic solvents.

Solid-phase microextraction (SPME) is a new alternative to traditional techniques for extracting volatile or semi-volatile organics (Belardi and Pawliszyn 1989, Boyd-Boland et al. 1994, Zhang et al. 1994). First developed to analyze for volatile chlorinated organics, PCBs (polychlorinated biphenyls) and BTEX (benzene, toluene, ethylbenzene, xylene) in water (Arthur and Pawliszyn 1990; Arthur et al. 1992a, b, d; Potter and Pawliszyn 1992, 1994; Buchholz and Pawliszyn 1993), the method has been successfully used for a wide variety of analytes in environmental, food and pharmaceutical matrices (Hawthorne et al. 1992, Otu and Pawliszyn 1993, Buchholz and Pawliszyn 1994, Horng and Huang 1994, Yang and

Peppard 1994, Zhang et al. 1994). The technique has several advantages (fast, simple, precise, sensitive), and requires no solvent (Arthur et al. 1992e). For this technique, a thin fused silica fiber coated with a stationary phase is exposed to a sample, either by immersion in a water or air sample or to headspace above an aqueous or solid sample (Fig. 1). Analytes sorb to the stationary phase, then the fiber is transferred directly to a heated injection port of a gas chromatograph for thermal desorption and analysis. The method can be automated and an SPME autosampler is available commercially (Arthur et al. 1992c, Berg 1993).

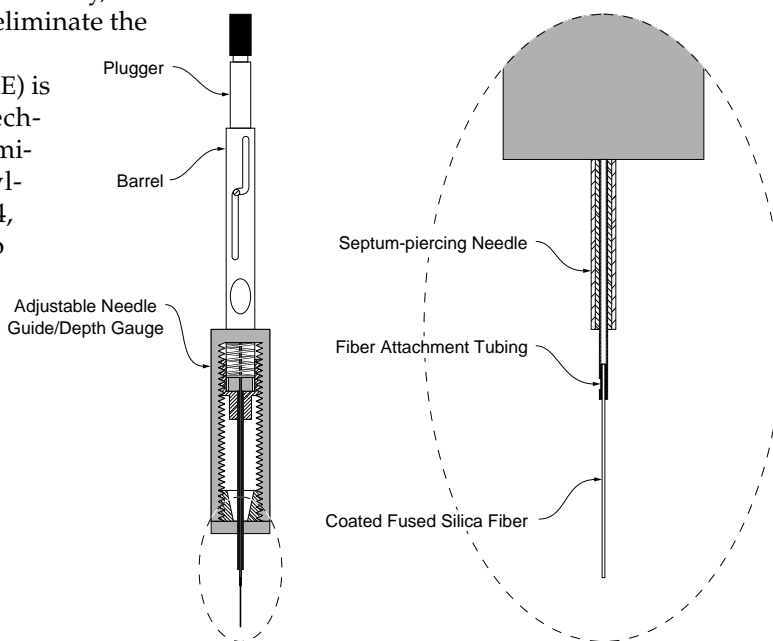


Figure 1. SPME device.

Headspace sampling works well for analytes with a Henry's Law constant, the equilibrium partition coefficient for a chemical between water and the headspace above it, above 90 atm-cm³/mole (Zhang and Pawliszyn 1993a, b). Since Henry's Law constant for white phosphorus is over 2000 atm-cm³/mole (Spanggard et al. 1985), headspace SPME is feasible. We were particularly interested in headspace sampling because environmental matrices containing white phosphorus are potentially complex (surface waters, wastewater, sediments), and the SPME fiber would be damaged or fouled by immersion into these matrices. Headspace sampling relies on the equilibrium partitioning of the analyte among the matrix, headspace and SPME phase (Zhang and Pawliszyn 1993a, b). The extraction is not exhaustive, and for semi-volatiles only a small portion of the total analyte present becomes associated with the fiber. If depletion of the analyte is negligible, the same aliquot of a sample can be analyzed first by headspace, then by solvent extraction. Analysis of the same sample aliquot by headspace SPME followed by solvent extraction allows direct comparison of the two methods without the confounding effect of heterogeneity, and makes SPME a valuable tool for screening samples for contamination. Because the majority of samples sent to analytical labs for the analysis of volatiles or semi-volatiles tend to be blank (devoid of the analytes of interest at analytical detection limits), considerable time and solvent could be saved by screening samples for contamination prior to solvent extraction and analysis.

The objectives of this study were to

1. Determine if headspace SPME provides a detection capability similar to solvent extraction methods for white phosphorus in water and sediment matrices.
2. Test the feasibility of calibrating headspace SPME for the quantitative analysis of water samples.
3. Evaluate the performance of headspace SPME with field-contaminated water and sediment samples.
4. Compare concentration estimates obtained via headspace SPME with estimates obtained by solvent extraction.
5. Evaluate the suitability of headspace SPME for use in a field laboratory.

METHODS

Standards and spiking solutions

An analytical standard for white phosphorus

was obtained from Aldrich Chemical Co. (Milwaukee, Wisconsin). The white phosphorus was supplied as a 5-g stick. It came immersed in water and had a white coating on its surface. Pieces (100–300 mg) of white phosphorus were cut from the stick under water. Care was taken to ensure that the surfaces of each piece of white phosphorus were freshly cut, lustrous in appearance, and showed no evidence of white coating. These translucent, colorless pieces were transferred under water to a test tube, and the test tube was placed in a beaker filled with water. The water with white phosphorus pieces was heated to 54°C to melt the white phosphorus, which remains as a separate phase. A Gilson Microman Positive Displacement Pipet was used to obtain 25- μ L (45 mg) droplets of white phosphorus, which were placed in separate test tubes under water. The water was cooled to solidify the droplets.

A stock solution for calibration standards was prepared under nitrogen by dissolving 90 mg of white phosphorus in 250 mL of toluene (Aldrich Chemical Co.). Standards over the range 7.2 to 7200 μ g/L were prepared by diluting the stock solution with methanol. Aqueous standards over the range of 0.0072 to 0.72 μ g/L were prepared by adding 25 μ L of a methanol standard to individual 25-mL aliquots of water in 40-mL glass vials sealed with a septum.

