R&M CONSULTANTS, INC.
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MEMORANDUM

To: University of Alaska Anchorage

From: R&M Consultants, Inc. (Kristi, McLean, Christopher Fell, CPG)

Subject: UAA Cooling Wells – ADNR Water Rights Summary

Project Number: 2992.01

Date: 19 July 2024

R&M is assisting UAA with obtaining Temporary Water Use Authorizations while Water Rights applications are adjudicated by the Alaska Department of Natural Resources (ADNR). Water Rights are still pending for the following seven wells, listed in order of priority date:

Cooling Well	LAS/ADL	Priority Date/Application Received	Status
AAC	LAS 30168	03/2015	In Process
ANSEP	LAS 30907	03/2016	In Process
AHS	LAS 30908	03/2016	In Process
PSB	LAS 30909	03/2016	In Process
Library	LAS 31545	12/2016	In Process
NSB	LAS 32346	05/2018	In Process
ARTS	ADL 212698	06/2018	Original WR issued in 02/1998; in process of transferring to new well

ADNR requested that UAA provide monthly well flow data for the above tabulated wells. The following table presents the data from sensors installed in the wells. Note that the data included have been modified from the raw format to remove obviously erroneous data (see data disclaimer).

Data Disclaimer:

There are sensor driven data artifacts (errors) in the dataset, that have been observed over the years (e.g., a well pump rate of 41,516 and 287,469 GPM when the pumps are physically incapable of operating at that level – AS122 from August 2019 and AS111 from July 2022, respectively, or a pump running for 22+ hours with no flow - AS124 from July 2019). Similarly, occasionally records show very low pump rates that fall below the throttle range of the pumps. Any user of these data should be made aware that these artifacts exist given the remote, sensor driven nature of monitoring and that any data analysis should include provisions for identifying, marking in any analysis for reference, and properly accounting for them in that analysis.

Month	Year	2022-2023 DNR UAA Well Total Flow - Gallons Per Month						
		PSB (AS111) LAS 30909	AHS (AS114) LAS 30908	NSB (AS122) LAS 32346	Library (AS124) LAS 31545	Arts (AS127) ADL 212698	ANSEP (AS153) LAS 30907	AAC (AS157) LAS 30168
1	2022	Pumps Winterized						
2	2022							
3	2022							
4	2022							
5	2022	77,127	210,500	180,875	2,483,690	2,299,847	13,565	191,8496
6	2022	5,261,902	2,127,400	542,038	5,626,502	6,186,285	341,007	4,287,968
7	2022	5,872,312	1,913,800	524,790	5,895,843	6,774,439	337,297	4,763,359
8	2022	1,696,838	1,724,500	388,058	388,058	6,712,858	193,035	3,824,784
9	2022	170,656	323,800	162,667	3,050,446	3,769,634	57,733	2,516,384
10	2022	61,421	117,500	14,903	0	0	13,128	397,760
11	2022	Pumps Winterized						130,144
12	2022							
1	2023							
2	2023							
3	2023							
4	2023							
5	2023	1,211,051	479,200	131,878	1,676,246	9,250	0	1,662,349
6	2023	2,659,027	1,112,600	299,738	4,327,306	0	178,902	2,675,840
7	2023	1,339,852	276,000	117,492	1,352,077	0	62,780	1,068,336
8	2023	August 2023 data not available						
9	2023	504,176	104,300	15,872	5,349,835			1,783,828
10	2023	Pumps Winterized						
11	2023							
12	2023							

Notes:
Well Flow Data for August 2023 not available.
Data compiled from UAA monthly well reports.
Sensor driven data artifacts (errors) have been removed from calculations of total flow for each month. See the "Data Disclaimer" for further explanation.