



**EIDER NEST SEARCHES IN THE
ALPINE OILFIELD AREA, ALASKA, 2020**

John E. Shook and Lauren B. Attanas

Prepared for
ConocoPhillips Alaska, Inc.
Anchorage, Alaska

Prepared by
ABR, Inc.—Environmental Research & Services
Fairbanks, Alaska

Cover: Female Spectacled Eider and brood. Photography by ABR.

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INTRODUCTION

The Alpine Satellite Development Project (Alpine Oilfield) is within the current or historic ranges of 2 species of eiders that are listed as threatened under the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 et seq.): the Spectacled Eider (*Somateria fischeri*) and the Steller's Eider (*Polysticta stelleri*). The Alpine Oilfield, operated by ConocoPhillips Alaska, Inc., (CPAI) currently consists of 4 drill sites on the Colville River delta and 2 drill sites (CD-5 and GMT-1 [MT-6]) plus another drill site under construction at the time of this report (GMT-2 [MT-7]) in the northeastern National Petroleum Reserve-Alaska (NE NPR-A). To comply with the Terms and Conditions issued in the Biological Opinions for the Alpine satellites, CD-5, GMT-1/MT-6 and GMT-2/MT-7 (USFWS 2004, 2011, 2014, 2015, 2018) and to reduce potential disturbance to breeding eiders, CPAI Operations requires documentation of the presence or absence of eider nests prior to initiating off-pad activities during the nesting season. If eider nests are found, CPAI then modifies those activities to avoid disturbance, after consultation with U.S. Fish and Wildlife Service (USFWS). CPAI contracted ABR, Inc.—Environmental Research & Services (ABR) to conduct nest searches for eiders on the Colville River delta and adjacent areas where off-pad activities were scheduled during the 2020 breeding season. In this report, we document the presence of eider nests in 12 search areas: 7 Alaska Clean Seas (ACS) spill-response equipment sites, 1 ACS bridge site, 2 sections of the ice road between GMT-1/MT-6 and GMT-2/MT-7, the Mi and Pi pipelines near the Mi/Pi gravel pad (Mi/Pi pad pipeline), and the pipeline/powerline from CD-1 to Pi Pipeline (Figure 1).

Spectacled Eiders are common breeders on the Colville River delta and NE NPR-A. However, Spectacled Eider nests are not distributed uniformly in the Alpine area (Johnson et al. 2015). Spectacled Eider nests are more common on the outer Colville delta where the CD-3 drill site is operated as a roadless satellite to the Alpine Oilfield and less common in the areas around CD-1, CD-2, CD-4, CD-5, GMT-1/MT-6, and

GMT-2/MT-7. (For eider distribution, see Figure 4 in Johnson et al. 2018).

In contrast, Steller's Eiders are extremely rare along the central Beaufort Sea coast, where the Alpine Oilfield is located. Their breeding distribution in Alaska is primarily centered to the northwest of the Alpine area, near Utqiagvik, although their historic range included the entire Arctic Coastal Plain of Alaska (Quakenbush et al. 2002). Evidence of nesting by Steller's Eiders east of Utqiagvik has been reported only 3 times in the last 30 years: a single brood was seen inland along the Colville River in 1987 (T. Swem, USFWS, unpubl. data), 1 brood was seen near Prudhoe Bay in 1993 (M. M. Deering, USFWS, pers. comm.), and another brood was seen near the upper Chipp River, approximately 80 km inland from the Dease Inlet/Admiralty Bay area in 1997 (King and Dau 1997). In the last 22 years, Steller's Eiders have been sighted only 3 times on the Colville delta (1995 [J. Bart, Boise State University, pers. comm.], 2001, and 2007 [Johnson et al. 2002, 2008a]), and only 5 times in the Greater Kuparuk Area (1995, 2000, 2001, 2007, and 2014 [Anderson et al. 2008; CPAI, unpubl. data]). There are no records of Steller's Eider nests or broods from the Colville River delta or adjacent areas.

Section 9 of the ESA prohibits harming, harassing, and disrupting normal activities of threatened and endangered species, without special exemption. However, under Section 7(b)(4) and 7(o)(2) of the ESA, Incidental Take Statements can be issued to allow actions that are prohibited under Section 9 if they comply with specific terms and conditions. In the Biological Opinions issued prior to construction of the Alpine satellites (CD-3, CD-4, and CD-5), the USFWS stipulated terms and conditions in the Incidental Take Statement that restrict human activity to existing gravel fill within 200 m of occupied Spectacled Eider nests from 1 June through 1 August (USFWS 2004, 2011). Where summer support or construction activities must occur off existing gravel fill during that restricted period, USFWS-approved nest surveys for Spectacled Eiders must be conducted during the nesting period prior to those activities so that active nests can be identified and avoided. CPAI conducts

