Gates of the Arctic National Park and Preserve
Transportation Data and Visitor Projection Analysis

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Prepared by

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1. EXECUTIVE SUMMARY

The National Park Service (NPS) is currently developing a General Management Plan (GMP) Amendment for Gates of the Arctic National Park and Preserve (GAAR). The amendment will provide updated guidance for managing the park over the next 15 to 20 years. This transportation and visitor study is intended to collect, compile, and analyze baseline visitation data and transportation patterns to the park; identify visitation trends and generate visitation projections to the extent feasible and reasonable; and define and depict potential projects that are likely to impact park visitation and resources. Results from this study will support development of a transportation component for the GMP Amendment.

The study team identified several data sources as essential for visitation analysis. These include visitor observations and interactions by the park staff, monthly use reports (MUR) and year-to-date (YTD) reports provided by the NPS Public Use Statistics Office, commercial use authorization (CUA) reports, and backcountry registrations provided by the park staff. Although each individual source has an independent visitor record or estimate, the analysis revealed that those individual records and estimates often contain incomplete and inaccurate data. The study team performed synthesis combining several data sources to derive existing and historical visitor volumes, patterns, and trends.

The analysis results revealed that during the past decade GAAR could have received 1,000 to over 3,000 visitors per year. The year 2004 has the most estimated visitors at 3,119, which might be the best estimate of the average annual visitors over the past decade, because 2004 is the only year with more complete visitation data. These estimates may appear somehow surprising as compared with some perceptions and expectations prior to this study; however, they resulted from unbiased analyses of all available and credible data sources based on sound analytical methods.

The entry and exit locations of park visitors are important indicators of where essential visitor amenities or facilities should be installed, if any. They also provide substantial input on where human footprints and visitor impact on park resources may need to be further monitored, analyzed, or mitigated. The study identified that the top **entry locations** include Noatak, Circle Lake, North Fork Koyukuk, 12 Mile Slough, Hunt Fork Lake, Bettles, Walker Lake, and Anaktuvuk Pass; and the top **exit locations** include Bettles, Anaktuvuk Pass, Kobuk, Allakaket, Help-me-Jack Lake, Matchurak, Takahula Lake, Noatak, Kavachurak, and Circle Lake. Some of the locations are within the park boundary while the others are outside the park.

Traffic volumes on Dalton Highway (the only road running close to the park) have remained relatively stable over the past 15 years, varying between 120 and 350 vehicles per day with estimated 75-80% heavy vehicles (buses and trucks). The current and projected future traffic (less than 800 vehicles per day in 2035) on Dalton Highway are significantly below its estimated capacity of 6,000 vehicles per day (both directions). The projected moderate traffic growth on

Dalton Highway is not expected to have substantial impact on park visitors and resources. In addition, the state and regional populations are expected to increase moderately over the next 20 years, which are not expected to cause substantial changes in park visitor use.

Two potential transportation projects, including the Ambler Mining District access road and Foothills West access road are likely to be built or partly built in the next 20 years, largely dependent on funding availability. These new roads may significantly increase visitor volumes to the park. Alternative access modes including driving (close to but not in the park), hiking, and boating may become the access mode for most visitors as compared with aviation, which is currently the predominant mode to access the park. Due to the early stages of these projects, it is impossible to predict their impact on park visitation quantitatively.

The study also found that the CUA reports and backcountry registrations, although incomplete, provided solid data in estimating visitor volumes and travel patterns. Measures to improve the accuracy and completeness of CUA reports and backcountry registrations may significantly enhance the visitor count program for the park. Example measures include an educational and public relations program to increase backcountry registrations, a policy that enforces conformance by CUA holders to submit complete and accurate CUA reports, and a better central file system (in print and electronic format) to keep those records intact and readily available.

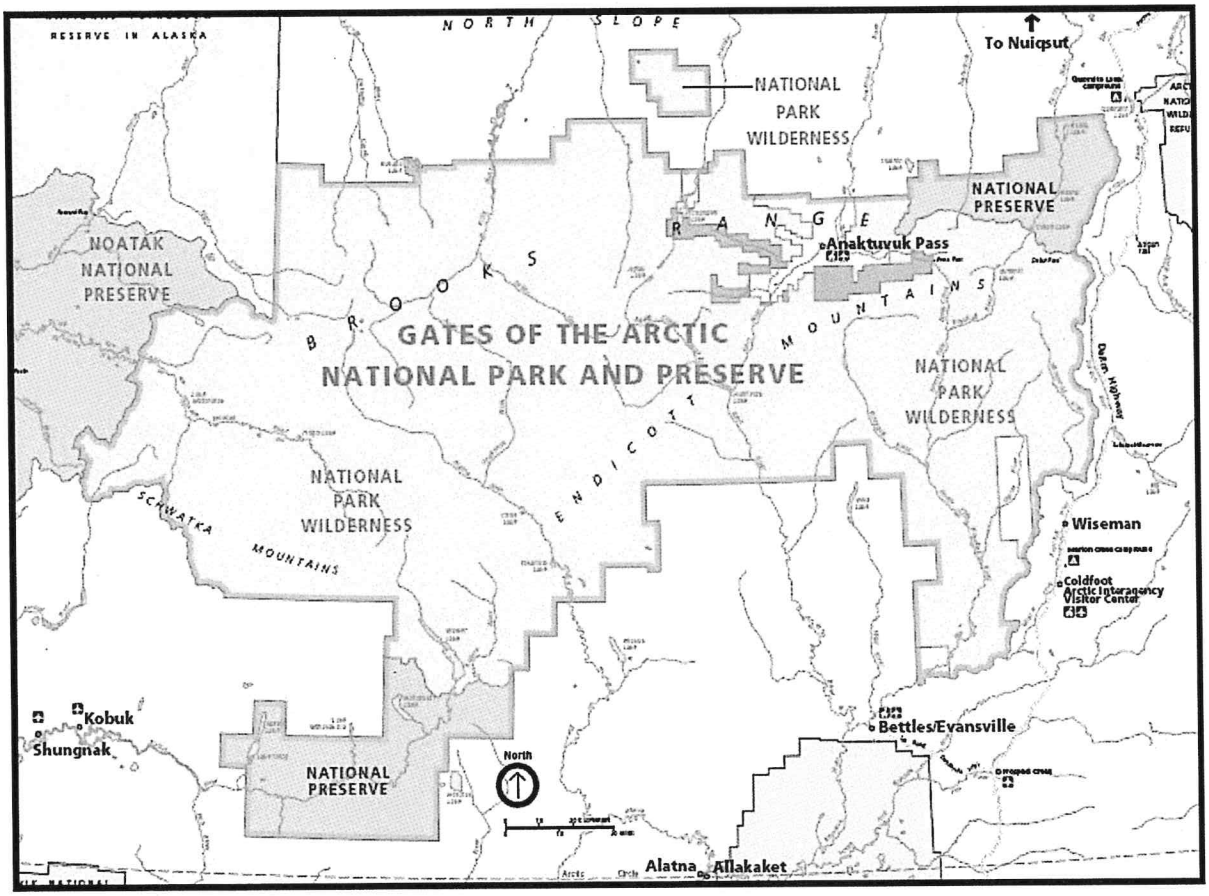
The 1997-1999 visitor surveys performed by the park staff during backcountry patrols, as described in Section 3.5, are a valuable data source in synthesizing visitor data and estimating annual visitor volumes of previous years. The study team recommends continuing and potentially expanding (to a larger sample size) these surveys as part of an enhanced visitor count program. In addition, as wireless communication technology becomes available in this area, cell phones could be used to track visitor use patterns and enhance the park's ability to count visitors more accurately.

2. INTRODUCTION

The purpose of this study is to provide baseline visitation data and analysis in support of a transportation component of the General Management Plan (GMP) Amendment, so that a transportation "toolbox" for the park can be created and included in the GMP Amendment.

The Gates of the Arctic National Park and Preserve (GAAR), located in the State of Alaska and entirely north of the Arctic Circle, is the northernmost national park in the U.S. and the second largest at approximately 8.4 million acres (**Figure 2-1**). This vast land of premier wilderness area became a national park in 1980 upon passage of the Alaska National Interest Lands Conservation Act, two years after it was first established as a U.S. National Monument. **Appendix A** displays a larger-scale map of the park and its immediate vicinity drawn from the most recent GIS data of the region.

Figure 2-1
Gates of the Arctic National Park and Preserve Overview



Source: National Park Service, Gates of the Arctic National Park and Preserve

In 1986 the original GAAR General Management Plan (GMP) was published to guide park management of wilderness, wild rivers, natural and cultural resources, access and circulation, subsistence uses, and visitor uses; and determination of needs for park operations and facilities. Currently the National Park Service (NPS) is working on amending the GMP for the GAAR so that it is consistent with current NPS park planning standards; and adapts to changes in land use and designation, transportation, natural and cultural resources, and ecological systems that have occurred in the region since 1986. The GMP Amendment will provide a vision for resources preservation and visitor use during the next 15 to 20 years that best achieve the NPS' mandate to preserve resources unimpaired for the enjoyment of future generations.

The current GMP, drafted in 1986, does not have a transportation plan component. Since 1986 the transportation system in the region has experienced significant changes, such as the opening of Dalton Highway in 1995, large land transfers resulting from the 1996 Anaktuvuk Pass Land Exchange, increasing interests in winter recreation and scenic overflights, and evolving access issues. The lack of a transportation plan which provides management tools may be negatively impacting visitor experience, subsistence uses, and other non-recreational visitors. Therefore, the NPS intends to add a transportation component to the GMP Amendment to address transportation related conflicts and the unique means of accessing GAAR.

To meet this purpose of this study as described previously, the study team is set to accomplish the following objectives:

1. Compile existing visitation data for GAAR from various sources
2. Identify visitation trends
3. Generate projections for future visitation
4. Define and depict the four potential transportation projects and changes in policy near the park as identified by the park management
5. Describe the likely impacts of each the potential projects/changes on park access, visitor use, and resources

3. VISITATION DATA ANALYSIS

Historically it has been a great challenge for the park staff to record visitation to the GAAR, mainly due to the following reasons:

- No formal gate to the park. There are no roads or trails entering the park. As the second largest national park in the U.S. at almost 8.5 million acres, the GAAR does not have formal entrances and exits where the majority of visitors would access the park. Instead most visitors have flown into the park and landed at a variety of lakes and gravel bars. Some other visitors may also hike into the park from the Dalton Highway or the village of Anaktuvuk Pass, which is located within the GAAR boundary. It is also possible for visitors to access the park by canoeing, rafting, or boating on one of the rivers that run into the park.
- Difficulties in developing an effective visitor tracking system. The visitor centers at the Fairbanks headquarters, Anaktuvuk Pass Ranger Station, and Coldfoot Arctic Interagency Visitor Center (AIVC) close between late September and early May. There is no reliable recording system to track winter visitors to the park when the visitor centers are closed. During the summer seasons, visitor registrations at one of the ranger stations or visitor centers are encouraged but not mandatory. Furthermore it is nearly impossible to determine whether some of the visitors to the ranger stations or visitor centers would ever enter the park.
- Communities in and near the park. Unusual for a U.S. national park, there are several small communities in the park's "resident subsistence zone" which approximately 1,500 people call home. Residents or their visitors, including subsistence users from these communities may access the park via hiking, snow machines, or all-terrain vehicles (ATV). Their travel in the park may have blended with other visitors and therefore increased the complexity in visitor tracking. It should be noted that snow machines are allowed for subsistence use or village-to-village travel, and ATV use is only allowed in areas exchanged through the 1996 Anaktuvuk Pass Land Exchange.

Throughout the years the park staff has made consistent efforts in tracking visitors through multiple measures and recording systems, including visitor backcountry registrations, annual Commercial Use Authorization (CUA) reports, reporting visitor centers data to the National Park Service (NPS) Public Use Statistics Office, backcountry visitor interviews, and direct observations of visitor activities in the park. These efforts provided key input to this visitation analysis. This section describes various visitation data sources, including both the park as the primary source and other secondary sources, and presents analysis results from the data.

3.1. Park Observations

For the purpose of this study, the park staff provided the study team with estimated visitor numbers based on their observations and interactions with visitors at the ranger stations or visitor centers over the previous years. This estimation indicates that most of the visitors to the park came through the Bettles ranger station. **Table 3-1** on the next page summarizes

estimated visitors through Bettles Ranger Station during the summer months from late May through September.

Table 3-1
Staff Estimated Visitors through Bettles Ranger Station

MONTH	TO BETTLES RANGER STATION[1]		To GAAR[2]	
	Minimum	Maximum	Minimum	Maximum
Late May	5	10	0	0
June	125	125	100	100
July	185	225	150	175
August	235	275	200	225
September	100	125	75	100
Summer total	**650**	**760**	**525**	**600**

Source: GAAR. Data compiled by URS.

Notes: (1) Numbers of visitors who visited the Ranger Station but may or may not have visited the park.
(2) Numbers of visitors who visited the park through the Ranger Station.

In addition, the park staff estimated that every summer approximately 75 visitors enter the park through Anaktuvuk Pass Ranger Station, 125 through Coldfoot AIVC, and 50 to 75 fly into the park from Fairbanks or other cities/villages.

The park staff also estimated that during the winter months (from October until mid-May) approximately 500 to 600 people per year visit Bettles Ranger Station but do not enter the park. In comparison with visitation during the summer, winter visitation to the park is very rare at approximately 20 to 35 visitors per year.

Overall, the park staff estimated that every year approximately 795 to 910 visitors entered the park from various locations. Around 9,000 to 10,000 people per year visited the Coldfoot AIVC, most of whom did not set foot in the park. Approximately 600 to 700 people per year visited Bettles Ranger Station but did not enter the park.

3.2. NPS Statistics

The NPS Public Use Statistics Office (NPS Stats) collects visitation data periodically from all national parks in the U.S. and maintains the data in a visitation database. For GAAR, Monthly Use Reports (MUR) from 1982 to 2009 and Year-to-Date (YTD) Reports from 1996 to 2010 are currently available in the database and were provided to the study team by the NPS Stats in the format of Microsoft Excel spreadsheets. **Table 3-2 through Table 3-4** and **Figure 3-1** presents visitation summaries based on the MUR and YTD reports.

Specifically, **Table 3-2** summarizes annual visitor information from the NPS Stats YTD Reports of 1996-2010. According to the NPS Stats, the YTD Reports estimate visitors who entered the park.

Table 3-3 displays park visitor statistics by month as an average over the years 1996-2010. **Figure 3-1** illustrates visitor volume variation by month over the 15-year period.

Different from the YTD Reports, the MUR reports include information on visitors to Anaktuvuk Pass Ranger Station, Bettles Ranger Station, Coldfoot AIVC, Fairbanks Headquarters, and to other facilities. Many of the visitors recorded in the MUR reports didn't enter the Park. **Table 3-4** displays annual visitor statistics of the 28-year period 1982-2009.

Table 3-2
Annual GAAR Visitors from the NPS YTD Reports of 1996-2010

Year	*Recreational Visitors*[1]	*Non-recreational Visitors*[2]	*Total Visitors*[3]	*Backcountry Overnight Stays*[4]	*Non-recreational Overnight Stays*[5]
1996	613	184	797	3,770	267
1997	747	117	864	5,481	159
1998	1,200	1,017	2,217	12,485	1,104
1999	588	506	1,094	6,282	512
2000	0	723	723	0	730
2001	337	379	716	1,366	379
2002	962	92	1,054	2,655	606
2003	677	238	915	4,293	330
2004	593	30	623	5,345	525
2005	604	1	605	4,383	10
2006	757	44	801	6,040	415
2007	612	4	616	5,461	0
2008	696	0	696	6,335	0
2009	506	0	506	4,638	0
2010	579	0	579	7,175	0
Total	**9,471**	**3,335**	**12,806**	**75,709**	**5,037**

Source: NPS Public Use Statistics Office. Data compiled by URS.
Notes: (1) Includes guided and non-guided visitors.
(2) Includes subsistence users, non-NPS researchers, and special use permit visitors.
(3) Sum of recreational and non-recreational visitors.
(4) The number of overnight stays by guided and non-guided visitors.
(5) The number of overnight stays by special use visitors, subsistence users, and non-NPS researchers.

