

Electronic Log Book Case Study

Brian Russell
brian@gbuapcd.org





- **Data driven public and internal websites.**
- **Real-time public alert system for community sites.**
- **Many remote sites - Owens and Mono Lake.**

Community Sites

Current Conditions

Health Advisories

Air Quality Cameras

Governing Board



The Great Basin Unified Air Pollution Control District is a California regional government agency that works to protect the people and the environment of Alpine, Mono and Inyo Counties from the harmful effects of air pollution.

Inyo, Mono and Alpine Counties joined together in 1974 in a joint powers agreement to form the Great Basin Unified Air Pollution Control District, which covers the Great Basin Valleys - Air Basin in California.

GBUAPCD's purpose is to enforce federal, state and local air quality regulations and to ensure that the federal and state air quality standards are met in the District. These standards are set to protect the health of sensitive individuals by restricting how much pollution is allowed in the air.

To meet these standards GBUAPCD enforces those federal laws delegated to us, state laws on stationary sources of pollution, and pass and enforce our own regulations as they become necessary.

	Air Quality
Bishop	Good
Coso Junction	Good
Keeler	Good
Lee Vining	No Data
Lone Pine	No Data
Mammoth Lakes	Good
Olancho	Good

Legend

✓ No Current Health Advisories.

Public Notice (5)

What's New

Automatic Flagging

Lone Pine Tabular Data

Date/Time	PM ₁₀ (µg/m ³)	Wind Speed (mph)	Wind Direction	Outside Temperature °F
Tuesday 05/07/2019 (127) 13-14:00	Maintenance / Routine Repairs	9	326° (NNW)	77
05/07/2019 12-13:00	Maintenance / Routine Repairs	6	334° (NNW)	75
05/07/2019 11-12:00	30	6	345° (NNW)	73
05/07/2019 10-11:00	40	7	356° (N)	69
05/07/2019 09-10:00	37	6	354° (N)	65
05/07/2019 08-09:00	20	3	37° (NE)	60
05/07/2019 07-08:00	23	3	181° (S)	56
05/07/2019 06-07:00	18	3	157° (SSE)	53

Why Did We Pursue E-Log Books?

- **Query-ability, Automatic Reporting.**
- **Information Accessibility
>>>Communication.**
- **Integration with other software systems.**
- **Prevent false positive health advisories.**

Health Advisories

Great Basin Unified Air Pollution Control District

Dust Alert

December-21-2017 8AM to 9AM

The following location is experiencing poor air quality

Keeler

PM ₁₀ , Stage 2	826.8µg/m ³
PM _{2.5} , Stage 1	160.1µg/m ³

Eliminate outdoor activities in impacted areas.

Remain indoors with doors and windows closed until the episode is terminated.

Avoid all activities that produce aerosols, dust, fumes and other irritants.

[Camera](#)

[Live Data](#)

[GBUAPCD](#)

[Unsubscribe from Keeler](#)

[Unsubscribe from All](#)

Health Advisory System Issues

- **Invasive Maintenance.**
- **Used algorithm to determine if dust storm was real.**
- **Average Wind Speed and Max Gust.**
- **Dust Devils cause huge PM values and also a high max gust.**

Site Visit Form

5855 2 Total 6085

Quick Find

FormSN: 10411 Get My Records Search Date Range Perform Find Show All Go To Summary Go To Table Go To Backpage Home Save

1400 TEOM GBUAPCD LAN

GENERAL INFO Remote Visit

Technician: Lajos_Kurucz
 Site: Lone Pine TEOM
 Date: 01/30/2019
 On site time (PST): 13:02
 Off site time (PST): 13:37

TEOM S/N(CU): 24981
 TEOM S/N(WU): 24928
 Auto-Invalidation: TEOM
 Invalidation Type: Bi-weekly Flow Check
 Status: ok
 Operating Mode: 4

Comments: All ok, biweekly flow check. Replaced inlet at 13:17; #621.

Maintenance Log: Biweekly Flow, Exch Inlet.