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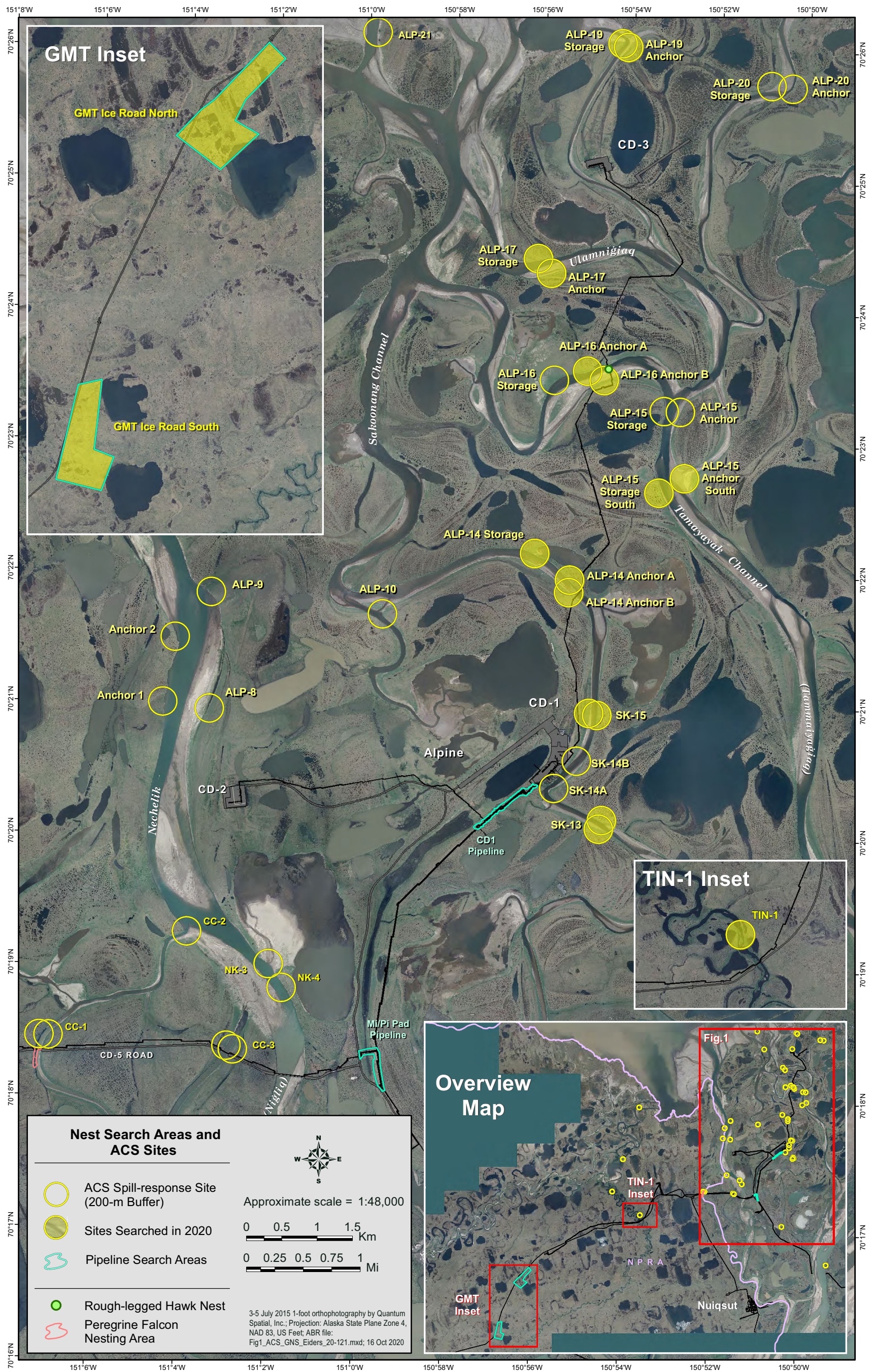


Figure 1. Study area for eider nest searches, sites searched in 2020, and locations of 2020 eider and raptor nests on the Colville River delta and NPR-A in the Alpine Oilfield area, Alaska, 2009–2020. No eider nests were found in 2020.

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off-pad activities necessary for regulatory compliance and operational needs (e.g., tundra clean-up after the ice-road season, spill-response equipment deployment, hydrological monitoring, water access, civil surveys, operational inspections and maintenance, etc.) on the tundra in portions of the nesting habitat of the Spectacled Eider annually during the breeding season (June and July). Eider nests are difficult to avoid because female eiders are cryptic, and the females of 4 eider species (Steller's, Spectacled, King [*S. spectabilis*], and Common eiders [*S. mollissima*]) are very similar, making them challenging to identify to species. Without prior knowledge of nest locations, workers could accidentally damage eggs or unintentionally disturb birds from their nests, leaving eggs exposed to predators.

CPAI has a regulatory obligation in its Oil Discharge Prevention and Contingency Plan for the Alpine Oilfield to stage or deploy spill-response equipment as soon as ice leaves the river channels, which typically overlaps with the eider nesting season. In a meeting on 2 May 2011, USFWS, CPAI, and ABR reviewed the data available on nest initiation dates for Spectacled Eiders and identified 9 June as the earliest known record of nest initiation for Spectacled Eiders on the Colville delta (ABR, unpubl. data). As a result of this meeting, USFWS agreed to postpone the earliest date when nest searches would be required for off-pad activity from 1 June to 9 June. Any off-pad work, including spill-response equipment deployment, from 9 June to 1 August would require nest searches if it occurred in areas where potential nesting habitat of Spectacled Eiders existed.