The following observations are made based on the information in **Table 3-2**:

1. Over the last 15 years (1996-2010), the total number of visitors to the park per year varies between 500 to over 2,200. The largest number of annual visitors occurred in 1998 at 2,217
2. Over the last 11 years (2000-2010), the total number of visitors to the park per year has remained relatively stable (between 506 in 2009 and 1,054 in 2002), indicating that the park may not have experienced substantial increase or decrease in visitor volume

3. Various data were not reported or for other reasons missing from the NPS Stats database, such as recreational visitors in 2000, non-recreational visitors from 2004 to 2010, and non-recreational overnight stays from 2007 to 2010. These missing data items coupled with unusual changes in visitation indicates that the YTD reports may not be a complete and reliable source for visitation analysis

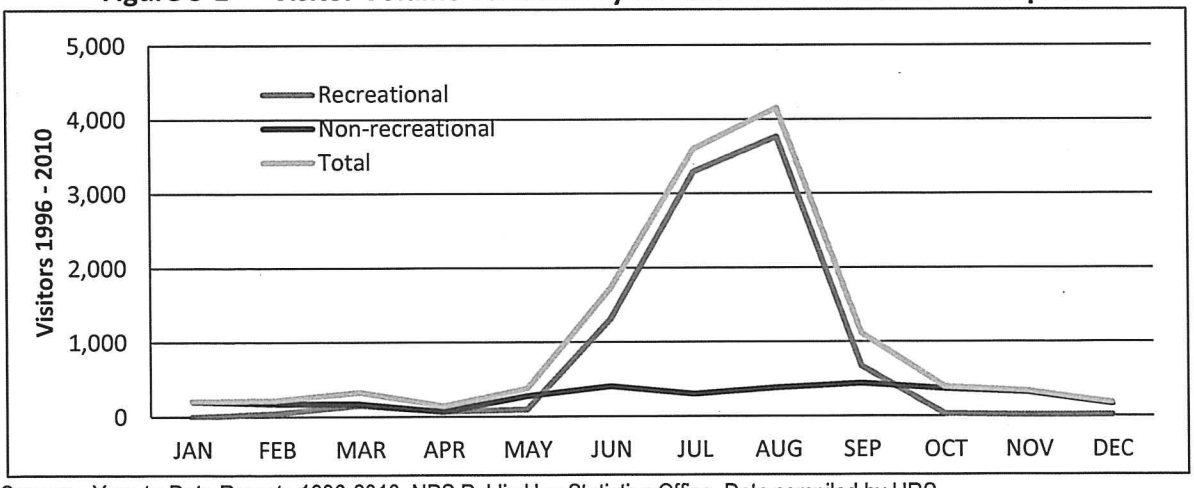
4. The accuracy of visitation data presented in the YTD reports, including the original data sources and validation of methods to estimate visitors, is unknown based on the information available to the study team

Table 3-3
Percentage of GAAR Visitors by Month from NPS YTD Reports of 1996-2010

Month	Recreational Visitors[1]	Non-recreational Visitors[2]	Backcountry Overnight Stays[3]	Non-recreational Overnight Stays[4]
January	0.0%	6.3%	0.0%	4.4%
February	0.5%	5.4%	0.2%	5.1%
March	1.6%	5.3%	0.9%	5.9%
April	0.8%	2.1%	0.4%	5.5%
May	1.1%	8.5%	0.8%	4.3%
June	13.9%	12.4%	11.4%	17.0%
July	34.8%	9.2%	38.9%	17.7%
August	39.8%	11.7%	40.8%	10.2%
September	7.1%	13.3%	6.3%	11.6%
October	0.3%	11.1%	0.1%	7.9%
November	0.1%	9.7%	0.1%	6.8%
December	0.1%	5.1%	0.1%	3.5%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Source: Year-to-Date Reports 1996-2010, NPS Public Use Statistics Office. Data compiled by URS.
Notes: (1) Includes guided and non-guided visitors.
(2) Includes subsistence users, non-NPS researchers, and special use permit visitors.
(3) The number of overnight stays by guided and non-guided visitors.
(4) The number of overnight stays by special use visitors, subsistence users, and non-NPS researchers.

Figure 3-1 Visitor Volume Variation by Month from 1996-2010 YTD Reports



Source: Year-to-Date Reports 1996-2010, NPS Public Use Statistics Office. Data compiled by URS.

Table 3-4
Annual Visitors to Visitor Centers and Ranger Stations from NPS MUR Reports of 1982-2009

Year	Recreational Visitors[1]	Non-recreational Visitors[2]	Total Visitors[3]
1982	1,381	2,341	**3,722**
1983	2,138	950	**3,088**
1984	2,440	2,139	**4,579**
1985	1,381	2,951	**4,332**
1986	2,801	2,150	**4,951**
1987	1,060	1,058	**2,118**
1988	1,258	1,050	**2,308**
1989	822	1,058	**1,880**
1990	1,010	1,029	**2,039**
1991	1,154	1,031	**2,185**
1992	2,116	1,301	**3,417**
1993	2,245	554	**2,799**
1994	1,726	535	**2,261**
1995	7,074	803	**7,877**
1996	6,448	268	**6,716**
1997	6,949	174	**7,123**
1998	8,266	1,522	**9,788**
1999	8,166	760	**8,926**
2000	11,278	1,082	**12,360**
2001	4,505	471	**4,976**
2002	6,648	137	**6,785**
2003	5,075	350	**5,425**
2004	10,282	30	**10,312**
2005	9,459	1	**9,460**
2006	9,982	53	**10,035**
2007	10,942	4	**10,946**
2008	11,397	0	**11,397**
2009	9,975	0	**9,975**
Total	**147,978**	**23,802**	**171,780**

Source: NPS Public Use Statistics Office. Data compiled by URS.

Notes: (1) Includes guided and non-guided tour visitors.

(2) Includes subsistence users, non-NPS researchers, and special use permit visitors.

(3) Sum of recreational and non-recreational tour visitors.

The following observations are made based on analysis of YTD reports as well as information shown in **Table 3-3** and **Figure 3-1**:

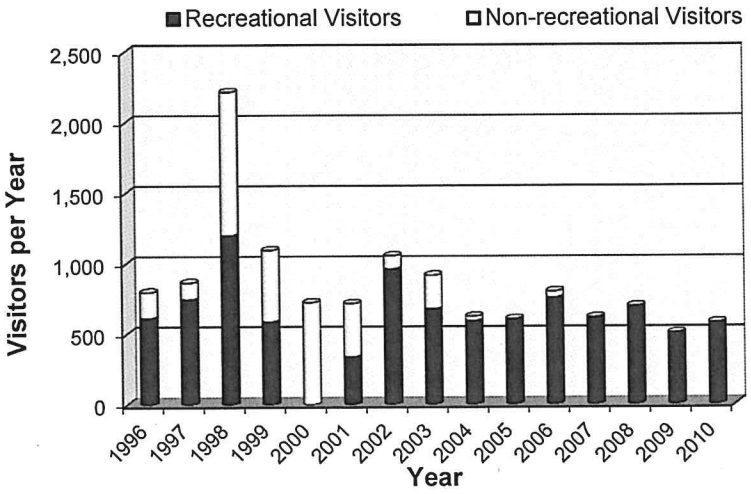
1. The vast majority of recreational visitors, at 95.6%, visited the park during the summer months from June to September. Correspondingly, 97.4% of annual backcountry overnight stays were in the same time period (June—September)
2. Non-recreational visitors tend to spread out throughout the entire year, with nearly 54% of them visiting the park between October and May. Similarly, close to 44% of annual non-recreational overnight stays were between October and May
3. Due to missing data and unknown accuracy of the YTD reports, the above summary and interpretive points should be considered with caution

Compared with **Table 3-2, Table 3-4** shows there were many more visitors to the visitor centers and other facilities than those who actually visited the park over the same time period 1996-2009. **Figures 3-2 and 3-3** on the next page compare visitor volumes between the YTD reports and MUR reports. It should be noted that **Figure 3-2** uses a larger vertical scale than **Figure 3-3** so that the visitor numbers of each year can be read more easily against the vertical axis.

The following observations are made based on **Figures 3-2 and 3-3** and analysis of the MUR and YTD reports:

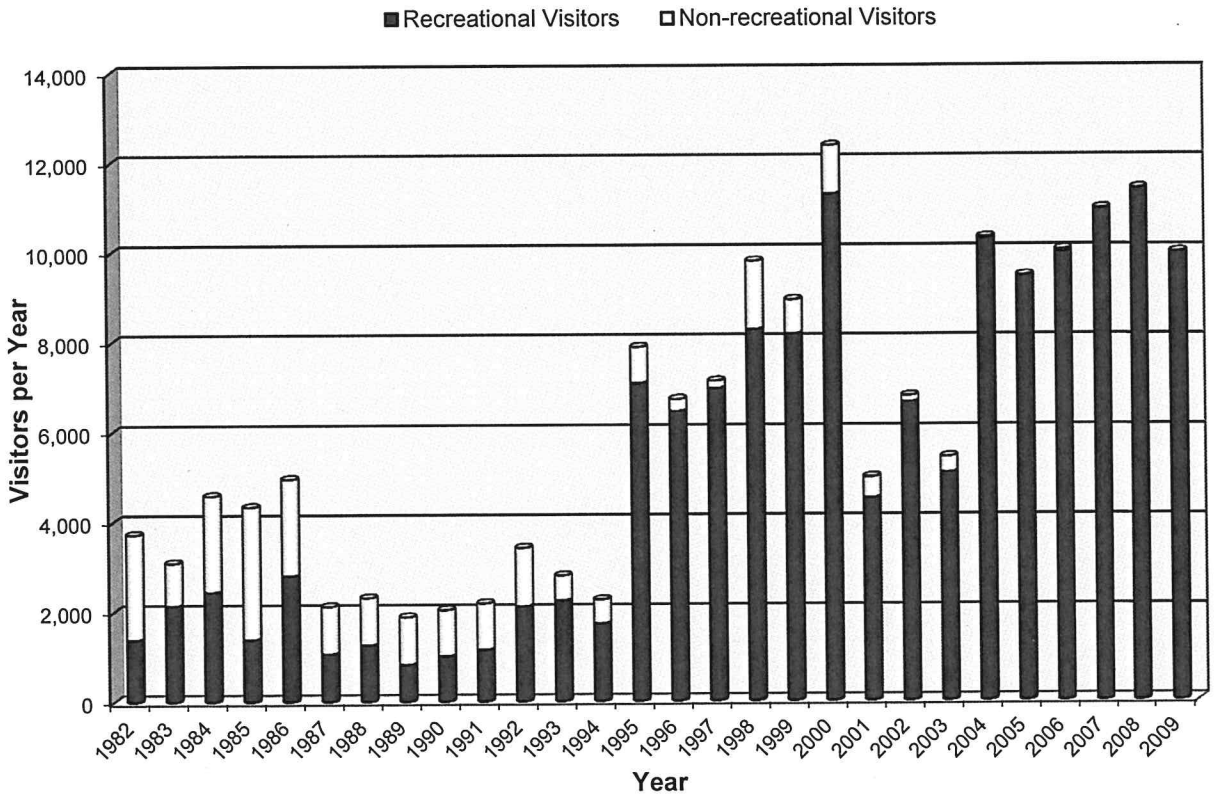
1. There does not seem to be a direct correlation between park visitors variation from year to year, as shown in **Figure 3-2**, and year-to-year variation of visitors to the visitor centers and other facilities as shown in **Figure 3-3**
2. **Figure 3-3** shows visitors to the visitor centers and other facilities remained relatively stable over the years 1982 to 1994 varying between 2,000 and 5,000 per year; increased significantly from 1995 to 2000 to approximately 12,000 in 2000; decreased during the three-year period 2001-2003 varying between 4,800 and 6,600 per year; and then increased to approximately 10,000 per year since 2004
3. The NPS Public Use Statistics office indicated that the accuracy of the MUR and YTD reports for GAAR has not been verified. These reports are generated from visitor use models using visitor input from the park. Although the models have proved to be accurate for many national parks which have moderate to high visitor volumes, they may not have the same accuracy for GAAR due to its low visitor volumes

Figure 3-2
Annual GAAR Visitors from NPS YTD Reports of 1996-2010



Source: NPS Public Use Statistics Office. Data compiled by URS.

Figure 3-3
Annual Visitors from NPS MUR Reports of 1982-2009



Source: NPS Public Use Statistics Office. Data compiled by URS.

3.3. Commercial Use Authorization Reports

The NPS, Alaska Region defines a commercial user authorization (CUA) as a permit that authorizes suitable commercial services to park area visitors in limited circumstances. According to the park, All CUA holders are required to submit an annual activity report to the park via one of the visitor centers/ranger stations. The park staffs estimated that approximately 90% of the CUA holders have been compliant. However the accuracy and completeness of the CUA reports have not been verified.

The URS Team received scanned copies of available CUA reports from the park and compiled the 2000-2010 CUA reports into Microsoft Excel spreadsheets for further analysis. The 2008-2010 CUA data is excluded from the analysis due to the small size of data—only 91 visitors reported in 2008, 65 visitors in 2009, and 22 visitors in 2010. **Table 3-5** summarizes 2000-2007 visitation numbers by year and month as represented in the CUA reports.

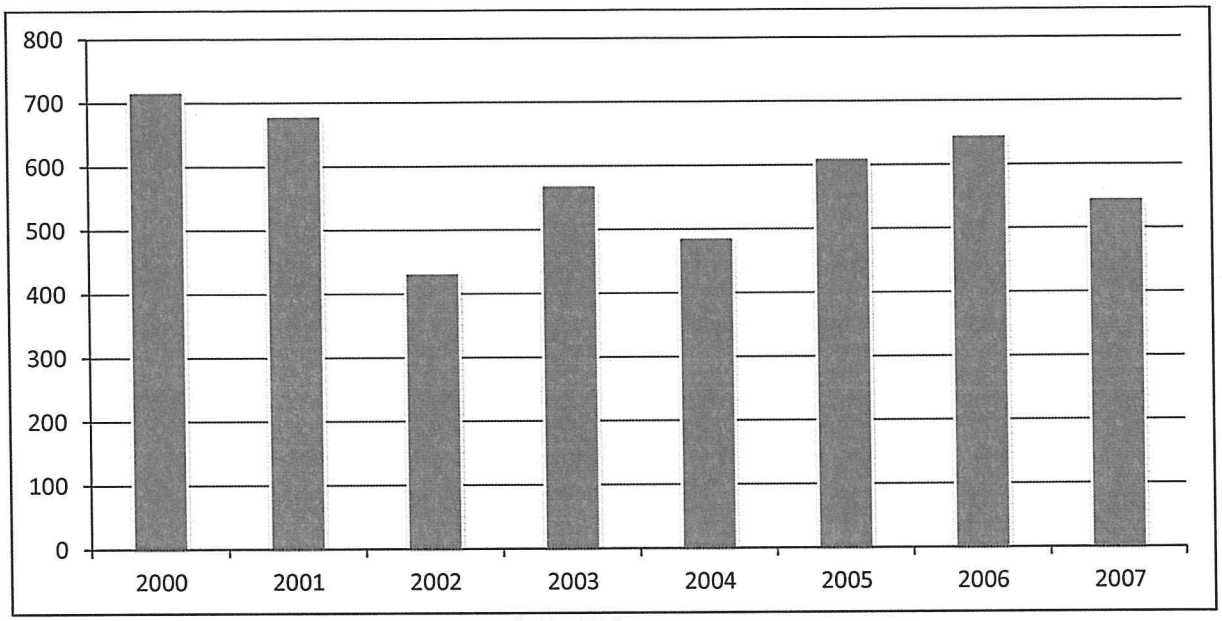
Table 3-5
Visitation Trends from the 2000-2007 CUA Reports

Number of Visitor Groups per Month by Year (2000-2007)									
	2000	2001	2002	2003	2004	2005	2006	2007	Total
March	2	1	2	0	0	0	0	0	5
May	0	0	0	0	1	2	0	0	3
June	18	39	10	38	21	31	21	12	190
July	66	68	34	44	47	53	87	45	444
August	94	74	49	73	44	67	80	79	560
September	14	13	10	9	17	13	22	16	114
Total	**194**	**195**	**105**	**164**	**130**	**166**	**210**	**152**	**1,316**
Number of Visitors per Month by Year (2000-2007)									
	2000	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**Total**
March	5	5	9	0	0	0	0	0	19
May	0	0	0	0	3	4	0	0	7
June	55	112	48	149	79	134	67	47	691
July	260	238	129	148	177	184	272	180	1,588
August	359	293	216	239	187	241	241	265	2,041
September	39	32	31	34	41	48	66	55	346
Total	**718**	**680**	**433**	**570**	**487**	**611**	**646**	**547**	**4,692**

Source: GAAR and NPS Alaska Region. Data compiled by URS.
Notes: Park visitors were not reported during the months that are not listed in the table

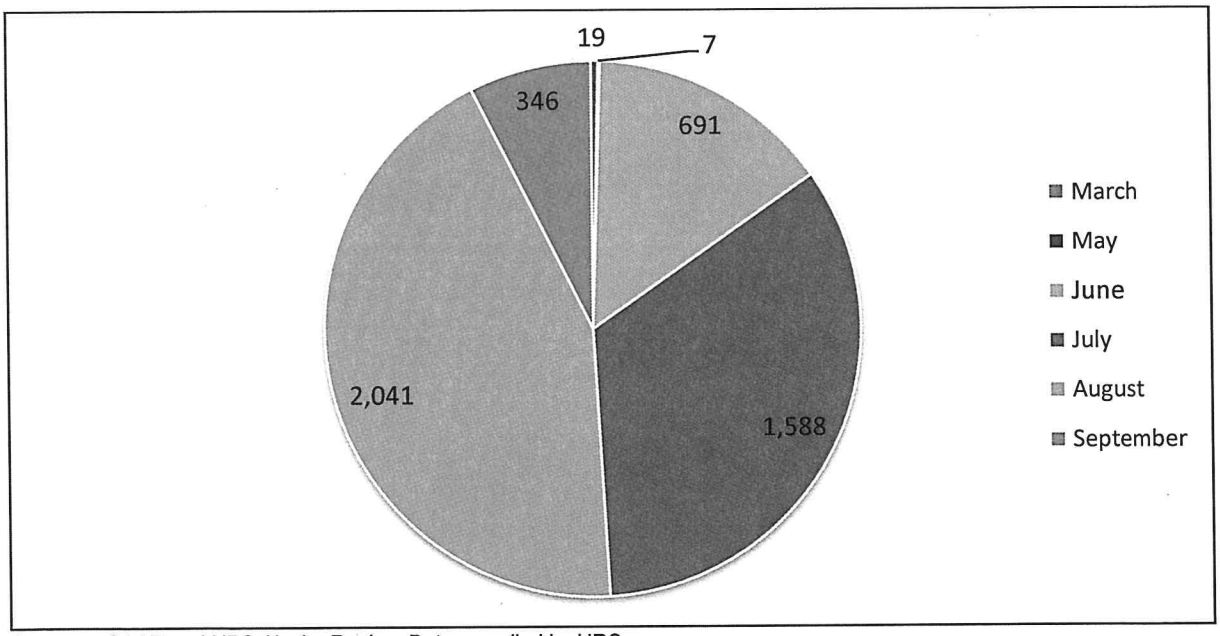
Figures 3-4 and 3-5 below illustrate the visitation data summarized in **Table 3-5.**

Figure 3-4
GAAR Visitors per Year from 2000-2007 CUA Reports



Source: GAAR and NPS Alaska Region. Data compiled by URS.