Aqueous solutions of white phosphorus were prepared by placing pieces of white phosphorus into an amber jug containing 4 L of reagent-grade water (Type I) (MilliQ, Millipore) with no headspace, and agitating the jug for more than 60 days.

Matrices

Blank matrices used to prepare spiked samples were reagent-grade (Type I) water (MilliQ, Millipore); groundwater from a domestic well in Weathersfield, Vermont; surface water from a pond in Hanover, New Hampshire; surface water from a salt marsh in Anchorage, Alaska; Ottawa sand purchased from U.S. Silica (Ottawa, Illinois); a loamy soil from the U.S. Army Environmental Center (Aberdeen Proving Ground, Maryland); and a sandy silt from Lebanon, New Hampshire. Soil samples were wetted to 100% moisture (dry weight basis, i.e., equal parts water and soil) prior to spiking.

Field-contaminated samples were obtained from Eagle River Flats, Fort Richardson, Alaska. Water samples were collected in 1-L amber glass bottles and sediment samples were collected in 120-mL wide-mouth jars filled so that there was no headspace. Samples were maintained at 4°C until extracted.

SPME

SPME fiber assemblies were obtained from Supelco (Bellefonte, Pennsylvania) (Fig. 1). These assemblies are composed of a fused silica fiber coated with a stationary phase (we purchased the 100- μm polydimethylsiloxane-coated fibers). The fiber is attached to a holder with a septum-piercing sheath that protects the fiber. The holder also allows precise positioning of the fiber in samples and the injection port of the gas chromatograph. In general, the fiber is exposed to a sample for a short period, during which time analytes sorb to the stationary phase. Then the fiber is placed into the injection port of a gas chromatograph to thermally desorb the analytes. We used the SPME fibers as follows: for each water sample, a 25-mL aliquot was placed in a 40-mL vial. The vial was either allowed to stand statically at room temperature or was placed in a sonic bath for five or ten minutes, during which time the SPME phase was exposed to the headspace (Fig. 2a). The SPME phase was immediately transferred to a heated (200°C) injection port of the gas chromatograph (Fig. 2b) described below.

For each sediment/soil sample, a 40-g subsample was placed in a 120-mL jar containing 10.0 mL of reagent-grade water. The jar was sealed with a

cap equipped with a septum. Each sample was shaken manually for 15 seconds, and then the SPME phase was exposed statically to the headspace for five minutes such that there was no physical contact between the fiber and the sample. The SPME phase was thermally desorbed as described for the water samples.

Solvent extraction

For water samples with white phosphorus concentrations less than 0.1 $\mu\text{g/L}$, preconcentration of the solvent extracts is required. A non-evaporative approach is used since white phosphorus is volatile and air-sensitive (Walsh 1995). A 500-mL aliquot of water was mixed with 50 mL of diethyl ether by shaking in a 500-mL separatory funnel for five minutes. After phase separation, all of the ether layer was collected. The volume of the ether layer recovered varied depending on the temperature and the ionic strength of the samples; it generally ranged from 3 to 10 mL. The volume of the ether layer was further reduced to 0.5–1.0 mL by adding the ether extract to approximately 50 mL of reagent-grade water in a 125-mL separatory funnel and shaking for one minute. After phase separation, the ether layer was collected in a 5.0-mL graduated cylinder and the exact volume measured. This procedure resulted in a preconcentration factor of 500 to 1000. White phosphorus concentration in the extract was then determined by gas chromatography. Extracts were analyzed immediately to minimize loss due to solvent evaporation.

For samples with white phosphorus concentrations greater than 0.1 $\mu\text{g/L}$ (Walsh 1995), simple solvent extraction provides sufficient concentration. A 25-mL aliquot of water was shaken for five



Figure 2. (left) Headspace SPME followed by (right) thermal desorption in injection port of gas chromatograph.

minutes with 2.00 mL of isooctane. Following phase separation, the isooctane extract was analyzed.

Wet sediment samples were extracted by placing a 40-g subsample into a 120-mL jar containing 10.0 mL of reagent-grade water. Then, 10.0 mL of isooctane was added. Each jar was tightly sealed with a Teflon-lined cap and vortex-mixed for one minute, and then placed horizontally on a platform shaker for 18 hours. The sample then was allowed to stand undisturbed for 15 minutes, and, if necessary, centrifuged for five minutes, to permit phase separation. Extracts were analyzed within a few hours.

Gas chromatograph

For solvent extracts or calibration standards, white phosphorus was determined by injecting a 1.0- μ L aliquot on-column into an SRI Model 8610 gas chromatograph equipped with a nitrogen-phosphorus detector. SPME fibers were thermally desorbed at 200°C in the injection port of the same GC, and, for convenience, the SPME fiber was left in the injection port for the entire run time (five minutes).

The methylsilicone fused silica column (J and W DB-1, 0.53-mm-i.d., 15-m, 3.0- μ m film thickness) was maintained at 80°C. The carrier gas was nitrogen set at 30 mL/minute. Under these conditions, white phosphorus eluted at 2.7 minutes.

RESULTS AND DISCUSSION

Detection capability

We evaluated the detection capability of SPME while gathering validation data for analytical methods for white phosphorus by solvent extraction and gas chromatography (Walsh et al. 1995). For each matrix (Table 1), ten replicate spiked sam-

ples (1 L for water and 40 g for wet soil) were prepared by adding an aqueous solution of white phosphorus to yield concentrations near the method detection limits for the solvent extraction methods (0.01 μ g/L for water and 1 μ g/kg for soil). Headspace SPME was performed and peak height data were obtained.

For those water samples that had white phosphorus concentrations near 0.01 μ g/L, the peak heights obtained by headspace SPME were small, but white phosphorus was consistently detectable in all spiked samples (signal-to-noise ratios were greater than 7). Therefore the detection capability of the SPME appeared to be comparable to solvent extraction. In addition, the SPME response factors (means of the peak heights normalized to spiked concentration for each water matrix) were similar. The similarity in response with different water matrices was further studied in terms of calibration, as described below.