The summer of 2020 is the twelfth season that eider nest searches have been conducted in advance of off-pad work in the Alpine Oilfield (Seiser and Johnson 2010; 2011a, b; 2012; 2014a, b; 2015; 2016; 2018a, b, c; Shook and Johnson 2019). Over the last 12 years in the Alpine Oilfield, the number of spill-response sites has expanded from 23 sites to 27 sites plus 4 bridges. The number of sites increased when the CD-5 drill site

came on line in 2016, extending the range of sites from the Colville River delta as far as the Nigliagvik Channel. Not all ACS sites require nest searches prior to off-pad activities. Ten of the 27 ACS sites were exempted from nest searches after joint reviews by USFWS, CPAI, and ABR (letters from Caryn Rea, CPAI, to Sarah Conn, USFWS, dated June 2011 and March 2012) because they either lack appropriate eider nesting habitat, contained nesting habitat in insufficient quantity or quality, or were degraded and became unusable nesting habitat (for example, the flare site at SK-14A and persistent snow berms at SK-14B; Table 1). In the cases of ACS sites ALP-16 and ALP-19, the storage sites but not the anchor sites were exempted. South of CD-4, the ALP-5 and ALP-3 response sites are in low density areas for pre-nesting eiders. Three new Nigliq response sites, NK-3, NK-4, and CD-2, were also excluded from the nest searching list because they lack eider nesting habitat.

Since 2009, ABR has conducted nest searches and habitat evaluations at 27 spill-response sites and 4 bridge sites (Table 1). Currently, 14 ACS sites and 4 road/pipeline bridge crossings still require nest searches if maintenance activities are planned during the eider breeding season (Table 1).

OBJECTIVES

The primary objective of nest searching in 2020 was to document the presence or absence of nesting Spectacled and Steller's eiders prior to off-pad activities. If active nests of Spectacled or Steller's eiders were found, their locations would be transmitted to CPAI field environmental staff. Documentation of nest locations would allow CPAI to modify planned activities occurring near nests, as needed. ABR searched for eider nests in designated off-pad work areas and transmitted information on presence of active Spectacled Eider nests to CPAI field environmental staff within 24 hours of the completion of the search in each work area.

Table 1. Site descriptions for 27 spill-response equipment sites and 4 road/pipeline bridge sites in the Alpine Oilfield and adjacent areas, Alaska, 2009–2020. Sites that were renamed in 2015 have prior names listed in parentheses.

| Site Name | Location | Site Description | Wildlife Habitat ^a | Habitat Description | Nesting Habitat Present ^b | Search History/ Nesting Records | Years Searched | Search in Future Years? | Comments |
|-----------------------|----------------------------|---|-------------------------------|---|--------------------------------------|------------------------------------|----------------|-------------------------|---|
| ALP-1 (Mil-A) | N 70.24403 W 150.29674 | Miluveach River, just north of TransAlpine pipeline. | PWM MSSM TLDS | West side well drained, east side is MSSM grading to PWM | Yes | No/No | 2011 | No | CONEX boxes are located on a well-drained bluff. Search area on the opposite bank, near boom anchor point, contains marginal nesting habitat. |
| ALP-2 (Kach-A) | N 70.23750 W 150.45838 | Kachemach River, just north of TransAlpine pipeline. | MSSM MTT NWM TLDS | Small pocket of wet meadow surrounded by drier habitat | No | No/No | 2011 | No | Unsuitable habitat because NWM is <10% of the total area, and the surrounding area is occupied by shrubs. |
| ALP-3 (Colville E) | N 70.25062 W -150.82796 | East bank of the Colville River, 0.7 km north pipeline. | PWM NWM TLDS BAR | | – | No/No | None | No | No Site Visit. Pre-nesting aerial surveys in adjacent areas suggest lack of use by eiders. |
| ALP-5 (SK-4) | N 70.280721 W 150.93346 | Sakoonang Channel, ~6.6 km south of CD-1. | PWM NWM TLDS BAR | | – | No/No | None | No | No site visit. Pre-nesting aerial surveys indicate lack of use by eiders. |
| ALP-8 (NK-6) | N 70.36017 W 151.05275 | Eastern bank of the Nigliq Channel. | TLDS, MSSM | Low willow shrubs and non-patterned grass/sedge | No | No/No | 2009 | No | No nesting habitat at this site for eiders or most other species of waterfowl. In 2018, it was mapped opposite of Anchor 1. |
| ALP-9 (NK-8) | N 70.36606 W 151.06483 | Eastern bank of the Nigliq Channel. | PWM, MSSM | Low willow shrubs with some polygons, river bank with polygon troughs | Yes | No/No | 2009–11 | No | Marginal nesting habitat due to prevalence of shrubs; contains some polygonal areas. |

Table 1. Continued.