Figure 3-5
GAAR Visitors by Month from 2000-2007 CUA Reports



Source: GAAR and NPS Alaska Region. Data compiled by URS.
Note: Park visitors were not reported during the months that are not listed in this figure

The following observations are made based on the analysis of CUA reports and information shown in **Table 3-5, Figure 3-4,** and **Figure 3-5**:

1. According to the CUA reports, park visitors varied between 433 (in 2002) and 718 (in 2000) over the eight-year period (2000-2007). Over that time period park visitation has not displayed a substantial variation trend, i.e., there have been up-and-downs from year to year but it is neither in a steady increase nor decrease
2. Of all CUA reported visitors, approximately 44% visited the park in August, 34% in July, 15% in June, 7% in September, and less than 1% in May and March. The CUA reports did not include park visitation in other months

The entry and exit locations of park visitors are important indicators of where essential visitor amenities or facilities should be installed, if any. They also provide substantial input on where visitor impact on park resources may need to be further monitored, analyzed, and mitigated. **Table 3-6 through Table 3-9** on the next several pages summarize entry and exit statistics that rank locations by number of visitors as presented in the CUA reports.

The following observations are made based on the analysis of CUA reports ad information shown in **Tables 3-6 through 3-9**:

1. According to the 2000-2007 CUA reports, Noatak, Circle Lake, North Fork Koyukuk, 12 Mile Slough, and Hunt Fork Lake are the top five locations overall where people started park trips
2. Matchurak, Takahula, Noatak, Kavachurak, and Circle Lake are the top five locations overall where visitors exited the park over the eight-year period
3. From year to year, the top five entry and exit locations varied, however the overall top five locations also ranked in the annual top five entry or exit locations during most of the eight years, indicating that the most popular entry and exit locations have not shifted substantially over the years

Table 3-6
Distribution of Visitor Entry Locations from 2000-2007 CUA Reports

Entry Location	2000	2001	2002	2003	2004	2005	2006	2007	Total
Noatak	14	66	87	55	49	77	--	10	358
Circle Lake	56	64	9	60	25	51	55	23	343
North Fork Koyukuk	52	8	23	24	42	70	85	37	341
12 Mile Slough	46	78	42	46	22	37	18	16	305
Hunt Fork Lake	47	47	20	56		50	38	4	262
Walker Lake	36	29	4	52	14	24	63	10	232
Gaedke Lake	44	44	11	21	--	15	51	--	186
Pingo Lake	34	48	--	14	--	40	4	37	177
Summit Lake	36	20	--	7	--	13	23	--	99
Alatna	16	9	24	13	--	--	--	32	94
Kutuk Lake	18	2	5	10	4	24	10	19	92
Tulilik Lake	15	33	11	2	5	5	4	9	84
Killik	--	--	8	31	15	16	2	10	82
Nigu	4	17	18	5	2	19	--	14	79
GAAR (Unspecified)	15	7	--	48	--	--	--	--	70
Oolah Lake	10	3	5	5	7	9	9	17	65
Arrigetch	6	10	33	7	--	4	--	2	62
Hunt Fork	--	--	--	--	13	--	4	35	52
Kobuk	--	5	--	8	30	--	7	--	50
Takahula Lake	11	16	--	6	--	6	7	--	46
Island Lake	2	6	2	2	2	10	4	14	42
Itkillik-Oolah	--	4	2	13	8	3	--	9	39
Agiak Lake	4	2	7	5	--	15	4	2	39
Red Star	12	10	--	16	--	--	--	--	38
Folly Lake	--	--	5	2	6	6	--	19	38
Chimney Lake	2	7	2	--	--	15	10	2	38
Pingo	--	--	--	--	--	--	36	--	36
Kavachurak	--	5	4	--	6	12	6	2	35
John	--	--	3	13	--	18	--	--	34
Okokmilaga	--	--	--	4	4	--	22	--	30
Minikokosa	6	--	11	5	--	8	--	--	30
Selby Lake	5	6	--	4	--	10	--	4	29
Pyramid Creek	--	--	27	--	--	--	--	--	27
Private Property	--	6	8	6	--	--	5	--	25
Issygok Lake	--	--	--	--	--	--	24	--	24
Anaktuvuk Pass	--	8	2	4	--	10	--	--	24
Nutuvuki	13	4	--	2	--	--	5	--	24
Coldfoot	--	--	23	--	--	--	--	--	23
Koyukuk Regions	--	16	7	--	--	--	--	--	23
Douglas Creek Lake	--	2	3	--	1	--	3	12	21
Matchurak Lake	--	--	--	--	--	4	10	6	20
Amiloyak Lake	--	7	3	1	--	--	--	9	20
Total	**504**	**589**	**409**	**547**	**255**	**571**	**509**	**354**	**3,738**

Source: GAAR and NPS Alaska Region. Data compiled by URS.

Notes: - This table shows only locations where no less than 20 visitors entered the park from.
- Locations are ranked in descending order using number of visitors who started park trip from the location.
- The CUA reported entry locations may be either inside or outside the park boundaries.

Table 3-7
Top Five Entry Locations by Year from 2000-2007 CUA Reports

Park Entry Location	Visitors
2000	
Circle Lake	54
North Fork Koyukuk	52
Hunt Fork Lake	47
12 Mile Slough	46
Gaedke Lake	44
2001	
12 Mile Slough	78
Noatak	66
Circle Lake	64
Pingo Lake	48
Hunt Fork Lake	47
2002	
Noatak	87
12 Mile Slough	42
Arrigetch	33
Pyramid Creek	27
Alatna	24
2003	
Circle Lake	60
Hunt Fork Lake	56
Walker Lake	52
Noatak	51
GAAR(Unspecified)	48

Park Entry Location	Visitors
2004	
Noatak	49
North Fork Koyukuk	42
Kobuk	30
Circle Lake	25
12 Mile Slough	22
2005	
Noatak	77
North Fork Koyukuk	70
Circle Lake	51
Hunt Fork Lake	50
Pingo Lake	40
2006	
North Fork Koyukuk	85
Walker Lake	63
Circle Lake	55
Gaedke Lake	51
Hunt Fork Lake	38
2007	
Pingo Lake	37
Hunt Fork Lake	35
North Fork Koyukuk	37
Alatna	32
Circle Lake	23

Source: GAAR and NPS Alaska Region. Data compiled by URS.
Note: Locations are ranked in descending order using number of visitors who started park trip from the location.

Table 3-8
Distribution of Visitor Exit Locations from 2000-2007 CUA Reports

Exit Location	2000	2001	2002	2003	2004	2005	2006	2007	Total
Matchurak Lake	21	86	44	41	7	39	--	19	257
Takahula Lake	30	34	4	25	--	42	20	2	157
Noatak	24	26	--	13	24	49	--	20	156
Kavachurak	28	45	4	11	--	20	10	4	122
Circle Lake	18	18	3	24	16	6	19	7	111
Walker Lake	7	8	--	13	7	20	16	3	74
Oolah Lake	2	12	5	5	7	24	6	12	73
Gaedke Lake	8	17	4	6	--	--	25	--	60
North Fork Koyukuk	--	--	--	2	11	26	12	8	59
Pingo Lake	13	9	2	11	--	2	4	13	54
Summit Lake	14	6	5	2	--	13	9	--	49
Kobuk	--	5	--	5	34	4	--	--	48
Udrivik Lake	6	27	5	4	--	--	--	--	42
Island Lake	2	6	2	2	2	10	4	14	42
Cutler Lake	--	--	13	--	7	17	--	4	41
Agiak Lake	4	2	2	1	--	23	4	--	36
Takahula Lake	--	--	--	--	7	--	--	27	34
John	--	--	--	8	1	25	--	--	34
Alatna	7	7	--	--	--	4	--	9	27
Itkillik-Oolah	--	4	2	6	8	--	--	6	26
Pah River	8	--	8	3	--	--	7	--	26
Selby Lake	5	6	--	4	--	6	--	4	25
Bettles	19	6	--	--	--	--	--	--	25
Old Bettles	10	--	--	--	2	6	7	--	25
Mulumut Fork	19	--	5	--	--	--	--	--	24
Dalton Highway	--	--	23	--	--	--	--	--	23
Folly Lake	--	--	--	2	2	6	--	12	22
Nutuvuki	13	4	--	2	--	--	2	--	21
Amiloyak Lake	--	7	3	1	--	--	--	9	20
Colville River	5	2	5	4	--	--	--	--	16
Koyukuk Regions	3	13	--	--	--	--	--	--	16
Killik	--	--	--	--	--	11	--	5	16
Kutuk Lake	--	--	--	9	--	--	1	4	14
Chimney Lake	4	--	2	--	--	--	8	--	14
Dauglas Lake	--	--	--	--	1	--	--	12	13
Nigu	--	7	--	--	--	6	--	--	13
Okokmilaga	--	--	--	4	--	--	--	9	13
Arrigetch	--	10	--	--	--	--	3	--	13
Kavachurak Lake	--	--	--	--	6	--	--	7	13
12 Mile Slough	5	4	--	--	--	--	--	--	9
Kobuk Sand Dunes	--	--	--	--	2	--	7	--	9

Source: GAAR and NPS Alaska Region. Data compiled by URS.
Notes: - This table shows only locations where no less than nine visitors exited the park from.
- Locations are ranked in descending order using number of visitors who left the park from the location.

Table 3-9
Top Five Exit Locations by Year from 2000-2007 CUA Reports

Park Exit Point	Visitor Exits
2000	
Takahula Lake	30
Kavachurak	28
Noatak	24
Matchurak Lake	21
Bettles	19
2001	
Matchurak Lake	86
Kavachurak	45
Takahula Lake	34
Udrivik Lake	27
Noatak	26
2002	
Matchurak Lake	44
Dalton Highway	23
Cutler Lake	13
Pah River	8
Itillik Lake	7
2003	
Matchurak Lake	41
Takahula Lake	25
Circle Lake	24
Noatak	13
Walker Lake	13

Park Exit Point	Visitor Exits
2004	
Kobuk	34
Noatak	24
Circle Lake	16
North Fork Koyukuk	11
Itkillik-Oolah	8
2005	
Noatak	49
Takahula Lake	42
Matchurak Lake	39
North Fork Koyukuk	26
John	25
2006	
Gaedke Lake	25
Takahula Lake	20
Circle Lake	19
Walker Lake	16
North Fork Koyukuk	12
2007	
Takahula Lake	27
Noatak	20
Matchurak Lake	19
Island Lake	14
Pingo Lake	13

Source: GAAR and NPS Alaska Region. Data compiled by URS.
Note: Locations are ranked in descending order using number of visitors who ended park trip from the location.

3.4. Backcountry Registration Reports

GAAR backcountry visitors who contacted the park by visiting one of the visitor centers, ranger stations, headquarters; by telephone; or by other means were asked to fill in a single-page backcountry registration form. The study team received scanned copies of available 2004 and 2006-2010 backcountry registration forms from the park via NPS Alaska Region, and compiled them into Microsoft Excel spreadsheets for further analysis. The 2005 backcountry registrations are missing from the park data portfolio.

In addition, the park also provided Excel spreadsheets containing compiled backcountry registrations of 2000, 2002, 2003, and 2004. Notably 2004 backcountry registrations come from both sources—original registration forms (scanned copy) and Excel spreadsheet. However 2001 and 2005 backcountry registration data are missing from the combined sources. **Table 3-10** below displays the availability of backcountry registrations from 2000 to 2010. Other tables and charts in this section present analysis results from the backcountry registration data.

Table 3-10
Backcountry Registration Data Availability

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Original BC Forms	No	No	No	No	Yes	No	Yes	Yes	Yes	Yes	Yes
Excel Spreadsheets	Yes	No	Yes	Yes	Yes	No	No	No	No	No	No

Source: GAAR and NPS Alaska Region.
Note: BC – Backcountry registrations

After inspecting information contained in the two sources (original forms and spreadsheets), the study team combined these two sources to analyze visitor volumes from 2000 to 2010 excluding 2001 and 2005. However only the original forms of 2004-2010 excluding 2005 were used to analyze other categories such as entry and exit locations, park areas visited, access mode, travel modes, etc. for the following reasons:

- The 2004-2010 original forms (excluding 2005) provide a sufficient sample size and more recent data in determining visitation patterns
- Much of the information of entry and exit locations, visited park areas, access mode, and travel mode (while in the park) is missing from the 2000-2004 spreadsheets, and therefore using the incomplete data risks skewing the analysis results.

Among the nine years (2000-2010 excluding 2001 and 2005) of which backcountry registration data is available, 2004 is unique since both original forms and a spreadsheet are available for this year. While combining the two sources into one database, the study team filtered and deleted all duplicate backcountry registration records by running queries (in Structured Query Language or SQL) in the Microsoft Access environment supplemented by visual inspections. This filtering process eliminated close to 100 duplicate reports from the 2004 data.
Table 3-11 summarizes distribution of visitor groups and individual visitors over the six-year period, while **Figure 3-6** and **Figure 3-7** on page 21 illustrate the variation trends by year and month, respectively.

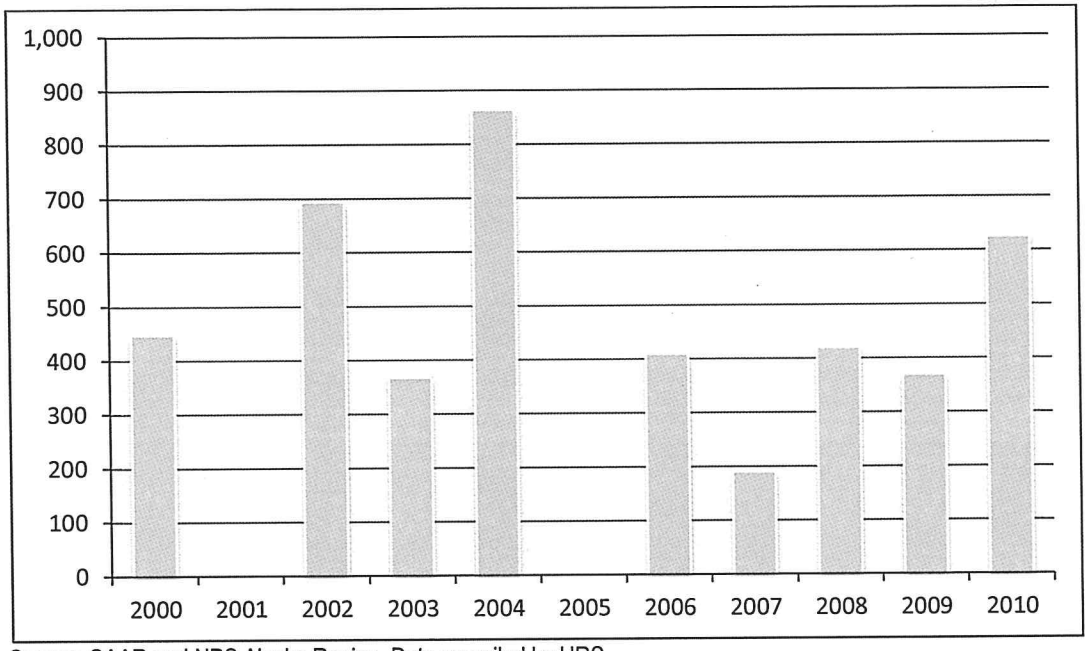
Table 3-11
GAAR Visitation Trends from 2000-2010 Backcountry Registrations

Number of Visitor Groups										
Month	**2000**	**2002**	**2003**	**2004**	**2006**	**2007**	**2008**	**2009**	**2010**	**Total**
February	0	2	1	0	0	0	0	0	0	3
March	0	4	1	4	0	0	0	0	2	11
April	0	0	2	1	0	0	0	0	0	3
May	0	1	0	1	3	0	0	1	3	9
June	10	23	30	27	17	0	19	17	34	177
July	42	74	45	87	39	7	36	37	57	424
August	57	73	19	89	54	36	56	53	76	513
September	7	14	3	23	7	4	9	0	16	83
October	0	0	0	0	1	0	0	0	0	1
December	0	0	0	0	0	1	0	0	0	1
Unknown	1	0	0	0	1	0	0	0	0	2
Total	**117**	**191**	**101**	**232**	**122**	**48**	**120**	**108**	**188**	**1,227**
Number of Visitors										
Month	**2000**	**2002**	**2003**	**2004**	**2006**	**2007**	**2008**	**2009**	**2010**	**Total**
February	0	13	1	0	0	0	0	0	0	14
March	0	9	1	27	0	0	0	0	8	45
April	0	0	3	1	0	0	0	0	0	4
May	0	1	0	3	9	0	0	4	6	23
June	28	74	103	97	60	0	76	66	105	609
July	184	255	187	323	131	28	125	150	191	1,574
August	217	296	64	338	179	141	199	150	267	1,851
September	17	46	9	75	23	16	20	0	48	254
October	0	0	0	0	3	0	0	0	0	3
December	0	0	0	0	0	5	0	0	0	5
Unknown	2	0	0	0	4	0	0	0	0	6
Total	**448**	**694**	**368**	**864**	**409**	**190**	**420**	**370**	**625**	**4,388**

Source: GAAR and NPS Alaska Region. Data compiled by URS.

