





## Chapter Eight

### Service Area 10





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## CHAPTER 8: SERVICE AREA 10

The North Slope Borough established Service Area 10 in 1975 with the objective of providing utility services to industrial users in the Prudhoe Bay area. Service Area 10 is managed by the North Slope Borough and encompasses the area generally between the National Petroleum Reserve-Alaska and the Arctic National Wildlife Refuge and extends from the Beaufort Sea south to 70° latitude. After creating Service Area 10, the Borough Assembly made provision for a solid waste collection and disposal district and a sanitary waste collection and disposal district in the area. SA-10 encompasses approximately 3,000 square miles. There is not a residential community in Deadhorse or the Prudhoe Bay region. Workers in the region reside there on a part-time, nonpermanent basis and travel to the region specifically for work in oil and gas industry. Few North Slope residents are employed in the Prudhoe Bay area.

The borough code stipulates that in setting utility rates, the borough should be compensated to support debt service for capital expansion of utilities projects initiated after January 1, 1982 and for other expenses, including operations and maintenance cost. Debt service for capital committed to the utilities prior to that date was not to be included in the utility rates. Utility have rate been established through the Regulatory Commission of Alaska for the last 15 years.

SA-10 originally also included the NSB built Kuparuk Industrial Center (KIC), a \$65 million, 60,000 square foot facility including a 250 man camp and recreation facilities, a 24 acre outside

storage pad and wastewater treatment facilities. The facility was constructed in 1984 on land leased from the State of Alaska and selected by the NSB under the Municipal Land Entitlement program. The facility was operated by a consortium of local Native corporations to provide utility services in the newly developed Kuparuk River Unit. Low oil prices and an economic downturn in the early 1990s lead to the sale of the facility to ARCO (now operated by ConocoPhillips). The land under the facility was conveyed to the borough in 2010 and is leased to ConocoPhillips, Inc. (CPAI).

The ordinance which established Service Area 10 specifically stated that that the services provided by the borough to this area might be on a different level than those provided on an areawide basis elsewhere in the borough. Aside from the exercise of general borough powers, the only services currently provided by the borough in Service Area 10 are police protection and management of borough owned lands. The borough assumed areawide police protection responsibilities in 1976, and has had regularly assigned public safety officers to the region since 1979.

In 1979, the NSB built a 15,000 square foot camp for 32 NSB employees living or working in the Prudhoe Bay area. The original facilities were expanded to over 37,000 square feet in 1982 to accommodate 68 persons with expanded dining and recreation areas along with retention cells and related facilities to support the NSB Department of Public Safety.<sup>175</sup> The building also

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<sup>175</sup> The Alaska State Troopers began servicing the Prudhoe Bay area in 1974 and ceased regular assignment in 1983 when the position was relocated to Utqiagvik to assist the State Court System.





houses the NSB police station and jail. The SA-10 hotel is now operated commercially. Since 2004, a contractor has operated the water and wastewater treatment facility and hotel. These facilities are co-located on a common pad in Deadhorse. Since 2009, the same contractor, ICE Services, has provided the SA-10 water, wastewater, and hotel services.<sup>176, 177</sup>

Renewed activity in the western fields and the potential opening of the Arctic Nation Wildlife Refuge 1002 area have renewed interest in development of facilities to support oil and gas development and should be considered in planning for future activities.

## WATER AND WASTEWATER SERVICES

The water treatment system was originally constructed by the Borough with capital improvement funds and activated in 1979. Prior to construction of the borough water treatment system, it was necessary for each camp in the Prudhoe Bay/Deadhorse area to provide its own water treatment plant and to rely on local lakes or rivers for raw water supplies. Some of the original systems were poorly designed and/or operated. The Alaska Department of Environmental Conservation was concerned about the possibility of water contamination under these circumstances and encouraged the development of a central water treatment and delivery system. A number of treatment plants are still being operated by individual camps.