| Site Name | Location | Site Description | Wildlife Habitat ^a | Habitat Description | Nesting Habitat Present ^b | Search History/ Nesting Records | Years Searched | Search in Future Years? | Comments |
|---------------------------------------|--|---|----------------------------------|--|--------------------------------------|------------------------------------|---|-------------------------|---|
| ALP-10 (SK-20) | Storage: N 70.36154 W 150.99201 | Near the intersection of channels on the Sakoonang. | PWM, NWM, TLDS, BAR | 10% PWM, 50% low relief MSSM, 40% riverine habitats | Yes | No/No | 2009, 2013, 2015–16, 2018 | Yes | Nesting habitat on both sides of the channel in areas of PWM, but not on willow covered island. Container location shifted between 2014 and 2015. |
| ALP-12 (Kach-C) | Storage: N 70.306921 W.150.67197 Anchor: N 70.307904 W 150.66798 | Alpine Pipeline site, Kachemach River, ~12 km east of CD-4. | PWM, NWM, TLDS, BAR | Low shrubs 50-100 m from river banks. West side NWM, and the east side is PWM | Yes | No/No | 2018 | Yes | East of the Colville delta. Booms span ~100 m wide channel. Potential nesting habitat beyond shrub lined banks. Location updated in 2018. |
| ALP-13 (Mil-C) | N 70.37038 W 150.51505 | Shoreline and islands ~800 m upstream of Miluveach River mouth. | NWM, BAR, SKT | NWM on river banks, BAR and SKT on islands | Yes | No/No | 2010 | No | No habitat mapping available for this site. Field appraisal in 2010 concluded only marginal nesting habitat existed on banks and islands and subject to frequent flooding. |
| ALP-14 (Site 8 & SK-15 ^c) | Storage: N 70.369519 W 150.93522; Anchor a: N 70.366204 W 150.92193; Anchor b: N 70.364615 W 150.92218 | Storage: CONEX on the northern bank of the Sakoonang Channel; anchors adjacent to Sakoonang pipeline bridge, ~2.5 km north of CD-1. | TLLWC, PWM, NWM, MSSM, TLDS, BAR | Storage: ~50% PWM, and ~50% MSSM and TLDS. Anchor a in PWM surrounded by shrub habitats. Anchor b: NWM with narrow band of PWM | Yes | No/No | Storage: 2009–11, 2013–16, 2019-20 Anchors: 1998–99, 2009–20 | Yes | Nesting habitat at storage site limited to area of PWM north of container. Shoreline of channel and tapped lake are unsuitable because of abundance of low shrubs. Potential nesting habitat present at both anchor sites. Anchor a has high relief PWM and Anchor b has a 125 m band of PWM and NWM. Two female Spectacled Eiders observed flying over the site in 2010. |

Table 1. Continued.

| Site Name | Location | Site Description | Wildlife Habitat ^a | Habitat Description | Nesting Habitat Present ^b | Search History/ Nesting Records | Years Searched | Search in Future Years? | Comments |
|--------------------|---|---|-------------------------------|--|--------------------------------------|------------------------------------|---|---------------------------|--|
| ALP-15 (Site 4) | Storage: N 70.38775 W 150.88718 Anchor : N 70.38767 W 150.88104 | Container on western bank of the Tamayayak; boom anchor opposite bank slightly down stream. | PWM, MSSM, DOWIP, BAR | ~70% low-relief PWM; ~10% high-relief PWM; ~10% DOWIP; ~10% BAR | Yes | No/No | 2009–20 | Yes | Suitable habitat on container side in low-relief areas and along lake. Marginal nesting habitat in the high-relief area. Eider nesting habitat is also present on the anchor side of the channel. 2020 site downstream. |
| ALP-16 (Site 7) | Storage: N 70.39152 W 150.92881 Anchor a: N 70.39261 W 150.91657 Anchor b: N 70.39130 W 150.91208 | Container on NW bank of Tamayayak; anchors adjacent to Tamayayak pipeline bridge. | PWM, NWM, TLDS, BAR | Storage: Well-drained NWM with low shrubs. Anchor a: PWM edged with low shrubs. Anchor b: NWM with narrow band of PWM | Yes | No/No | Storage: 2009, 2011, 2016 Anchors: 2017–20 | Yes, at Anchor sites only | No suitable nesting habitat near storage unit, the area is dry, shrubby and lacks ponds. Anchors a and b have suitable habitat inland from the shrub lined banks. |
| ALP-17 (Site 3) | Storage: N 70.40692 W 150.93549 Anchor: N 70.40507 W 150.93047 | Container on northern bank of Ulamniġiaq; anchor on opposite bank. | NWM, PWM, BAR | Vegetated areas ~50% NWM and ~50% PWM | Yes | Yes ^d /Yes | 2009–20 | Yes | Eider nesting habitat near spill-response container and anchor; a Spectacled Eider nested 160 m from the container in 2011 207 m from the container in 2009, and 120 m from the container in 2019. Two female Spectacled Eiders observed flying in 2012. |
| ALP-19 (Site 2) | Storage: N 70.43417 W 150.90533 Anchor: N 70.433872 W 150.90261 | Container on western bank; anchor on the opposite bank of the West Ulamniġiaq. | MSSM, DPC, NWM, BAR, SM, SKT | Half of site is vegetated. MSSM, NWM, and BAR is on the west bank, the east bank has BAR, and SM grading into NWM and PWM. | Yes | Yes ^d /No | 2009–2011, 2014, 2017, 2019-20 Anchor 2018–20 | Yes | On the anchor side there is eider nesting habitat consisting of polygon ponds. Otherwise marginal nesting habitat bordering ~60 m wide channel. On the storage unit side driftwood lines indicate flooding is common at this site. |