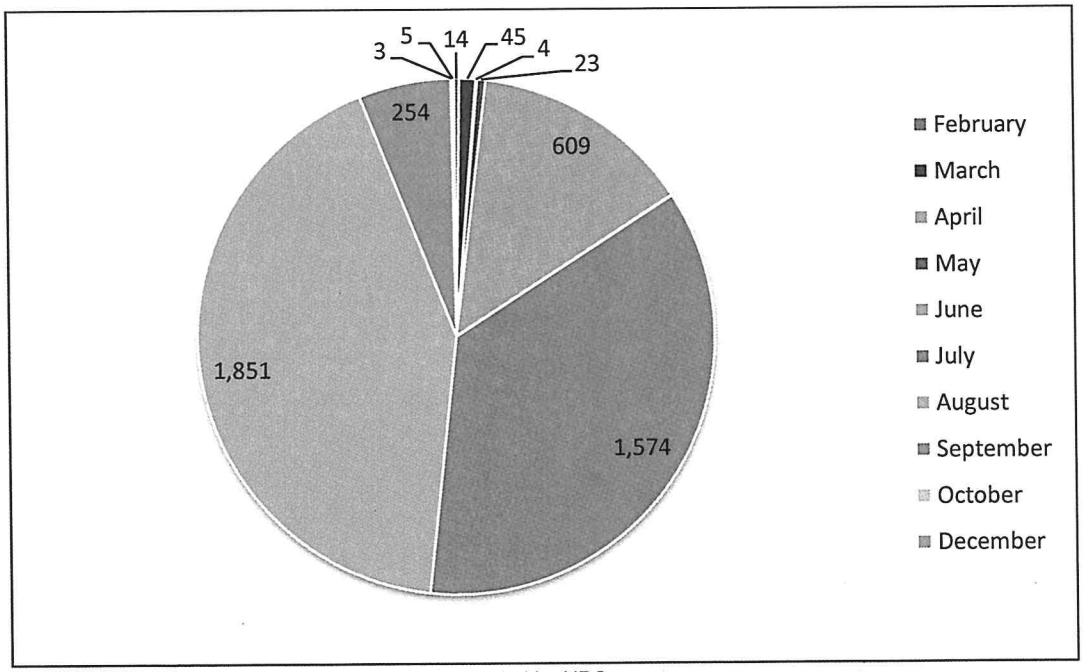
Note: There is no data for Years 2001 and 2005.

Figure 3-6
GAAR Visitors per Year from Backcountry Registrations (2000-2010)



Source: GAAR and NPS Alaska Region. Data compiled by URS.
Note: There is no data for Year 2001 and 2005.

Figure 3-7
GAAR Visitors by Month from Backcountry Registrations (2000-2010)



Source: GAAR and NPS Alaska Region. Data compiled by URS.
Note: There is no data for Year 2001 and 2005.

The following observations are made based on **Table 3-11** and **Figures 3-6** and **3-7**:

1. The number of backcountry visitor groups over the nine-year period (2000-2010, excluding 2001 and 2005) varied between 48 (in 2007) and 232 (in 2004) per year
2. The number of individual backcountry visitors (included in the above groups) varied between 190 (in 2007) and 864 (2004) per year
3. Year 2007 recorded lowest number of backcountry visitors at 190. It is not clear whether this is mostly due to a low registration rate or for other reasons, such as missing registration reports
4. Year 2004 registered the highest number of backcountry visitors at 864. This high number is attributed to two data sources (original forms and a spreadsheet) being available for 2004, while the other years only have one data source, i.e., either the original forms or a spreadsheet
5. Since the majority of 2004 backcountry registration records from both sources do not overlap with each other, it is obvious that neither the available original forms nor the park-provided spreadsheet alone represents the actual number of visitors to the park
6. Furthermore, assuming 2004 data is typical and similar to other years, then backcountry registration data of other years might represent significantly lower than the actual number of visitors during those years
7. The year-by-year backcountry visitor variation does not reveal an increase or decrease trend over the nine-year period, although 2010 shows substantially more visitors than the previous four years from 2006 to 2009
8. Over the nine-year period, 10 months of the year (except January and November) have recorded backcountry visitors
9. Similar to the CUA reports, backcountry registrations show that August has the largest percentage of park visitors at 42%, followed by July at 36%, June at 14%, September at 6%, and all the other months combined at less than 3%

Similar to the CUA reports, the original backcountry registrations also contain the start and end locations of backcountry travelers. Many of these locations are within the park boundaries, while others are outside the park. **Table 3-12 and 3-13** summarize the trip start and end locations, respectively.

Table 3-12
GAAR Trip Start Locations from Backcountry Registrations 2004, 2006-2010

Location	2004	2006	2007	2008	2009	2010	Total
Circle Lake	23	25	53	34	50	36	221
Bettles	18	14	44	18	35	28	157
Walker Lake	31	29	7	15	40	24	146
Hunt Fork Lake	21	27	22	5	26	38	139
Anaktuvuk Pass	7	0	2	6	80	9	104
Pingo Lake	4	20	27	14	25	8	98
Summit Lake	32	12	6	14	20	6	90
12 Mile Slough	0	0	0	5	4	75	84
Alatna	7	10	10	1	2	44	74
Pyramid Creek	14	11	17	19	2	8	71
Coldfoot	6	0	14	23	23	1	67
12 Mile Lake	9	6	17	0	33	0	65
Kutuk Lake	7	0	5	10	10	32	64
Nigu	0	10	4	0	26	20	60
Trembly Creek	9	0	9	18	0	13	49
Wiseman	3	0	14	3	12	17	49
Noatak	0	0	21	9	18	0	48
Oolah Lake	11	9	12	7	3	4	46
12 Mile Slough	19	2	17	0	4	0	42
Galbraith Lake	16	0	6	0	17	0	39
Tulilik Lake	18	0	0	0	6	15	39
Takahula Lake	5	1	0	6	11	14	37
Geodeke Lake	16	0	2	0	16	0	34
Minikokosa	0	0	0	0	4	28	32
Arrigetch	0	2	5	11	10	2	30
Galbraith	4	0	2	3	3	18	30
Folly Lake	4	0	18	0	3	4	29
Matcharak Lake	2	5	0	4	0	18	29
Dietrich River	17	0	6	0	5	0	28
Agiak Lake	4	0	0	9	6	7	26
Killik	6	0	0	0	2	18	26
Gaedke Lake	0	0	0	23	0	0	23
Gates Bar	14	0	0	0	0	8	22

Source: GAAR and NPS Alaska Region. Data compiled by URS.

Notes: - This table shows only locations where no less than 20 visitors entered the park from.
- Locations are ranked in descending order using number of visitors who entered the park from the location.
- There is no data for Year 2005.

Table 3-13
GAAR Trip End Locations from Backcountry Registrations 2004, 2006-2010

Location	2004	2006	2007	2008	2009	2010	Total
Bettles	60	68	35	58	108	64	393
Anaktuvuk Pass	8	21	1	13	14	69	126
Kobuk	37	24	2	6	2	37	108
Allakaket	37	0	2	18	13	30	100
Help-me-Jack Lake	9	3	3	10	10	21	56
Kavachurak	9	2	5	25	2	8	51
Circle Lake	15	7	0	4	11	8	45
Coldfoot	4	6	0	11	8	15	44
Colville River	18	4	8	4	0	9	43
Galbraith	13	16	0	2	2	5	38
Alatna	6	0	10	4	5	12	37
Cutler Lake	8	3	6	16	4	0	37
Dalton Highway	3	0	0	2	10	11	26
Agiak Lake	3	4	2	0	9	7	25
Dietrich River	0	5	0	5	5	9	24
Arrigetch	0	0	0	3	8	12	23
Etivluk/Colville	0	6	0	0	0	14	20
Folly Lake	0	4	0	13	0	3	20

Source: GAAR and NPS Alaska Region. Data compiled by URS.

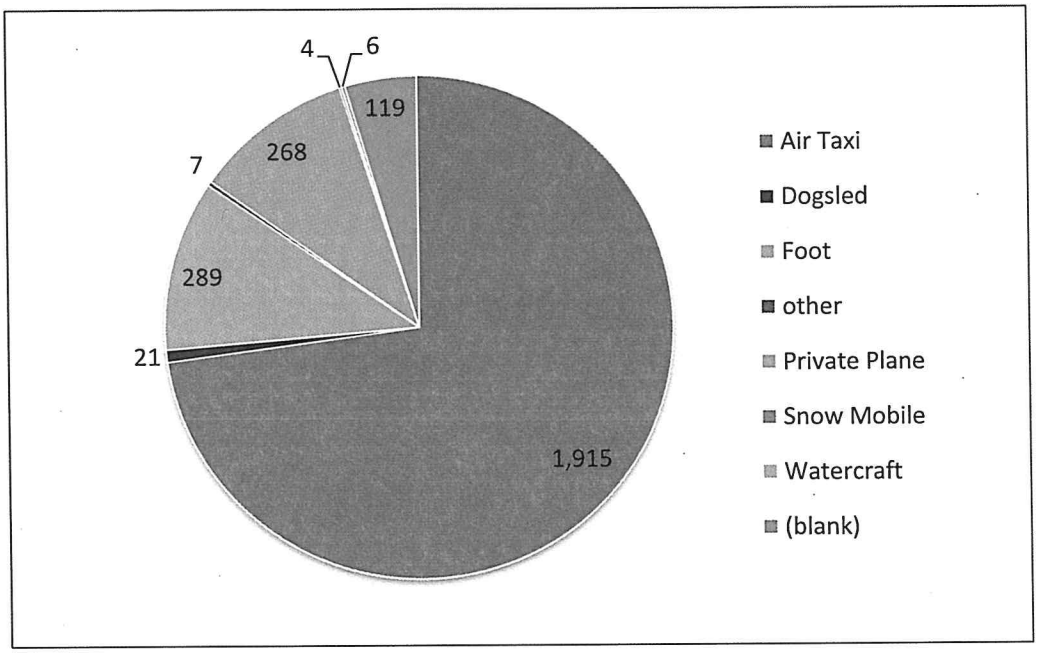
Notes: - This table shows only locations where no less than 20 visitors left the park.
- Locations are ranked in descending order using number of visitors who left the park from the location.
- There is no data for Year 2005.

The following observations, regarding visitor entry and exit locations, are made based on information presented in **Tables 3-12** and **3-13**:

1. Over the six-year period (2004, 2006-2010) Circle Lake, Bettles, Walker Lake, Hunt Fork Lake, and Anaktuvuk Pass are the top five locations where backcountry visitors started their park trips. Over 100 visitors reported starting from each of these five locations
2. Over the same time period Bettles, Anaktuvuk Pass, Kobuk, Allakaket, and Help-me-Jack Lake are the top five locations where backcountry visitors ended their park trips. At least 100 visitors ended their park trips at each of these locations except Help-me-Jack Lake

Figure 3-8 on the next page illustrates the access modes of backcountry visitors entering and exiting the park. The original backcountry registration forms allow visitors to select one of six modes including air taxi, dogsled, foot (hiking), private aircraft, snow machine, watercraft (canoe, boat, kayak, etc.); or specify some other modes.

Figure 3-8
GAAR Visitors by Access Mode from Backcountry Registrations 2004, 2006-2010

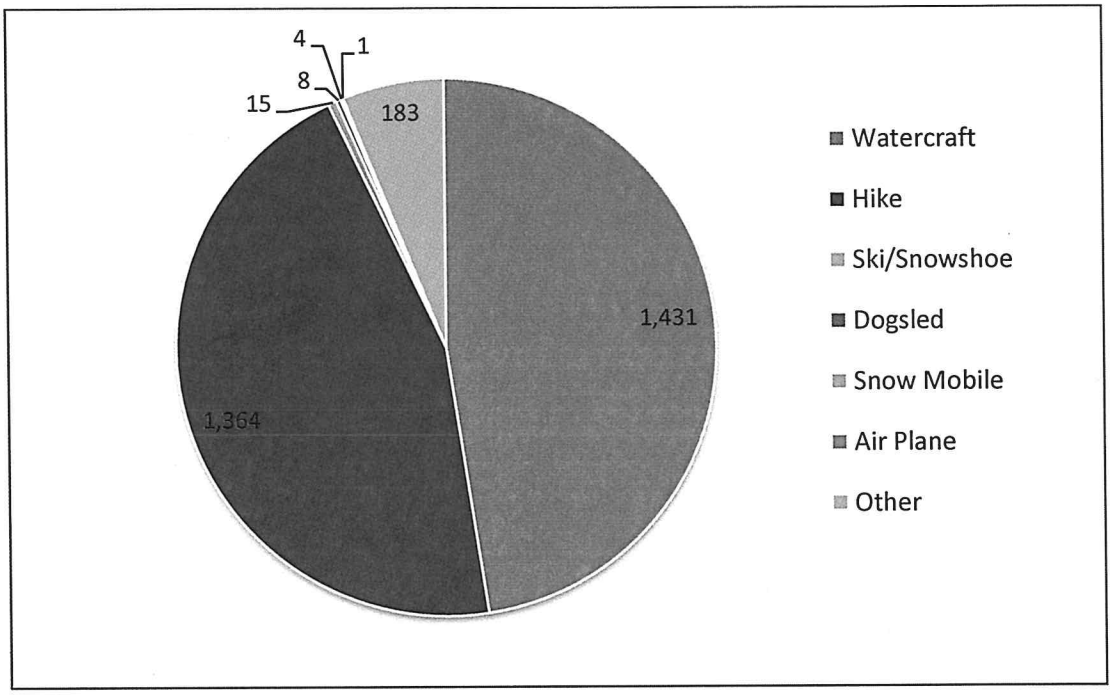


Source: GAAR and NPS Alaska Region. Data compiled by URS.
Notes: (blank)—access mode was not specified in the original backcountry registrations
There is no data for Year 2005.

Figure 3-8 shows that air taxi is by far the most popular access mode to the park with 73% of all registered backcountry visitors using it to enter/exit the park, followed by hiking at 11%, private aircraft at 10%, and all other modes combined at 6%.

Figure 3-9 on the next page illustrates how backcountry visitors traveled within the park. The original backcountry registration forms allow visitors to choose multiple travel modes as listed in **Figure 3-9**. In many cases visitors reported more than one travel mode. As shown in **Figure 3-9**, during the six-year period approximately 54% of backcountry visitors used watercraft to travel within the park, 52% by hiking, while 8% used one of the other travel modes. (Percentages add to more than 100% due to multiple travel modes used)

Figure 3-9
GAAR Travel Mode within Park from Backcountry Registrations 2004, 2006-2010



Source: GAAR and NPS Alaska Region. Data compiled by URS.
Note: There is no data for Year 2005.

3.5. Visitor Volume Synthesis

Each of the previously described visitor data sources, including park observations, NPS Statistics data (MUR and YTD reports), CUA reports, and Backcountry Registrations provides valuable visitor information. However, as discussed in the earlier sections none of these data sources reveal the actual number of visitors to the park, although some might be closer than the others. This section focuses on exploring the annual visitor volumes to the park using the following methods:

1. Extrapolation using the 2000-2010 Backcountry Registration data and the 1997-1999 Backcountry Patrol data
2. Synthesis by combining Backcountry Registration and CUA data of 2000-2007. This synthesis uses Microsoft Access to combine the two data sources. During this combining process, all likely duplicate records (visitor groups) between these two sets of data are identified and removed. The resulting combined visitor data is then analyzed using Excel

3.5.1. Extrapolation of Visitor Volumes from Backcountry Registration Reports

From 1997 to 1999, park rangers performed visitor data collection during their backcountry patrols. When they saw visitors during the patrol, the rangers would try to make contacts with the visitors, ask them some brief questions including whether the visitors had registered, and

record the contacts in a patrol visitor use report. The purpose of these data collection efforts was to look at the visitor contacts in the backcountry, to find out how many of those groups had registered in the Bettles Ranger Station, and to gain a better understanding of visitation to the park. During that time period, visitor data was not collected at Coldfoot AIVC or Anaktuvuk Pass.

The three-year patrol reports returned 58 visitor groups in 1997, 63 visitor groups in 1998, and 73 visitor groups in 1999 who were contacted or seen in the backcountry. The numbers of visitors in these contacted or seen groups are less accurate since there were groups seen in the backcountry with unknown group sizes. **Table 3-14** summarizes the backcountry patrol visitor data collected from 1997-1999.