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### Water Treatment

The SA-10 water treatment facility receives raw water from a pump station in Nana Reservoir, through a short section of insulated heat-traced pipe, to the treatment facility. A portion of raw water is filtered, stored on-site, and is available as non-potable water for pick-up. Water not stored for pick-up is treated in the water treatment facility that combines membrane treatment with UV and chlorine disinfection. Treated potable water is transported to water delivery stations where it is stored for pick-up for delivery. As an emergency back-up to the reservoir pump station, three slant wells are in place to supplement the reservoir water source if necessary. The water from the wells have a high iron content. Another treatment train to remove the iron would have to be added to the facility in order to use water from the wells.

<sup>176</sup> The North Slope Borough has certificates of public convenience for wastewater and landfill service in the service area. NSBMC sec. 15.06.130 provides that these services should be used by all users in the service area, unless a waiver is granted by the mayor.

<sup>177</sup> North Slope Borough. 2018. *Service Area 10: Commitment to Partnership Presentation*. 2018 Oil and Gas Forum.





**SA 10 Water Treatment Plant:**

- Current Treatment Capacity  
230,000 gallons per day
- Current Storage Capacity  
250,000 gallons of potable  
120,000 gallons raw
- Delivery method  
Water truck pick up
- Water source  
Nana Reservoir
- Treatment method  
GE membranes
- Current demand  
80,000 average of gallons per day

**Wastewater Treatment**

Wastewater is treated in the wastewater treatment facility comprising sequencing batch reactors (SBRs), tertiary filtration, and UV disinfection. Sludge from the wastewater treatment process is dewatered via belt filter presses before it is delivered to the SA-10 landfill. Sludge not generated in the wastewater treatment process is discharged directly to the belt filter press (BFP). A portion of the treated effluent is used as influent to the heated water system and the rest of the liquid stream is discharged into an outfall pond.

**SA 10 Wastewater Treatment Plant:**

- Current Treatment Capacity  
420,000 gallons per day
- Delivery method  
Vacuum truck

- Treatment method  
Activated Sludge using sequence match reactors SBRs
- Disposal method  
Discharge to lake
- Current demand  
55,000-65,000 average gallons per day

**Water Heating**

Hot water is needed for some oil drilling operations. The plant began offering on demand hot water in 2015. A combination of raw water and wastewater treatment effluent is heated with three natural gas boilers and delivered directly to the customer’s truck for pick-up. There is limited demand at this time due to a current slowdown in oil field activities.<sup>178</sup>

**Water and Wastewater Demand**

The demand for water and wastewater services varies from year to year depending on the activity of the oil and gas market. Table 19 summarizes historical flowrates of potable and non-potable water, and wastewater, and sludge treatment. Heated water is not included because it has only recently become available. Permitted flowrates are shown for water and wastewater and maximum flowrates are presented for sludge and heated water.

<sup>178</sup> Oliver, Shady Grove. 2015. *Water treatment plant opens in Prudhoe Bay*. The Arctic Sounder. Nov. 6, 2015. [www.thearcticsounder.com/article/1545water\\_treatment\\_plant\\_opens\\_in\\_prudhoe\\_bay](http://www.thearcticsounder.com/article/1545water_treatment_plant_opens_in_prudhoe_bay).





Table 19: Historical and Design Flowrates for Water and Wastewater Treatment Facility

Utility	Fiscal Year								Permitted Flowrate (gpd)
	2010 -11	2011-12	2012-13	2013-14	2014-15	2015-16	201-17	2017-18	
Water									420,000
Potable Water	124,900	168,500	127,400	137,000	166,900	127,081	108,989	85,163	
Non-potable Water	25,000	31,200	31,800	35,600	33,200	29,299	37,111	35,489	
Wastewater	111,000	161,400	104,700	112,900	132,100	115,801	95,041	70,639	420,000

### Area Needs – Water and Wastewater

The water and wastewater treatment systems were almost new in 2015 and, other than stated below, should provide adequate service through the plan period. Treatment capacities appears to be adequate to meet future demand, barring a major upturn in oil field activity.

#### Water Treatment

Add treatment train to remove iron from back up wells. Normally scheduled membrane replacement.

#### Wastewater Treatment

No major repairs foreseen.