In contrast, SPME peak heights varied with the different soil matrices. Peak heights were lowest in the sample with the highest organic content and grain size distribution. However, in all cases, the peak heights were much larger than those obtained by solvent extraction, indicating that detection capability of the headspace SPME might be better than that for solvent extraction. Further studies were performed with field-contaminated samples as described below.

Depletion of total analyte present

White phosphorus may be present in sediment samples as heterogeneously distributed particles of different masses. Due to potential loss of white phosphorus by sublimation and oxidation, traditional homogenization methods involving drying, grinding, sieving, mixing, and subsampling are not applicable for white phosphorus-contaminat-

Table 1. Mean peak heights obtained following headspace SPME/GC for water and soil samples spiked at white phosphorus concentrations near the detection limit for solvent extraction methods.

| Matrix | Spiked conc. | n | Peak height | | | Response factor* |
|----------------------|------------------|----|-------------|--------------------|---------|------------------|
| | | | Mean | Standard deviation | RSD (%) | |
| Reagent-grade water | 0.012 μ g/L | 10 | 1,465 | 252 | 17 | 122,000 |
| Well water | 0.0097 μ g/L | 10 | 1,119 | 106 | 9.5 | 115,000 |
| Pond water | 0.010 μ g/L | 10 | 1,013 | 235 | 23 | 101,000 |
| Sand | 1.9 μ g/kg | 9 | 270,481 | 20,356 | 7.5 | 142,000 |
| Lebanon (Sandy silt) | 0.97 μ g/kg | 10 | 97,063 | 10,486 | 11 | 100,000 |
| USAEC (Loam) | 0.84 μ g/kg | 9 | 74,381 | 6,157 | 8.3 | 88,500 |

* (Peak height)/(Spiked concentration [μ g/L]).

ed sediments. As a result, wide variations are routinely observed in concentration estimates of subsamples from individual field-contaminated sediment samples. This heterogeneity complicates the comparison of different analytical methods.

One potential attribute of headspace SPME is the ability to detect the presence of an analyte without altering a sample. Provided that headspace SPME does not remove a significant amount of analyte, the same subsample of sediment can be analyzed by headspace SPME followed by solvent extraction and GC determination. Using the same subsample for both determinations, the results of the two methods can be compared without the confounding effects of heterogeneity. Since heterogeneity between subsamples of bulk water samples has not been observed, we are primarily concerned with soil/sediment samples.

To see if concentration estimates based on the amount of white phosphorus in solvent extracts would be biased if headspace SPME was performed, we used the peak height data in Table 1 and peak height data from direct injections of calibration standards to calculate the mass of white phosphorus detected by SPME. Less than 0.4% of the initial white phosphorus present was removed by headspace SPME from each soil matrix, and less than 1% from each water matrix. Thus the amount of white phosphorus removed by one headspace SPME extraction is negligible.

Calibration

Calibration, which is necessary for quantitation, has been achieved for other analytes by spiking a known amount of analyte, generally dissolved in a water-miscible solvent, into a clean water matrix, then performing SPME as is done for regular samples (Zhang et al. 1994). Calibration for a complex matrix such as soil is more complicated since matrix-analyte interactions are much more pronounced. While methods such as standard additions or internal standards have been suggested and work well for some analytes (Zhang et al. 1994), the difference in extractability between spiked and native analyte can have a profound influence, unless the extraction is exhaustive. Recently, exhaustive headspace SPME extraction of some volatiles was achieved by simultaneous heating of the sample and cooling of the fiber coating (Zhang and Pawliszyn 1995). Prior to that study, quantitative results by SPME were reported primarily for water samples, and results for soil samples have been predominantly qualitative.

Linearity

To determine the feasibility of calibrating headspace SPME for water contaminated with white phosphorus, a series of aqueous calibration standards over the range 0.0072 to 7.2 $\mu\text{g/L}$ (Table 2) was prepared in duplicate. Linearity of response (peak heights) with respect to white phosphorus concentration was tested for water from four sources (a MilliQ purification system, a well water, a pond water and a salt marsh) (Table 3). These aqueous standards were prepared by adding 25 μL of standards prepared in methanol to 25 mL of water, which resulted in a methanol concentration of 0.1%. Previous studies with BTEX showed that a methanol of less than 1% did not effect peak areas obtained by SPME (Arthur et al. 1992c). Peak heights obtained by headspace SPME-GC were converted to mass (pg) of white phosphorus from response factors based on syringe injections of standards in methanol (Zhang and Pawliszyn 1993a).

Table 2. Concentration of calibration standards prepared for headspace SPME of water samples.

| Conc. of methanol std. ($\mu\text{g/L}$) | Conc. of aqueous std. ($\mu\text{g/L}$)* | Mass of white phosphorus in each aqueous std. (ng) |
|--|--|--|
| 7.2 | 0.0072 | 0.18 |
| 14.4 | 0.0144 | 0.36 |
| 28.8 | 0.0288 | 0.72 |
| 72 | 0.072 | 1.8 |
| 144 | 0.144 | 3.6 |
| 1440 | 1.44 | 36 |
| 7200 | 7.2 | 180 |

* Prepared by adding 25 μL of methanol standard to 25 mL of water.

Table 3. Water quality measurements for matrices used for aqueous white phosphorus standards.

| Matrix | Conductivity (nmho/cm) | pH | Redox (mV) |
|---------------------|------------------------|-----|------------|
| Reagent-grade water | 0 | | |
| Well water | 0.277 | 7.6 | 163 |
| Pond water | 0.201 | 7.4 | 14 |
| Salt marsh water | 23 | 7.9 | 133 |

For data for each water matrix, a linear regression model with intercept (Fig. 3) and a linear regression model through the origin were tested for lack of fit. In all cases, linear models adequately described the data over the concentration range 0.0072 to 0.144 $\mu\text{g/L}$ (the F ratio for lack of fit was less than the critical value for 95% confidence)

