EAST COUNTY FIRE & RESCUE

REGULAR BOARD OF FIRE COMMISSIONERS MEETING
January 03, 2023
Station 91
6:30 PM

AGENDA

Held as a hybrid meeting

Dial 1-253-215-8782; Meeting ID 823 4350 9863; Passcode 169473

CALL TO ORDER:
Flag Salute

AGENDA ADJUSTMENTS:

CONSENT AGENDA:
1. Approval of December 19, 2022 Special Meeting Minutes
2. Approval of December 20, 2022 Regular Board Meeting Minutes
3. Approval of December 20, 2022 Local BVFF&RO Meeting Minutes
4. Approval of December 27, 2022 Special Meeting Minutes
5. Approval of Financial Transactions
6. Excuse Absent Commissioner(s):

OPEN TO PUBLIC:

CORRESPONDENCE:

STAFF REPORT:
Chief Hartin
Assistant Chief Jacobs

VOLUNTEER FIRE FIGHTERS ASSOCIATION:

SAFETY REPORT:

FIRE DISTRICT BUSINESS:

- Results of Exit Conference with State Auditor
- Merina + Co Proposal
- Resolution # 313-01032023 – Surplus Equipment (see attachements)

COMMITTEE MEETINGS:

- Communication with Neighboring Elected Officials
- Camas – January 24, 2023 at 2:00PM at City Hall
- City of Washougal – TBA
- Risk Group – January 4, 2023 at 8:00AM
- Safety Committee Representative – January 24, 2023 Station 91 at 7:30 PM.
- Revenue Exploratory Committee – January 11, 2023 Station 91 at 10:00 AM
- ECAAB – TBA

COMMISSIONER COMMENTS:

OPEN TO PUBLIC:

LOCAL BOARD FOR VOLUNTEER F/F & RESERVE OFFICERS:

ROUND TABLE:

Monthly Event Calendar

Strategic Planning Workshop, January 4, 2023 Station 91 at 3:00 PM.

EXECUTIVE SESSION:

ADJOURNMENT:

Next Regular Board Meeting: January 17, 2023 Station 91, 6:30 PM

EAST COUNTY FIRE & RESCUE
CONSENT AGENDA
January 03, 2023

1. Minutes –
   - December 19, 2022 Special Meeting
   - December 20, 2022 Regular Board Meeting
   - December 20, 2022 Local BVFF Meeting
   - December 27, 2022 Special Meeting

2. Invoices
   - $26,129.52

      I. Check Nos. 14498 – 14504 dated December 21, 2022

3. Approved Commissioner Stipends January 10th Pay Date

	For the Period December 16 - December 31					
Name	Regular Meeting	Committee Meeting	Special Mtg	Education	Other	Total
Hofmaster	1	0	2	0	0	**3**
Martin	1	0	2	0	2	**5**
Petty	1	0	2	0	0	**3**
Seeds	1	0	2	0	0	**3**
Taggart	1	0	2	0	1	**4**

4. Voided/Destroyed Claims/Payroll Warrants

5. Payroll/Benefits/EFT's
   - $62,176.66 (Payroll)

Commissioner Martha Martin – Chair

Commissioner Mike Taggart – Vice Chair

Commissioner Joshua Seeds

Commissioner Sherry Petty

Commissioner Steve Hofmaster

EAST COUNTY FIRE & RESCUE

SPECIAL BOARD OF FIRE COMMISSIONERS MEETING
December 19, 2022
Station 91

Draft Minutes

ATTENDANCE:

Martha Martin	Mike Taggart	Joshua Seeds
Steve Hofmaster	Mike Carnes	Sherry Petty
Debbie Macias	Pam Jensen	

***Held as a Hybrid Meeting**

CALL TO ORDER: 16:01

Chairperson Martha Martin called the meeting to order for the Special Meeting.

Commissioner Martin let the public know that we would be going into an Executive Session to evaluate the qualifications of an applicant for public employment RCW 42.30.110 (1)(g)

EXECUTIVE SESSION:
RCW 42.30.110 (1)(g) To evaluate the qualifications of an applicant for public employment

The Board went into Executive Session at 16:06 for 30 minutes to return at 16:36.
The meeting was extended for 30 minutes to return at 17:06.
The meeting was extended for 30 minutes to return at 17:36.
The Board reconvened at 17:36.

Commissioner Martin let the public know that we have returned from Executive Session and there is no action to take.

Commissioner Martin asked for a motion to adjourn.

Motion by Commissioner Taggart to adjourn **seconded by Commissioner Hofmaster. Motion passed unanimously**

Meeting adjourned 17:38

Respectfully Submitted,

Martha Martin, Chairperson

Steve Hofmaster, Commissioner

Michael Taggart, Commissioner

Sherry Petty, Commissioner

Joshua Seeds, Commissioner

ATTEST:

DISTRICT SEAL:

Debbie Macias, District Secretary

EAST COUNTY FIRE & RESCUE

REGULAR BOARD OF FIRE COMMISSIONERS MEETING

December 20, 2022
Station 91
6:30 PM

Draft Minutes

ATTENDANCE:

Martha Martin	Mike Taggart	Joshua Seeds
Sherry Petty	Steve Hofmaster	Mike Carnes
Robert Jacobs	Debbie Macias	Chief Hartin
Station 94 Duty Crew		

CALL TO ORDER:
Chairperson Martha Martin called the meeting to order at 18:31 via Zoom Meeting.
Chief Carnes led the Flag salute.

AGENDA ADJUSTMENTS:
None

CONSENT AGENDA:
Approval of December 06, 2022 Regular Board Meeting Minutes
Approval of December 06, 2022 Local BVFF&RO Meeting Minutes
Approval of December 07, 2022 Strategic Planning Meeting Minutes
Approval of December 08, 2022 Special Meeting Minutes
Approval of December 13, 2022 Special Meeting Minutes
Approval of Financial Transactions
Excuse Absent Commissioner(s):

Motion by Commissioner Seeds to approve the consent agenda **seconded by Commissioner Hofmaster. Motion passed unanimously.**

OPEN TO PUBLIC:
None

CORRESPONDENCE:
None

STAFF REPORT:
Chief Carnes report; a copy is in the packet.
Assistant Chief Jacobs gave his report as follows:
DOC training will be on December 13, 2022.
January DOC will be 01-10-2023 at Station 93 at 7:00 PM
No December EST training.
Good turnout for C.A.R.O.L box and delivery, 125 sets of 4 boxes packed.

VOLUNTEER FIRE FIGHTERS ASSOCIATION:
Nothing new to report.

SAFETY REPORT:

- Last Safety Committee meeting held on November 30, 2022
- Next Safety Committee meeting January 24, 2023 at Station 91 at 7:30 PM.
- No reported accidents/incidents since your last Board Meeting.

FIRE DISTRICT BUSINESS:

Chief Carnes let the Board know that we are in a spot where the Board can approve the OPEIU -CBA contract for the staff. He does not have a clean version yet but has read it and it is what the Board discussed.
Commissioner Martin called for a motion to approve the OPEIU - CBA contract.

Motion by Commissioner Seeds to approve OPEIU – CBA for the staff **seconded by Commissioner Taggart. Motion passed unanimously.**

Chief Carnes let the Board know that the auditor needs clarification on how we would like our reserve funds assigned. Pam Jensen shared the document with Board on the two ways we can assign the reserve funds. Discussion ensued.
Commissioner Martin called for a motion to make the reserve funds Committed Funds.

Motion by Commissioner Taggart to approve having our reserve funds as committed funds **seconded by Commissioner Seeds Motion passed unanimously.**

Resolution #312-12202022 Surplus Equipment (CRT Computer Monitor and Canon Camera)
The Purpose of this resolution is to surplus equipment (CRT Computer Monitor and Canon Camera) See Attachment A.

Motion by Commissioner Seeds to approve Resolution No. 312-12202022 to surplus equipment (CRT Computer Monitor and Canon Camera) See Attachment A, **seconded by Commissioner Hofmaster. Motion passed unanimously.**

Chief Carnes let the Board know that the State Auditor's Office is ready to schedule the exit conference for out Audit. After discussion, the exit conference is set for December 21, 2022 at 1:30 PM via Team Viewer.

COMMITTEE MEETINGS:

Communication with Neighboring Elected Officials
City of Camas – January 24, 2023 at 2:00PM at City Hall

City of Washougal –
TBA

Risk Group
TBA

.

Safety Committee Representative
January 24, 2023 7:30 at Station 91.

Revenue Exploratory Committee
January 11, 2023 at 10:00AM at Station 91.

ECAAB
TBA

.

COMMISSIONER COMMENTS:

Commissioner Petty shared with Chief Carnes that he knows how she feels about him and wished him luck in the future.
Commissioner Taggart thanked Chief Carnes for all of his commitment over the years also that he is very proud of him.
Commissioner Seeds reflected that he always felt welcomed and that he appreciated all of Chief Carnes can do attitude. It has been a great experience the last four years working with him.
Commissioner Hofmaster shared that he was impressed with Chief Carnes and that he will miss him.
Commissioner Martin shared that they are proud of Chief Carnes and that he is leaving ECFR better than he found it.
Chief Carnes shared he was very fortunate to be able to be the Fire Chief here at ECFR. Very much, appreciated all the support the Board has given him.

OPEN TO PUBLIC:

Chief Jacobs reflected that it has been a privilege to work with Chief Carnes ever since he was a volunteer and he feels honored to have been able to work with him.
Pam Jensen shared with Chief Carnes that it has been an absolute pleasure working with him. She shared with him that although he is serious about work has a great sense of humor. That he has made the office for Debbie and her a lot of fun and that we will miss you.

LOCAL BOARD FOR VOLUNTEER F/F & RESERVE OFFICERS:

No new business.

ROUND TABLE:

Monthly Event Calendar
Strategic Planning Workshop Meeting January 4, 2023 at Station 91 at 3:00 PM Hybrid

EXECUTIVE SESSION:

ADJOURNMENT:

Next Regular Board Meeting: January 3, 2022, at Station 91, 6:30 PM via Zoom – Hybrid version.

Motion by Commissioner Taggart to adjourn at 19:17 hours, **seconded by Commissioner Hofmaster. Motion passed unanimously.**

Martha Martin, Chairperson

Joshua Seeds, Commissioner

Sherry Petty, Commissioner

Steve Hofmaster, Commissioner

Michael Taggart, Vice Chair

DISTRICT SEAL:

ATTEST:

Debbie Macias, District Secretary

EAST COUNTY FIRE & RESCUE

Local Board for Volunteer Fire Fighters & Reserve Officers Meeting

Draft Minutes
December 20, 2022

CALL TO ORDER:
Chairperson Martha Martin called the meeting to order at 19:16 at Station 91.

The following were in attendance:

Martha Martin	Mike Taggart	Joshua Seeds
Mike Carnes	Sherry Petty	Steve Hofmaster
Robert Jacobs	Debbie Macias	Edward Hartin
Station 94 Duty Crew		

BUSINESS:
No new business.

ADJOURNMENT:
The Local Board adjourned at 19:16.

Respectfully Submitted,

Mike Taggart, Commissioner,
Sherry Petty, Alternate

Joel VanNess, FF's Assoc. Liaison
Tad Crum, Alternate

Bob Jacobs, Chief is Rep.
Mike Carnes, Alternate

Martha Martin, Chairperson
Joshua Seeds, Alternate

DISTRICT SEAL:

Debbie Macias, District Secretary
Mike Carnes, Alternate

EAST COUNTY FIRE & RESCUE

SPECIAL BOARD OF FIRE COMMISSIONERS MEETING
December 27, 2022
Station 91

Draft Minutes

ATTENDANCE:

Martha Martin	Mike Taggart	Joshua Seeds
Steve Hofmaster	Mike Carnes	Sherry Petty
Ed Hartin	Sue Hartin	Pam Jensen

***Held as a Hybrid Meeting**

CALL TO ORDER: 16:00

Chairperson Martha Martin called the meeting to order for the Special Meeting.
Commissioner Martin read the MOU (memo of understanding) for Chief Hartin's employment. Discussion ensued.
Commissioner Martin asked for a motion to approve the MOU for Chief Hartin's employment.