Table 1. Continued.

| Site Name | Location | Site Description | Wildlife Habitat ^a | Habitat Description | Nesting Habitat Present ^b | Search History/ Nesting Records | Years Searched | Search in Future Years? | Comments |
|-----------------------|--|--|-------------------------------|--|--------------------------------------|------------------------------------|-----------------------------------|-------------------------|---|
| ALP-20 (Site 1) | Storage: N 70.429162 W 150.84817 Anchor: N 70.42885 W 150.84019 | Container on west bank of the Tamayayak; boom anchored downstream where the channel narrows. | NWM, PWM, DPC, BAR, SOW | Vegetated areas on west side of channel are predominately NWM and PWM; east side includes DPC and BAR. | Yes | Yes ^d /Yes | 2009–11, 2013–15, 2017–18 | Yes | Eider nesting habitat consists of polygon ponds 100 m inland from the container and deep polygon ponds on east side. One Spectacled Eider nest present in 2013 and 2014. |
| ALP-21 (Site 9) | N 70.43531 W 150.99748 | Container on eastern side of Tamayayak. | SM, SKT, BAR | Salt-affected vegetation and abundant drift wood on east bank, river channel and BAR | Yes | No/No | 2009–11, 2018 | Yes | Suitable nesting habitat with sparse vegetation; better habitat ~250 m east of the container in low-center polygon area; area probably used extensively by molting/brood-rearing geese in late July and early–mid August. |
| Anchor 1 | N 70.35003 W 151.07447 | Western bank of the Nigliq Channel. | NWM, MSSM, PWM | Shrubs, low-relief low-center polygons | Yes | No/No | 2009–11 | No | Marginal nesting habitat because of prevalence of shrubs. Few ponds. |
| Anchor 2 | N 70.35828 W 150.07022 | Western bank of the Nigliq Channel. | PWM, DOWIP | Shrubs, low-relief low-center polygons | Yes | No/No | 2009–11 | Yes | Large and small ponds are suitable habitat. Non-shoreline nesting habitat diminished by shrubs. |
| CC-1 (CD-5 Site 3) | N 70.30756 W 151.11541 | Nigliagvik Channel, ~200 m from bridge. | TLDS, BAR MTT, MSSM | TLDS along banks with MTT on the west side and MSSM in polygonal area on the east side of channel | No | Yes ^e /No | 2009, 2015–16, East side: 2018–19 | Yes, east side. | Potential nesting habitat on the east bank in an area of low center polygons. Willow cover is prevalent along the river bank. Road access. |

Table 1. Continued.

| Site Name | Location | Site Description | Wildlife Habitat ^a | Habitat Description | Nesting Habitat Present ^b | Search History/ Nesting Records | Years Searched | Search in Future Years? | Comments |
|--------------------------|--|--|-------------------------------|--|--------------------------------------|------------------------------------|------------------------|-------------------------|---|
| CC-2 (CD-5 Site 1) | N 70.32093 W 151.06402 | Mouth of the Nigliagvik Channel. | TLDS, DPC, MSSM, BAR | Narrow band of TLDS with MSSM high relief low centered polygons on the north side and willow covered low centered polygons on the south side | No | No/No | 2015 | No | Low value to no nesting habitat for eiders; in areas where the tundra is patterned the vegetation tends to be MSSM with abundant willow cover. |
| CC-3 (CD-5 Site 2) | Storage: N 70.30608 W 151.0460 Anchor: N 70.30652 W 151.04845 | Lake L9341, ~100m from bridge. | TLDS, NWM, TLHWC, HUMO | Mostly TLDS with a narrow band of NWM on top of old river bank. | Yes | Yes ^c /No | 2009, 2014–15, 2017–18 | Yes | The site spans an old river channel and a roadway. NWM occurs in patches, which may support eider nesting. |
| NK-3 | N 70.31924 W 150.03083 | Overflow waterway between Nigliq Channel and large tap lake. | BAR TLDS | | No | No/No | None | No | Excluded from Spectacled Eider nest searches because it is mostly unvegetated with willows covered banks |
| NK-4 (CD-5 Site 4) | N 70.31697 W 151.033072 | Nigliq Channel, ~1.3 km north of Bridge #2. | BAR, TLDS | East bank TLDS and silt covered polygons. Barrens on west bank | No | No/No | 2015 | No | Polygonal area present at the site but the abundance of willows and silt deposited by floods made habitat unsuitable for nesting eiders. |
| SK-13 | N 70.33506 W 150.90711 | Both banks of Sakoonang just south of Alpine. | PWM, NWM, TLDS, BAR | Low-relief PWM with narrow bands of TLDS, BAR, and NWM | Yes | Yes ^f /No | 1998–00, 2009, 2011–20 | Yes | Potential eider nesting habitat in areas of PWM. In 2011, a Spectacled Eider pair was sighted 550 m north of SK-13 and, in 2014, a female Spectacled Eider was observed flying by the site. |