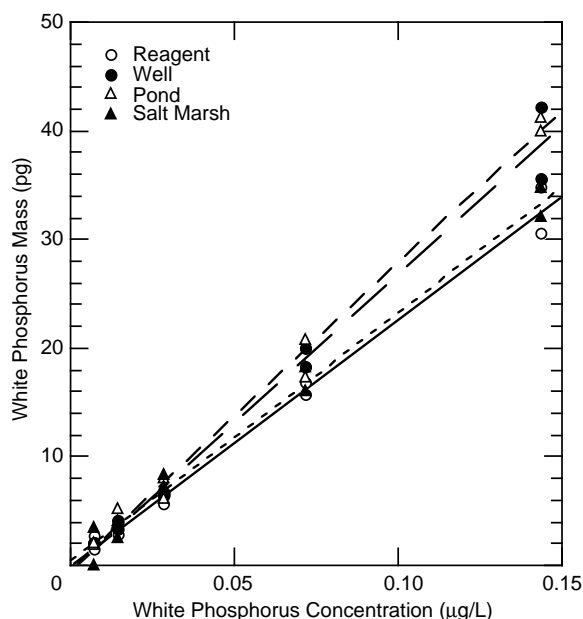


Figure 3. Mass of white phosphorus (pg) detected by headspace SPME vs. aqueous concentration over range of 0.0072 to 0.144 µg/L. Lines represent least squares regression models.

Table 4. Regression coefficients for linear calibration models of white phosphorus (pg) detected by headspace SPME vs. aqueous concentration over range of 0.0072 to 0.144 µg/L.

| Water matrix | Model* with intercept | | Lack of fit F ratio [†] | Model through origin | | Zero-intercept hypothesis |
|---------------|-----------------------|-----------|----------------------------------|----------------------|-----------------------|----------------------------|
| | Slope | Intercept | | Slope | Lack of fit F ratio** | Calculated F ^{††} |
| Reagent grade | 226 | -0.0067 | 0.15 | 226 | 0.11 | 0.00014 |
| Well | 272 | -0.42 | 0.16 | 268 | 0.16 | 0.26 |
| Pond | 280 | -0.27 | 0.88 | 278 | 0.71 | 0.21 |
| Salt marsh | 230 | 0.41 | 0.24 | 234 | 0.25 | 0.41 |

* $y = mx + b$, where y = mass of WP (pg) and x = aqueous WP concentration (µg/L)

† Critical $F_{0.95(3,5)} = 5.41$

** Critical $F_{0.95(4,5)} = 5.19$

†† Critical $F_{0.95(1,8)} = 5.32$

Table 5. White phosphorus mass (pg) detected by headspace SPME for replicate 0.144 µg/L aqueous standards prepared in four water matrices and analyzed on the same day.

| Rep | White phosphorus mass (pg) | | | |
|--------------|----------------------------|------|------|------------|
| | Reagent | Well | Pond | Salt marsh |
| 1 | 31.8 | 36.5 | 41.3 | 39.6 |
| 2 | 35.8 | 39.1 | 31.5 | 32.1 |
| 3 | 37.6 | 32.9 | 36.7 | 33.1 |
| 4 | 32.9 | 36.2 | 36.6 | 34.3 |
| 5 | 32.3 | 34.1 | 35.6 | 36.8 |
| Mean | 34.1 | 35.8 | 36.3 | 35.2 |
| Std dev | 2.5 | 2.4 | 3.5 | 3.0 |
| % RSD | 7.4% | 6.8% | 9.6% | 8.6% |
| Mass (pg) | 237 | 249 | 252 | 244 |
| Conc. (µg/L) | | | | |

(Table 4). Higher concentrations were beyond the linear range of the detector. The slopes for the regression models for the four different waters were not compared statistically because the data were not generated on a single day; however, they appeared to be similar.

Matrix effects

To confirm the similarity in response (mass of white phosphorus detected by headspace SPME) among the four different matrices, five replicate 0.144-µg/L aqueous standards were prepared for each matrix and analyzed on a single day. The means of the responses obtained (Table 5) were compared by ANOVA and were not significantly different ($p = 0.65$) despite the fairly wide range

of conductivities (0 to 23 mmho/cm) between the matrices. These results, however, are consistent with those observed for BTEX where salt concentrations below 1% did not significantly affect results (Arthur et al. 1992c). However, salt saturation has been used successfully to enhance response for BTEX by headspace SPME (MacGillivray et al. 1994).

The mean mass of white phosphorus detected by headspace SPME for the combined data set (Table 5) is 35.4 pg. To prepare each 25-mL aqueous standard at 0.144 µg/L, 3600 pg of white phosphorus was added. Therefore, the mass removed by headspace SPME was 0.98% of the initial mass. These data provide further confirmation that headspace SPME may be performed on the same sample prior to solvent extraction without biasing the concentration estimates obtained by solvent extraction. For water samples, sequential SPME-solvent extraction of the same aliquot would be appropriate for samples with white phosphorus concentrations greater than 0.1 µg/L. For water samples with lower concentrations, a larger aliquot (500 mL) of water is needed to provide adequate preconcentration using ether extraction. Results using these various extraction options will be discussed later in relation to field samples.

Model predictions

Zhang and Pawliszyn (1993a) derived the following equation for the mass of analyte sorbed by the SPME phase at equilibrium during headspace SPME of water samples:

$$n = \frac{K_1 K_2 C_0 V_1 V_2}{K_1 K_2 V_1 + K_2 V_3 + V_2}$$

where K_1 = SPME phase/gas partition coefficient

K_2 = gas/water partition coefficient

C_0 = initial concentration of the analyte in the aqueous solution

V_1 , V_2 , and V_3 = volumes of the SPME phase, aqueous solution and the headspace.

The gas/water partition coefficient (K_2) is derived from the Henry's Law constant (K_H)

$$K_2 = \frac{K_H}{RT}$$

The SPME phase/gas partition coefficient (K_1) can be estimated from the relationship

$$K = K_1 K_2$$

where K is close to the octanol water partition coefficient (K_{ow}) for many analytes (Zhang and Pawliszyn 1993a, Louch et al. 1992, Dean et al. 1996). For BTEX compounds, the ratios of K_{ow}/K ranged from 0.9 to 2.7 (Zhang and Pawliszyn 1993a). K_{ow} and K_H have been measured for white phosphorus (Spangford et al. 1985). The estimates are $K_{ow} = 1200$ and $K_H = 2100 \text{ atm-cm}^3/\text{mole}$. Using these estimates for K_{ow} and K_H , the predicted mass of white phosphorus sorbed to the SPME phase was computed for equilibrium with a 0.144-µg/L aqueous solution and the two size vials used in these studies (Table 6).