Motion by Commissioner Taggart to approve the MOU for Chief Hartin's employment **seconded by Commissioner Hofmaster. Motion passed unanimously**

Meeting adjourned 16:05

Respectfully Submitted,

_____
Martha Martin, Chairperson

_____
Steve Hofmaster, Commissioner

_____
Michael Taggart, Commissioner

_____
Sherry Petty, Commissioner

_____
Joshua Seeds, Commissioner

ATTEST:

DISTRICT SEAL:

_____
Debbie Macias, District Secretary

CHECK REGISTER

East County Fire & Rescue

Time: 07:43:02 Date: 12/30/2022

12/16/2022 To: 12/31/2022

Trans	Date	Type	Acct #	Chk #	Claimant	Amount	Memo
1288	**12/21/2022**	**Claims**	**6291**	**14498**	**GENERAL FIRE APPARATUS, INC**	**31.70**	**Invoice # 15816 - HME Cab Door Check Strap, Blank. Apparatus 1014.**
		001 - 522 60 48 014 - E94 (1014)				31.70	HME Cab Door Check Strap, Blank. Apparatus 1014.
1289	**12/21/2022**	**Claims**	**6291**	**14499**	**PACIFIC TRUCK & TRAILER SERVICE, INC**	**5,011.81**	**Invoice # 2022-34173 - Checked for not starting, found batteries weak. Replace all three batteries. Cleaned cables and terminals. Started and tested batteries. App # 916; Invoice # 2022-34170 - Instal**
		001 - 522 60 47 001 - Emergency Generators Repair/				664.46	Installed new block heater kit. Replaced bypass hose and o-ring tighten all hose clamps. Add 7 gal coolant. Generator at Station 93
		001 - 522 60 48 020 - E91 (1020)				3,610.22	App # 1020. Perform annual emergency vehicle inspection. Repaired exhaustt leak at manifold. Changed def filter.
		001 - 522 60 48 916 - E95 (916)				737.13	Checked for not starting, found batteries weak. Replace all three batteries. Cleaned cables and terminals. Started and tested batteries. App # 916
1290	**12/21/2022**	**Claims**	**6291**	**14500**	**SEAWESTERN**	**1,947.05**	**Invoice # INV20230 - Large C5 mask (Valencia); Invoice # INV20231 - Large C5 Mask (Harrington); Invoice # INV20233 - Large C5 Mask (Parry); Invoice # INV20232 - Large C5 Mask (Allen); INvoice # INV202**
		001 - 522 20 32 002 - Equipment				410.61	Large C5 Mask (Valencia)
		001 - 522 20 32 002 - Equipment				384.11	Large C5 Mask (Harrington)
		001 - 522 20 32 002 - Equipment				384.11	Large C5 Mask (Parry)
		001 - 522 20 32 002 - Equipment				384.11	Large C5 Mask (Allen)
		001 - 522 20 32 002 - Equipment				384.11	Large C5 Mask (Sorensen)
1291	**12/21/2022**	**Claims**	**6291**	**14501**	**STATE AUDITOR'S OFFICE**	**348.30**	**Inv# L151587 Financial Audit billing for Nov. 2022- Audit Period 2020-2021**
		001 - 522 10 41 000 - State Audit Costs				348.30	Financial Audit billing for Nov. 2022- Audit Period 2020-2021
1292	**12/21/2022**	**Payroll**	**6291**	**14502**	**OPEIU Local 11**	**60.90**	**Pay Cycle(s) 12/25/2022 To 12/25/2022 - OPEIU Dues**
		001 - 589 99 99 000 - Payroll Clearing				30.45	
		001 - 589 99 99 000 - Payroll Clearing				30.45	
1293	**12/21/2022**	**Payroll**	**6291**	**14503**	**TRUSTEED PLANS SERVICE CORPORATION**	**927.07**	**Pay Cycle(s) 12/10/2022 To 12/25/2022 - DIsability - FF (Case#37014)**
		001 - 522 20 26 001 - FF Disability				94.44	
		001 - 522 20 26 001 - FF Disability				86.58	
		001 - 522 20 26 001 - FF Disability				90.05	
		001 - 522 20 26 001 - FF Disability				103.20	
		001 - 522 20 26 001 - FF Disability				65.63	
		001 - 522 20 26 001 - FF Disability				85.66	
		001 - 522 20 26 001 - FF Disability				111.96	
		001 - 522 20 26 001 - FF Disability				94.44	
		001 - 522 20 26 001 - FF Disability				83.15	
		001 - 522 20 26 001 - FF Disability				111.96	

Trans	Date	Type	Acct #	Chk #	Claimant	Amount	Memo
1294	**12/21/2022**	**Payroll**	**6291**	**14504**	**TRUSTEED PLANS SERVICE CORPORATION**	**17,802.69**	**Pay Cycle(s) 12/10/2022 To 12/25/2022 - PPO-100 (Case#69106); Pay Cycle(s) 12/10/2022 To 12/25/2022 - Kaiser (Case#69106)**
		001 - 522 10 22 001 - Admin Medical Insurance				1,539.23	
		001 - 522 10 22 001 - Admin Medical Insurance				1,539.23	
		001 - 522 10 22 001 - Admin Medical Insurance				701.17	
		001 - 522 20 22 001 - FF Medical Insurance				623.68	
		001 - 522 20 22 001 - FF Medical Insurance				623.68	
		001 - 522 20 22 001 - FF Medical Insurance				1,767.09	
		001 - 522 20 22 001 - FF Medical Insurance				1,088.64	
		001 - 522 20 22 001 - FF Medical Insurance				1,767.09	
		001 - 522 20 22 001 - FF Medical Insurance				1,767.09	
		001 - 522 20 22 001 - FF Medical Insurance				701.17	
		001 - 522 20 22 001 - FF Medical Insurance				1,767.09	
		001 - 522 20 22 001 - FF Medical Insurance				1,767.09	
		001 - 522 20 22 001 - FF Medical Insurance				701.17	
		001 - 589 99 99 000 - Payroll Clearing				266.48	
		001 - 589 99 99 000 - Payroll Clearing				96.87	
		001 - 589 99 99 000 - Payroll Clearing				10.00	
		001 - 589 99 99 000 - Payroll Clearing				266.48	
		001 - 589 99 99 000 - Payroll Clearing				266.48	
		001 - 589 99 99 000 - Payroll Clearing				10.00	
		001 - 589 99 99 000 - Payroll Clearing				266.48	
		001 - 589 99 99 000 - Payroll Clearing				266.48	
		001 General Fund				26,129.52	
						26,129.52	Claims: 7,338.86
							Payroll: 18,790.66

CHECK REGISTER

East County Fire & Rescue

Time: 07:45:34 Date: 12/30/2022

12/16/2022 To: 12/31/2022

Trans	Date	Type	Acct #	Chk #	Claimant	Amount	Memo
1256	12/25/2022	Payroll	6291	EFT		2,298.85	
1257	12/25/2022	Payroll	6291	EFT		2,498.50	
1258	12/25/2022	Payroll	6291	EFT		3,672.93	
1259	12/25/2022	Payroll	6291	EFT		2,065.77	
1260	12/25/2022	Payroll	6291	EFT		846.10	
1261	12/25/2022	Payroll	6291	EFT		3,859.86	
1262	12/25/2022	Payroll	6291	EFT		2,229.76	
1263	12/25/2022	Payroll	6291	EFT		578.19	
1264	12/25/2022	Payroll	6291	EFT		1,839.70	
1265	12/25/2022	Payroll	6291	EFT		610.70	
1266	12/25/2022	Payroll	6291	EFT		315.23	
1267	12/25/2022	Payroll	6291	EFT		1,451.53	
1268	12/25/2022	Payroll	6291	EFT		470.59	
1269	12/25/2022	Payroll	6291	EFT		1,276.02	
1270	12/25/2022	Payroll	6291	EFT		352.93	
1271	12/25/2022	Payroll	6291	EFT		2,411.80	
1272	12/25/2022	Payroll	6291	EFT		705.87	
1273	12/25/2022	Payroll	6291	EFT		1,970.37	
1274	12/25/2022	Payroll	6291	EFT		437.51	
1275	12/25/2022	Payroll	6291	EFT		2,128.28	
1276	12/25/2022	Payroll	6291	EFT		315.23	
1277	12/25/2022	Payroll	6291	EFT		921.35	
1278	12/25/2022	Payroll	6291	EFT		3,403.44	
1279	12/25/2022	Payroll	6291	EFT		2,721.52	
1280	12/25/2022	Payroll	6291	EFT	IAFF2444	728.40	Pay Cycle(s) 12/25/2022 To 12/25/2022 - IAFF Dues
1281	12/25/2022	Payroll	6291	EFT	DEPT OF RETIREMENT SYSTEMS	2,519.53	Pay Cycle(s) 12/25/2022 To 12/25/2022 - DComp
1282	12/25/2022	Payroll	6291	EFT	DEPT OF RETIREMENT SYSTEMS	1,653.24	Pay Cycle(s) 12/25/2022 To 12/25/2022 - PERS2
1283	12/25/2022	Payroll	6291	EFT	DEPT OF RETIREMENT SYSTEMS	6,360.51	Pay Cycle(s) 12/25/2022 To 12/25/2022 - LEOFF2
1284	12/25/2022	Payroll	6291	EFT	DEPT OF RETIREMENT SYSTEMS	1,987.58	Pay Cycle(s) 12/25/2022 To 12/25/2022 - DComp Match
1285	12/25/2022	Payroll	6291	EFT	IRS	8,422.37	941 Deposit for Pay Cycle(s) 12/25/2022 - 12/25/2022
1286	12/25/2022	Payroll	6291	EFT	OR Department of Revenue	423.00	Pay Cycle(s) for OR Tax: 12/25/2022 - 12/25/2022
1287	12/25/2022	Payroll	6291	EFT	WASHINGTON STATE SUPPORT REGISTRY	700.00	Pay Cycle(s) 12/25/2022 To 12/25/2022 - WA Child Support
		001 General Fund				62,176.66	
						62,176.66	Payroll: 62,176.66

EAST COUNTY ECFR FIRE AND RESCUE

East County Fire and Rescue

600 NE 267th Avenue Camas, WA 98607

(360) 834-4908 (phone) (360) 835-8920 (fax) www.ecfr.u

To: Board of Fire Commissioners

From: Chief Ed Hartin

Date: January 3, 2022

Subject: Chief's Report

Response Activity

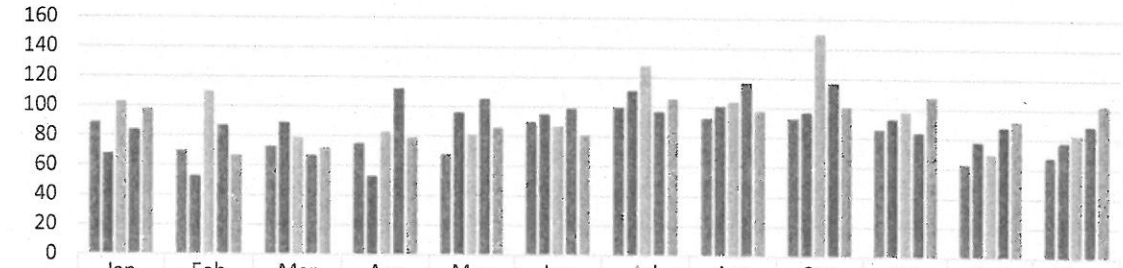
In December the district responded to 104 calls for service. Table 1 outlines the distribution of incidents by incident type series.

Table 1. December Responses

Incident Type Series	Number
1 - Fire	4
3 - Rescue & Emergency Medical Service Incident	65
4 - Hazardous Condition (No Fire)	9
5 - Service Call	3
6 - Good Intent Call	21
7 - False Alarm & False Call	2
Total Responses	104

As illustrated in Figure 2, the district's emergency response call volume is typically highest in the third quarter (July-September). In general call volumes in 2022 were lower than one or both previous years. However, volume in the fourth quarter of 2022 was consistently higher than in previous years.

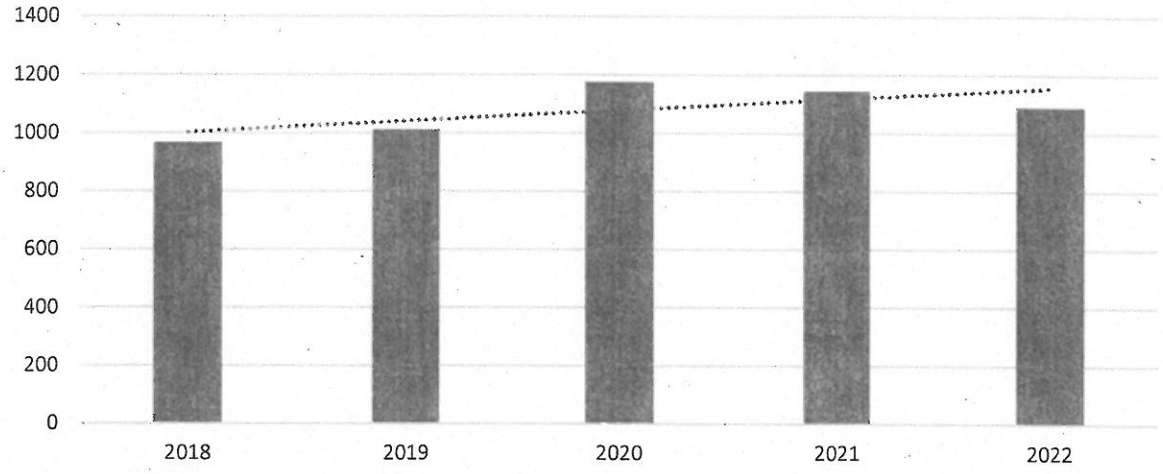
Figure 1. Incident Responses by Month 2018-2022



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2018	89	70	73	75	68	90	100	93	93	86	63	68
2019	68	53	89	53	96	95	111	101	97	93	78	78
2020	103	110	79	83	81	87	128	104	150	98	70	83
2021	84	87	67	112	105	99	97	117	117	84	88	89
2022	98	67	72	79	86	81	106	98	101	108	92	103

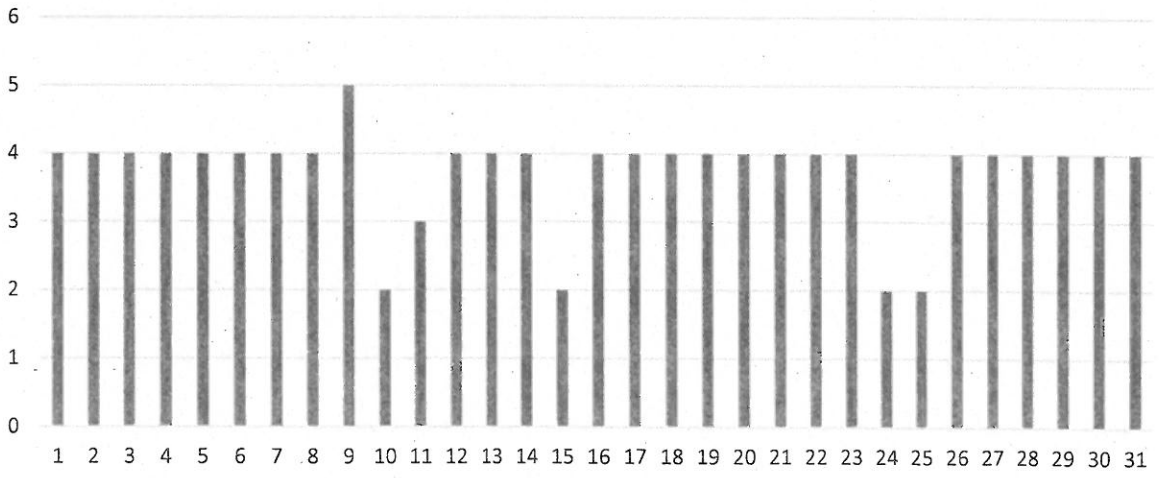
As illustrated in Figure 3, the total number of incident responses have fluctuated over the last five years with the highest number of responses occurring during peak of the COVID-19 pandemic in 2020-2021. Overall, the district call volume has trended upward with a 12.71% increase in demand for emergency services between 2018 and 2022.