Table 3-14
Summary of GAAR Backcountry Patrol Visitor Data
1997-1999

Year	1997	1998	1999	Average	Percent
Kobuk Hunting Patrol data:					
Groups Contacted or Seen in Backcountry	15	26	26	22.3	100%
Patrol data excluding Kobuk contacts:					
Total Groups Contacted or Seen in Backcountry	43	37	47	42.3	
Groups that were registered	11	5	12	9.3	22.0%
Groups that were not registered	20	21	32	24.3	57.5%
Groups with unknown registration status	12	11	3	8.7	20.5%

Source: GAAR and NPS Alaska Region. Data compiled by URS.

As shown in **Table 3-14**, the 1997-1999 patrol data is divided into two categories: (1) Kobuk hunting patrol data, and (2) patrol data excluding Kobuk hunting patrol. Kobuk hunting patrol data was separated because the patrol methodology in that area is to contact 100% of the hunting groups who usually do not register. The percentage in the last column needs to be adjusted to account for the groups with unknown registration status. The following equations were used for the adjustment:

$$r_{1,adjusted} = r_{1,orig} + \frac{r_{3,orig} \times r_{1,orig}}{r_{1,orig} + r_{2,orig}}, \text{ and}$$

$$r_{2,adjusted} = r_{2,orig} + \frac{r_{3,orig} \times r_{2,orig}}{r_{1,orig} + r_{2,orig}}$$

Where: $r_{1,adjusted}$ = adjusted percentage of visitor groups that were registered
$r_{2,adjusted}$ = adjusted percentage of visitor groups that were not registered
$r_{1,original}$ = 22.0%, percentage of visitor groups that were registered
$r_{2,original}$ = 57.5%, percentage of visitor groups that were not registered
$r_{3,original}$ = 20.5%, percentage of visitor groups of unknown registration status

As a result, it is estimated that from 1997-1999, 27.7% of all visitor groups were registered, while the remaining 72.3% were not registered, based on the following assumptions:

- The visitor groups who were contacted or seen in the backcountry with unknown registration status have the same percentage of registration as others contacted or seen in the backcountry
- The three-year backcountry patrol reports present a sample size of visitors that is sufficient to represent all visitors

Using 27.7% as the percentage of registration, the study team estimated the annual visitor volumes by extrapolating visitor volumes from backcountry registrations as previously summarized in **Table 3-11** and **Figure 3-6**. The extrapolation is expressed below:

$$V_e = \frac{V_{BC}}{r}$$

Where: V_e = estimated number of annual visitors
V_{BC} = annual visitors derived from backcountry registration reports and/or spreadsheets
r = 27.7% which is the percentage of visitors who registered

This estimation is based on the following assumptions:

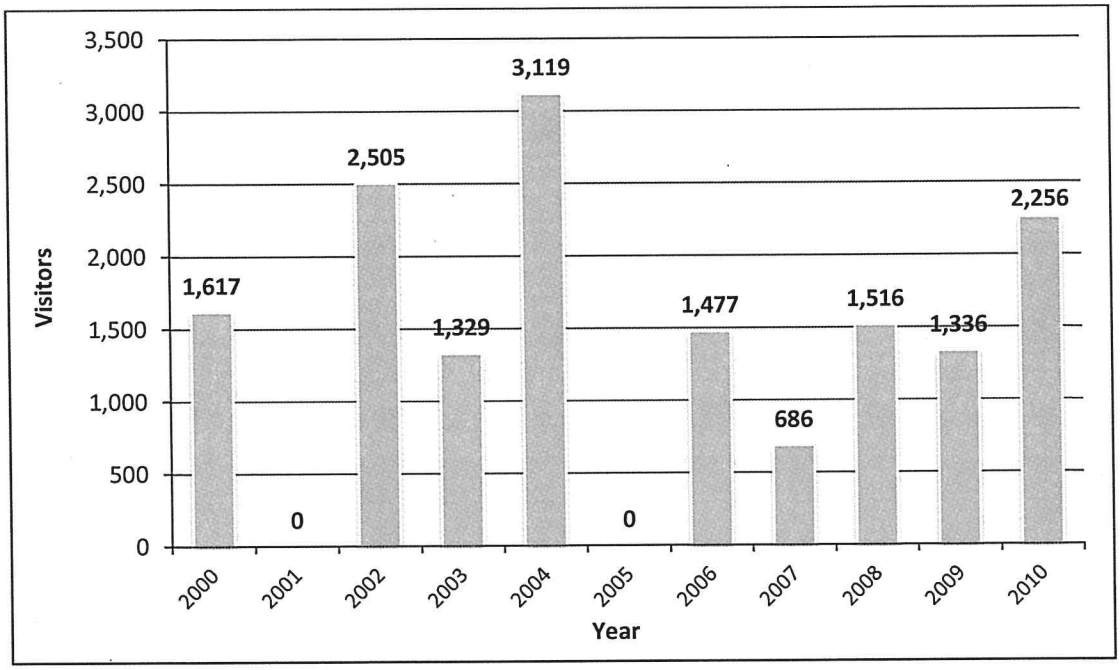
- The percentage of visitor groups that were registered is approximately equal to the percentage of visitors that were registered
- The percentage of visitors that were registered at any of the visitor center/ranger stations have not changed over the years from 1997 to 2010

The estimated visitor volumes are shown in **Figure 3-10** on the next page. The following observations are made based on information shown in **Figure 3-10** and from the extrapolation analysis:

1. During the 11-year period from 2000 to 2010 (excluding 2001 and 2005 as data is not available for these two years), the estimated number of visitors to the park varied widely between 686 (in 2007) and 3,119 (in 2004)
2. The year 2007 has by far the lowest number of visitors and is the only year with less than 1,000 visitors. This is mostly because the original backcountry registration reports of this year are incomplete, reporting only 48 visitor groups for the entire year (the only year reporting less than 100 visitor groups)
3. The year 2004 has the highest number of visitors due to being the only year with two sources of backcountry registration data (original forms and a park-provided spreadsheet). If only one source were counted, the year of 2004 would have had less visitors than 2002 and 2010

4. It becomes apparent that for most or all of the years, the backcountry registration data available is incomplete, and therefore under-representing the actual number of visitors to the park annually. The 2004 annual visitors of 3,119, derived from two sources of backcountry registration with all likely duplicates removed, might be the closest to the actual visitor volume

Figure 3-10
Estimated Annual Visitors by Extrapolation



Source: GAAR and NPS Alaska Region. Data compiled by URS.
Note: There is no backcountry registration data for 2001 and 2005

3.5.2. Synthesis of Combined Backcountry Registrations and CUA Reports

From 2000 to 2010, backcountry registration reports and commercial use authorization (CUA) reports are both available for most of the 11 years as indicated in **Table 3-15** below, although to various extents of completeness.

Table 3-15
Visitation Reports Availability 2000-2010

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008*	2009*	2010*
BC Reports	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
CUA Reports	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Source: GAAR and NPS Alaska Region.
Notes: BC – Backcountry registrations
CUA – Commercial Use Authorization
* - CUA reports contains limited data for 2008, 2009, and 2010 with less than 100 visitors reported for each year

The overlapping years of backcountry registration and CUA reports provided an opportunity to combine the two sources for a synthesis, which may result in a clearer picture of how many visitors traveled to the park on an annual basis. This synthesis used Microsoft Access, to combine the two data sources and filter duplicate data between the two sources, and Microsoft Excel to run PivotTable and statistical analysis in determining annual visitation to the park.

The synthesis process consists of the following steps:

1. Prepare the backcountry registration and CUA reports in two Excel tables, one for each type of report, so that the two tables have the same field (column) structure with each other
2. Import the prepared backcountry registration and CUA tables from Excel into an Access database
3. In the Access database, design and run a query to combine the backcountry registration and CUA tables into one table. In this new table, each record (row) represents visitation information of a visitor group that was reported in the backcountry registration forms or the CUA reports
4. Design and run queries to find and label duplicate records (rows) in the combined Access table
5. Visually inspect all labeled duplicate records to determine whether some of them may have been different visitor groups even though using criteria different from those used in step 4
6. Delete the replicates from the Access table. If two records are found to be the same visitor group, then one is deleted; if three are the same, then two are deleted
7. Repeat step 4 to step 6 for multiple times, each time using a different set of criteria, to ensure that all duplicate records are filtered and deleted
8. Export the resulting new table without duplicate records from Access to Excel for PivotTable and other analysis

The primary criteria used to find duplicates include:

- Number of people in the visitor group including guide(s)
- Entry location
- End location
- Trip start date
- Trip end date

In addition, other commonly reported visitor information in both types of visitor reports were used as secondary criteria to achieve better accuracy in fining duplicates. These secondary criteria include access mode, traveled areas in the park, guide services, and transporter.

Overall approximately 110 duplicates (between the backcountry registrations and CUA reports) were confirmed and deleted. This results in a total of 2,533 visitor groups (records) over the 11-year period from 2000-2011 in the combined visitor use table. **Table 3-16** and **Figure 3-11** summarizes PivotTable analysis results.

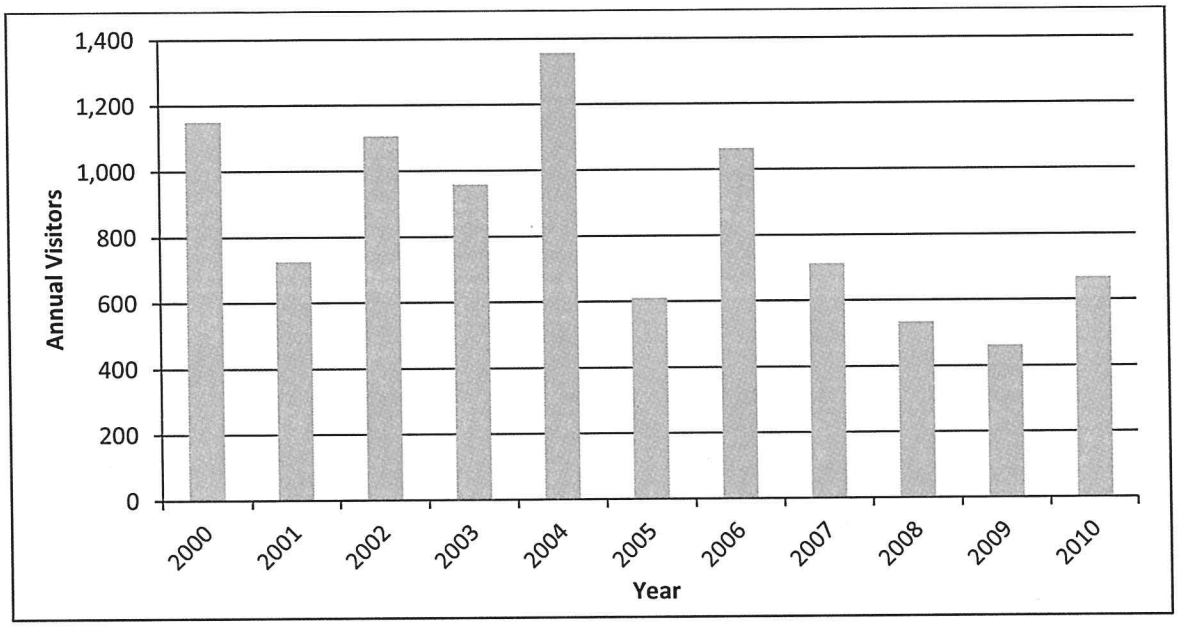
Table 3-16
GAAR Visitor Volumes from Combined Backcountry Registration and CUA Reports

Number of Visitor Groups												
Month	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**Total**
February	0	0	2	1	0	0	0	0	0	0	0	3
March	0	1	6	1	4	0	0	0	0	0	2	14
April	0	0	0	2	1	0	0	0	0	0	0	3
May	0	0	1	0	2	2	3	0	0	1	2	11
June	26	39	31	67	46	31	38	12	22	22	35	369
July	105	68	104	89	126	53	123	50	42	44	59	863
August	145	73	117	89	127	67	137	105	66	60	87	1,073
September	21	13	24	12	38	13	29	17	10	2	16	195
October	0	0	0	0	0	0	1	0	0	0	0	1
December	0	0	0	0	0	0	0	1	0	0	0	1
Total	**297**	**194**	**285**	**261**	**344**	**166**	**331**	**185**	**140**	**129**	**201**	**2,533**
Number of Visitors												
Month	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**Total**
February	0	0	13	1	0	0	0	0	0	0	0	14
March	0	7	24	1	27	0	0	0	0	0	8	67
April	0	0	0	3	1	0	0	0	0	0	0	4
May	0	0	1	0	6	4	9	0	0	4	4	28
June	79	117	119	255	174	134	129	49	88	82	109	1,335
July	445	254	382	349	487	184	401	212	163	185	201	3,263
August	572	317	491	305	548	241	429	386	260	181	298	4,028
September	56	32	78	44	114	48	94	61	24	11	48	610
October	0	0	0	0	0	0	3	0	0	0	0	3
December	0	0	0	0	0	0	0	5	0	0	0	5
Total	**1,152**	**727**	**1,108**	**958**	**1,357**	**611**	**1,065**	**713**	**535**	**463**	**668**	**9,357**

Source: GAAR and NPS Alaska Region. Data compiled by URS.

Notes: There is no backcountry registration data for years 2001 and 2005.
There are limited CUA reports for year 2008, 2009, 2010; each year having less than 100 visitors reported.
No visitation was recorded in January and November.

Figure 3-11
GAAR Annual Visitors from Combined BC and CUA Reports



Source: Backcountry registrations and CUA reports, provided by GAAR and NPS Alaska Region. Data compiled by URS.
Notes: BC = Backcountry registration.
CUA = Commercial use authorization

The following observations are made based on information from **Table 3-16** and **Figure 3-11** and the synthesis process:

- The synthesis of backcountry registrations and CUA reports indicated that annual visitors to the park varied between 463 (in 2009) and 1,357 (in 2004)
- The years of 2001 and 2005 do not have backcountry registrations available to the study team, and therefore the visitor numbers of these two years in **Table 3-16** are from the CUA reports only. Accordingly visitor volumes from these two years are very likely under-represented through this synthesis
- The year 2007 has a very low number of visitor groups or visitors reported in the backcountry registration forms, compared with other years for which backcountry registration data is available. Accordingly the visitor volume of 2007 based on this synthesis is likely much lower than the actual visitors

- The years of 2008, 2009, and 2010 have very few reports available from the CUA reports. Accordingly visitor volumes from these three years are very likely under-represented through this synthesis
- The year of 2004 has the highest number of visitors mostly because it is the only year that has more than one source of backcountry registration data (the original forms and a spreadsheet). According due to more data availability, the number of visitors of 2004 is expected to be closer to the actual visitor volume than the other years

3.6. Summary

The previous sub-sections present visitor analyses of various data sources including park staff observations, visitor estimates provided by the NPS Public Use Statistics Office, CUA reports, and backcountry registration reports. **Table 3-17** compares visitor volumes resulting from different resources and analyses.

Table 3-17
Summary of Annual Visitor Volumes

Source	Park Observations		YTD Reports	CUA Reports	BC Reports	BC Extrapolation	BC & CUA Synthesis
	Min	Max					
2000	795	910	723	718	448	1,617	1,152
2001	795	910	716	680	N/A	N/A	727
2002	795	910	1,054	433	694	2,505	1,108
2003	795	910	915	570	368	1,329	958
2004	795	910	623	487	864	3,119	1,357
2005	795	910	605	611	N/A	N/A	611
2006	795	910	801	646	409	1,477	1,065
2007	795	910	616	547	190	686	713
2008	795	910	696	N/A	420	1,516	535
2009	795	910	506	N/A	370	1,336	463
2010	795	910	579	N/A	625	2,256	668

Source: Original data provided by GAAR and NPS Alaska Region. Compiled and analyzed by URS.
Notes: Min – minimum. Max – maximum.
YTD – year-to-date. BC – backcountry. CUA – commercial use authorization.
N/A – not available or sample size is too small to be used.