Table 6. Predicted mass (pg) of white phosphorus sorbed to the SPME phase during headspace SPME based on model by Zhang and Pawliszyn (1993) and estimates of K_{ow} and K_H by Spangford et al. 1985.

| Size of vial (mL) | Volume (mL) | | Theoretical mass sorbed (pg) |
|-------------------|-------------|------------------|------------------------------|
| | Headspace | Aqueous solution | |
| 40 | 1 | 39 | 104 |
| | 5 | 35 | 102 |
| | 10 | 30 | 100 |
| | 15 | 25 | 97 |
| | 20 | 20 | 93 |
| | 25 | 15 | 87 |
| | 30 | 10 | 77 |
| 120 | 35 | 5 | 57 |
| | 1 | 119 | 105 |
| | 10 | 110 | 104 |
| | 20 | 100 | 103 |
| | 30 | 90 | 102 |
| | 40 | 80 | 100 |
| | 50 | 70 | 98 |
| | 60 | 60 | 95 |
| | 70 | 50 | 92 |
| | 80 | 40 | 87 |
| | 90 | 30 | 80 |
| 100 | 20 | 69 | |
| 110 | 10 | 49 | |

Predictions are shown for two sizes of extraction vials used for these studies and various volumes of headspace. Numbers in bold correspond to volumes used in this study.

$$n = \frac{K_1 K_2 C_0 V_1 V_2}{K_1 K_2 V_1 + K_2 V_3 + V_2} = \text{mass of analyte}$$

sorbed by the SPME phase at equilibrium during headspace SPME.

V_1 = volume of SPME phase = 6.12×10^{-4} mL*

V_2 = volume of aqueous solution

V_3 = volume of headspace

C_0 = 0.144 µg/L

K_1 = SPME phase/gas partition coefficient

K_2 = gas/water partition coefficient = $K_H/RT = 0.09$

$K_1 K_2 \approx K_{ow} = 1200$.

* Personal communication, Supelco, 1996.

For 25 mL of 0.144 µg/L aqueous solution in a 40-mL vial, the predicted mass of white phosphorus sorbed by the SPME phase is 97 pg. We found approximately 35 pg, or about one-third of the predicted mass. Assuming that K_2 is accurately predicted from K_H , the amount of mass sorbed corresponds to a K of 410. The ratio between K_{ow} and K equals 2.9, which is slightly outside the range reported for BTEX. Therefore the model predictions and experimental results are in fair agreement.

The model also predicts the effect of variable volumes of headspace. Predicted mass sorbed increases as headspace volume shrinks, but the effect is minimal for the size vials we used when the vials are at least half full. This characteristic is very useful in a field laboratory since sample volumes need to be measured with a precision of approximately ±1 mL. Sample aliquots could be obtained by gentle pouring into graduated vials, eliminating the need for volumetric pipets and associated glassware washing and rinsing.

Agitation

During headspace SPME, agitation of the sample hastens equilibrium (Arthur et al. 1992c). We used a sonic bath (Motlagh and Pawliszyn 1993), but found that temperature had to be carefully controlled. Fluctuating temperatures decrease precision. Higher temperatures increase the analyte vapor phase concentration but decrease analyte sorption into the fiber (MacGillivray et al. 1994, Zhang and Pawliszyn 1995) since sorption is an exothermic process (Arthur et al. 1992c). Stirring was not tested, but has been used by previous investigators (MacGillivray et al. 1994, Zhang and Pawliszyn 1995). The most convenient and least labor-intensive setup is static extraction for five minutes (length of the GC run) at room temperature.

Zhang and Pawliszyn (1993a) predicted equilibration time for headspace SPME using a model based on one-dimensional diffusion described by Fick's second law. Equilibration time was controlled by the gas/water and SPME phase/water partition coefficients (K_2 and K_1 described above). Extraction time profiles of analytes by headspace SPME are characterized by a three-part curve: first, by a rapid increase in mass sorbed within the first minute of exposure of the SPME phase to the headspace, followed by a much slower increase, then no change at equilibrium. The initial increase corresponds to the sorption of analyte initially present in the headspace, and the slower increase is due to the mass transfer of analytes from the aqueous phase (Pawliszyn 1995). The transition between the

initial rapid rise and equilibrium is reduced by agitation. Based on this model and the physical properties of white phosphorus ($K_{ow} = 1200$, $K_H = 2100 \text{ atm-cm}^3/\text{mole}$), equilibration time for white phosphorus should be only a few minutes for well-agitated samples. Even though equilibrium may not be reached within a few minutes when the sample is not agitated, the mass absorbed should approach the mass at equilibrium because of the shallow slope of the extraction profile.

To see if the elimination of the sonication significantly decreased the mass of white phosphorus sorbed to the SPME phase, four replicate 0.144-µg/L aqueous standards were prepared in reagent-grade water and extracted and analyzed in random order by headspace SPME by three methods: five minutes of sonication, ten minutes of sonication, and five minutes static. One sample was extracted statically for 20 minutes, then 80 minutes. The results (Table 7) were compared by blocked ANOVA (Table 8), and a significant difference was found indicating that equilibrium was not reached during five minutes of static headspace SPME. However, the difference was small for practical purposes, 30.6 pg vs. 34.0 pg (90% recovery). For the one sample extracted statically for 20 minutes and 80 minutes, the masses detected were 31.5 and 35.2 pg, respectively. Since sonication or lengthy static extractions resulted in only modest increas-

Table 7. Mass of white phosphorus (pg) found by headspace SPME for samples extracted with sonicated and static aqueous phases.

| Rep | White phosphorus mass (pg) | | |
|---------|----------------------------|--------------|--------------|
| | 5 min sonic | 10 min sonic | 5 min static |
| 1 | 30.3 | 32.7 | 29.1 |
| 2 | 36.8 | 34.5 | 31.5 |
| 3 | 36.8 | 35.1 | 30.8 |
| 4 | 31.2 | 33.6 | 31.0 |
| Mean | 33.8 | 34.0 | 30.6 |
| Std dev | 3.52 | 1.06 | 1.02 |
| % RSD | 10.4% | 3.1% | 3.3% |

Table 8. Blocked ANOVA comparing means of sonicated and static samples.

| | ss | df | MS | F |
|-------------------|----------|----|-------|------|
| Total | 12971.74 | 12 | | |
| Correction factor | 12899.92 | 1 | | |
| Between block | 28.02 | 3 | 9.34 | 3.58 |
| Between treatment | 28.14 | 2 | 14.07 | 5.39 |
| Error | 15.66 | 6 | 2.61 | |

$$F_{0.95(2,6)} = 5.14$$

es in response, simple five-minute static extraction should provide satisfactory precision and sensitivity if timing and extraction conditions are consistent. When analyzing samples in a field lab, eliminating the need for extra equipment and steps in the method will save time and money.