Figure 2. Incident Responses by Year 2018-2022



Staffing and Deployment

During the month of December ECFR maintained a 90th percentile shift staffing level of four personnel (90% of the time there were at least four personnel on-duty). Station 94 was unstaffed for five days during the month and as such its availability of response from this station was 83.87% (in comparison with 100% availability from Station 91). No incidents within the ECFR response area where the engine or squad from this station would have been first due were impacted. Daily shift staffing for the month of December is illustrated in Figure 2.



Total shift staffing is impacted by members on Kelly shift (days on which individual members are not schedule to work in order to reduce their work week). The district has assigned one full-time firefighter to work as a floating Kelly relief firefighter (maintaining minimum staffing while other firefighters are on a Kelly shift). Reduced shift staffing occurs when a full-time member is on vacation, sick, or other type of contractual leave. In addition, reduced staffing occurs when a part-time firefighter is unavailable to work. A second factor impacting on staffing of Station 94 is when a part-time member is not yet been fit tested to wear a self-contained breathing apparatus (SCBA) or has not yet completed emergency vehicle incident prevention (EVIP) training and as such cannot drive district apparatus. I will be working with the captains to develop a plan of action to minimize the amount of time Station 94 is unstaffed.

Shift Reports

As my start date as the new fire chief with East County Fire and Rescue, I have not had the opportunity to discuss the concept of monthly shift reports with the captains. However, this will become a regular component of future chief's reports to the board of fire commissioners.

Programs and Projects

Fire Chief's Onboarding: With the able assistance of Administrative Specialist Pam Jensen, I have been working towards completion of the required medical physical examination (the first appointment was canceled due to inclement weather) and will complete this task on January 6th 2023. I completed the personal history questionnaire and testing components of the post offer psychological assessment and will complete the interview component on January 10th 2023.

With Pam's assistance I have access to the district's staffing software, records management system, and have updated my agency of record for emergency medical technician certification to East County Fire and Rescue. I will be following up with the Camas Washougal Fire Department emergency medical services chief and the Clark County medical program director to determine if I need to complete any additional ongoing training and evaluation program (OTEP) components prior to my recertification date in August 2023.

Financial Projection Model: I reviewed the proposal received from Merina+CO for development of a financial projection model to assist the district in capital planning and operational decision-making over the next five years. Based on my prior experience in fire district financial planning and development of financial models, I am recommending that this work be done by an internal working group and have identified historical revenue and expense elements necessary to begin this process. I am recommending that funding for consultants be reserved for geographic information systems (GIS) analysis of fire station location, and as necessary, architectural and engineering studies on specific district facilities, or component projects related to those facilities. A copy of my presentation to the board on this project is attached.

Station 94 Mold Report and Mitigation: In December Chief Carnes receive a report of a potential mold condition at Station 94 and an expression of concern regarding the health hazard to personnel. The district contracted with Clear View Home Inspections LLC to perform air sampling to determine the levels of mold in several different areas of the station. High levels of airborne penicillium/aspergillus

mold were found in the area of the water heater and the kitchen. This inspection did not examine for the presence of mold in any structural cavities (which given the airborne concentrations is likely). Chief Carnes and I discussed this issue on the morning of December 22nd and he tasked Captain Burch with obtaining quotations from companies experienced in mold remediation to mitigate this potential heath hazard to our members. Chief Carnes also advised Local 2444 of the action being taken on this issue. Remediation will likely require identification of the likely cause of mold development and correction of remaining issues that may have contributed to mold growth, removal of mold on exposed surfaces, and examination of potentially contaminated structural voids with removal of mold as necessary. I will follow up with Captain Burch on the status of this project when he returns from vacation on January 5th, 2023. I have attached resources from the International Association of Firefighters and United States Environmental Protection Agency (EPA) regarding fire station mold and mold remediation in schools and commercial buildings to provide additional information on this issue.

Personnel: I have started the process of one-on-one meetings with each member of the district. One of the great strengths of any fire and rescue service is the diversity of knowledge, experience, and skills of its members and I am looking forward to learning about each of the individuals I will be working with.

Apparatus and Equipment Assessment: I also have started work on an apparatus and equipment assessment to serve two needs: 1) Increase my knowledge of the district's resources and 2) begin to lay a foundation for the apparatus and equipment components of a capital projects plan.

Attached: *ECFR Long term financial planning & capital facilities analysis presentation*
Mold in the fire station (IAFF)
Mold remediation in schools and commercial buildings (US EPA)

1

Proposal by MERINA+CO

- Task 1: Five Year Financial Projection Model
- Task 2: Modeling Capital Planning Scenarios
- Task 3: Roadmap for Pursuing Capital Project Decision-Making

Expected Outcome: Five-year financial projection model to facilitate high-level decision making regarding financial position and capacity for financing operations and near-term capital project priorities.

ECFR

2

MERINA+CO's Proposal Does Not Address

- Facilities condition analysis (FCA)
- Fire station location study
- Commercial appraisal of district facilities

Understanding the current state of facilities in general (partially addressed by the proposal) and impact of fire station location will likely impact the level of effort placed on facilities condition analysis (architectural and engineering study) and impact of demand for service, location, and potential annexation are critical elements in capital facilities planning.

ECFR

3

Long Term Financial Plan Development

Internal Project Team

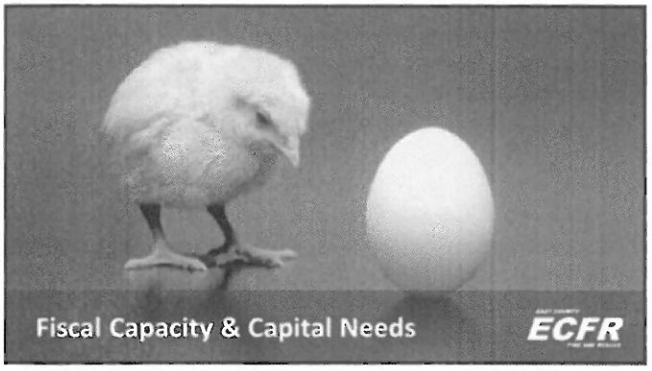
- Have developed similar plan and model (fire chief)
- Develop staff fiscal literacy and ownership of the plan.
- Provides a model that can be updated annually.
- Expense may be focused on specific technical needs.

Internal Expertise

- Additional resources applied to the project.
- Expense is reasonable for the scope of work.
- Some data elements need by the consultant do not yet exist.

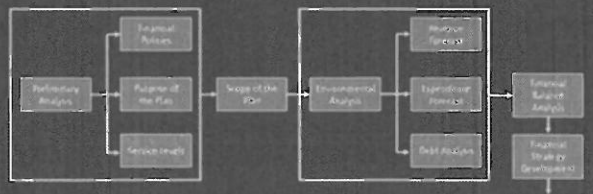
ECFR

4



5

Long Term Financial Planning Process



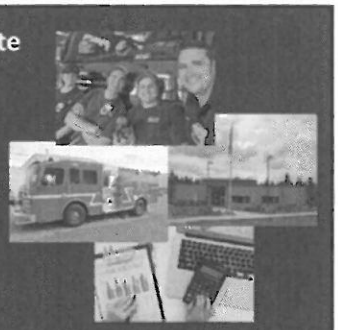
ECFR

Adapted from Kavanaugh, S. (2007) *Financing the Future*
Chicago: Government Finance Officers Association

6

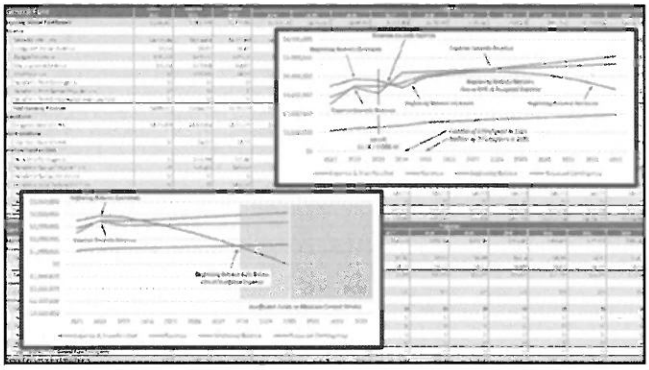
Define the Current State

- Staffing and deployment
- Apparatus and equipment
- Facilities
- Fiscal environmental scan
- Baseline fiscal data



ECFR

7



8

Recommendation

Use an internal working group to:

1. Begin the financial planning process by establishing baseline data.
2. Develop improved fiscal literacy among district staff assigned to the working group.
3. Construct a prospective cash flow model for examination of alternative fiscal scenarios.
4. Identify the need for external consultants for geographic analysis of station location and architectural and engineering studies.
5. Use iterative decision-making to keep the project on the path.

ECFR

9

Long Term Financial Planning
& Capital Facilities Analysis

Project Team

- Chief Ed Hartin
- Assistant Chief Robert Jacobs
- Administrative Specialist Pam Jensen
- Additional team members to provide representation across the district

ECFR

10

Mold in the fire station

September 2017

What is mold?

Molds are fungi that are found naturally in the environment and can be detected year round indoors and outdoors. Mold grows best in warm, humid conditions and spreads through the air by producing spores.

What causes mold growth indoors?

Outdoors mold grows in damp, shady areas on decaying vegetation. Indoors they grow where humidity levels are high, like basements or bathrooms. Mold growth indoors is usually indicative of water damage, prolonged humidity, or dampness. This is extremely common following floods. If you can see mold indoors, then action must be taken to identify and correct the conditions that permit it to grow.

What are the health effects of exposure to mold?

Some people are more sensitive to mold than others; two people may react differently to the same mold exposure. People with mold allergies have reactions similar to seasonal allergies, including nasal stuffiness, eye irritation, and sneezing, when they are exposed. People with asthma may have wheezing and shortness of breath. People with compromised immune systems, such as from cancer or chronic lung diseases, may develop fungal infections in their lungs. Sometimes, exposure to very high levels of mold can cause hypersensitivity pneumonitis which has symptoms similar to pneumonia. There are no occupational exposure limits for mold.

What to do post flooding?

It can be assumed that if there was flooding from a hurricane, the exposed areas will have mold on them. It is important to remember that covering mold will not prevent it from growing. Therefore, you must remove visible mold and dry the area completely. It is extremely important to dry the building and everything in it as soon as possible, ideally between 24-48 hours after flooding. Once all the water is removed, it is advised that any objects that have been wet and could not be dried and cleaned within the 24-48-hour time period should be thrown out. Although, generally anything below the water line will probably be thrown out. Everything that cannot be removed from the fire station must also be dried completely, and this can be done by opening doors and windows and by using fans and dehumidifiers to remove moisture.

To reiterate, once the flood water has receded from your fire station it is important to follow these five steps:

1. Inspect your fire station and determine what has odor, discoloration or damage
2. Remove all standing water, wallboard materials and furniture that have been exposed to flood waters
3. Clean the exposed area and visible mold from surfaces
4. Dry out everything that has been cleaned or exposed
5. Keep everything dry- as mold grows when there is moisture

How to remediate mold growing in your fire station?

Successful remediation is a multi-pronged approach that involves correcting the underlying moisture problem, cleaning or discarding affected materials (in general, non- or semi-porous materials may be cleaned and porous materials should be discarded), and allowing the area to fully dry. Large scale mold evaluation and remediation (mold growth in multiple rooms and/or in the HVAC system) should be performed by an experienced professional. Running dehumidifiers or cleaning affected areas may reduce mold spores in the air, but they are only temporary fixes. The source of the moisture problem must be fixed in order to stop the reoccurrence of mold.

If you are going to remediate yourselves, it is important to wear gloves, masks (N-95) and goggles to protect your eyes, nose, mouth and skin from the mold and chemicals being used to clean it. You can use a bleach mixture (1/4 cup bleach with 1 gallon of water) to remove mold from hard surfaces such as floors, counters, stoves, sinks and tools. Make sure the mixture is just water and bleach, do not mix bleach and ammonium as they can create toxic fumes. Do not use bleach directly without mixing with water as this may lead to additional nose, eye, throat, and respiratory irritation. Once these items are cleaned they must be dried completely.

Should fire fighters be relocated from the station during mold remediation?

Guidelines from the CDC, OSHA, EPA, and the American Industrial Hygiene Association (see links below) recommend that the decision to relocate workers should be based on the following factors: the size of the contaminated area, the source of the contamination, the type of health effects reported by building occupants, and the potential for building occupant exposure to airborne mold during remediation. This decision should also take into account both visible mold growth and the potential for hidden mold growth. Remediation employees must take measures to prevent mold spores from being dispersed throughout the building, such as isolating the area and keeping it under negative air pressure.

If mold and water damage are found in multiple rooms of a fire station and in the HVAC system, the IAFF usually recommends temporary relocation of workers to reduce the likelihood of exposures.

How can I prevent mold from growing in the fire station?

Once the mold is completely removed, The CDC recommends the following steps to prevent mold from coming back:

- Keep humidity levels as low as you can—no higher than 60%--all day long. An air conditioner or dehumidifier will help you keep the level low.

- Use an air conditioner or a dehumidifier during humid months.
- Be sure the building has adequate ventilation, including exhaust fans.
- Add mold inhibitors to paints before application.
- Clean bathrooms with mold killing products.
- Do not carpet bathrooms and basements.
- Remove or replace previously soaked carpets and upholstery.

Where can I get more information?