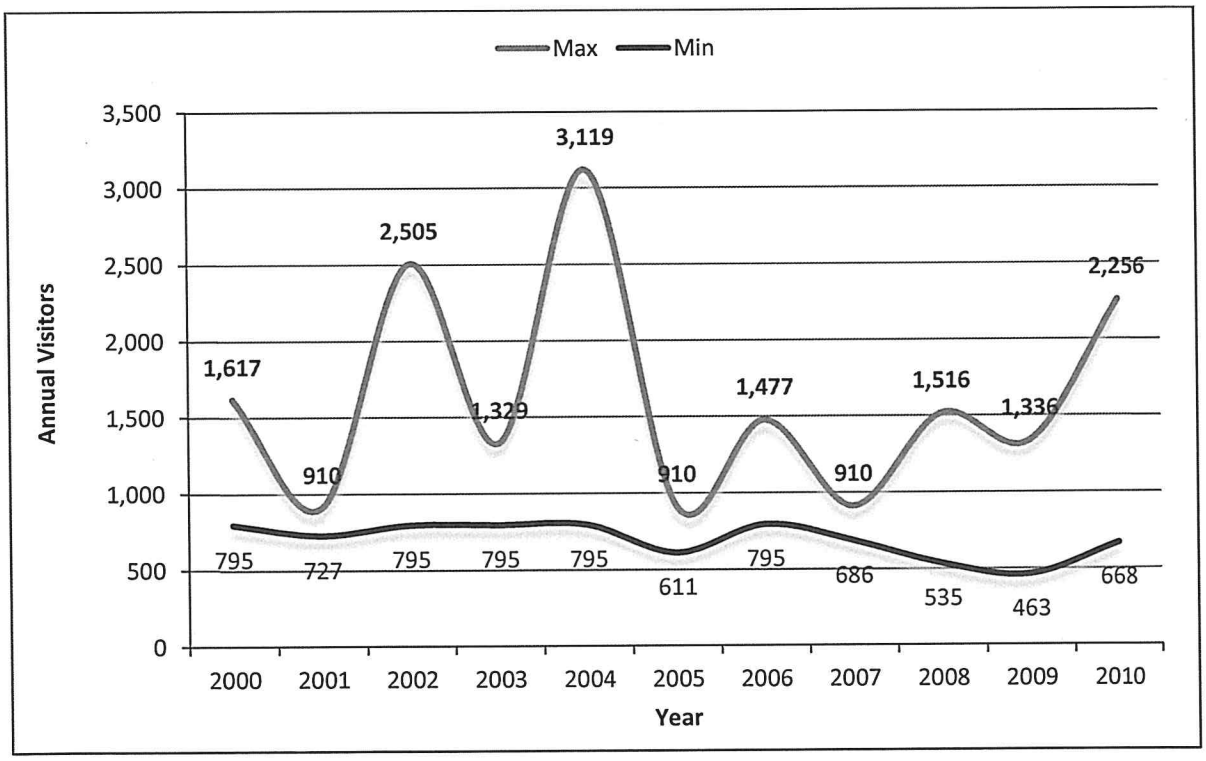
To estimate a reasonable range of the annual visitor volumes over the 11-year period from 2000 to 2010, based on the available data and without further speculation, the study team used four categories shown in **Table 3-17** including park observations (maximum and minimum), extrapolation of backcountry registrations, and synthesis of backcountry registrations and CUA

reports. The other three categories in **Table 3-17** including YTD reports, CUA reports, and backcountry registrations are excluded from this range estimate for the following reasons:

- The YTD reports, as advised by the NPS Public Use Statistics Office, contains unverified estimates of visitor uses
- The extrapolation results, which are based on backcountry registrations and park patrol visitor use reports, are considered more accurately representing visitor use than backcountry registration reports since the extrapolation accounted for park visitors who were not registered
- Similarly, the synthesis of CUA reports and backcountry registrations are considered better representation of visitor use than the latter two sources separated since the synthesis accounted for visitors reported in one source but not the other

Figure 3-12 illustrates the estimated range of annual visitors from 2000 to 2010. It is noted that over the past 11 years, 2001, 2005, 2008, 2009, and 2010 have less data available than the other years, and estimates of these years tend to result in lower visitor volumes.

Figure 3-12 Estimated Range of Annual Visitor Volumes



Source: Original data provided by GAAR and NPS Alaska Region. Data compiled and analyzed by URS.

The following items summarize visitor data analysis presented in the previous sub-sections:

1. Based on all visitor data available to the study team, it is estimated that the annual visitor volume varies between 1,000 and over 3,000 per year (reading the maximum line from **Figure 3-12**)
2. Various data were missing from different data sources used in this study, such as backcountry registrations of 2001 and 2005, very few records shown in the 2008-2010 CUA reports, and several years absent from NPS Stats database. These missing data items coupled with apparent incompleteness and unknown accuracy of some available data makes it very difficult to estimate actual visitor volumes
3. Compared with other data sources, the CUA reports and backcountry registrations provided sample data of visitor uses as opposed to unverified estimates. However, it is apparent that the CUA reports and backcountry registrations are incomplete in themselves, and they may only represent a portion of the actual visitors
4. Assuming that visitor volumes have not changed significantly since 2000, the extrapolated 2004 visitor volume at 3,119 might be the best estimate of average annual visitors over the last 11 years
5. Although incomplete, the CUA reports and backcountry registrations provide solid sample data in estimating travel patterns (other than visitor volumes) of the visitor population such as months of visitation, entry and exit locations, access mode, travel mode in the park, and traveled areas in the park
6. Of all park visitors, approximately 42-44% made the trip to the park in August, 34-36% in July, 14-15% in June, 6-7% in September, and only less than 3% visited the park during the other months
7. Over the 11-year period, the top locations from where visitors entered the park include Noatak, Circle Lake, North Fork Koyukuk, 12 Mile Slough, Hunt Fork Lake, Bettles, Walker Lake, and Anaktuvuk Pass
8. Over the 11-year period, the top locations where visitors exited the park include Bettles, Anaktuvuk Pass, Kobuk, Allakaket, Help-me-Jack Lake, Matchurak, Takahula Lake, Noatak, Kavachurak, and Circle Lake
9. Air taxi is by far the most common access mode to the park with approximately 73% of backcountry visitors using it to enter/exit the park, followed by hiking at 11%, private aircraft at 10%, and all other modes combined at 6%.
10. Approximately 54% of backcountry visitors used watercraft to travel within the park, 52% by hiking, while 8% used one of the other travel modes. (Percentages add to more than 100% due to multiple travel modes used)

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4. HIGHWAY TRAFFIC DATA ANALYSIS

This section describes highway traffic data that might affect park visitor volumes, visitor experience, and park resources.

4.1. Historical traffic counts

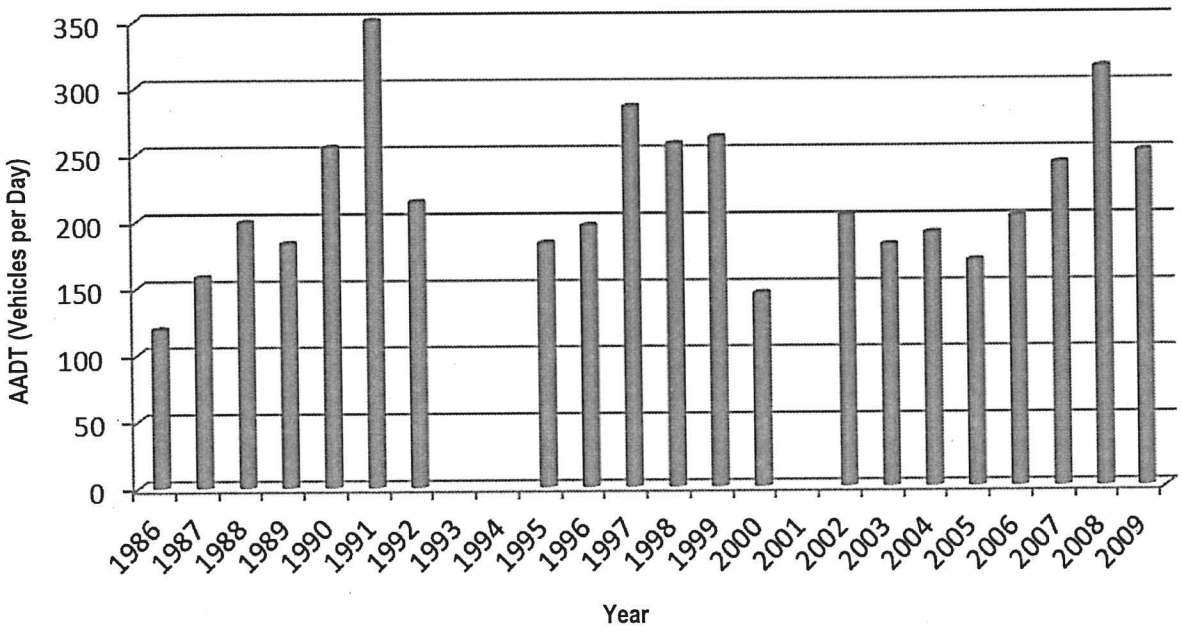
Currently there is no road in the park, nor is there a road providing access to the park via automobiles. The only all-season road that runs close to the park is the Dalton Highway which comes within five miles to the eastern boundary of the park. The Dalton Highway is a 415-mile, mostly gravel highway stretching from Livengood (84 miles north of Fairbanks) to Deadhorse and the Prudhoe Bay. Hiking from the highway to the park is possible along the Dalton Highway between approximately milepost 190 and milepost 276. The following landmarks/facilities adjacent to the park are located along the Dalton Highway:

- Coldfoot Arctic Interagency Visitor Center (AIVC), milepost 175
- Marion Creek Campground, milepost 180
- Wiseman, milepost 189
- Atigun Pass, milepost 244
- Galbraith Lake, milepost 275

Traffic data on the Dalton Highway, in terms of Annual Average Daily Traffic (AADT), heavy vehicle percentage, and crash data were collected from the Northern Region of Alaska Department of Transportation and Public Facilities (AK DOT & PF). **Figure 4-1** displays the AADT variation from a coverage count station at the Yukon River Bridge on the Dalton Highway, at milepost 55. A count station, as compared to a permanent traffic counter, only counts traffic several days a year (usually one full week), and estimates the AADT from the counts using pre-determined seasonal and/or monthly factors. This count station is the closest one to the GAAR which has a consistent traffic count record.

As shown in **Figure 4-1**, traffic volumes on Dalton Highway varied between 120 and 350 vehicles per day during the 21-year period 1986-2009 (Data of Year 1993, 1994, and 2001 are not available). Traffic volumes from 1997 to 2009 have remained relatively stable. There is no consistent trend of increasing or decreasing traffic over the past 21 years. According to communications with the traffic data & forecasting staff at AK DOT & PF, heavy vehicles on the Dalton Highway have been fairly consistent at 75%-80%, but no automated classification counts were taken at the location until 2007. These heavy vehicles are considered as consisting of mainly buses and trucks.

Figure 4-1
Dalton Highway Annual Average Daily Traffic (AADT)



Source: Alaska DOT & PF. Data compiled by URS.

Note: Traffic counts were collected from the count station at milepost 55.589. There is no data for Year 1993, 1994, and 2001.

Under normal conditions, traffic volumes on the Dalton Highway as described above should not cause any capacity restraints, since most segments of the highway should be able to handle approximately 1,000 vehicles per hour during a peak traffic hour, or 6,000 to 7,000 vehicles per day for both directions of travel. The above estimated capacity is based on the Highway Capacity Manual (HCM 2000), Transportation Research Board (TRB).

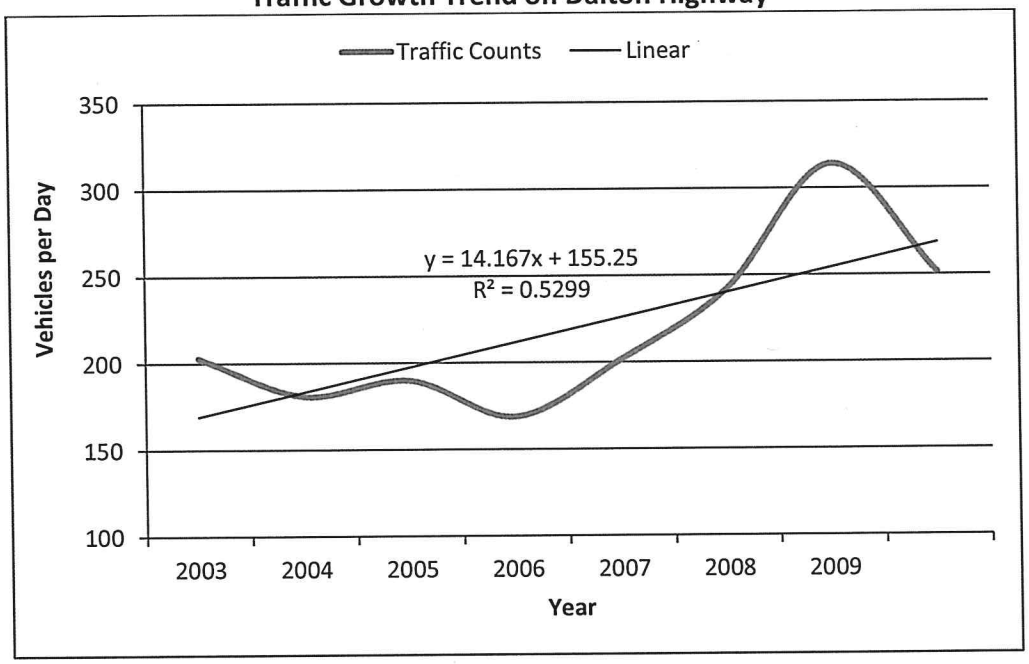
4.2. Traffic Projection

Although the 21-year traffic counts on the Dalton Highway, as displayed in **Figure 4-1**, do not reveal a consistent growth trend, it is still possible to project future traffic volumes using traffic counts of a shorter and more recent time period. **Figure 4-1** shows that the seven-year period from 2003 to 2009 has a generally upward growth trend.

Comparison of several different trend lines, each best fit to the seven-year traffic data, indicates that a linear trend line as shown in **Figure 4-2** is appropriate to represent the growth trend and can be used to project future traffic volumes (vehicles per day), based on the assumption that future year growth trend will be similar to the seven-year period. Other more sophisticated trend lines such as exponential, logarithmic, or polynomial have similar R-squared

values (a trend line and its equation are most accurate when its R-squared value is at or near 1) but are more prone to irregular projections with increasing, decreasing, or up-and-down rates. **Table 4-1** shows projected future traffic volumes on Dalton Highway.

Figure 4-2
Traffic Growth Trend on Dalton Highway



Source: Original data provided by Alaska DOT & PF. Data compiled and analyzed by URS.
Note: Traffic counts were collected from the count station at Dalton Highway milepost 55.589.

Table 4-1
Project Traffic Volumes on Dalton Highway

Year	2010	2015	2020	2025	2030	2035
AADT	270	365	460	554	649	744

Source: Original data provided by Alaska DOT & PF. Data compiled and analyzed by URS.
Note: AADT = Annual average daily traffic, vehicle per day.

Based on the variation trend fitted for the seven-year traffic counts (2003-2009), Dalton Highway is projected to carry less than 800 vehicles per day in the future year 2035, significantly below its estimated capacity of approximately 6,000 vehicles per day in both directions of travel. This projection does not account for traffic growth generated from potential transportation projects/changes in policy that are discussed in the next section. In addition, how much of the projected traffic growth will be related to the park visitors remains unknown and may need to be further analyzed. There is not sufficient data for this study to make such prediction.

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5. FUTURE PLANNING SCENARIO REVIEW

A variety of planning scenarios near the park and in the region may have substantial impacts on future park visitation and resources. This section provides an overview of potential projects/changes in policy identified by the park management, statewide and regional transportation plans, and demographic and economic information that are expected to affect visitor experience and park resources.

5.1. Potential Projects/Changes in Policy

The GAAR and NPS have identified four potential projects/changes in policy to be analyzed for their likelihood to be implemented and, if built, the potential impacts of these projects on park visitation and natural and cultural resources. These potential projects/changes include:

1. Potential Road to Resources road connecting Dalton Highway to the Bureau of Land Management (BLM) National Petroleum Preserve
2. Potential Road to Resources road connection Dalton Highway to the Ambler Mining District
3. Potential removal of the five-mile non-motorized buffer along Dalton Highway
4. Potential development of a float plane pond at Coldfoot.

The study team collected relevant data and documents on these identified potential projects from multiple agencies including the AK DOT&PF and BLM-Alaska. The status of each project/change in policy identified in the scope and its likely impact on park visitation; including volume, mode, origin, and experience; is briefly described in this section.

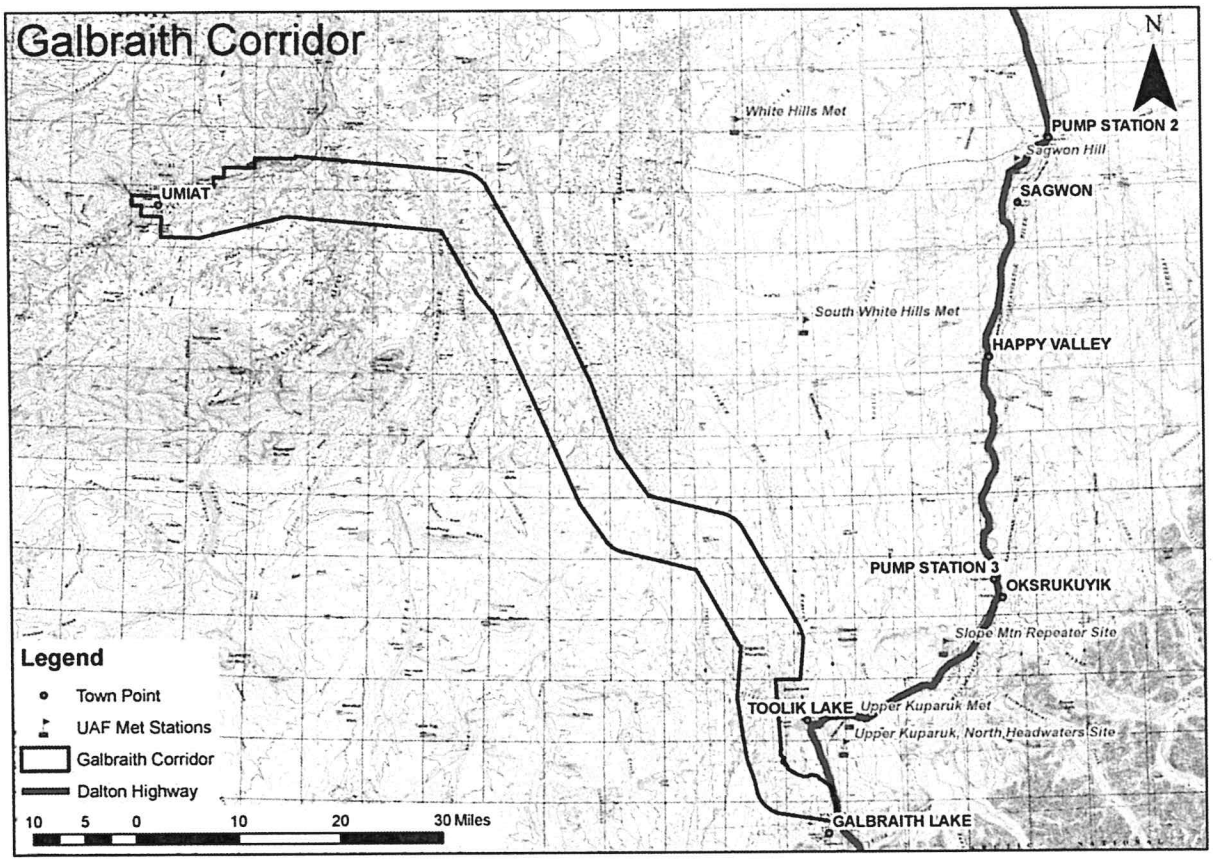
5.1.1. Potential Road to Resources Road from Dalton Highway to Umiat and BLM National Petroleum Preserve

This project, known as the "Foothills West Transportation Access", is currently under preliminary engineering and environmental baseline studies. The purpose of this project is to provide access to oil and gas resources both along the northwestern foothills of the Brooks Range, and within the National Petroleum Reserve-Alaska (NPRA). When funding is available, the AK DOT&PF intends to develop a formal Environmental Impact Statement (EIS) to determine if the project will move forward. The project is supported by the current administration, however funding for follow-on phases is currently not available (as of December 2010).