Field samples

Water

Water samples were collected from a salt marsh that was contaminated by white phosphorus munitions (Racine et al. 1993). Each of the five samples plus a blank were analyzed first by headspace SPME and concentrations estimates obtained using aqueous calibration standards. Triplicate measurements were made on some samples to estimate precision with real samples. White phosphorus was detectable by headspace SPME in three of the five water samples (Table 9).

Solvent extractions were then performed, either with isooctane or diethyl ether, depending on the concentration. One sample had an estimated concentration of 0.1 $\mu\text{g/L}$, which is barely detectable by isooctane extraction, so both types of extractions were performed, with the isooctane extraction performed on the same subsample as the headspace SPME. One sample was overrange using the headspace SPME method. The sample was diluted by a

factor of 1:100 with reagent-grade water, and headspace SPME was repeated, followed by isooctane extraction of the same aliquot of sample.

Agreement between the methods was good, as was the precision of the headspace SPME method (Table 9). Regression of the mean of the headspace SPME determinations with those by solvent extraction yielded a linear model with slope of 1.07 and R^2 of 0.997 (Fig. 4). Although the data set is small and more samples need to be analyzed for confirmation, these initial results showed good agreement between the different methods.

Sediment

A much larger number of sediment samples were available for analysis. A total of 92 sediment samples was analyzed by headspace SPME followed by solvent extraction. We used the same subsample for both types of extractions. Of these samples, 30 were blank and 62 were positive by both methods; therefore, there were no false positives or false negatives for the headspace SPME method. The sediment samples varied widely in salt and organic matter content, and this matrix heterogeneity resulted in a poor correlation between the amount of white phosphorus detected by headspace SPME and the concentration found by solvent extraction (Fig. 5a, b). Nonetheless, headspace SPME proved to be an excellent screen-

Table 9. Estimates of white phosphorus concentrations by headspace SPME and solvent extraction in field-contaminated water samples.

| Sample | Estimated concentration ($\mu\text{g/L}$) | | |
|-----------------------|---|----------------------------------|------------------|
| | Headspace SPME | Solvent extraction isooctane* | Ether |
| 1 | <d <d <d | | 0.003 |
| 2 | <d <d <d | | <d <d |
| 3 | 0.0348 0.0354 0.0355 | | 0.0149 0.0187 |
| 4 | 0.109 0.106 0.0972 | 0.0834 | 0.0759 |
| 5 | >17.2 (overrange) | 39.7 38.7 | |
| 5 ($1/100$ dilution) | 0.399 | 0.369 | |
| Blank | <d | | <d |

* Isooctane extraction of the same subsample as headspace SPME.

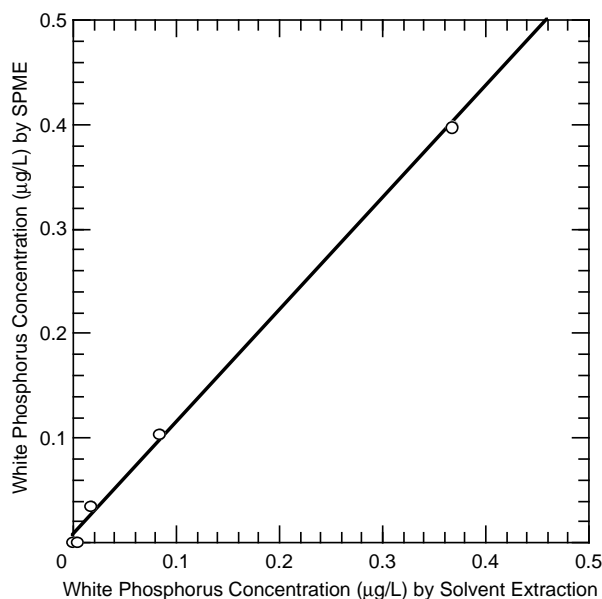
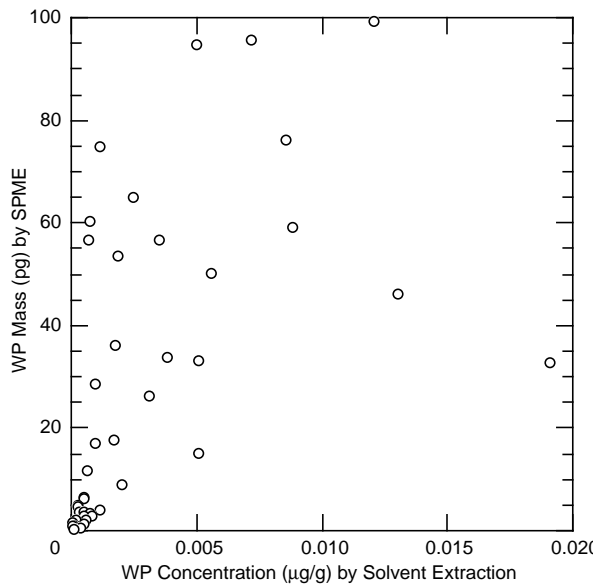
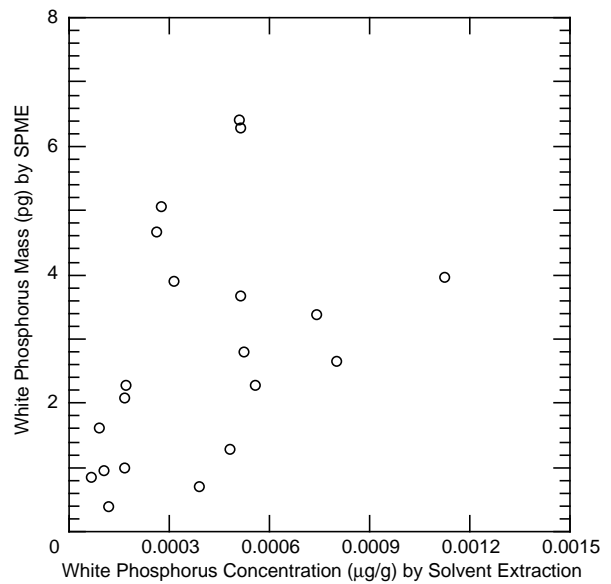