The links below provide further information mold exposure, health effects, and remediation guidelines:

- Centers for Disease Control and Prevention - Mold:
  https://www.cdc.gov/mold/faqs.htm
  https://www.cdc.gov/mold/default.htm
  https://www.cdc.gov/mold/cleanup.htm

- New York City Department of Health - Guidelines on Assessment and Remediation of Fungi in Indoor Environments:
  https://www1.nyc.gov/assets/doh/downloads/pdf/epi/epi-mold-guidelines.pdf

- OSHA - A Brief Guide to Mold in the Workplace:
  https://www.osha.gov/dts/shib/shib101003.html

- EPA - Mold Remediation in Schools and Commercial Buildings:
  http://www.epa.gov/sites/production/files/2014-08/documents/moldremediation.pdf
  https://www.epa.gov/mold/floods-and-mold-growth

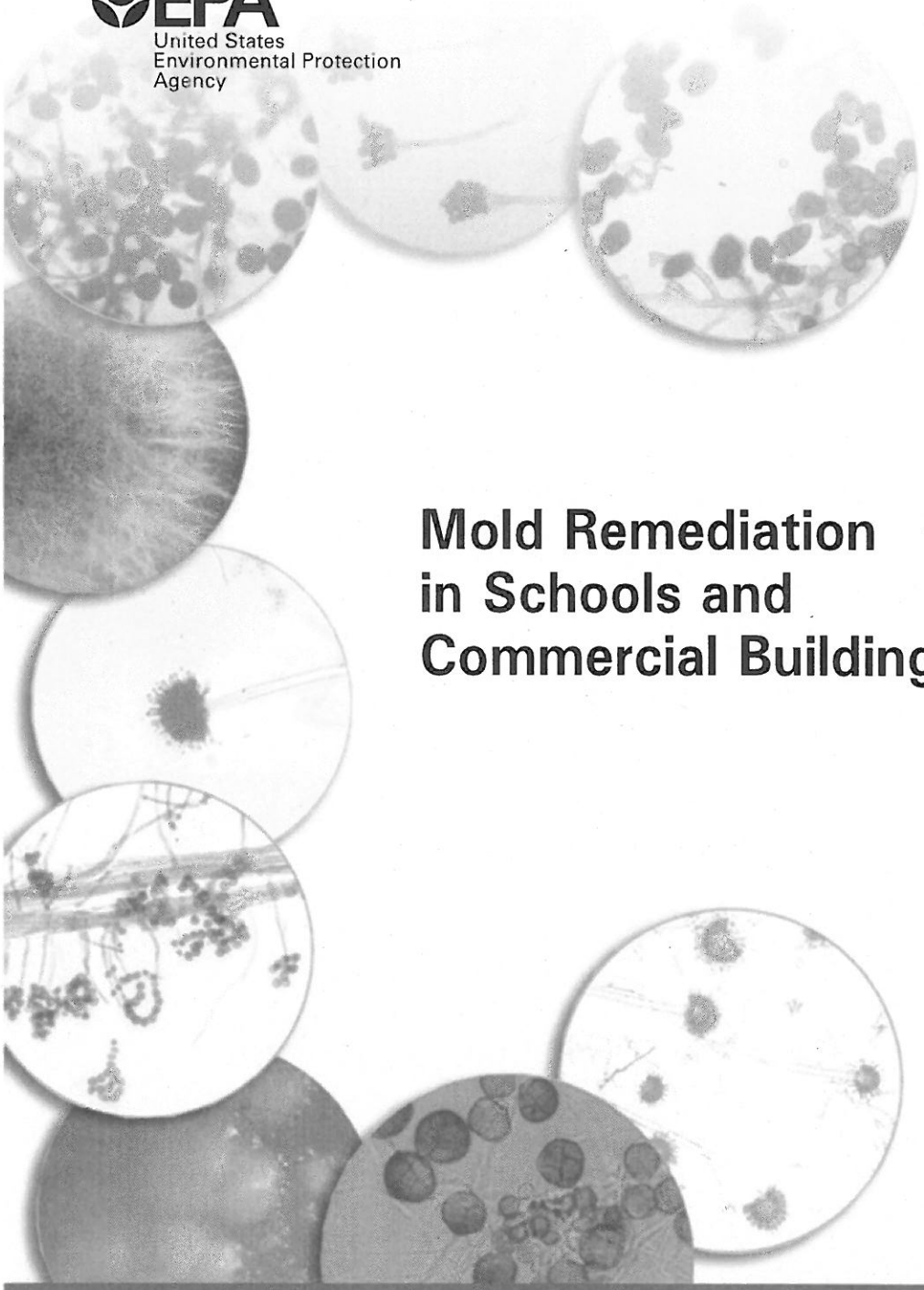
- NIOSH Alert: Prevention Occupational Respiratory Disease from Exposures Caused by Dampness in Office buildings, Schools, and Other Nonindustrial Buildings:
  http://www.cdc.gov/niosh/docs/2013-102/

- American Industrial Hygiene Association - Facts about Mold:
  https://www.aiha.org/publications-and-resources/TopicsofInterest/Hazards/Pages/Facts-About-Mold.aspx

- Institute of Inspection Cleaning and Restoration Certification
  http://www.iicrc.org/five-steps-prevent-mold-growth-after-flood-a-99.html

EPA 402-K-01-001 | September 2008 | www.epa.gov/mold

EPA
United States
Environmental Protection
Agency



Mold Remediation in Schools and Commercial Buildings

Indoor Air Quality (IAQ)

Acknowledgements

This document was prepared by the Indoor Environments Division (IED) of the U.S. Environmental Protection Agency. IED would like to thank the reviewers of this document who provided many valuable and insightful comments, and the contractors who provided support during the development of this document.

EPA would also like to thank those who provided photos: Terry Brennan (Photo #2, Photo #3A, Photo #4A, Photo #6, Photo #8, Photo #9); Paul Ellringer (Photo #4C); Stephen Vesper, Ph.D. (Photo #3B); and Chin Yang, Ph.D. (cover photos, Photo #4B, Photo #5, Photo #7).

Please note that this document presents *recommendations* on mold remediation. EPA does not regulate mold or mold spores in indoor air.

Cover Photos: Magnified photos of different species of mold

Mold Remediation in Schools and Commercial Buildings

Contents

Introduction

Concern about indoor exposure to mold has been increasing as the public becomes aware that exposure to mold can cause a variety of health effects and symptoms, including allergic reactions. This document presents guidelines for the remediation/cleanup of mold and moisture problems in schools and commercial buildings; these guidelines include measures designed to protect the health of building occupants and remediators. It has been designed primarily for building managers, custodians, and others who are responsible for commercial building and school maintenance. It should serve as a reference for potential mold and moisture remediators. Using this document, individuals with little or no experience with mold remediation should be able to make a reasonable judgment as to whether the situation can be handled in-house. It will help those in charge of maintenance to evaluate an in-house remediation plan or a remediation plan submitted by an outside contractor.[1] Contractors and other professionals who respond to mold and moisture situations in commercial buildings and schools may also want to refer to these guidelines.

Molds gradually destroy the things they grow on. Prevent damage to building materials and furnishings, save money, and avoid potential health risks by controlling moisture and eliminating mold growth.

Photo 2: Extensive mold contamination of ceiling and walls

[1] If you choose to use outside contractors or professionals, make sure they have experience cleaning up mold, check their references, and have them follow the recommendations presented in this document, the guidelines of the American Conference of Government Industrial Hygienists (ACGIH) (see Resources List), and/or guidelines from other professional organizations.

Molds can be found almost anywhere; they can grow on virtually any organic substance, as long as moisture and oxygen are present. There are molds that can grow on wood, paper, carpet, foods, and insulation. When excessive moisture accumulates in buildings or on building materials, mold growth will often occur, particularly if the moisture problem remains undiscovered or unaddressed. It is impossible to eliminate all mold and mold spores in the indoor environment. However, mold growth can be controlled indoors by controlling moisture indoors.

Molds reproduce by making spores that usually cannot be seen without magnification. Mold spores waft through the indoor and outdoor air continually. When mold spores land on a damp spot indoors, they may begin growing and digesting whatever they are growing on in order to survive. Molds gradually destroy the things they grow on.

Many types of molds exist. All molds have the potential to cause health effects. Molds can produce allergens that can trigger allergic reactions or even asthma attacks in people allergic to mold. Others are known to produce potent toxins and/or irritants. Potential health concerns are an important reason to prevent mold growth and to remediate/clean up any existing indoor mold growth.

Since mold requires water to grow, it is important to prevent moisture problems in buildings. Moisture problems can have many causes, including uncontrolled humidity. Some moisture problems in buildings have been linked to changes in building construction practices during the 1970s, '80s, and '90s. Some of these changes have resulted in buildings that are tightly sealed, but may lack adequate ventilation, potentially leading to moisture buildup. Building materials, such as drywall, may not allow moisture to escape easily. Moisture problems may include roof leaks, landscaping or gutters that direct water into or under the building, and unvented combustion appliances. Delayed maintenance or insufficient maintenance are also associated with moisture problems in schools and large buildings. Moisture problems in portable classrooms and other temporary structures have frequently been associated with mold problems.

When mold growth occurs in buildings, adverse health problems may be reported by some building occupants, particularly those with allergies or respiratory problems. Remediators should avoid exposing themselves and others to mold-laden dusts as they conduct their cleanup activities. Caution should be used to prevent mold and mold spores from being dispersed throughout the air where they can be inhaled by building occupants.

Prevention

The key to mold control is moisture control. Solve moisture problems before they become mold problems!

Mold Prevention Tips

- Fix leaky plumbing and leaks in the building envelope as soon as possible.
- Watch for condensation and wet spots. Fix source(s) of moisture problem(s) as soon as possible.
- Prevent moisture due to condensation by increasing surface temperature or reducing the moisture level in air (humidity). To increase surface temperature, insulate or increase air circulation. To reduce the moisture level in air, repair leaks, increase ventilation (if outside air is cold and dry), or dehumidify (if outdoor air is warm and humid).
- Keep heating, ventilation, and air conditioning (HVAC) drip pans clean, flowing properly, and unobstructed.
- Vent moisture-generating appliances, such as dryers, to the outside where possible.
- Maintain low indoor humidity, below 60% relative humidity (RH), ideally 30 – 50%, if possible.
- Perform regular building/HVAC inspections and maintenance as scheduled.
- Clean and dry wet or damp spots within 48 hours.
- Don't let foundations stay wet. Provide drainage and slope the ground away from the foundation.

Safety Tips While Investigating and Evaluating Mold and Moisture Problems

- Do not touch mold or moldy items with bare hands.
- Do not get mold or mold spores in your eyes.
- Do not breathe in mold or mold spores.
- Consult Table 2 and text for Personal Protective Equipment (PPE) and containment guidelines.
- Consider using PPE when disturbing mold. The minimum PPE is an N-95 respirator, gloves, and eye protection.

Moldy Areas Encountered During an Investigation

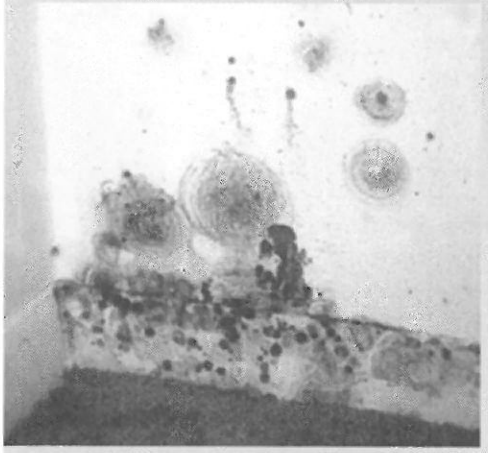
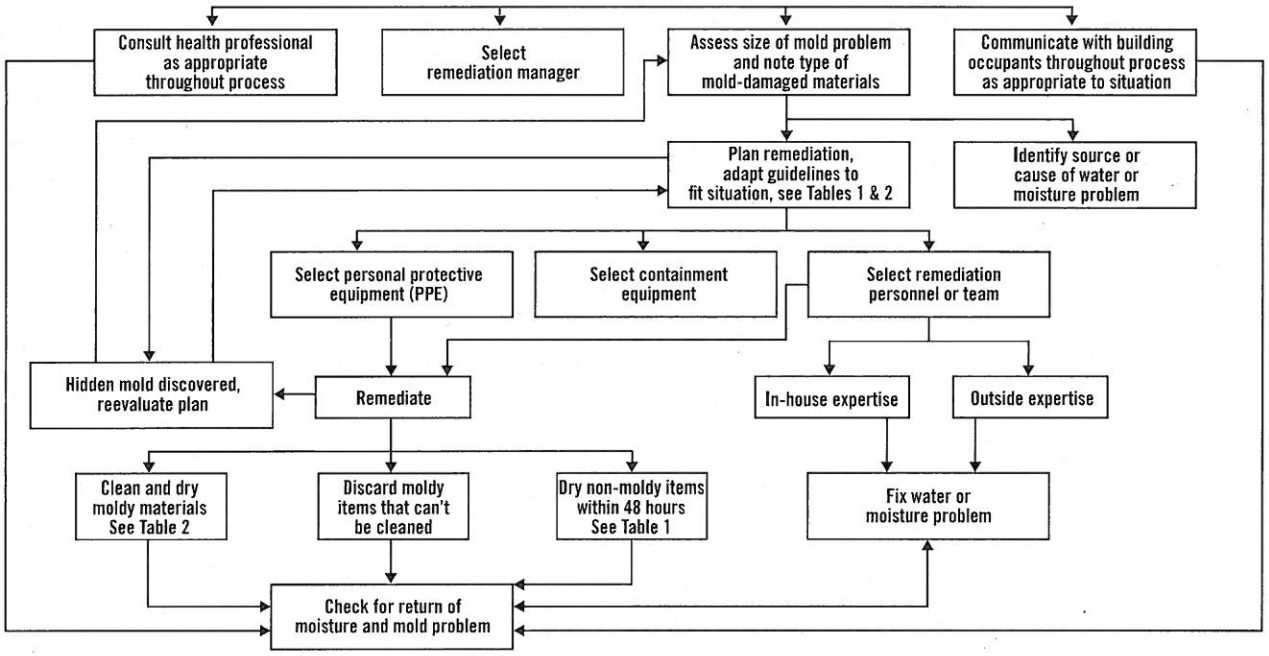


Photo 3A: Mold growing in closet as a result of condensation from room air

Photo 3B: Front side of wallboard looks fine, but the back side is covered with mold

Mold Remediation – Key Steps



Plan the Remediation Before Starting Work

Questions to Consider Before Remediating

- Are there existing moisture problems in the building?
- Have building materials been wet more than 48 hours? (See Table 2 and text)
- Are there hidden sources of water or is the humidity too high (high enough to cause condensation)?
- Are building occupants reporting musty or moldy odors?
- Are building occupants reporting health problems?
- Are building materials or furnishings visibly damaged?
- Has maintenance been delayed or the maintenance plan been altered?
- Has the building been recently remodeled or has building use changed?
- Is consultation with medical or health professionals indicated?