WEEKLY VISIT INFO

Recording time (PST): 13:03
 % of filter: 35
 Instantaneous MC: 4.7 µg
 30 Minute MC: 4.2 µg
 1 Hour MC: 3.1 µg
 24 Hour MC: 7.6 µg
 Total Mass: 348.30 µg
 Case Temp: 50.00 °C
 Air Temp: 50.00 °C
 Cap Temp: 50.00 °C
 Main Flow: 3.00 liters/min
 Aux Flow: 13.66 liters/min
 Noise: 0.041
 Frequency: 246.67642 KHz
 Inlet/ VSCC maint: Exchange
 Inlet maint time (PST): 13:17
 Installed inlet S/N: 621

FLOW CHECK Biweekly Monthly QC Check

Start time (PST): 13:06

TEOM INDICATED		FROM AUDIT DEVICES	
Teom Main Flow	3.00	Black orifice s/n	61196
Teom Aux Flow	13.67	White orifice s/n	61114
Teom Total Flow	16.67	AD Main Flow	2.13
Teom Temp	17.5	AD Total Flow	4.76
Teom Pressure	0.874	AD Temp	17.7
		AD Pressure	0.872
		AD Main Calc. Flow	3.00
		AD Total Calc. Flow	16.46

% Difference Main Flow: 0.00 %
 % Difference Total Flow: 1.28 %
 End time (PST): 13:17

WEEKLY (FDMS)

Sample Out Temp: °C (A/I 3)
 Humidity Out: % (A/I 4)
 Sample In Temp: °C (A/I 5)
 Humidity In: % (A/I 6)
 Dew Point: °C
 In-line vacuum: "

TEOM MAINTENANCE Start time (PST): End time (PST): Quarterly QA Flow Audit

Site Log Form

SITELOG/PAPERWORK

Go to Export

Save



Entry ID 1027

Site North Beach

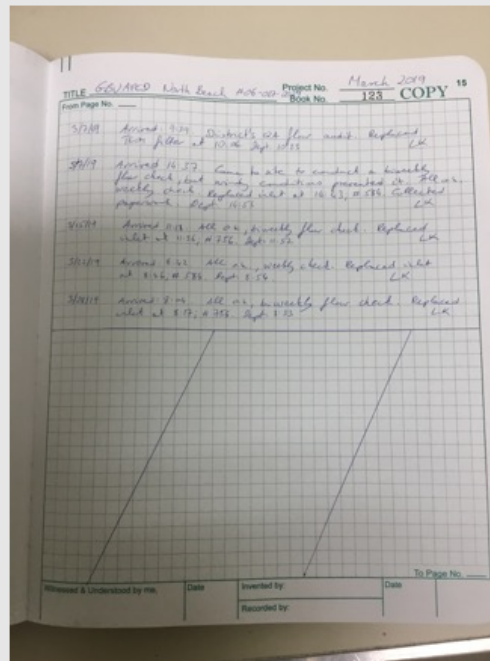
Date 4/4/2019 9:53:59 AM

Month/Year March 2019

Technician Lajos_Kurucz

select any day in the month the paperwork represents

Logbook
photo

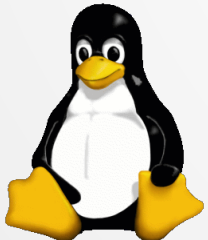


Comments

Empty comment box

How Did We Do This?

- **Mac Pro Server, Filemaker database and webserver, Python Scripting.**
- **The Open Source Solution: Linux, Apache, Mysql, php and python (LAMP Stack).**



WARNING

At First Glance, the next slide might appear like we are going to do math today...



WARNING

At First Glance, the next slide might appear like we are going to do math today...



We are not going to do any math today



WOOHOO!!!

Utility Ratio

You will get new ideas as you implement your initial plan. This is GOOD, just manage scope.

$$\phi = \frac{\text{User Experience}}{\text{System Complexity}}$$

During implementation it can be easy to underestimate how far you still have to go and how much an additional feature could complicate things.

Hurdles

- **Security**
- **Access**
- **Connectivity**
- **Backups**

Security

- **Cannot be an after-thought.**
- **Use encryption (https,SSL).**
- **Confidentiality, Integrity, Availability, Non-Repudiation.**
- **Why would someone want to hack an Air District?**

They Will Try...