## HOTEL SERVICES

In addition to water and wastewater services, there are also hotel services available in SA-10, including accommodations, and meals and snacks. The hotel also provides NSB a two room suite to serve as an office for the hotel and a second office space used as a police station and jail. The hotel has a kitchen, two dining rooms, guest laundry rooms, a smoking room, and a workout room.

In 2006, the contracted operator increased the number of hotel rooms from 77 to 149. NSB owns the original 77 rooms at the hotel (includes 40 twin, 30 full, and 2 queen beds). The additional 72 rooms are a separate building that is now connected to the original hotel and are owned by the current contractor, ICE Services. In addition to constructing additional rooms, ICE Services constructed a utilities building that provides electricity, water, and sewage services to the hotel. The current contractor may elect to remove the rooms and utilities building if the NSB operating contract is awarded to another contractor. Table 20 summarizes the original 77 rooms owned by NSB.

#### SA 10 Hotel/Camp

- Current Capacity: 140 rooms (includes NSB rooms and ICE rooms available for rent)
- Current Services provided: Meals, internet, television, phone

#### Hotel Occupancy

The hotel accommodates guests and NSB staff. ICE Services also utilizes the hotel for their rotational staff that work at the water and wastewater facility. The hotel also provides, on occasion and if rooms are available, accommodations for NSB residents for up to





three days on a complimentary basis as well as complementary rooms for those who require accommodation on a short-term basis, such as for weather-related flight delays.

Like water and wastewater services, demand for the hotel’s accommodations fluctuates with activity in the oil and gas industry. Table 20 summarizes the hotel occupancy (includes rooms in the 72 room addition).

Table 20: SA-10 Hotel Occupancy based on Revenue

Hotel Rooms	Calendar Year		
	2014	2015	2016*
Available Room Revenue	\$58,035	\$58,035	\$50,721
Occupied Rooms	\$54,950	\$48,122	\$39,543
Occupied Rooms Excluding Non-Revenue Rooms	\$38,340	\$29,953	\$23,741
Occupancy Percentage	94.7%	82.9%	78.0%
Occupancy Percentage Excluding Non-Revenue Rooms	66.1%	51.6%	46.8%

\* 2016 represents year-to-date November 16, 2016.

### Area Needs – Hotel

No major repairs foreseen. Normally scheduled room remodels and carpet replacement. Room capacity appears to be adequate to meet demand through the plan period, barring a major upturn in oil field activity.

## SOLID WASTE FACILITIES

During the initial development of the Prudhoe Bay area, solid waste was not managed as strictly as current guidelines require. An early disposal site, the Sand Dunes dump, was ordered closed by ADEC. ARCO subsequently undertook the design of a new landfill at the gravel site it was mining near the Putuliquyak River. The North Slope Borough assumed responsibility for the

final design and development of the landfill after reaching an agreement with ARCO.<sup>179</sup> The Oxbow landfill operation was assumed by the borough in 1981, following the delivery of the necessary heavy equipment for the site’s operation. The land at which the gravel site was developed was not originally owned by the borough, but was leased from the State of Alaska. The NSB municipal code was also amended that year to require all owners or occupiers of premises located in the solid waste district to use and pay for the garbage and solid waste collection and disposal systems provided by the borough. Exceptions to this requirement are only allowed following a waiver being granted by the Mayor.

The SA-10 landfill is now owned by the NSB, following state conveyance of the land in 1996

<sup>179</sup> North Slope Borough. 1983. *Background for Planning, Service Area 10*. Prepared for the North Slope Borough by Alaska Consultants Inc.





and is located approximately 6.8 miles northwest of Deadhorse. By 2009, the landfill was nearing capacity and was in danger of closing. In 2011, additional lands to the south of the Oxbow landfill were conveyed by the State of Alaska, allowing for a much needed expansion of the site to satisfy customer needs. It has been accepting solid waste disposal resulting from industrial development activities in Greater Prudhoe Bay, Kuparuk, Alpine, and Point Thomson areas for over 30 years. In addition to the landfill, there are support facilities at the site, including the maintenance and storage shop, waste reduction facility building that includes incinerators, generator building, diesel fuel aboveground storage tank, and perimeter fencing.<sup>180</sup>

The SA-10 Landfill is regulated by the Alaska Department of Environmental Conservation as a Class I Freezeback landfill, permitted to accept the following:

- Municipal waste;
- Contaminated soil;
- Construction & Demolition;
- Drilling and industrial waste;
- Inert material; and
- Ash and sludge.