Out of multiple alternative corridors identified and evaluated for this project, the "Galbraith" corridor has been developed as the corridor that holds the highest potential for success, and has been the primary focus of the 2009 and 2010 field investigations. **Figure 5-1** illustrates the

Galbraith corridor. It begins approximately four miles north of Galbraith Lake, near milepost 286 of the Dalton Highway, and stretches northwest for approximately 75 miles to the Gubik oil and gas fields, and then an additional 25 miles further west to Umiat. The corridor crosses four major drainages including the Itkillik, Anaktuvuk, Chandler, and Colville Rivers. All the four major drainages run into the GAAR boundaries either directly or through their tributaries. The Killik, Nigu, and Etivluk Rivers are tributaries of the Colville River within the GAAR boundary.

Figure 5-1
Foothills West Transportation Access Project



Source: Alaska DOT & PF, Foothills West Transportation Access Project website: http://foothillsroad.alaska.gov/

Whether the project will be implemented in the foreseeable future and the built-out year of this project are unknown and largely dependent on future funding availability. However, upon completion this new road is expected to have significant impact on park visitations at the following aspects:

1. The new road may come within 10 miles of the GAAR boundary, especially at its southern terminus close to Galbraith Lake. If a non-motorized buffer is not imposed to the new road,

visitors will be able to use all-terrain vehicles to approach the park boundary from the future Foothills West road, and then either hike or use watercraft to enter the park.

2. The new road would cross four major drainages, as described previously, which extend into the park. Visitors will likely gain new access to the park by driving through the new road to one of the rivers or other smaller drainages and then enter the park using watercraft
3. The new road will likely change the distribution of trip origin (entry location) and destination (exit location) points in or near the park, as the crossing points of the four rivers with the park boundaries will become more popular
4. Similarly the future visitation patterns related to the new road may impact park resources along the four rivers
5. This new road could substantially increase visitor volumes to the GAAR because it provides easier access and the opportunity of using alternative access modes, i.e., ATVs and watercraft

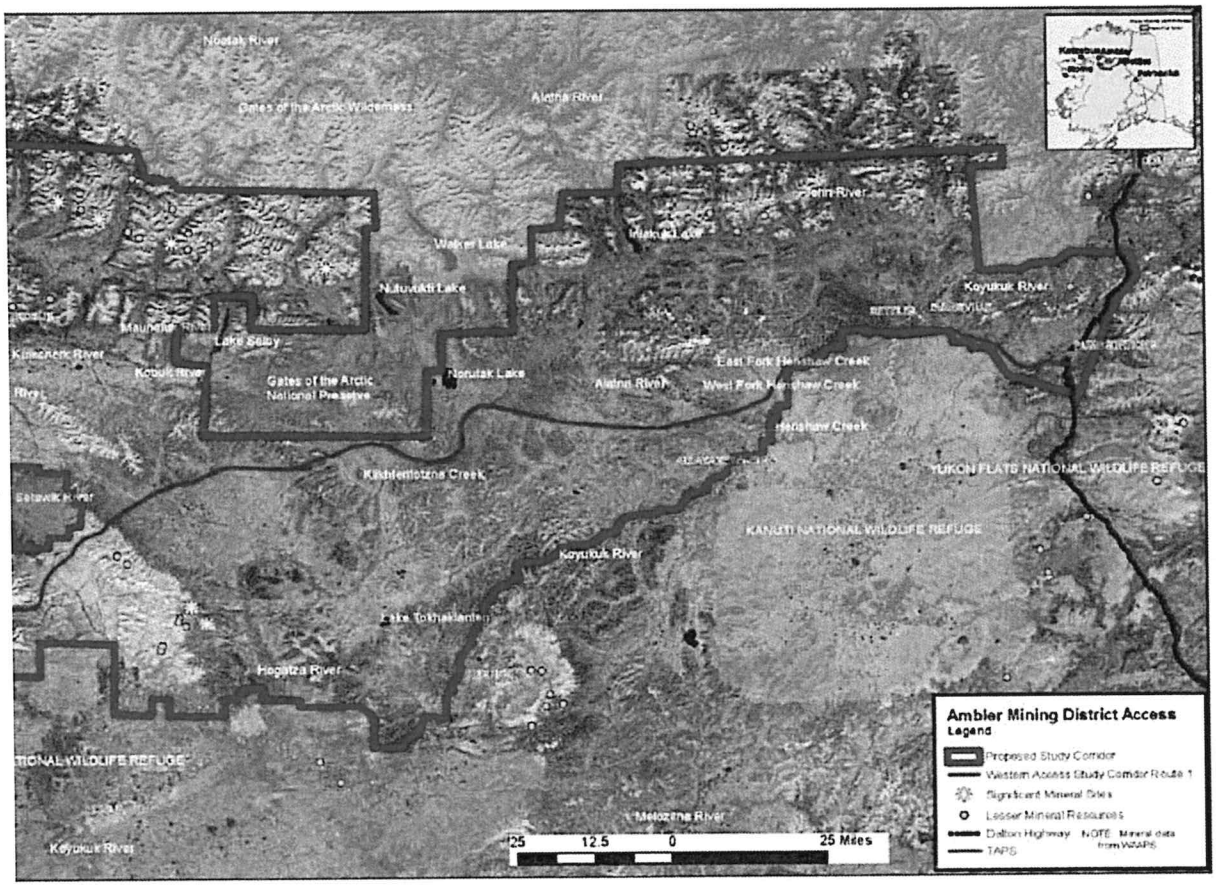
5.1.2. Potential Road to Resources from Dalton Highway to Ambler Mining District

The AK DOT & PF is conducting preliminary engineering on this Ambler Mining District Access Project. The objective of this project is to identify and construct a road or rail corridor that will provide transportation access to the Ambler Mining District from the Dalton Highway on the east and from the Pacific coast on the west. The AK DOT&PF intends to continue this project if it is determined feasible and if funding for next phases is allocated. This project is supported by the current administration.

As of April 2011, this project is in a pre-environmental review phase which may lead to a National Environmental Policy Act (NEPA) review phase as the project moves forward. The AK DOT&PF has started stakeholder outreach meetings in the villages closest to the Ambler Mining District. According to the DOT&PF, The current study is the first step to move towards a construction project. It will include preliminary analyses of possible corridors and may recommend one or more for further study. If one or more corridors are selected out of this study, the DOT&PF will need to conduct further environmental reviews and public outreach before the project could move toward design and construction. This process may take several years and construction would depend on the availability of funding. Currently funding for future studies, design, and construction has not been proposed or allocated.

Assuming the project will move toward construction, upon completion this new road may provide all-season road or rail access between Dalton Highway and communities including Ambler, Bettles, Alatna, and Kobuk. A portion of this road may run along the southern edge of GAAR or even within the park boundary. **Figure 5-2** on the next page illustrates one of the alternative corridors being studied, initially identified as the "Western Access Study Corridor Route 1". **Appendix B** includes the most recent corridor map, provided by the AK DOT&PF, illustrating the current alternatives under study. Several alternative corridors shown in the map will run along the southern edge of the park or within the park boundary.

Figure 5-2
Ambler Mining District Access



Source: Alaska DOT & PF

Similar to the Dalton Highway to Umiat road, whether the Ambler Mining District Access project will be constructed in the foreseeable future and the built-out year of this project are unknown. However, upon completion this new access is expected to have an impact on park visitation and resources in the following aspects:

- This project could substantially increase future visitor volumes to the park by bringing a road or rail almost immediately adjacent to the southern boundary of the park. If a road were built, driving to the park vicinity from Fairbanks or Kotzebue will be an one or one-half day trip
- The new access road or rail will likely increase hiking and boating as the primary access modes to the park, as opposed to flying

- Crossing points of major drainages and the southern boundaries of the park will likely become more popular trip origins (entry location) and destinations (exit location). Such drainages include the Koyukuk, Wild, John, Alatna, and Kobuk Rivers
- Park resources, especially wilderness areas, along these major drainages will likely experience impacts by increased visitors in those areas

5.1.3. Potential Removal of BLM Non-Motorized Buffer on the Dalton Highway

In the past multiple bills have been proposed to remove the five-mile non-motorized buffer along the Dalton Highway, but none of them were passed by the state legislature. The most recent move is State House Bill (HB) 267 proposed in early 2010 and likely defeated in April 2010. HB 267 proposes to provide snow machine access within five miles along Dalton Highway from October 1st to April 30th.

The potential impact by removal of the non-motorized buffer would have been limited to Park visitation during the winter, since any proposal involving allowing all-terrain vehicles to use the buffer area will unlikely receive support from the BLM or the State.

5.1.4. Potential Development of a Float Plane Pond at Coldfoot

According to the DOT&PF, development of a float plane pond at Coldfoot or other communities near the park is highly unlikely in the foreseeable future. The study team has conducted an extensive literature review along with communications with the DOT&PF officials on this subject. No formal documents were found that might suggest a float plane pond be developed at Coldfoot. Therefore the study indicates that this potential development is unlikely to happen in the foreseeable future and no impacts on park visitation and park resources can be expected at this stage.

5.2. Relevant Transportation Plans

Aside from the four potential projects/changes in policy as described previously, other statewide and regional transportation plans were thoroughly reviewed for potential transportation and aviation projects in the region that may affect park visitation and resources. The following relevant transportation plans have been reviewed:

- *Let's Get Moving 2030: Alaska Statewide Long-Range Transportation Plan* (LRTP), AK DOT&PF, February 2008
- *Northwest Alaska Transportation Plan, Community Transportation Analysis* (An element of the statewide LRTP). Alaska DOT&PF, February 2004
- *Interior Alaska Transportation Plan* (An element of the statewide LRTP), AK DOT&PF, February 2010

- *Alaska Statewide Transportation Improvement Program (STIP) 2010-2013*. AK DOT&PF, August 2010
- *Airport Improvement Program Project Schedule 2011-2013*, Federal Aviation Administration (FAA) Airports Division, Alaskan Region, October 2010
- *Alaska Aviation System Plan, Phase 1, Stage 1 Report.* AK DOT&PF, October 2008

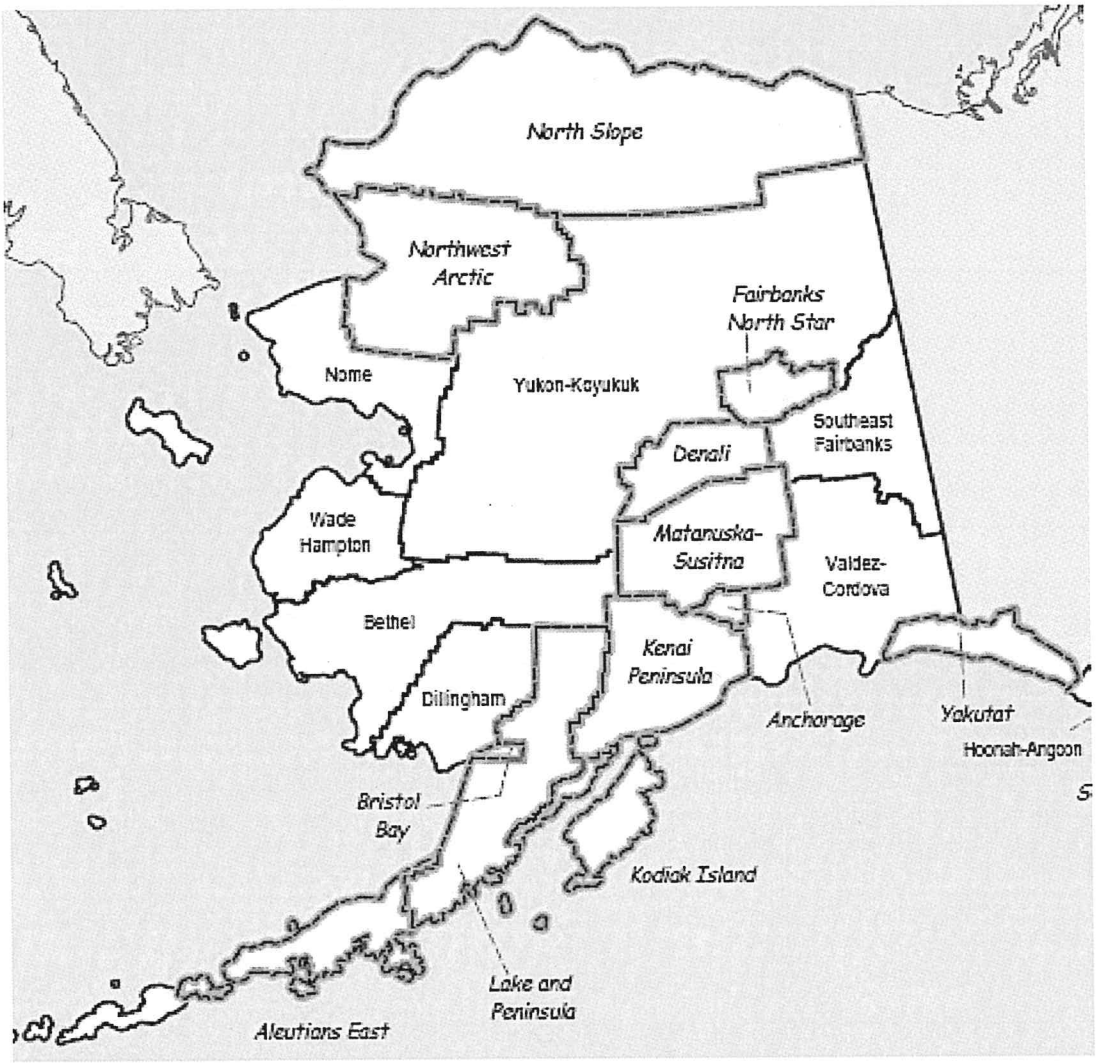
Upon these reviews, the following potential projects/developments which could have impacts on park visitation and/or resources have been identified:

1. The statewide LRTP identifies a recent move to develop a more formal trail network throughout the arctic, interior, and western Alaska.
2. The DOT&PF Northern Region staff will work with regional and community Search and Rescue personnel to setup winter trail projects. The goal is to allow people to use their Global Positioning System (GPS) equipment on the trails through waypoint
3. Aviation will remain the primary transportation mode for long distance transport over the 20-year window used in the DOT/PF area plans
4. A 35-mile road connecting Bettles to Dalton Highway is recommended within the 20-year horizon. This road will provide access from Bettles to the State road system. The estimated cost is approximately $35 million. If the Ambler Mining District Access project moves forward, this 35-mile road is likely to be part of the larger project
5. A road connecting Anaktuvuk Pass to Dalton Highway via a Spur from the proposed Foothills West Access Road. The objective of this project is to provide access from Anaktuvuk Pass to the state road system. The construction of this road is beyond the 20-year planning horizon and is dependent on the development of the Foothills West Access project
6. The statewide and area LRTP and STIP identified various projects for Dalton Highway, including illustrative projects; short term, medium term, and long term highway improvements. These projects include rehabilitation, resurfacing, widening, drainage improvements, reconstruction, enhancements, heavy deferred maintenance, pavement, permitting, and delineator installations. Many of these projects will likely be completed by 2030. Although not expected to increase capacity of the Dalton Highway, these projects may improve travel speed, safety, and traveler comfort and convenience
7. Airport capital improvements have been recommended for the Coldfoot airport, including medium term projects of $3.5 million and long term projects of $3 million. These improvements will include erosion control, lighting replacement, obstruction clearance, and resurfacing.

5.3. Demographic Data

The Gates of the Arctic National Park and Preserve (GAAR) is located in three boroughs & census area including the North Slope Borough, Northwest Arctic Borough, and Yukon-Koyukuk Census Area. **Figure 5-3** illustrates the current boundaries of these boroughs and census areas.