Figure 4. Concentration ($\mu\text{g/L}$) of white phosphorus estimated by headspace SPME vs. solvent extraction for field-contaminated water samples.



a. Data within linear range of detector.



b. Same data as a, showing results at lowest concentrations detected.

Figure 5. Mass of white phosphorus detected by headspace SPME and concentration found in same sediment sample following solvent extraction.

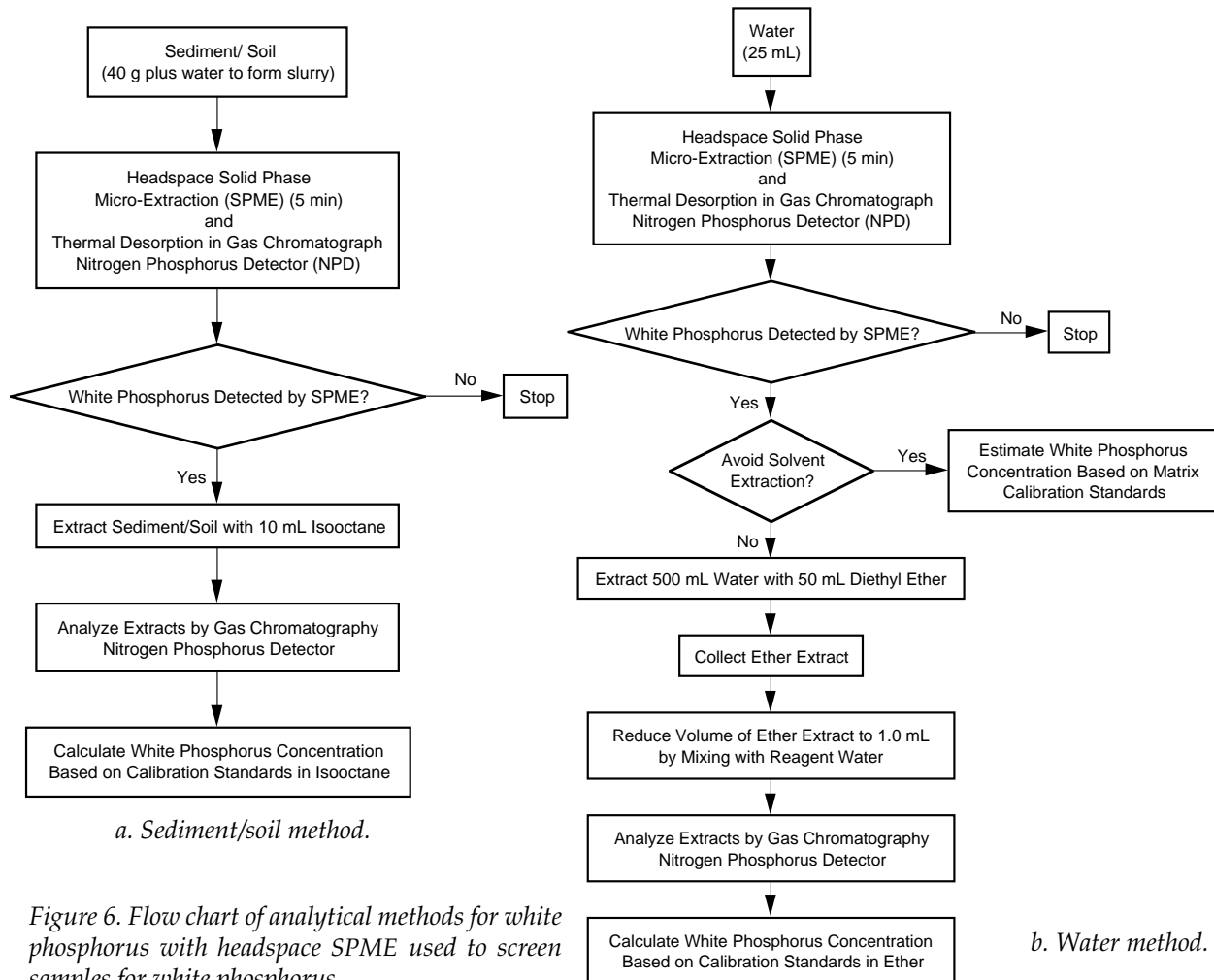


Figure 6. Flow chart of analytical methods for white phosphorus with headspace SPME used to screen samples for white phosphorus.

ing method. Based on the results from these field-contaminated sediment samples, the detection limit of the headspace SPME appeared to be similar to that of the solvent extraction (Fig. 5b).

The samples used for this experiment were collected from an area that was known to be contaminated, thus the high percentage of positive samples. Typically, most samples submitted for analysis are blank. We suggest that solvent extraction be used only for those sediment and soil samples where quantitative results are desired (Fig. 6).

Advantages of headspace SPME

When samples are analyzed for white phosphorus, headspace SPME provides the following advantages over the methods based on solvent extraction:

1. Time required for extraction/preconcentration is reduced to five minutes for water samples.
2. Water samples may be analyzed easily in a field laboratory.
3. Sediment/soil samples can be screened for the presence of white phosphorus.
4. Solvent extraction of blank samples can be eliminated, reducing the production of hazardous laboratory waste and reducing costs.

Further studies

Beyond these initial studies, the following experiments will be performed.

1. Gather more data to validate quantitative results for field-contaminated water samples.
2. Determine if salt saturation, which generally increases response of headspace SPME for BTEX, is appropriate for white phosphorus.
3. Explore ways to calibrate headspace SPME for sediments/soils.