The SA-10 landfill is composed of two disposal areas, a solid oily waste pit (SOWP) and the main area (formerly called the “metals pit”). The SOWP has not received any waste since 1990 and is closed. The main area receives construction and demolition waste delivered by customers, municipal solid waste, baled waste, incinerator ash, and sewage sludge transported by the SA-10 utility staff. On average, approximately 8,500 cubic yards (CY) of material are received each month at the facility.

The SA-10 Landfill is permitted as a freezeback landfill, meaning that operations rely on the containment properties of frozen ground to contain the waste and leachate without a bottom liner and leachate collection systems. Operator measurements from the thermal monitoring wells show that the existing waste can be maintained in a permanently frozen condition with the proper placement of final cover and closure of the landfill. The resulting encapsulation of waste will maintain the 32° F isotherm within the cover material. Material and waste below this isotherm will remain frozen. Soil temperatures around the landfill are monitored to ensure compliance.

The main area of the SA-10 landfill is approximately 24.6 acres and surrounded by a security fence. The total design capacity of the landfill is estimated at 3,135,000 CY. The landfill will be at capacity by 2018, and closure of the existing landfill and landfill expansion are currently in progress.

The landfill site has an existing maintenance shop building that houses the operator office, scale ticketing, restroom facilities, potable water, and equipment maintenance bay. Adjacent to the shop building sits an intermediate fuel tank, power generation building, and fuel dispensing tank. The waste reduction facility, a building designed to house a future incinerator and tipping floor is west of the shop building.

The existing waste reduction facility (WRF) was designed in 2008 by ASCG, Incorporated to provide a building for future incineration equipment. The facility was partially

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<sup>180</sup> North Slope Borough. 2014. *Project Analysis Report: SA-10 Oxbow Landfill*.





constructed shortly thereafter. The existing facility consists of an insulated building shell, foundation, and minimal electrical and mechanical equipment. The design includes a tipping floor with roughed-in in-floor heat, recessed incineration bay for housing future incinerator chambers, an equipment floor area for future exhaust and ash handling equipment and supports, and a partial mezzanine for a future control room and restroom facilities. The control room and restroom wall framing are in place, unfinished. The equipment bay floor is currently exposed gravel to allow for installation of foundations for future equipment support structures to support the ash handling and exhaust equipment. Identifying appropriate alternatives for waste reduction/minimization are a critical factor in developing future plans for the landfill.

### Landfill Expansion

The existing landfill is nearing capacity and is scheduled to be closed and capped in 2019. A new lateral expansion to the existing landfill has been developed to ensure uninterrupted solid waste disposal for the SA-10 region. NSB has developed a 22-acre expansion site, but has designed and permitted a total of 40-acres for future expansion. Based on projections of future waste streams into the landfill, this initial landfill expansion should allow for eight years of operations without need for further expansion. Future development of the remaining acreage will be necessary to allow for 20 years of capacity. This phased expansion will allow the most flexibility in operation and provide some savings in overall expansion costs.

The NSB installed two small incinerators at the landfill as part of the recent landfill expansion

project. However, the incinerators are not permitted under Title 5 of the Clean Air Act, and will not be operated. Older incinerators, which the new incinerators were intended to replace, are not in compliance with current regulatory standards and have also been taken out of operation. At this time, it is anticipated that incoming waste will not be incinerated and the projected life of the landfill will reflect that. However, anticipated industrial activities in the east (associated with Point Thompson and ANWR 1002 development) and in the west (Nanushuk and NPR-A development) should be considered in planning for future activities and the current planned capacity of the Oxbow facility. Future DR&R needs also need to be factored into planning efforts for solid waste disposal in the long run.