Remediation Plan

Assess the size of the mold and/or moisture problem and the type of damaged materials before planning the remediation work. Select a remediation manager for medium or large jobs (or small jobs requiring more than one person). The remediation plan should include steps to fix the water or moisture problem, or the problem may reoccur. The plan should cover the use of appropriate Personal Protective Equipment (PPE) and include steps to carefully contain and remove moldy building materials to avoid spreading the mold.[2] A remediation plan may vary greatly depending on the size and complexity of the job, and may require revision if circumstances change or new facts are discovered.

The remediation manager's highest priority must be to protect the health and safety of the building occupants and remediators. It is also important to communicate with building occupants when mold problems are identified.[3] In some cases,

[2] Molds are known allergens and may be toxic. You may wish to use Personal Protective Equipment (PPE) while investigating a mold problem, as well as during remediation/cleanup situations. The minimum PPE includes an N-95 respirator, gloves, and eye protection.

[3] See Appendix C.

especially those involving large areas of contamination, the remediation plan may include temporary relocation of some or all of the building occupants. The decision to relocate occupants should consider the size and type of the area affected by mold growth, the type and extent of health effects reported by the occupants, the potential health risks that could be associated with debris, and the amount of disruption likely to be caused by remediation activities. If possible, remediation activities should be scheduled for off-hours when building occupants are less likely to be affected.

Remediators, particularly those with health-related concerns, may wish to check with their doctors or health care professionals before working on mold remediation or investigating potentially moldy areas. If you have any doubts or questions, you should consult a health professional before beginning a remediation project.

HVAC System

Do not run the HVAC system if you know or suspect that it is contaminated with mold. If you suspect that it may be contaminated (it is part of an identified moisture problem, for instance, or there is mold growth near the intake to the system), consult EPA's guide *Should You Have the Air Ducts in Your Home Cleaned?*[4] before taking further action (see Resources List).

Photo 4A: Contaminated fibrous insulation inside air handler cover

Photo 4B: Mold growth on air diffuser in ceiling

Photo 4C: Moldy air duct

[4] Although this document has a residential focus, it is applicable to other building types.

Hidden Mold

In some cases, indoor mold growth may not be obvious. It is possible that mold may be growing on hidden surfaces, such as the back side of drywall, wallpaper, or paneling, the top of ceiling tiles, the underside of carpets and pads, etc. Possible locations of hidden mold can include pipe chases and utility tunnels (with leaking or condensing pipes), walls behind furniture (where condensation forms), condensate drain pans inside air handling units, porous thermal or acoustic liners inside ductwork, or roof materials above ceiling tiles (due to roof leaks or insufficient insulation). Some building materials, such as drywall with vinyl wallpaper over it or wood paneling, may act as vapor barriers,[5] trapping moisture underneath their surfaces and thereby providing a moist environment where mold can grow. You may suspect hidden mold if a building smells moldy, but you cannot see the source, or if you know there has been water damage and building occupants are reporting health problems. Investigating hidden mold problems may be difficult and will require caution when the investigation involves disturbing potential sites of mold growth—make sure to use PPE. For example, removal of wallpaper can lead to a massive release of spores from mold growing on the underside of the paper. If you believe that you may have a hidden mold problem, you may want to consider hiring an experienced professional. If you discover hidden mold, you should revise your remediation plan to account for the total area affected by mold growth.

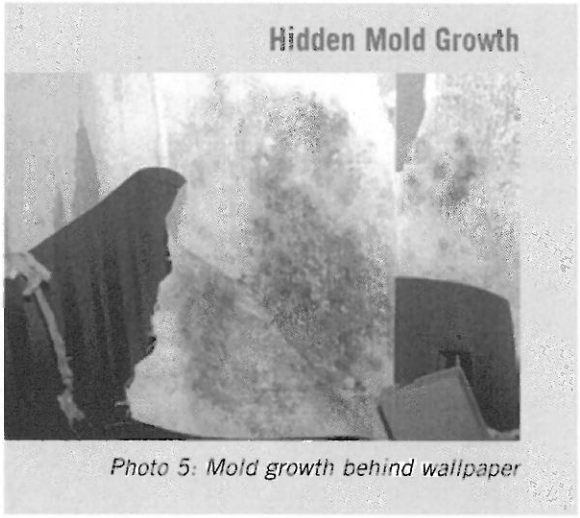


Photo 5: Mold growth behind wallpaper

[5] For more information on vapor barriers and building construction, see Resources List. It is important that building materials be able to dry; moisture should not be trapped between two vapor barriers or mold may result.

1. Fix the water or humidity problem. Complete and carry out repair plan if appropriate. Revise and/or carry out maintenance plan if necessary. Revise remediation plan, as necessary, if more damage is discovered during remediation. See Mold Remediation – Key Steps (page 5) and Resources List (page 29) for additional information.
2. Continue to communicate with building occupants, as appropriate to the situation. Be sure to address all concerns.
3. Completely clean up mold and dry water-damaged areas. Select appropriate cleaning and drying methods for damaged/ contaminated materials. Carefully contain and remove moldy building materials. Use appropriate Personal Protective Equipment (PPE). Arrange for outside professional support if necessary.

The Key to Mold Control is Moisture Control!

- When addressing mold problems, don't forget to address the source of the moisture problem, or the mold problem may simply reappear!
- Remember to check for high humidity and condensation problems as well as actual water leaks, maintenance issues, and HVAC system problems.
- Protect the health and safety of the building occupants and remediators. Consult a health professional as needed. Use PPE and containment as appropriate when working with mold.

Table 1: Water Damage Cleanup and Mold Prevention[6]

Table 1 presents strategies to respond to water damage within 24 – 48 hours. These guidelines are designed to help avoid the need for remediation of mold growth by taking quick action before growth starts. If mold growth is found on the materials listed in Table 1, refer to Table 2 for guidance on remediation. Depending on the size of the area involved and resources available, professional assistance may be needed to dry an area quickly and thoroughly.

[6] Please note that Tables 1 and 2 contain general guidelines. Their purpose is to provide basic information for remediation managers to first assess the extent of the damage and then to determine whether the remediation should be managed by in-house personnel or outside professionals. The remediation manager can then use the guidelines to help design a remediation plan or to assess a plan submitted by outside professionals.

Table 1: Water Damage – Cleanup and Mold Prevention

Guidelines for Response to Clean Water Damage within 24 – 48 Hours to Prevent Mold Growth*	
Water-Damaged Material†	**Actions**
Books and papers	* For non-valuable items, discard books and papers. * Photocopy valuable/important items, discard originals. * Freeze (in frost-free freezer or meat locker) or freeze-dry.
Carpet and backing – dry within 24 – 48 hours§	* Remove water with water extraction vacuum. * Reduce ambient humidity levels with dehumidifier. * Accelerate drying process with fans.
Ceiling tiles	* Discard and replace.
Cellulose insulation	* Discard and replace.
Concrete or cinder block surfaces	* Remove water with water extraction vacuum. * Accelerate drying process with dehumidifiers, fans, and/or heaters.
Fiberglass insulation	* Discard and replace.
Hard surface, porous flooring§ (Linoleum, ceramic tile, vinyl)	* Vacuum or damp wipe with water and mild detergent and allow to dry; scrub if necessary. * Check to make sure underflooring is dry; dry underflooring if necessary.
Non-porous, hard surfaces (Plastics, metals)	* Vacuum or damp wipe with water and mild detergent and allow to dry; scrub if necessary.
Upholstered furniture	* Remove water with water extraction vacuum. * Accelerate drying process with dehumidifiers, fans, and/or heaters. * May be difficult to completely dry within 48 hours. If the piece is valuable, you may wish to consult a restoration/water damage professional who specializes in furniture.
Wallboard (Drywall and gypsum board)	* May be dried in place if there is no obvious swelling and the seams are intact. If not, remove, discard, and replace. * Ventilate the wall cavity, if possible.
Window drapes	* Follow laundering or cleaning instructions recommended by the manufacturer.
Wood surfaces	* Remove moisture immediately and use dehumidifiers, gentle heat, and fans for drying. (Use caution when applying heat to hardwood floors.) * Treated or finished wood surfaces may be cleaned with mild detergent and clean water and allowed to dry. * Wet paneling should be pried away from wall for drying.

*If mold growth has occurred or materials have been wet for more than 48 hours, consult Table 2 guidelines. Even if materials are dried within 48 hours, mold growth may have occurred. Items may be tested by professionals if there is doubt. Note that mold growth will not always occur after 48 hours; this is only a guideline.

These guidelines are for damage caused by clean water. If you know or suspect that the water source is contaminated with sewage, or chemical or biological pollutants, then Personal Protective Equipment and containment are required by the Occupational Safety and Health Administration (OSHA). An experienced professional should be consulted if you and/or your remediators do not have expertise remediating in contaminated water situations. Do not use fans before determining that the water is clean or sanitary.

† If a particular item(s) has high monetary or sentimental value, you may wish to consult a restoration/water damage specialist.

§ The subfloor under the carpet or other flooring material must also be cleaned and dried. See the appropriate section of this table for recommended actions depending on the composition of the subfloor.

Table 2: Mold Remediation Guidelines[7]

Table 2 presents remediation guidelines for building materials that have or are likely to have mold growth. The guidelines in Table 2 are designed to protect the health of occupants and cleanup personnel during remediation. These guidelines are based on the area and type of material affected by water damage and/or mold growth. Please note that these are guidelines; some professionals may prefer other cleaning methods. If you are considering cleaning your ducts as part of your remediation plan, you should consult EPA's publication entitled, *Should You Have the Air Ducts In Your Home Cleaned?*[8] (see Resources List). If possible, remediation activities should be scheduled for off-hours when building occupants are less likely to be affected.

Mold and Indoor Air Regulations and Standards

Standards or Threshold Limit Values (TLVs) for airborne concentrations of mold, or mold spores, have not been set. As of December 2000, there are no EPA regulations or standards for airborne mold contaminants.

Although the level of personal protection suggested in these guidelines is based on the total surface area contaminated and the potential for remediator and/or occupant exposure, professional judgment should always play a part in remediation decisions. These remediation guidelines are based on the size of the affected area to make it easier for remediators to select appropriate techniques, not on the basis of health effects or research showing there is a specific method appropriate at a certain number of square feet. The guidelines have been designed to help construct a remediation plan. The remediation manager will then use professional judgment and experience to adapt the guidelines to particular situations. When in doubt, caution is advised. Consult an experienced mold remediator for more information.

[7] Please note that Tables 1 and 2 contain general guidelines. Their purpose is to provide basic information for remediation managers to first assess the extent of the damage and then to determine whether the remediation should be managed by in-house personnel or outside professionals. The remediation manager can then use the guidelines to help design a remediation plan or to assess a plan submitted by outside professionals.

[8] Although this document has a residential focus, it is applicable to other building types.

In cases in which a particularly toxic mold species has been identified or is suspected, when extensive hidden mold is expected (such as behind vinyl wallpaper or in the HVAC system), when the chances of the mold becoming airborne are estimated to be high, or sensitive individuals (e.g., those with severe allergies or asthma) are present, a more cautious or conservative approach to remediation is indicated. Always make sure to protect remediators and building occupants from exposure to mold.

Health Concerns

If building occupants are reporting serious health concerns, you should consult a health professional.

Table 2: Guidelines for Remediating Building Materials with Mold Growth Caused by Clean Water*

Material or Furnishing Affected	Cleanup Methods†	Personal Protective Equipment	Containment
SMALL – Total Surface Area Affected Less Than 10 square feet (ft^2)			
Books and papers	3	Minimum N-95 respirator, gloves, and goggles	None required
Carpet and backing	1, 3		
Concrete or cinder block	1, 3		
Hard surface, porous flooring (Linoleum, ceramic tile, vinyl)	1, 2, 3		
Non-porous, hard surfaces (Plastics, metals)	1, 2, 3		
Upholstered furniture & drapes	1, 3		
Wallboard (Drywall and gypsum board)	3		
Wood surfaces	1, 2, 3		
MEDIUM – Total Surface Area Affected Between 10 and 100 (ft^2)			
Books and papers	3	Limited or Full Use professional judgment, consider potential for remediator exposure and size of contaminated area	Limited Use professional judgment, consider potential for remediator/occupant exposure and size of contaminated area
Carpet and backing	1, 3, 4		
Concrete or cinder block	1, 3		
Hard surface, porous flooring (Linoleum, ceramic tile, vinyl)	1, 2, 3		
Non-porous, hard surfaces (Plastics, metals)	1, 2, 3		
Upholstered furniture & drapes	1, 3, 4		
Wallboard (Drywall and gypsum board)	3, 4		
Wood surfaces	1, 2, 3		
LARGE – Total Surface Area Affected Greater Than 100 (ft^2) or Potential for Increased Occupant or Remediator Exposure During Remediation Estimated to be Significant			
Books and papers	3	Full Use professional judgment, consider potential for remediator exposure and size of contaminated area	Full Use professional judgment, consider potential for remediator/occupant exposure and size of contaminated area
Carpet and backing	1, 3, 4		
Concrete or cinder block	1, 3		
Hard surface, porous flooring (Linoleum, ceramic tile, vinyl)	1, 2, 3, 4		
Non-porous, hard surfaces (Plastics, metals)	1, 2, 3		
Upholstered furniture & drapes	1, 3, 4		
Wallboard (Drywall and gypsum board)	3, 4		
Wood surfaces	1, 2, 3, 4		

Table 2 continued

*Use professional judgment to determine prudent levels of Personal Protective Equipment and containment for each situation, particularly as the remediation site size increases and the potential for exposure and health effects rises. Assess the need for increased Personal Protective Equipment, if, during the remediation, more extensive contamination is encountered than was expected. Consult Table 1 if materials have been wet for less than 48 hours, and mold growth is not apparent.