Lines containing IP:104.218.164.51 in /var/log/auth.log

```
Sep 19 06:05:52 sidewinder sshd[27453]: Connection from 104.218.164.51 port 33274 on 4[REDACTED]
Sep 19 06:06:00 sidewinder sshd[27487]: Connection from 104.218.164.51 port 52696 on [REDACTED]
Sep 19 06:06:03 sidewinder sshd[27487]: pam_unix(sshd:auth): authentication failure; logname= uid=0 euid=0 tty=ssh ruser= rhost=104.218.164.51 user=root
Sep 19 06:06:05 sidewinder sshd[27487]: Failed password for root from 104.218.164.51 port 52696 ssh2
Sep 19 06:06:05 sidewinder sshd[27487]: Connection closed by 104.218.164.51 [preauth]
Sep 19 06:06:06 sidewinder sshd[27493]: Connection from 104.218.164.51 port 42820 on [REDACTED]
Sep 19 06:06:11 sidewinder sshd[27493]: pam_unix(sshd:auth): authentication failure; logname= uid=0 euid=0 tty=ssh ruser= rhost=104.218.164.51 user=root
Sep 19 06:06:13 sidewinder sshd[27502]: Connection from 104.218.164.51 port 34870 on [REDACTED]
Sep 19 06:06:14 sidewinder sshd[27493]: Failed password for root from 104.218.164.51 port 42820 ssh2
Sep 19 06:06:14 sidewinder sshd[27493]: Connection closed by 104.218.164.51 [preauth]
Sep 19 06:06:14 sidewinder sshd[27502]: pam_unix(sshd:auth): authentication failure; logname= uid=0 euid=0 tty=ssh ruser= rhost=104.218.164.51 user=root
Sep 19 06:06:16 sidewinder sshd[27502]: Failed password for root from 104.218.164.51 port 34870 ssh2
Sep 19 06:06:18 sidewinder sshd[27502]: Connection closed by 104.218.164.51 [preauth]
Sep 19 06:06:19 sidewinder sshd[27526]: Connection from 104.218.164.51 port 52800 on [REDACTED]
Sep 19 06:06:20 sidewinder sshd[27526]: pam_unix(sshd:auth): authentication failure; logname= uid=0 euid=0 tty=ssh ruser= rhost=104.218.164.51 user=root
Sep 19 06:06:23 sidewinder sshd[27526]: Failed password for root from 104.218.164.51 port 52800 ssh2
Sep 19 06:06:24 sidewinder sshd[27526]: Connection closed by 104.218.164.51 [preauth]
Sep 19 06:06:25 sidewinder sshd[27542]: Connection from 104.218.164.51 port 44006 on 4[REDACTED]
Sep 19 06:06:27 sidewinder sshd[27542]: pam_unix(sshd:auth): authentication failure; logname= uid=0 euid=0 tty=ssh ruser= rhost=104.218.164.51 user=root
Sep 19 06:06:29 sidewinder sshd[27542]: Failed password for root from 104.218.164.51 port 44006 ssh2
Sep 19 06:06:30 sidewinder sshd[27542]: Connection closed by 104.218.164.51 [preauth]
Sep 19 06:06:31 sidewinder sshd[27572]: Connection from 104.218.164.51 port 35176 on [REDACTED]
Sep 19 06:06:32 sidewinder sshd[27572]: pam_unix(sshd:auth): authentication failure; logname= uid=0 euid=0 tty=ssh ruser= rhost=104.218.164.51 user=root
Sep 19 06:06:34 sidewinder sshd[27572]: Failed password for root from 104.218.164.51 port 35176 ssh2
```


Access

- **A user accidentally deletes half the database records first thing in the morning before coffee. Whose fault is it?**
- **User Permissions and Groups.**
- **Access Controls.**
- **Directory Server. (LDAP).**
- **Where is the user?**

Connectivity

- **Cloud vs Locally hosted.**
- **Varying levels of technical savvy among users.**
- **System needs to be “high availability” to support website content and software systems.**

Backups

- **3-2-1**
- **3 copies of your data.**
- **2 backups on different storage media.**
- **1 of them located off-site.**

Take Aways

- **Security can't be an afterthought.**
- **Make sure to implement initial design goals completely while leaving room for growth.**
- **Hire people who are good at this.**

Questions?

Thank You!

Questions?
brian@gbuapcd.org