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### Area Needs – Solid Waste

Current upgrades to the solid waste facilities include a new warm storage building, a new landfill expansion cell, and assorted other improvements/upgrades that will allow the landfill to operate adequately well into the future. Other than the planned expansion discussed below, no major upgrades are currently planned.<sup>181 182</sup>

### Future Landfill Expansion

Initial projections of future waste streams into the landfill estimated that the initial landfill expansion should allow for eight years of operations without need for further expansion. However, due to a recent slowdown in oil field activities in the Prudhoe Bay area, it is now thought that the initial expansion should provide

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<sup>181</sup> North Slope Borough. 2018. *2017 Annual Report Oxbow Landfill Prudhoe Bay, Alaska*. Prepared for the North Slope Borough by ICE Services, Inc.

<sup>182</sup> Helinski, Rich. Project Manager, ICE Services, Inc. Personnel communication.





for disposal beyond the initial estimate.<sup>183</sup> Future development of the remaining acreage will likely be necessary to allow for 20 years of capacity. This phased expansion will allow the most flexibility in operation and provide some savings in overall expansion costs in the Prudhoe Bay area, but other solid waste needs must be addressed.

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#### Area Needs – SA-10 Enterprise Zone

Overall, the SA-10 facilities have all been recently upgraded, or are in the process of being updated. However, as SA-10 is an enterprise zone, these facilities are being operated with the expectation of generating profit back to NSB and provide a very necessary service to the oil and gas industry. As such, fiscal tools associated with for-profit enterprises, such as rate studies, internal financial audit and budget review, etc., should be incorporated into the management of

each facility, if these tools are not already utilized.

Utility needs in the area of current and future oil and gas development are an important issue in address the planning efforts of the North Slope Management Plan (NSMP) that is underway with the State of Alaska Division of Mining, Land, and Water (DMLW). The borough must consider these issues in planning for not only utility needs but other infrastructure development to support both the local and state economies. Land conveyance to the borough for these needs is very important, given that the federal government is the land manager in both ANWR and the NPR-A. Future expansion of the service area and its services must be coordinated with the lease holders (and other customers) in the area and the management and regulatory agencies that are closely involved in managing the resources.

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<sup>183</sup> North Slope Borough.2018. *2017 Annual Report Oxbow Landfill Prudhoe Bay, Alaska*. Prepared for the North Slope Borough by ICE Services, Inc.





Image Source:  
DCRA Community Mapping 2014



**North Slope Borough**  
**SA-10 Deadhorse Area Facilities**  
**Map 7**





**North Slope Borough  
Deadhorse WWTP  
Map 8**





## COMMUNITY INPUT, FINDINGS, NEEDS, AND CHALLENGES

During the public input process, residents did not discuss specific issues or concerns relating to Service Area 10. As the only local governmental entity in the Prudhoe Bay region, however, the borough’s input and involvement in the area is essential. Providing services to industry has been a borough role for over forty years. With potential expansion into ANWR, that role may be increasing to provide additional services and over a larger area.

### Findings

The North Slope Borough established Service Area 10 in 1975 with the objective of providing utility services to industrial users in the Prudhoe Bay area.

Service Area 10 takes in the area lying generally between the National Petroleum Reserve-Alaska and the Arctic National Wildlife Refuge and extends from the Beaufort Sea south to 70° latitude.

Service Area 10 provides hotel accommodations, water and wastewater, hot water, and solid waste services.

### Needs & Challenges

A landfill expansion is needed.

There is potential to provide additional services in ANWR 1002 to support exploration and development.

## PRIMARY SERVICE AREA 10 GOAL

**Goal Eight: Partner and collaborate with Industry for the benefit of borough residents.**

Objective 1: Ensure Service Areas are keeping up with industry needs.

8.1.1. Investigate the need and feasibility to establishing an additional service area to support expansion into ANWR 1002 area of new oil exploration and production.

8.1.2. Investigate the need of expanding Service Area 10 and offering additional services to users.