These guidelines are for damage caused by clean water. If you know or suspect that the water source is contaminated with sewage, or chemical or biological pollutants, then the Occupational Safety and Health Administration (OSHA) requires PPE and containment. An experienced professional should be consulted if you and/or your remediators do not have expertise in remediating contaminated water situations.

†Select method most appropriate to situation. Since molds gradually destroy the things they grow on, if mold growth is not addressed promptly, some items may be damaged such that cleaning will not restore their original appearance. If mold growth is heavy and items are valuable or important, you may wish to consult a restoration/water damage/remediation expert. Please note that these are guidelines; other cleaning methods may be preferred by some professionals.

CLEANUP METHODS

Method 1: Wet vacuum (in the case of porous materials, some mold spores/fragments will remain in the material but will not grow if the material is completely dried). Steam cleaning may be an alternative for carpets and some upholstered furniture.

Method 2: Damp-wipe surfaces with plain water or with water and detergent solution (except wood—use wood floor cleaner); scrub as needed.

Method 3: High-efficiency particulate air (HEPA) vacuum after the material has been thoroughly dried. Dispose of the contents of the HEPA vacuum in well-sealed plastic bags.

Method 4: Discard – remove water-damaged materials and seal in plastic bags while inside of containment, if present. Dispose of as normal waste. HEPA vacuum area after it is dried.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Minimum: Gloves, N-95 respirator, goggles/eye protection
Limited: Gloves, N-95 respirator or half-face respirator with HEPA filter, disposable overalls, goggles/eye protection
Full: Gloves, disposable full body clothing, head gear, foot coverings, full-face respirator with HEPA filter

CONTAINMENT

Limited: Use polyethylene sheeting ceiling to floor around affected area with a slit entry and covering flap; maintain area under negative pressure with HEPA-filtered fan unit. Block supply and return air vents within containment area.

Full: Use two layers of fire-retardant polyethylene sheeting with one airlock chamber. Maintain area under negative pressure with HEPA-filtered fan exhausted outside of building. Block supply and return air vents within containment area.

Table developed from literature and remediation documents including *Bioaerosols: Assessment and Control* (American Conference of Governmental Industrial Hygienists, 1999) and *IICRC S500, Standard and Reference Guide for Professional Water Damage Restoration* (Institute of Inspection, Cleaning and Restoration, 1999); see Resources List for more information.

Cleanup Methods

A variety of mold cleanup methods are available for remediating damage to building materials and furnishings caused by moisture control problems and mold growth. The specific method or group of methods used will depend on the type of material affected, as presented in Table 2. Please note that professional remediators may use some methods not covered in these guidelines; absence of a method in the guidelines does not necessarily mean that it is not useful.[9]

Method 1: Wet Vacuum

Wet vacuums are vacuum cleaners designed to collect water. They can be used to remove water from floors, carpets, and hard surfaces where water has accumulated. They should not be used to vacuum porous materials,

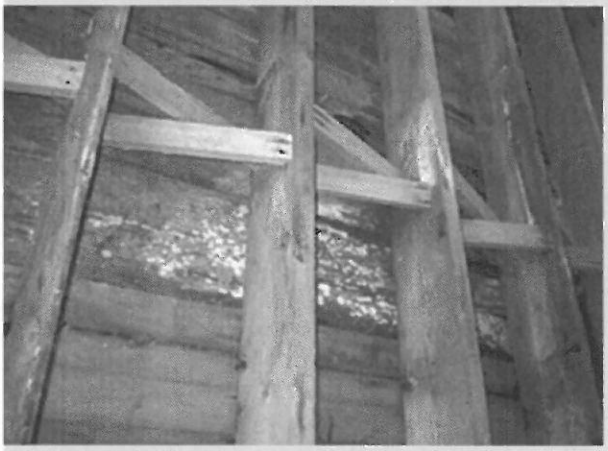


Photo 6: Heavy mold growth on underside of spruce floorboards

Molds Can Damage Building Materials and Furnishings

Mold growth can eventually cause structural damage to a school or large building, if a mold/moisture problem remains unaddressed for a long time. In the case of a long-term roof leak, for example, molds can weaken floors and walls as the molds feed on wet wood. If you suspect that mold has damaged building integrity, you should consult a structural engineer or other professional with expertise in this area.

[9] If you are unsure what to do, or if the item is expensive or of sentimental value, you may wish to consult a specialist. Specialists in furniture repair restoration, painting, art restoration and conservation, carpet and rug cleaning, water damage, and fire/water restoration are commonly listed in phone books. Be sure to ask for and check references; look for affiliation with professional organizations. See Resources List.

such as gypsum board. They should be used only when materials are still wet—wet vacuums may spread spores if sufficient liquid is not present. The tanks, hoses, and attachments of these vacuums should be thoroughly cleaned and dried after use since mold and mold spores may stick to the surfaces.

Method 2: Damp Wipe

Whether dead or alive, mold is allergenic, and some molds may be toxic. Mold can generally be removed from non-porous (hard) surfaces by wiping or scrubbing with water, or water and detergent. It is important to dry these surfaces quickly and thoroughly to discourage further mold growth. Instructions for cleaning surfaces, as listed on product labels, should always be read and followed. Porous materials that are wet and have mold growing on them may have to be discarded. Since molds will infiltrate porous substances and grow on or fill in empty spaces or crevices, the mold can be difficult or impossible to remove completely.

Mold and Paint

Don't paint or caulk moldy surfaces; clean and dry surfaces before painting. Paint applied over moldy surfaces is likely to peel.

Method 3: HEPA Vacuum

HEPA (High-Efficiency Particulate Air) vacuums are recommended for final cleanup of remediation areas after materials have been thoroughly dried and contaminated materials removed. HEPA vacuums are also recommended for cleanup of dust that may have settled on surfaces outside the remediation area. Care must be taken to ensure that the filter is properly seated in the vacuum so that all the air must pass through the filter. When changing the vacuum filter, remediators should wear PPE to prevent exposure to the mold that has been captured. The filter and contents of the HEPA vacuum must be disposed of in well-sealed plastic bags.

Mold Remediation/Cleanup and Biocides

The purpose of mold remediation is to remove the mold to prevent human exposure and damage to building materials and furnishings. It is necessary to clean up mold contamination, not just to kill the mold. Dead mold is still allergenic, and some dead molds are potentially toxic. The use of a biocide, such as chlorine bleach, is not recommended as a routine practice during mold remediation, although there may be instances where professional judgment may indicate its use (for example, when immune-compromised individuals are present). In most cases, it is not possible or desirable to sterilize an area; a background level of mold spores will remain in the air (roughly equivalent to or lower than the level in outside air). These spores will not grow if the moisture problem in the building has been resolved.

If you choose to use disinfectants or biocides, always ventilate the area. Outdoor air may need to be brought in with fans. When using fans, take care not to distribute mold spores throughout an unaffected area. Biocides are toxic to humans, as well as to mold. You should also use appropriate PPE and read and follow label precautions. Never mix chlorine bleach solution with cleaning solutions or detergents that contain ammonia; toxic fumes could be produced.

Some biocides are considered pesticides, and some States require that only registered pesticide applicators apply these products in schools. Make sure anyone applying a biocide is properly licensed, if necessary. Fungicides are commonly applied to outdoor plants, soil, and grains as a dust or spray—examples include hexachlorobenzene, organomercurials, pentachlorophenol, phthalimides, and dithiocarbamates. Do not use fungicides developed for use outdoors for mold remediation or for any other indoor situation.

Method 4: Discard – Remove Damaged Materials and Seal in Plastic Bags

Building materials and furnishings that are contaminated with mold growth and are not salvageable should be double-bagged using 6-mil polyethylene sheeting. These materials can then usually be discarded as ordinary construction waste. It is important to package mold-contaminated materials in sealed bags before removal from the containment area to minimize the dispersion of mold spores throughout the building. Large items that have heavy mold growth

should be covered with polyethylene sheeting and sealed with duct tape before they are removed from the containment area.

Personal Protective Equipment (PPE)

If the remediation job disturbs mold and mold spores become airborne, then the risk of respiratory exposure goes up. Actions that are likely to stir up mold include: breakup of moldy porous materials such as wallboard; invasive procedures used to examine or remediate mold growth in a wall cavity; actively stripping or peeling wallpaper to remove it; and using fans to dry items.

Always use gloves and eye protection when cleaning up mold!

The primary function of Personal Protective Equipment (PPE) is to avoid inhaling mold and mold spores and to avoid mold contact with the skin or eyes. The following sections discuss the different types of PPE that can be used during remediation activities. Please note that all individuals using certain PPE equipment, such as half-face or full-face respirators, must be trained, must have medical clearance, and must be fit-tested by a trained professional. In addition, the use of respirators must follow a complete respiratory protection program as specified by the Occupational Safety and Health Administration (OSHA) (see Resources List for more information).

Skin and Eye Protection

Gloves are required to protect the skin from contact with mold allergens (and in some cases mold toxins) and from potentially irritating cleaning solutions. Long gloves that extend to the middle of the forearm are recommended. The glove material should

Personal Protective Equipment

Photo 7: Remediation worker with limited PPE

be selected based on the type of materials being handled. If you are using a biocide (such as chlorine bleach) or a strong cleaning solution, you should select gloves made from natural rubber, neoprene, nitrile, polyurethane, or PVC. If you are using a mild detergent or plain water, ordinary household rubber gloves may be used.

To protect your eyes, use properly fitted goggles or a full-face respirator with HEPA filter. Goggles must be designed to prevent the entry of dust and small particles. Safety glasses or goggles with open vent holes are not acceptable.

Respiratory Protection

Respirators protect cleanup workers from inhaling airborne mold, mold spores, and dust.

Minimum: When cleaning up a small area affected by mold, you should use an N-95 respirator. This device covers the nose and mouth, will filter out 95% of the particulates in the air, and is available in most hardware stores.

Limited: Limited PPE includes use of a half-face or full-face air purifying respirator (APR) equipped with a HEPA filter cartridge. These respirators contain both inhalation and exhalation valves that filter the air and ensure that it is free of mold particles. Note that half-face APRs do not provide eye protection. In addition, the HEPA filters do not remove vapors or gases. You should always use respirators approved by the National Institute for Occupational Safety and Health (see Resources List).

Full: In situations in which high levels of airborne dust or mold spores are likely or when intense or long-term exposures are expected (e.g., the cleanup of large areas of contamination), a full-face, powered air purifying respirator (PAPR) is recommended. Full-face PAPRs use a blower to force air through a HEPA filter. The HEPA-filtered air is supplied to a mask that covers the entire face or a hood that covers the entire head. The positive pressure within the hood prevents unfiltered air from entering through penetrations or gaps. Individuals must be trained to use their respirators before they begin remediation. The use of these respirators must be in compliance with OSHA regulations (see Resources List).

Disposable Protective Clothing

Disposable clothing is recommended during a medium or large remediation project to prevent the transfer and spread of mold to clothing and to eliminate skin contact with mold.

Limited: Disposable paper overalls can be used.

Full: Mold-impervious disposable head and foot coverings, and a body suit made of a breathable material, such as TYVEK®, should be used. All gaps, such as those around ankles and wrists, should be sealed (many remediators use duct tape to seal clothing).

Containment

The purpose of containment during remediation activities is to limit release of mold into the air and surroundings, in order to minimize the exposure of remediators and building occupants to mold. Mold and moldy debris should not be allowed to spread to areas in the building beyond the contaminated site.

Containment Tips

- Always maintain the containment area under negative pressure.
- Exhaust fans to outdoors and ensure that adequate makeup air is provided.
- If the containment is working, the polyethylene sheeting should billow inwards on all surfaces. If it flutters or billows outward, containment has been lost, and you should find and correct the problem before continuing your remediation activities.

The two types of containment recommended in Table 2 are limited and full. The larger the area of moldy material, the greater the possibility of human exposure and the greater the need for containment. In general, the size of the area helps determine the level of containment. However, a heavy growth of mold in a relatively small area could release more spores than a lighter growth of mold in a relatively large area. Choice of containment should be based on professional judgment.[10] The primary object of containment should be to prevent occupant and remediator exposure to mold.

[10] For example, a remediator may decide that a small area that is extensively contaminated and has the potential to distribute mold to occupied areas during cleanup should have full containment, whereas a large wall surface that is lightly contaminated and easily cleaned would require only limited containment.

Limited Containment

Limited containment is generally recommended for areas involving between 10 and 100 square feet (ft^2) of mold contamination. The enclosure around the moldy area should consist of a single layer of 6-mil, fire-retardant polyethylene sheeting. The containment should have a slit entry and covering flap on the outside of the containment area. For small areas, the polyethylene sheeting can be affixed to floors and ceilings with duct tape. For larger areas, a steel or wooden stud frame can be erected and polyethylene sheeting attached to it. All supply and air vents, doors, chases, and risers within the containment area must be sealed with polyethylene sheeting to minimize the migration of contaminants to other parts of the building. Heavy mold growth on ceiling tiles may impact HVAC systems if the space above the ceiling is used as a return air plenum. In this case, containment should be installed from the floor to the ceiling deck, and the filters in the air handling units serving the affected area may have to be replaced once remediation is finished.

Photo 8: Full containment on large job

The containment area must be maintained under negative pressure relative to surrounding areas. This will ensure that contaminated air does not flow into adjacent areas. This can be done with a HEPA-filtered fan unit exhausted outside of the building. For small, easily contained areas, an exhaust fan ducted to the outdoors can also be used. The surfaces of all objects removed from the containment area should be remediated/cleaned prior to removal. The remediation guidelines outlined in Table 2 can be implemented when the containment is completely sealed and is under negative pressure relative to the surrounding area.