Table 1. Continued.

| Site Name | Location | Site Description | Wildlife Habitat ^a | Habitat Description | Nesting Habitat Present ^b | Search History/ Nesting Records | Years Searched | Search in Future Years? | Comments |
|----------------------------------|-----------------------------|--|-------------------------------|---|--------------------------------------|------------------------------------|------------------------|-------------------------|---|
| SK-14A | N 70.33975 W 50.92675 | Site is adjacent to the Alpine flare pit on the Sakoonang. | PWM, NWM, TLDS, BAR | Gravel pad, high-relief polygons, and shrubs are on the NW bank. The east bank contains TLDS, NWM, and PWM. | Yes | Yes ^f /No | 1996–2001, 2009 | No | Marginal nesting habitat because of shrubs and habitat modification. The NW side bank habitat is modified by the gravel pad and flare; the SE bank is relatively dry. Previous searches have not found eider nests. |
| SK-14B | N 70.34325 W 150.91836 | Site is NW of the Alpine boat ramp. | PWM, NWM, TLDS, BAR | PWM, gravel pad and NWM on NE bank, TLDS and PWM on SW bank | Yes | Yes ^f /No | 1996–01, 2009–10 | No | Eider nesting habitat adjacent to the Alpine gravel pad and to a lesser degree on the east side of the channel. Snowbanks on the pad edge may delay availability. Previous searches have not found eider nests. |
| SK-15 ^c (new site) | N 70.349086 W 150.910916 | Near CD-1, on the Sakoonang. | PWM, NWM, TLDS | Willow and barrens along channel banks grading into NWM east side into low and high-relief polygons | Yes | Yes ^f /No | 1996–01, 2017–18, 2020 | Yes | Potential eider nesting habitat in 50-m band of NWM on west side and a wider band of PWM and shallow lake on the east side of the channel. |
| Sakoonang Pipeline Bridge | N 70.36444 W 150.91888 | First channel-crossing north of Alpine | PWM, NWM, TLDS, BAR | PWM on NE bank, SW bank is shrubs with low-centered polygons in PWM | Yes | Yes ^f /No | 1998–99, 2010 | Yes | Potential nesting habitat in polygons in the southwest end of the site. Marginal nesting habitat on the NE side because of prevalence of shrubs. |
| Tin-1 Road/pipeline Bridge | N 70.28804 W 151.26606 | North of bridge on Tiḡmiaqsiuḡvik (Ublutuoch River) | PWM, NWM, DOWIP, DOW | PWM in NW corner, NWM on shores of lakes on both sides of riv., DOWIP on East side, DOW in East and West sides. | Yes | No/No | 2019–20 | Yes | New site for 2019. Potential nesting habitat in PWM in northwest corner of plot, in NWP on shores of lakes on both sides of river, DOWIP on east side of river and DOW on both sides of river. Poor habitat immediately along banks of river due to prevalence of shrubs. |

Table 1. Continued.

| Site Name | Location | Site Description | Wildlife Habitat ^a | Habitat Description | Nesting Habitat Present ^b | Search History/ Nesting Records | Years Searched | Search in Future Years? | Comments |
|----------------------------|---------------------------|--|-------------------------------|--|--------------------------------------|------------------------------------|------------------|-------------------------|---|
| Tamayyak Pipeline Bridge | N 70.39277 W 150.90805 | Second channel-crossing north of Alpine. | PWM, NWM, TLDS BAR | PWM and NWM on north bank, south bank is BAR, shrub, and NWM | Yes | No/No | 2010 | Yes | Willows along channel margins, suitable nesting habitat away from channels. |
| Ulamniġiaq Pipeline Bridge | N 70.39277 W 150.90805 | Third channel-crossing north of Alpine. | PWM, NWM, BAR | PWM and NWM on north bank, south bank is NWM | Yes | Yes ^d | 2000–07, 2010 | Yes | The majority of this site contains suitable nesting habitat. |

^a Wildlife Habitats = Salt Marsh (SM), Salt-killed Tundra (SKT), Tapped Lake with Low-water Connection (TLLWC), Tapped Lake with High-water Connection (TLHWC), Deep Open Water without Islands (DOW), Deep Open Water with Islands or Polygonized Margins (DOWIP), Shallow Open Water without Islands (SOW), Deep Polygon Complex (DPC), Nonpatterned Wet Meadow (NWM), Patterned Wet Meadow (PWM), Moist Sedge-Shrub Meadow (MSSM), Moist Tussock Tundra (MTT), Tall, Low, Dwarf Shrub (TLDS), Barrens (BAR), and Human Modified (HUMO).

^b Areas containing SM, SKT, DOWIP, DOW, SOW, NWM, PWM, or DPC (Deep Polygon Complex).

^c SK-15 was reassigned to a new site near CD-1. Prior to 2017, ALP-14 anchors, a and b, next to Sakoonang Pipeline Bridge, were known as SK-15 anchors, a and b.

^d CD-3 nest searches conducted during 2000–2007; Spectacled Eider and unidentified eider nests were found at these sites during some years (Johnson et al. 2008b).

^e CD-5 eider nest searches conducted in 2009, 2014–2017, 2019 (Seiser and Johnson 2011, 2014, 2016, 2018b; Johnson and Seiser 2015).