SUMMARY AND CONCLUSIONS

Using the spiked and field-contaminated water and sediment samples, we tested headspace SPME for the analysis of white phosphorus. The SPME fiber was simply exposed to the headspace above a sample and then thermally desorbed in the injection port of the gas chromatograph. We calibrated the method to obtain quantitative results for water samples. Matrix dissimilarities confounded quantitation for sediment samples; however, headspace SPME successfully detected the presence of white phosphorus in sediment. Using headspace SPME of water and sediment matrices, detection limits appear to be similar to those obtained by solvent extraction.

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Appendix I
Vegetation Plot Data

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Table I-1: Complete Results of Percent Vegetative Cover for All Plots and All Years

| Plot | 1992 | | | 1999 | | | 2004 | | | 2012 | | |
|--------|-------|------------|-----------|-------|------------|-----------|-------|------------|-----------|-------|------------|-----------|
| | Forbs | Graminoids | Pondweeds | Forbs | Graminoids | Pondweeds | Forbs | Graminoids | Pondweeds | Forbs | Graminoids | Pondweeds |
| L2-4 | 55 | 0 | 0 | 55 | 0 | 0 | 0.5 | 8 | 0 | 8 | 60 | 0 |
| L2-10* | nd | nd | nd | 0 | 0 | 0 | 0 | 90 | 0 | 68 | 15 | 0 |
| L2-17 | 15 | 15 | 0 | 90 | 0 | 0 | 70 | 8 | 0 | 0 | 80 | 0 |
| L2-18 | 0 | 45 | 0 | 0 | 0 | 0 | 2 | 85 | 0 | 50 | 31 | 0 |
| L5-9 | 85 | 0 | 0 | 40 | 10 | 0 | 3 | 25 | 0 | 18 | 75 | 0 |
| L5-10 | 0 | 0 | 0 | 0 | 80 | 0 | 1 | 68 | 0 | 3 | 88 | 0 |
| L5-12 | 0 | 85 | 0 | 0 | 40 | 0 | 21 | 30 | 0 | 1 | 69 | 0 |
| L5-13 | 10 | 5 | 0 | 80 | 0 | 0 | 36 | 1 | 0 | 0 | 0 | 0 |
| L5-16* | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.3 | 0 | 0 | 0 | 0 |
| L5-17* | 0 | 35 | 0 | 0 | 40 | 0 | 4 | 0 | 0 | 0 | 1 | 0 |
| L5-18 | 20 | 55 | 0 | 0 | 80 | 0 | 50 | 12 | 0 | 0 | 99 | 0 |
| L5-19 | 0 | 5 | 0 | 0 | 65 | 0 | 11 | 56 | 0 | 0 | 98 | 0 |
| L6-1 | 55 | 0 | 0 | nd | nd | nd | 23 | 25 | 0 | 5 | 95 | 0 |
| L10-2 | 7 | 0 | 0 | 45 | 40 | 0 | 5 | 38 | 0 | 45 | 45 | 0 |
| L10-3 | 50 | 0 | 0 | 10 | 85 | 0 | 4 | 55 | 0 | 40 | 45 | 0 |
| L10-6 | 0 | 0 | 0 | nd | nd | nd | 7 | 90 | 0 | 21 | 72 | 0 |
| L10-8 | 3 | 90 | 0 | nd | nd | nd | 3 | 5 | 0 | 15 | 25 | 0 |
| L10-9 | 0 | 1 | 0 | nd | nd | nd | 18.5 | 1 | 0 | 11 | 1 | 0 |
| L10-10 | 0 | 50 | 0 | nd | nd | nd | 0.3 | 6 | 0 | 2 | 10 | 0 |
| L10-11 | 5 | 0 | 0 | nd | nd | nd | 4 | 3 | 0 | 8 | 7 | 0 |
| L10-12 | 60 | 0 | 0 | nd | nd | nd | 39.3 | 6 | 0 | 13 | 77 | 0 |
| L10-19 | 75 | 0 | 0 | 0 | 0 | 0 | 71 | 6 | 0 | 3 | 41 | 0 |
| L10-21 | 70 | 0 | 0 | nd | nd | nd | 93 | 4 | 0 | 48 | 17 | 0 |
| L10-22 | 40 | 0 | 0 | 10 | 85 | 0 | 89 | 6 | 0 | 35 | 55 | 0 |

Table I-1: Complete Results of Percent Vegetative Cover for All Plots and All Years

| Plot | 1992 | | | 1999 | | | 2004 | | | 2012 | | |
|---------|-------|------------|-----------|-------|------------|-----------|-------|------------|-----------|-------|------------|-----------|
| | Forbs | Graminoids | Pondweeds | Forbs | Graminoids | Pondweeds | Forbs | Graminoids | Pondweeds | Forbs | Graminoids | Pondweeds |
| L10-23 | nd | nd | nd | 0 | 0.5 | 0 | 0 | 3 | 0 | 0 | 3 | 0 |
| L10-24 | 5 | 45 | 0 | nd | nd | nd | 3 | 0 | 0 | 0 | 0 | 0 |
| L10-25* | 15 | 0 | 5 | 45 | 15 | 0 | 37 | 7 | 0 | 0 | 6 | 0 |
| L11-7 | 0 | 7 | 0 | 17 | 7 | 0 | 7 | 20 | 0 | 60 | 22 | 0 |
| L11-8 | nd | nd | nd | 0 | 5 | 0 | 2 | 1.5 | 0 | 0 | 30 | 0 |
| L11-10 | 5 | 85 | 0 | 0 | 80 | 0 | 73 | 4 | 0 | 0 | 99 | 0 |
| L11-12 | 65 | 0 | 0 | 5 | 0 | 0 | 7 | 3 | 0 | 0 | 0 | 0 |
| L11-13* | 0 | 0 | 100 | 0 | 0 | 2 | 9 | 20 | 0 | 0 | 20 | 50 |
| L11-15 | nd | nd | nd | 0 | 95 | 0 | 60 | 30 | 0 | 0 | 65 | 0 |

* Remediated pond

Note:

nd = no data