Full Containment

Full containment is recommended for the cleanup of mold-contaminated surface areas greater than 100 ft^2 or in any situation in which it appears likely that the occupant space would be further contaminated without full containment. Double layers of polyethylene should be used to create a barrier between the moldy area and other parts of the building. A decontamination chamber or airlock should be constructed for entry into and exit from the remediation area. The entryways to the airlock from the outside and from the airlock to the main containment area should consist of a slit entry with covering flaps on the outside surface of each slit entry. The chamber should be large enough to hold a waste container and allow a person to put on and remove PPE. All contaminated PPE, except respirators, should be placed in a sealed bag while in this chamber. Respirators should be worn until remediators are outside the decontamination chamber. PPE must be worn throughout the final stages of HEPA vacuuming and damp-wiping of the contained area. PPE must also be worn during HEPA vacuum filter changes or cleanup of the HEPA vacuum.

Equipment

Moisture Meters: Measure/Monitor Moisture Levels in Building Materials

Moisture meters may be helpful for measuring the moisture content in a variety of building materials following water damage. They can also be used to monitor the process of drying damaged materials. These direct reading devices have a thin probe which can be inserted into the material to be tested or can be pressed directly against the surface of the material. Moisture meters can be used on materials such as carpet, wallboard, wood, brick, and concrete.

Moisture Meter

Photo 9: Moisture meter measuring moisture content of plywood subfloor

Humidity Gauges or Meters: Monitor Moisture Levels in the Air

Humidity meters can be used to monitor humidity indoors. Inexpensive (<$50) models are available that monitor both temperature and humidity.

Humidistat: Turns on HVAC System at Specific Relative Humidity (RH)

A humidistat is a control device that can be connected to the HVAC system and adjusted so that, if the humidity level rises above a set point, the HVAC system will automatically come on.

HVAC System Filter: Filters Outdoor Air

Use high-quality filters in your HVAC system during remediation. Consult an engineer for the appropriate efficiency for your specific HVAC system and consider upgrading your filters if appropriate. Conventional HVAC filters are typically not effective in filtering particles the size of mold spores. Consider upgrading to a filter with a minimum efficiency of 50 to 60% or a rating of MERV 8, as determined by Test Standard 52.2 of the American Society of Heating, Refrigerating, and Air Conditioning Engineers. Remember to change filters regularly and change them following any remediation activities.

Sampling

Is sampling for mold needed? In most cases, if visible mold growth is present, sampling is unnecessary. In specific instances, such as cases where litigation is involved, the source(s) of the mold contamination is unclear, or health concerns are a problem, you may consider sampling as part of your site evaluation. Surface sampling may also be useful in order to determine if an area has been adequately cleaned or remediated. Sampling should be done only after developing a sampling plan that includes a confirmable theory regarding suspected mold sources and routes of exposure. Figure out what you think is happening and how to prove or disprove it before you sample!

If you do not have extensive experience and/or are in doubt about sampling, consult an experienced professional. This individual can help you decide if sampling for mold is useful and/or needed, and will be able to carry out any necessary sampling. It is important to remember that the results of sampling may have limited use or application. Sampling may help locate the source of mold contamination, identify some of the mold species present, and differentiate between mold and soot or dirt. Pre- and post-remediation sampling may also be useful in determining whether remediation efforts have been effective. After remediation, the types and concentrations of mold in indoor air samples should be similar to what is found in the local outdoor air. Since no EPA or other Federal threshold limits have been set for mold or mold spores, sampling cannot be used to check a building's compliance with Federal mold standards.

Sampling for mold should be conducted by professionals with specific experience in designing mold sampling protocols, sampling methods, and interpretation of results. Sample analysis should follow analytical methods recommended by the American Industrial Hygiene Association (AIHA), the American Conference of Governmental Industrial Hygienists (ACGIH), or other professional guidelines (see Resources List). Types of samples include air samples, surface samples, bulk samples (chunks of carpet, insulation, wallboard, etc.), and water samples from condensate drain pans or cooling towers.

A number of pitfalls may be encountered when inexperienced personnel conduct sampling. They may take an inadequate number of samples, there may be inconsistency in sampling protocols, the samples may become contaminated, outdoor control samples may be omitted, and you may incur costs for unneeded or inappropriate samples. Budget constraints will often be a consideration when sampling; professional advice may be necessary to determine if it is possible to take sufficient samples to characterize a problem on a given budget. If it is not possible to sample properly, with a sufficient number of samples to answer the question(s) posed, it would be preferable not to sample. Inadequate sample plans may generate misleading, confusing, and useless results.

Keep in mind that air sampling for mold provides information only for the moment in time in which the sampling occurred, much like a snapshot. Air sampling will reveal, when properly done, what was in the air at the moment when the sample was taken. For someone without experience, sampling results will be difficult to interpret. Experience in interpretation of results is essential.

How Do You Know When You Have Finished Remediation/Cleanup?

1. You must have completely fixed the water or moisture problem.
2. You should complete mold removal. Use professional judgment to determine if the cleanup is sufficient. Visible mold, mold-damaged materials, and moldy odors should not be present.
3. If you have sampled, the kinds and concentrations of mold and mold spores in the building should be similar to those found outside, once cleanup activities have been completed.
4. You should revisit the site(s) shortly after remediation, and it should show no signs of water damage or mold growth.
5. People should be able to occupy or re-occupy the space without health complaints or physical symptoms.
6. Ultimately, this is a judgment call; there is no easy answer.

Checklist for Mold Remediation*

Investigate and evaluate moisture and mold problems

- ☐ Assess size of moldy area (square feet)
- ☐ Consider the possibility of hidden mold
- ☐ Clean up small mold problems and fix moisture problems before they become large problems
- ☐ Select remediation manager for medium or large size mold problem
- ☐ Investigate areas associated with occupant complaints
- ☐ Identify source(s) or cause of water or moisture problem(s)
- ☐ Note type of water-damaged materials (wallboard, carpet, etc.)
- ☐ Check inside air ducts and air handling unit
- ☐ Throughout process, consult qualified professional if necessary or desired

Communicate with building occupants at all stages of process, as appropriate

- ☐ Designate contact person for questions and comments about medium or large scale remediation as needed

Plan remediation

- ☐ Adapt or modify remediation guidelines to fit your situation; use professional judgment
- ☐ Plan to dry wet, non-moldy materials within 48 hours to prevent mold growth (see Table 1 and text)
- ☐ Select cleanup methods for moldy items (see Table 2 and text)
- ☐ Select Personal Protection Equipment – protect remediators (see Table 2 and text)
- ☐ Select containment equipment – protect building occupants (see Table 2 and text)
- ☐ Select remediation personnel who have the experience and training needed to implement the remediation plan and use Personal Protection Equipment and containment as appropriate

Remediate moisture and mold problems

- ☐ Fix moisture problem, implement repair plan and/or maintenance plan
- ☐ Dry wet, non-moldy materials within 48 hours to prevent mold growth
- ☐ Clean and dry moldy materials (see Table 2 and text)
- ☐ Discard moldy porous items that can't be cleaned (see Table 2 and text)

*For details, see main text of this publication. Please note that this checklist was designed to highlight key parts of a school or commercial building remediation and does not list all potential steps or problems.

Resources List – EPA

U.S. Environmental Protection Agency (EPA), Indoor Environments Division (IED)

An Office Building Occupant's Guide to IAQ
www.epa.gov/iaq/pubs/occupgd.html

Biological Contaminants
www.epa.gov/iaq/biologic.html

Building Air Quality Action Plan (for Commercial Buildings)
www.epa.gov/iaq/largebldgs/pdf_files/baqactionplan.pdf

Floods / Flooding
www.epa.gov/iaq/flood

Indoor Air Quality (IAQ) Home Page
www.epa.gov/iaq/index.html

IAQ in Large Buildings / Commercial Buildings
www.epa.gov/iaq/largebldgs

IAQ in Schools
www.epa.gov/iaq/schools

Mold Remediation in Schools and Commercial Buildings
www.epa.gov/mold/mold_remediation.html

Mold Resources
www.epa.gov/mold/moldresources.html

Resources List – OTHER

The following list of resources includes information created and maintained by other public and private organizations. The U.S. EPA does not control or guarantee the accuracy, relevance, timeliness, or completeness of this outside information. Further, the inclusion of such resources is not intended to endorse any views expressed or products or services offered by the author of the reference or the organization operating the service on which the reference is maintained.

American College of Occupational and Environmental Medicine (ACOEM)
(847) 818-1800 www.acoem.org/
Referrals to physicians who have experience with environmental exposures

American Conference of Governmental Industrial Hygienists, Inc. (ACGIH)
(513) 742-2020 www.acgih.org
Occupational and environmental health and safety information

American Industrial Hygiene Association (AIHA)
(703) 849-8888 www.aiha.org
Information on industrial hygiene and indoor air quality issues including mold hazards and legal issues

American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc. (ASHRAE)
(800) 527-4723 www.ashrae.org
Information on engineering issues and indoor air quality

Association of Occupational and Environmental Clinics (AOEC)
(888) 347-AOEC (2632) www.aoec.org
Referrals to clinics with physicians who have experience with environmental exposures, including exposures to mold; maintains a database of occupational and environmental cases

Asthma and Allergic Diseases:

American Academy of Allergy, Asthma & Immunology (AAAAI)
(414) 272-6071 www.aaaai.org
Physician referral directory, information on allergies and asthma

Asthma and Allergy Foundation of America (AAFA)
(800) 7-ASTHMA (800-727-8462) www.aafa.org
Information on allergies and asthma

American Lung Association (ALA)
(800) LUNGUSA (800-586-4872) www.lungusa.org
Information on allergies and asthma

Asthma and Allergy Network/Mothers of Asthmatics, Inc. (AAN-MA)
(800) 878-4403 or (703) 641-9595 www.aanma.org
Information on allergies and asthma

National Institute of Allergy and Infectious Diseases (NIAID)
(301) 496-5717 www.niaid.nih.gov/
Information on allergies and asthma

National Jewish Medical and Research Center
(800) 222-LUNG (800-222-5864) www.nationaljewish.org/
Information on allergies and asthma

Canada Mortgage and Housing Corporation (CMHC)
(613) 748-2000 [International] www.cmhc-schl.gc.ca/
Several documents on mold-related topics available

Carpet and Rug Institute (CRI)
(706) 278-3176 www.carpet-rug.org/
Carpet maintenance, restoration guidelines for water-damaged carpet, other carpet-related issues

Centers for Disease Control and Prevention (CDC)
(800) CDC-INFO (232-4636) www.cdc.gov
Information on health-related topics including asthma, molds in the environment, and occupational health

CDC's National Center for Environmental Health (NCEH)
(800) CDC-INFO (232-4636) www.cdc.gov/mold/stachy.htm
Questions and answers on *Stachybotrys chartarum* and other molds

Energy and Environmental Building Association
(952) 881-1098 www.eeba.org
Information on energy-efficient and environmentally responsible buildings, humidity/moisture control/vapor barriers

Floods/ Flooding:

Federal Emergency Management Agency (FEMA)
(800) 621-FEMA (3362) www.fema.gov/hazard/flood/index.shtm
Publications on floods, flood proofing, etc.

University of Minnesota, Department of Environmental Health & Safety
(612) 626-6002 www.dehs.umn.edu/
Managing water infiltration into buildings

University of Wisconsin-Extension, The Disaster Handbook
(608) 262-3980 www.uwex.edu/ces/news/handbook.html
Information on floods and other natural disasters

Health Canada, Health Protection Branch, Laboratory Centre for Disease Control, Office of Biosafety
(613) 957-1779 www.phac-aspc.gc.ca/msds-ftss
Material Safety Data Sheets with health and safety information on infectious microorganisms, including *Aspergillus* and other molds and airborne biologicals

Indoor Environmental Remediation Board (IERB)
(916) 736-1100 www.ierb.org
Information on best practices in building remediation

Institute of Inspection, Cleaning and Restoration Certification (IICRC)
(360) 693-5675 www.iicrc.org
Information on and standards for the inspection, cleaning, and restoration industry

International Society of Cleaning Technicians (ISCT)
(800) WHY-ISCT (800-949-4728)
Information on cleaning such as stain removal guide for carpets

ISSA—The Worldwide Cleaning Industry Association
(800) 225-4772 www.issa.com
Education and training on cleaning and maintenance

National Air Duct Cleaners Association (NADCA)
(202) 737-2926 www.nadca.com
Duct cleaning information

National Association of the Remodeling Industry (NARI)
(847) 298-9200 www.nari.org
Consumer information on remodeling, including help finding a professional remodeling contractor

National Institute of Building Sciences (NIBS)
(202) 289-7800 http://nibs.org
Information on building regulations, science, and technology

National Institute for Occupational Safety and Health (NIOSH)
(800) CDC-INFO (232-4636) www.cdc.gov/niosh
Health and safety information with a workplace orientation

National Pesticide Information Center (NPIC)
(800) 858-7378 http://npic.orst.edu/
Regulatory information, safety information, and product information on antimicrobials

New York City Department of Health and Mental Hygiene
www.nyc.gov/html/doh/html/epi/moldrpt1.shtml
"Guidelines on Assessment and Remediation of Fungi in Indoor Environments"

Occupational Safety & Health Administration (OSHA)
(800) 321-OSHA (800-321-6742) www.osha.gov
Information on worker safety, includes topics such as respirator use and safety in the workplace

Restoration Industry Association
(800) 272-7012 www.ascr.org/
Disaster recovery, water and fire damage, emergency tips, referrals to professionals

Sheet Metal & Air Conditioning Contractors' National Association (SMACNA)
(703) 803-2980 www.smacna.org
Technical information on topics such as air conditioning and air ducts

Smithsonian Museum Conservation Institute
(301) 238-1240 www.si.edu/mci
Guidelines for caring for and preserving furniture and wooden objects, paper-based materials; preservation studies

University of Michigan Herbarium
(734) 615-6200 www.herbarium.lsa.umich.edu
Specimen-based information on fungi; information on fungal ecology

University of Tulsa Indoor Air Program
(918) 631-5246 www.utulsa.edu/iaqprogram
Courses, classes, and continuing education on indoor air quality

References

American Academy of Pediatrics. Committee on Environmental Health. "Toxic Effects of Indoor Air Molds." *Pediatrics*. Volume 101, pp. 712-714. 1996.