^f Alpine nest searches conducted in 1995–2001 (Johnson et al. 2003).

METHODS

ABR followed methods for nest searches approved by the USFWS in 2009 for off-pad work. Eider nest searches were conducted only in the subset of ACS sites that contain suitable nesting habitat and that were scheduled for off-pad work visits between 9 June and 1 August. In 2020, 7 ACS sites, 1 ACS bridge site, the Mi/Pi pad pipeline, and a portion of the CD-1 pipeline were scheduled for pipeline work activities between 9 June and 1 August and were surveyed for eider nests (Figure 1). In addition, high-value eider habitat in two portions of the GMT Ice Road corridor were searched prior to off-pad stick-picking (Figure 1).

Search areas included a 200 m buffer around work sites located within potential eider nesting habitat. The 200 m buffer around work sites was based on terms and conditions in the Incidental Take Statement (ITS) issued in the Biological Opinions for the Alpine Satellite Development Project (USFWS 2004) and for GMT-1/MT-6 and GMT-2/MT-7 (USFWS 2014, 2018) that prohibit off-pad human activity within 200 m of active nests. While regulatory guidelines have not been issued on the area around human activity that should be monitored for nesting activity, or conversely, the area around nests in which human activity should be avoided, the 200 m buffer has been applied in ITSs for specific projects as a zone outside of which there is a reduced probability for off-pad human activity to cause severe disturbance to nesting and brood-rearing Spectacled Eiders. Data on flushing distances for nesting Spectacled Eiders over the last 20 years of nest searching suggest that this species rarely flushes from a nest when people are more than 25 m away (ABR, unpublished data).

A crew of 2–4 people experienced in eider identification searched for nests by walking a regular search pattern with spacing of 10–20 m between searchers, which provided 100% coverage of the tundra within search boundaries. Crews were transported by truck or helicopter, depending on the site. We recorded all nest locations were recorded using a custom application on an Android smartphone. Eider nests were recorded as ‘active’ if occupied or ‘inactive’ if empty. Upon nest discovery, searchers avoided disturbing incubating

Spectacled Eiders by approaching nests no closer than needed to identify them to species. If Spectacled Eider hens flushed from nests inadvertently, we floated the eggs in water to estimate hatch dates (because their buoyancy changes with age) and installed an artificial temperature-sensing egg in the nest. Temperature data recorded by artificial eggs were used to determine nest fate (success or failure) and the timing of hatch or nest failure as described in Johnson et al. (2008b). Research activities were approved under USFWS ESA Native Threatened Species Recovery TE012155-7 and Alaska Department of Fish and Game Scientific Permit 20-130.

ACS sites included spill-response equipment storage containers and/or anchor points for floating booms. Some ACS sites had as many as 3 search areas centered on storage containers or anchor points for booms (Figure 1, Table 1). At sites where spill-response equipment storage containers are pre-staged year-round, we searched within a 200 m radius of either the container or the coordinates provided by ACS. In 2018, ACS installed anchor posts at several sites, which were used as center points for the 200 m search area. Where anchor posts were not present, we based anchor position on aerial photos of the boom locations in 2015 (ConocoPhillips 2017).

We performed a search of the pipeline between CD-1, the Pi 3 pipeline, and the Mi/Pi pad pipeline prior to inspection/maintenance activities. Because inspection and maintenance activities were located very near the pipeline, we only searched a 50 m buffer on either side of the pipeline. We searched high-value eider habitat in a 200 m buffer around the GMT ice road alignment prior to clean-up activities (i.e. stick-picking).

We searched habitats that were preferred or frequently used by nesting and pre-nesting Spectacled Eiders, as determined by previous studies in the area (Johnson et al. 2008b, 2015, 2016), including: Brackish Water, Salt-killed Tundra, Salt Marsh, Deep Water (both with and without islands), Shallow Water (both with and without islands), Deep Polygon Complex, Sedge Marsh, Grass Marsh, Patterned Wet Meadow, and lake shorelines. We inventoried habitat within search areas at each site by visual inspection and by overlaying each site on a wildlife habitat map of

the Colville River delta and the Alpine Transportation Corridor (Johnson et al. 1997; Jorgenson et al. 1997, 2002). Sites where habitat had been modified so that nesting was unlikely (i.e., gas flares or snow dumps), were re-classified as having insufficient nesting habitat.

RESULTS

SPILL-RESPONSE SITES

During 19–21 June 2020, we searched 7 spill-response sites and 1 bridge site (Figure 1). We located 56 nests of 8 species within 200 m of spill response and bridge sites (Table 2). No eider nests were found within 200 m of any spill-response site nor at any bridge sites and consequently, no temperature-sensing eggs or time-lapse nest-monitoring cameras were deployed. One dead female King Eider was found near the SK-13 site; the carcass was decomposed, and the cause of death could not be determined.