Figure 5-3
Alaska Borough & Census Area Boundaries (Partial) – 2008



Source: Alaska Department of Labor & Workforce Development, Census & Geographic Information Network.

For demographic data collection purpose, the study team identified 16 cities, municipalities, and census-designated places (CDP) that are either close to GAAR or major cities of which population growth may impact park visitation; such as Anchorage and Fairbanks. **Table 5-1** on the next page illustrates population changes from 1990, 2000, and 2010 U.S. Census data. The U.S. Census Bureau recently released the 2010 Census data for the State of Alaska.

Table 5-1 shows that, over the last two decades, the State population has steadily increased from approximately 550,000 in 1990 to over 710,000 in 2010, an overall 29.1% increase. The three boroughs/census area collectively have a population decrease of approximately 10% from 1990 to 2010. Anchorage has seen its municipality population increased by nearly 29%, while the population of Fairbanks increased by 2.2% over the last two decades. The smaller cities and CDPs close to the park, including Kotzebue, collectively had a population increase of approximately 14% (from 4,263 people in 1990 to 4,857 in 2010).

Table 5-1 Alaska Population Change 1990-2010

Geography	1990 Population	2000 population	2010 Population
Statewide			
Alaska	550,043	626,932	710,231
Borough/Census Area			
North Slope Borough, Alaska	5,979	7,385	9,430
Northwest Arctic Borough, Alaska	6,113	7,208	7,523
Yukon-Koyukuk Census Area, Alaska	8,478	6,551	5,588
CDP			
Alatna CDP, Alaska	N/A	35	37
Allakaket city, Alaska	170	97	105
Ambler city, Alaska	311	309	258
Anaktuvuk Pass city, Alaska	259	282	324
Anchorage municipality, Alaska	226,338	260,283	291,826
Bettles city, Alaska	36	43	12
Coldfoot CDP, Alaska		13	10
Evansville CDP, Alaska	33	28	15
Fairbanks city, Alaska	30,843	30,224	31,535
Hughes city, Alaska	54	78	77
Kobuk city, Alaska	69	109	151
Kotzebue city, Alaska	2,751	3,082	3,201
Koyuk city, Alaska	231	297	332
Koyukuk city, Alaska	126	101	96
Shungnak city, Alaska	223	256	262
Wiseman CDP, Alaska		21	14

Source: U.S. Census Bureau. Data compiled by URS

The Alaska Department of Labor and Workforce Development (DOLWD) recently released the *Alaska Population Projections 2010-2034*, February 2011 (published in April 2011). In this document, the DOLWD forecast that in the most likely scenario the State population will be approximately 723,619 in 2014, 794,975 in 2024, and 862,750 by 2034. Compared with the

2010 State population from the U.S. Census data, the projected population represents an increase of 2% by 2014, 12% by 2024, and 22% by 2035. Overall, the State and most communities near the park are projected to have moderate increase in population in the next 20 years.

The study team also reviewed recent economic data and documents including *the 2009 Alaska Economic Performance Report*, published by the Alaska Department of Commerce, Community, and Economic Development. No regional or local economic developments, such as increased oil and natural gas production and significant growth in regional tourist industry, was identified that might substantially affect GAAR visitation.

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6. VISITATION PROJECTION

The study team experimented with a variety of methods and forecast models in developing quantitative projection of future visitor volumes. However, it becomes apparent that such projection, although tempting, cannot generate verifiable and reliable visitor use data for the following reasons:

- The historical visitor use data is incomplete and the accuracy of the available data is unknown. As a result, it is very difficult to develop a growth trend using the historical data. Furthermore it is impossible with the available data to establish a correlation between visitor volume variation and parameters that likely affect visitor use
- Some of the potential projects/changes in policy described in the preceding section are expected to substantially affect park visitation. However, the early planning status of those projects, accordingly a lack of documented forecast data, and their unknown futures regarding whether and when they will be built, render a quantitative visitor projection unreliable

Despite the above issues, the following qualitative assessments of future park visitation are made from the study results:

- If none of the potential projects/changes in policy will be implemented, the visitor volume is expected to have a moderate increase during the next 20 years. The increase will likely come from population growth with more younger people in the State and nationwide and improvements to the Dalton Highway and Coldfoot Airport
- The potential Ambler Mining Access Road and Foothills West Access Road ("Road to Umiat"), upon completion, are expected to significantly increase visitor volumes to the park. Surface transportation including driving (close to the park), hiking, and boating is expected to become the access mode for majority of visitors as compared with aviation, which is the current predominant mode to access the park
- The above two projects are also expected to have substantial impacts on park resources due to increased visitor use, especially along major drainages that extend into the park from north and south
- The potential removal of the BLM non-motorized buffers along Dalton Highway, upon implementation, is expected to increase the number of park visitors in the winter season as visitors will be allowed to drive on Dalton Highway near the park, use a snow machine to reach the park boundary, and hike or use watercraft to enter the park. The increased impacts on park resources by this change in policy will mostly be in the eastern portion of the park

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7. CONCLUSIONS

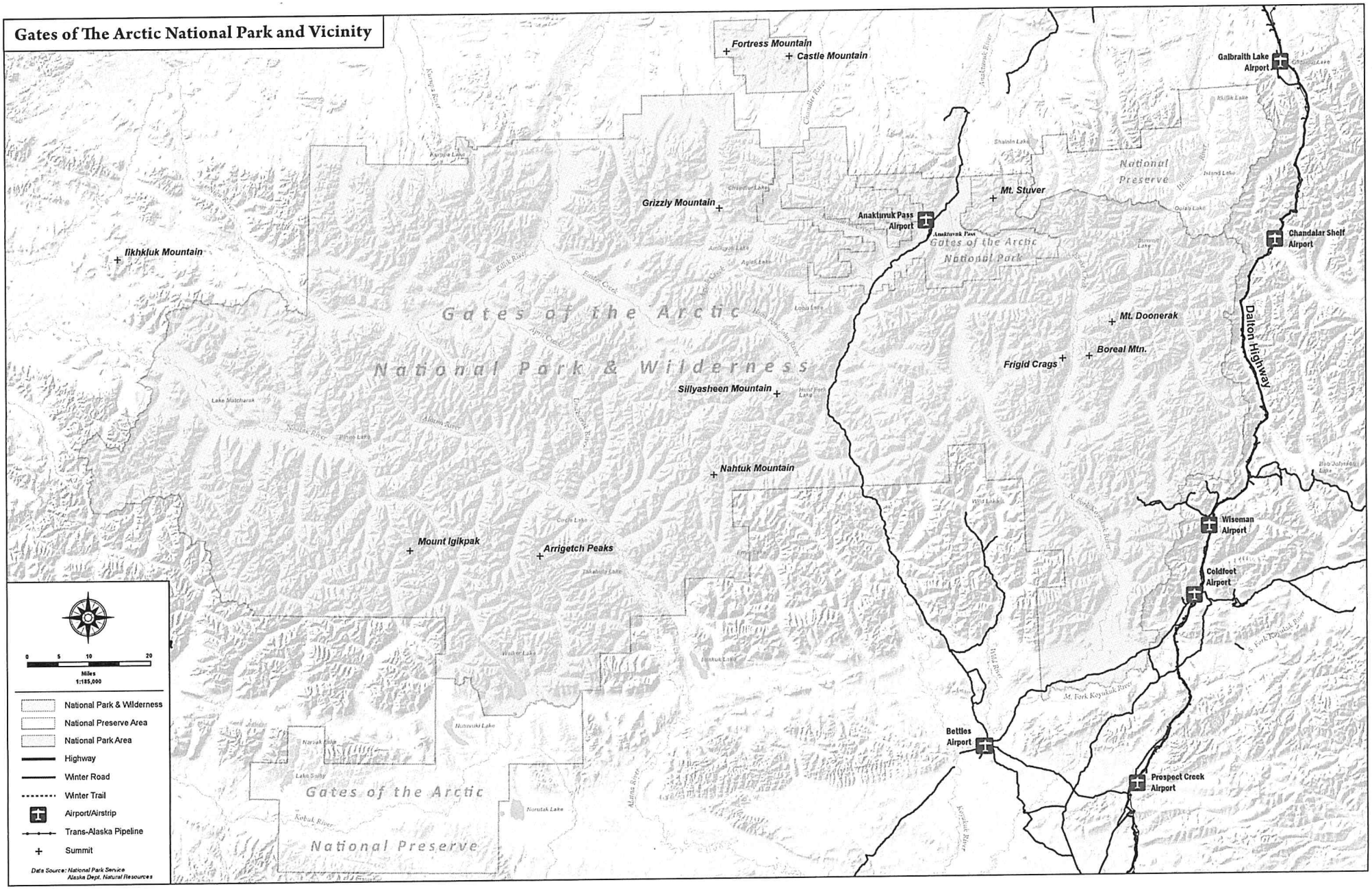
The following conclusions are presented based on data collection, compilation, and analysis results as described in the preceding sections. These conclusions are strictly based on thorough analyses of all available data with reasonable assumptions and acknowledgement that all sources need to be considered objectively without bias. Although some of the results may seem surprising, the study team believes that they represent unbiased analysis and educated estimates based on all available data and sound analytical methods.

1. The available visitor data collectively indicated that, during the past decade GAAR might have received 1,000 to 3,000 visitors per year
2. The CUA reports and backcountry registrations provided recorded data of visitor uses as opposed to unverified estimates. However, it is apparent that the CUA reports and backcountry registrations are incomplete in themselves, and they may only represent a portion of the actual visitors
3. The extrapolated 2004 visitor volume of 3,119 might be the best estimate of and closest to the average annual visitors over the last 11 years (2000 to 2010), since 2004 is the only year with more complete recorded data and the extrapolation accounted for visitors who were not registered
4. Although incomplete, the CUA reports and backcountry registrations provided solid sample data in estimating travel patterns (other than visitor volumes) of the visitor population such as months of visitation, entry and exit locations, access mode, travel mode in the park, and traveled areas in the park
5. Of all park visitors, approximately 42-44% made the trip to the park in August, 34-36% in July, 14-15% in June, 6-7% in September, and only less than 3% visited the park during the other months
6. Over the 11-year period, the top locations from where visitors entered the park include Noatak, Circle Lake, North Fork Koyukuk, 12 Mile Slough, Hunt Fork Lake, Bettles, Walker Lake, and Anaktuvuk Pass
7. Over the 11-year period, the top locations where visitors exited the park include Bettles, Anaktuvuk Pass, Kobuk, Allakaket, Help-me-Jack Lake, Matchurak, Takahula Lake, Noatak, Kavachurak, and Circle Lake
8. Air taxi is by far the most popular access mode to the park with approximately 73% of backcountry visitors using it to enter/exit the park, followed by hiking at 11%, private aircraft at 10%, and all other modes combined at 6%
9. Approximately 54% of backcountry visitors used watercraft to travel within the park, 52% by hiking, while 8% used one of the other travel modes. (Percentages add to more than 100% due to multiple travel modes used). This travel mode distribution is expected to remain generally the same over the next 20 years, regardless of the status of potential projects/changes in policy

10. The State population is expected to increase moderately over the next 20 years, indicating by itself population increase is not expected to cause significant changes in park visitor use
11. Based on the information currently available, it is possible that the Ambler Mining District Access Road and Foothills West Access Road might be constructed or partly constructed in the next 20 years. Upon completion these new roads are expected to significantly increase visitor volumes to the park. Surface transportation including driving (close to the park), hiking, and boating is expected to become the access mode for majority of visitors as compared with aviation, which is the current predominant mode to access the park
12. The above new roads are also expected to have substantial impacts on park resources due to increased visitor use, especially along major drainages that extend into the park from north and south
13. Compared with the potential new roads to Ambler and Umiat, the potential removal of the BLM non-motorized buffers along Dalton Highway is unlikely to occur in the foreseeable future due to lack of support from Federal and State agencies and the general public. Nonetheless, upon implementation this potential removal is expected to increase the number of park visitors in the winter season as visitors will be allowed to drive on Dalton Highway near the park, use a snow machine to reach the park boundary, and hike or use watercraft to enter the park. The increased impacts on park resources by this change in policy will mostly be in the eastern portion of the park
14. As wireless communication technology becomes available in this area, cell phones could be used to track visitor use patterns and enhance the park's ability to count visitors more accurately.

APPENDIX A.
GATES OF THE ARCTIC NATIONAL PARK AND PRESERVE
- OVERVIEW MAP

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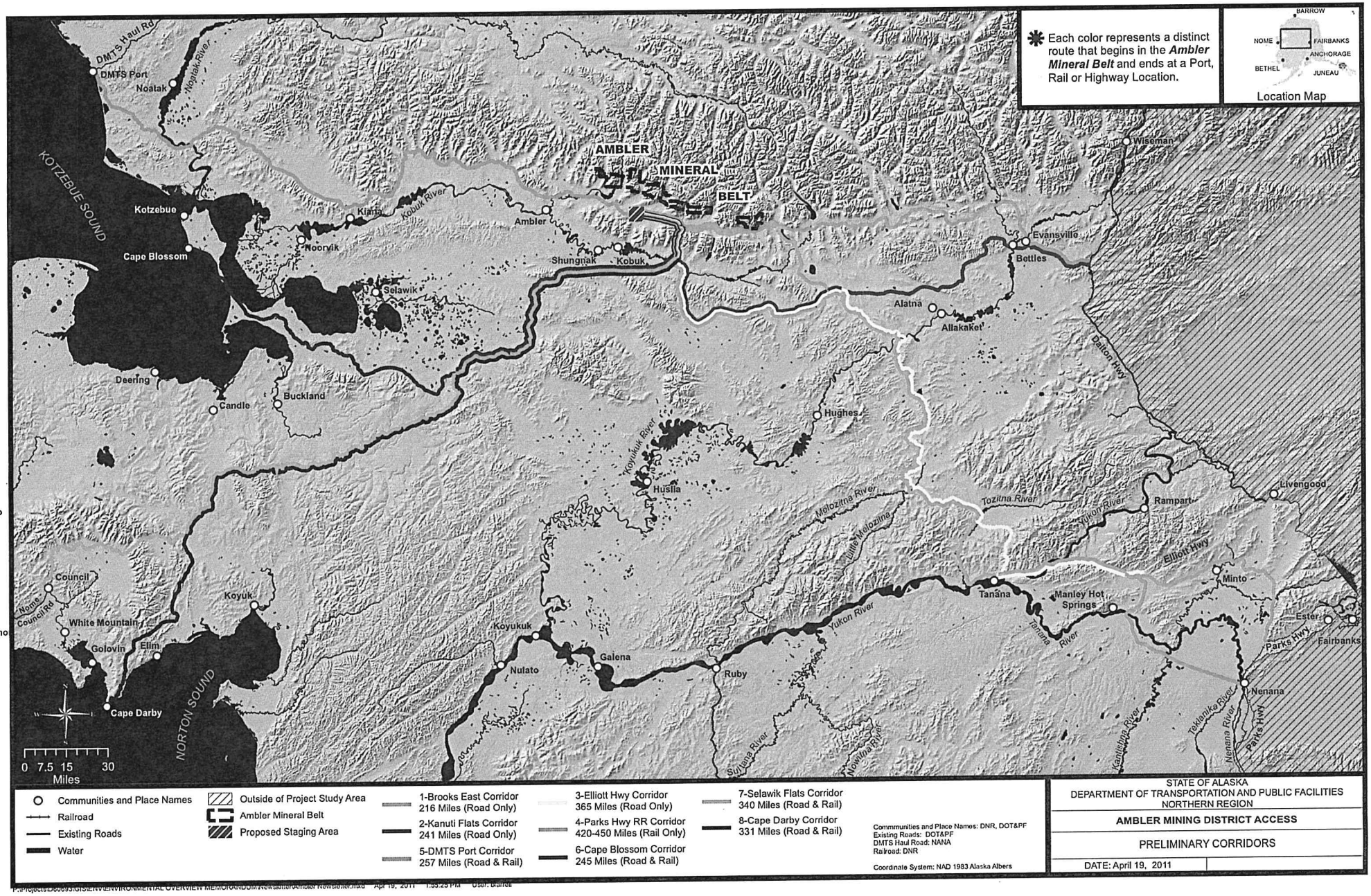

Gates of The Arctic National Park and Vicinity
Fortress Mountain
Castle Mountain
Galbraith Lake Airport
Grizzly Mountain
Mt. Stuver
Anaktuvuk Pass Airport
Chandalar Shelf Airport
Ikhkluk Mountain
Gates of the Arctic National Park & Wilderness
Mt. Doonerak
Dalton Highway
Boreal Mtn.
Frigid Crags
Sillyasheen Mountain
Nahtuk Mountain
Wiseman Airport
Coldfoot Airport
Mount Igikpak
Arrigetch Peaks
Bettles Airport
Prospect Creek Airport
Gates of the Arctic National Preserve
0 5 10 20
Miles
1:185,000
National Park & Wilderness
National Preserve Area
National Park Area
Highway
Winter Road
Winter Trail
Airport/Airstrip
Trans-Alaska Pipeline
Summit
Data Source: National Park Service
Alaska Dept. Natural Resources

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APPENDIX B.
AMBLER MINING DISTRICT ACCESS – PRELIMINARY CORRIDORS

(Source: Alaska Department of Transportation and Public Facilities, Northern Region)

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STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
NORTHERN REGION

AMBLER MINING DISTRICT ACCESS

PRELIMINARY CORRIDORS

DATE: April 19, 2011

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