In recent years, raptors have been observed regularly on or near infrastructure during nest searches. In 2020, a pair of Peregrine Falcons (*Falco peregrinus*) was observed exchanging prey (a shorebird) along the channel south of the CC-1 site and Bridge 3 over the Nigliagvik channel, and several pluck perches were seen in the vicinity; however, no evidence of successful breeding was found. Peregrine Falcon fledglings were found on this bridge in both 2018 and 2019, and a pair was observed here in 2016. One Rough-legged Hawk nest was found near the ALP-16 anchor on the south side of the channel. This nest likely contained eggs or very young chicks because we could not see the heads of young birds over the rim of the nest structure. Rough-legged Hawks nests have been observed on pipelines on the Colville delta since 2018 (Seiser and Johnson 2018a).

GMT ICE ROAD AND PIPELINE SURVEYS

During 20 June–1 July, we searched 2 pipeline sites and 2 areas along the GMT Ice Road prior to off-pad activities (Figure 1). We did not find any

eider nests or adult eiders in the CD-1 to Pi 3 pipeline, Mi/Pi pad pipeline or GMT ice road search areas. We found 11 nests of 5 other bird species at these sites, including 5 nests in the CD-1 pipeline search area, 5 nests in the northern search area along the GMT Ice Road, and 1 nest in the Mi/Pi pad pipeline search area (Table 2). The majority of these nests belonged to Greater White-fronted Geese. Five additional nests were found outside of search area boundaries: 2 near the CD-1 pipeline and 3 near the Mi/Pi pad pipeline.

SUMMARY

No Spectacled Eider nests were found in the vicinity of spill-response, bridge, pipeline or ice road sites in 2020. No Steller's Eider nests have been observed in any of the spill-response, hydrotest, water-source lake, or pipeline search areas since searches began in 2009. The only sighting of a Steller's Eider in the Alpine Oilfield occurred at CD-3 in 2001. Long-term surveys, including annual aerial surveys and ground-based searches over the last 29 years, verify the rarity of Steller's Eiders on the Colville Delta, NE NPR-A, and in the Greater Kuparuk Area (ABR, unpubl. data; Wilson et. al 2018). No King Eider nests were found at these sites in 2020. We found 56 nests of 8 species at spill-response sites and 11 nests of 6 species during pipeline and ice road searches. An additional 5 nests of 2 species were found outside of pipeline plot boundaries.

Identification of active Spectacled Eider nests through nest searches prior to off-pad human activity reduces the potential for unintended disturbance to nesting Spectacled Eiders and ensures compliance with the terms and conditions listed in the Biological Opinions for Alpine, CD-5, GMT-1/MT-6, and GMT-2/MT-7. Cooperation between the USFWS and CPAI on the details, locations, and timing of required nest searches has allowed critical oilfield operations, such as spill-response preparation and shutdown operations, to be completed with minimal modifications.

Table 2. Numbers and species of nests found within search areas at 7 spill-response equipment sites, 1 bridge site, 2 pipeline sites, and 2 ice road sites in the Alpine Oilfield area, Alaska, 19 June–1 July 2020. No eider nests were found in 2020.

| Search Area (Former Name) ^a | Greater White-fronted Goose | Snow Goose | Unidentified Phalarope ^b | Red-necked Phalarope | Unidentified Goose | Tundra Swan | Willow Ptarmigan | Pectoral Sandpiper | Semipalmated Sandpiper | Arctic Tern | Red-throated Loon | Rough-legged Hawk | Total |
|---|-----------------------------|------------|-------------------------------------|----------------------|--------------------|-------------|------------------|--------------------|------------------------|-------------|-------------------|-------------------|-----------|
| ACS Spill Response Sites | | | | | | | | | | | | | |
| ALP-14 Storage and Anchors A & B (Site 8 and SK-15) | 11 | – | 1 | – | – | 1 | 1 | – | – | – | – | – | 14 |
| ALP-15 Storage and Anchors (Site 4) | 2 | – | – | – | – | – | – | – | – | – | – | – | 2 |
| ALP-16 Storage and Anchors A & B(Site 7) | 8 | – | – | – | – | – | – | – | – | – | – | 1 | 9 |
| ALP-17 Storage and Anchor (Site 3) | 5 | – | – | – | – | – | – | – | – | – | – | – | 5 |
| ALP-19 Storage and Anchor (Site 2) | 3 | 3 | – | – | – | – | – | – | – | – | – | – | 6 |
| SK-13 | 9 | – | – | – | – | – | – | – | – | – | – | – | 9 |
| SK-15 (location near CD-1) | 7 | – | – | 1 | – | – | – | – | 1 | – | – | – | 9 |
| TIN-1 | 2 | – | – | – | – | – | – | – | – | – | – | – | 2 |
| Subtotal | 47 | 3 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 56 |
| CD1 Pipeline | 3 | – | 1 | – | 1 | – | – | – | – | – | – | – | 5 |
| GMT Ice Road North | 3 | – | – | – | – | – | – | 1 | – | 1 | – | – | 5 |
| Mi/Pi Pipeline | – | – | – | – | – | – | – | – | – | – | 1 | – | 1 |
| Subtotal | 6 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 11 |
| Total Nests | 53 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 67 |

^a Additional nests located just outside of the search areas include: Greater White-fronted Goose (4), Arctic Tern (1).

^b One Red-necked Phalarope nest and 2 phalarope nests that couldn't be identified to species were found in 2020.

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