American Conference of Governmental Industrial Hygienists. *Bioaerosols: Assessment and Control*. Macher, J., editor. ACGIH. Cinncinati, OH. ISBN 1-882417-29-1. 1999.

American Conference of Governmental Industrial Hygienists. *Guidelines for the Assessment of Bioaerosols in the Indoor Environment*. ISBN 0-936712-83-X. 1989.

American Industrial Hygiene Association. *Field Guide for the Determination of Biological Contaminants in Environmental Samples*. Dillon, H. K., Heinsohn, P. A., and Miller, J. D., editors. Fairfax, VA. 1996.

American Society of Heating, Refrigerating, and Air Conditioning Engineers. *Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size*. ASHRAE Standard 52.2. 2000.

American Society for Microbiology. *Manual of Environmental Microbiology*. Hurst, C., Editor in Chief. ASM Press. Washington, DC. 1997.

Canada Mortgage and Housing Corporation. *Clean-up Procedures for Mold in Houses*. ISBN 0-662-21133-2. 1993.

Eastern New York Occupational and Environmental Health Center. *Proceedings of the International Conference*. Saratoga Springs, NY. October 6-7, 1994. *Fungi and Bacteria in Indoor Air Environments - Health Effects, Detection, and Remediation*. Johanning, E., and Yang, C., editors. Eastern New York Occupational Health Program. Latham, NY. 1995.

Eastern New York Occupational and Environmental Health Center. *Bioaerosols, Fungi and Mycotoxins: Health Effects, Assessment, Prevention and Control*. Johanning, E., editor. Albany, NY. 1999. (Proceedings of the Third International Conference on Fungi, Mycotoxins and Bioaerosols: Health Effects, Assessment, Prevention and Control. September 23-25, 1998.)

Gravesen, S., Frisvad, J., and Samson, R. *Microfungi*. Munksgaard. Copenhagen, Denmark. 1994.

"Indoor Mold and Children's Health." *Environmental Health Perspectives*, Vol. 107, Suppl. 3, June 1999.

Institute of Inspection. Cleaning and Restoration Certification. *IICRC S500, Standard and Reference Guide for Professional Water Damage Restoration*. 2nd Edition. 1999.

Lstiburek, J. *Building Science Corporation Builder's Guide. Mixed-Humid Climates*. Building Science Corporation and the Energy Efficient Building Association. 1999.

National Academy of Sciences, Committee on the Assessment of Asthma and Indoor Air. *Clearing the Air: Asthma and Indoor Air Exposures*. National Academy Press. 2000.

National Academy of Sciences. *Indoor Allergens: Assessing and Controlling Adverse Health Effects*. National Academy Press. 1993.

National Institute for Occupational Safety and Health. *Guide to the Selection and Use of Particulate Respirators Certified under 42 CFR 84*. DHHS (NIOSH) Publication No. 96-101. January 1996.

New York City Department of Health, Bureau of Environmental & Occupational Disease Epidemiology. *Guidelines on Assessment and Remediation of Fungi in Indoor Environments*. 2000.

Occupational Safety & Health Administration. *Respiratory Protection Standard, 29 CFR 1910.134*. 63 FR 1152. January 8, 1998.

U.S. Environmental Protection Agency. *Should You Have the Air Ducts In Your Home Cleaned?* EPA-402-K-97-002. October 1997.

U.S. Environmental Protection Agency. *IAQ Tools for Schools*. EPA-402-K-95-001. May 1995.

Resources List – EPA

U.S. Environmental Protection Agency (EPA), Indoor Environments Division (IED)

An Office Building Occupant's Guide to IAQ
www.epa.gov/iaq/pubs/occupgd.html

Biological Contaminants
www.epa.gov/iaq/biologic.html

Building Air Quality Action Plan (for Commercial Buildings)
www.epa.gov/iaq/largebldgs/pdf_files/baqactionplan.pdf

Floods / Flooding
www.epa.gov/iaq/flood

Indoor Air Quality (IAQ) Home Page
www.epa.gov/iaq/index.html

IAQ in Large Buildings / Commercial Buildings
www.epa.gov/iaq/largebldgs

IAQ in Schools
www.epa.gov/iaq/schools

Mold Remediation in Schools and Commercial Buildings
www.epa.gov/mold/mold_remediation.html

Mold Resources
www.epa.gov/mold/moldresources.html

Resources List – OTHER

The following list of resources includes information created and maintained by other public and private organizations. The U.S. EPA does not control or guarantee the accuracy, relevance, timeliness, or completeness of this outside information. Further, the inclusion of such resources is not intended to endorse any views expressed or products or services offered by the author of the reference or the organization operating the service on which the reference is maintained.

American College of Occupational and Environmental Medicine (ACOEM)
(847) 818-1800 www.acoem.org/
Referrals to physicians who have experience with environmental exposures

American Conference of Governmental Industrial Hygienists, Inc. (ACGIH)
(513) 742-2020 www.acgih.org
Occupational and environmental health and safety information

American Industrial Hygiene Association (AIHA)
(703) 849-8888 www.aiha.org
Information on industrial hygiene and indoor air quality issues including mold hazards and legal issues

American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc. (ASHRAE)
(800) 527-4723 www.ashrae.org
Information on engineering issues and indoor air quality

Association of Occupational and Environmental Clinics (AOEC)
(888) 347-AOEC (2632) www.aoec.org
Referrals to clinics with physicians who have experience with environmental exposures, including exposures to mold; maintains a database of occupational and environmental cases

Asthma and Allergic Diseases:

American Academy of Allergy, Asthma & Immunology (AAAAI)
(414) 272-6071 www.aaaai.org
Physician referral directory, information on allergies and asthma

Asthma and Allergy Foundation of America (AAFA)
(800) 7-ASTHMA (800-727-8462) www.aafa.org
Information on allergies and asthma

American Lung Association (ALA)
(800) LUNGUSA (800-586-4872) www.lungusa.org
Information on allergies and asthma

Asthma and Allergy Network/Mothers of Asthmatics, Inc. (AAN-MA)
(800) 878-4403 or (703) 641-9595 www.aanma.org
Information on allergies and asthma

National Institute of Allergy and Infectious Diseases (NIAID)
(301) 496-5717 www.niaid.nih.gov/
Information on allergies and asthma

National Jewish Medical and Research Center
(800) 222-LUNG (800-222-5864) www.nationaljewish.org/
Information on allergies and asthma

Canada Mortgage and Housing Corporation (CMHC)
(613) 748-2000 [International] www.cmhc-schl.gc.ca/
Several documents on mold-related topics available

Carpet and Rug Institute (CRI)
(706) 278-3176 www.carpet-rug.org/
Carpet maintenance, restoration guidelines for water-damaged carpet, other carpet-related issues

Centers for Disease Control and Prevention (CDC)
(800) CDC-INFO (232-4636) www.cdc.gov
Information on health-related topics including asthma, molds in the environment, and occupational health

CDC's National Center for Environmental Health (NCEH)
(800) CDC-INFO (232-4636) www.cdc.gov/mold/stachy.htm
Questions and answers on *Stachybotrys chartarum* and other molds

Energy and Environmental Building Association
(952) 881-1098 www.eeba.org
Information on energy-efficient and environmentally responsible buildings, humidity/moisture control/vapor barriers

Floods/ Flooding:

Federal Emergency Management Agency (FEMA)
(800) 621-FEMA (3362) www.fema.gov/hazard/flood/index.shtm
Publications on floods, flood proofing, etc.

University of Minnesota, Department of Environmental Health & Safety
(612) 626-6002 www.dehs.umn.edu/
Managing water infiltration into buildings

University of Wisconsin-Extension, The Disaster Handbook
(608) 262-3980 www.uwex.edu/ces/news/handbook.html
Information on floods and other natural disasters

Health Canada, Health Protection Branch, Laboratory Centre for Disease Control, Office of Biosafety
(613) 957-1779 www.phac-aspc.gc.ca/msds-ftss
Material Safety Data Sheets with health and safety information on infectious microorganisms, including *Aspergillus* and other molds and airborne biologicals

Indoor Environmental Remediation Board (IERB)
(916) 736-1100 www.ierb.org
Information on best practices in building remediation

Institute of Inspection, Cleaning and Restoration Certification (IICRC)
(360) 693-5675 www.iicrc.org
Information on and standards for the inspection, cleaning, and restoration industry

International Society of Cleaning Technicians (ISCT)
(800) WHY-ISCT (800-949-4728)
Information on cleaning such as stain removal guide for carpets

ISSA—The Worldwide Cleaning Industry Association
(800) 225-4772 www.issa.com
Education and training on cleaning and maintenance

National Air Duct Cleaners Association (NADCA)
(202) 737-2926 www.nadca.com
Duct cleaning information

National Association of the Remodeling Industry (NARI)
(847) 298-9200 www.nari.org
Consumer information on remodeling, including help finding a professional remodeling contractor

National Institute of Building Sciences (NIBS)
(202) 289-7800 http://nibs.org
Information on building regulations, science, and technology

National Institute for Occupational Safety and Health (NIOSH)
(800) CDC-INFO (232-4636) www.cdc.gov/niosh
Health and safety information with a workplace orientation

National Pesticide Information Center (NPIC)
(800) 858-7378 http://npic.orst.edu/
Regulatory information, safety information, and product information on antimicrobials

New York City Department of Health and Mental Hygiene
www.nyc.gov/html/doh/html/epi/moldrpt1.shtml
"Guidelines on Assessment and Remediation of Fungi in Indoor Environments"

Occupational Safety & Health Administration (OSHA)
(800) 321-OSHA (800-321-6742) www.osha.gov
Information on worker safety, includes topics such as respirator use and safety in the workplace

Restoration Industry Association
(800) 272-7012 www.ascr.org/
Disaster recovery, water and fire damage, emergency tips, referrals to professionals

Sheet Metal & Air Conditioning Contractors' National Association (SMACNA)
(703) 803-2980 www.smacna.org
Technical information on topics such as air conditioning and air ducts

Smithsonian Museum Conservation Institute
(301) 238-1240 www.si.edu/mci
Guidelines for caring for and preserving furniture and wooden objects, paper-based materials; preservation studies

University of Michigan Herbarium
(734) 615-6200 www.herbarium.lsa.umich.edu
Specimen-based information on fungi; information on fungal ecology

University of Tulsa Indoor Air Program
(918) 631-5246 www.utulsa.edu/iaqprogram
Courses, classes, and continuing education on indoor air quality

References

American Academy of Pediatrics. Committee on Environmental Health. "Toxic Effects of Indoor Air Molds." *Pediatrics*. Volume 101, pp. 712-714. 1996.

American Conference of Governmental Industrial Hygienists. *Bioaerosols: Assessment and Control*. Macher, J., editor. ACGIH. Cinncinati, OH. ISBN 1-882417-29-1. 1999.

American Conference of Governmental Industrial Hygienists. *Guidelines for the Assessment of Bioaerosols in the Indoor Environment*. ISBN 0-936712-83-X. 1989.

American Industrial Hygiene Association. *Field Guide for the Determination of Biological Contaminants in Environmental Samples*. Dillon, H. K., Heinsohn, P. A., and Miller, J. D., editors. Fairfax, VA. 1996.

American Society of Heating, Refrigerating, and Air Conditioning Engineers. *Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size*. ASHRAE Standard 52.2. 2000.

American Society for Microbiology. *Manual of Environmental Microbiology*. Hurst, C., Editor in Chief. ASM Press. Washington, DC. 1997.

Canada Mortgage and Housing Corporation. *Clean-up Procedures for Mold in Houses*. ISBN 0-662-21133-2. 1993.

Eastern New York Occupational and Environmental Health Center. *Proceedings of the International Conference*. Saratoga Springs, NY. October 6-7, 1994. *Fungi and Bacteria in Indoor Air Environments - Health Effects, Detection, and Remediation*. Johanning, E., and Yang, C., editors. Eastern New York Occupational Health Program. Latham, NY. 1995.

Eastern New York Occupational and Environmental Health Center. *Bioaerosols, Fungi and Mycotoxins: Health Effects, Assessment, Prevention and Control*. Johanning, E., editor. Albany, NY. 1999. (Proceedings of the Third International Conference on Fungi, Mycotoxins and Bioaerosols: Health Effects, Assessment, Prevention and Control. September 23-25, 1998.)

Gravesen, S., Frisvad, J., and Samson, R. *Microfungi*. Munksgaard. Copenhagen, Denmark. 1994.

"Indoor Mold and Children's Health." *Environmental Health Perspectives*, Vol. 107, Suppl. 3, June 1999.

Institute of Inspection. Cleaning and Restoration Certification. *IICRC S500, Standard and Reference Guide for Professional Water Damage Restoration*. 2nd Edition. 1999.

Lstiburek, J. *Building Science Corporation Builder's Guide. Mixed-Humid Climates*. Building Science Corporation and the Energy Efficient Building Association. 1999.

National Academy of Sciences, Committee on the Assessment of Asthma and Indoor Air. *Clearing the Air: Asthma and Indoor Air Exposures*. National Academy Press. 2000.

National Academy of Sciences. *Indoor Allergens: Assessing and Controlling Adverse Health Effects*. National Academy Press. 1993.

National Institute for Occupational Safety and Health. *Guide to the Selection and Use of Particulate Respirators Certified under 42 CFR 84*. DHHS (NIOSH) Publication No. 96-101. January 1996.

New York City Department of Health, Bureau of Environmental & Occupational Disease Epidemiology. *Guidelines on Assessment and Remediation of Fungi in Indoor Environments*. 2000.

Occupational Safety & Health Administration. *Respiratory Protection Standard, 29 CFR 1910.134*. 63 FR 1152. January 8, 1998.

U.S. Environmental Protection Agency. *Should You Have the Air Ducts In Your Home Cleaned?* EPA-402-K-97-002. October 1997.

U.S. Environmental Protection Agency. *IAQ Tools for Schools*. EPA-402-K-95-001. May 1995.

Appendix A – Glossary

Allergen.....Substance (such as mold) that can cause an allergic reaction.

APR.....Air purifying respirator

Biocide.....Substance or chemical that kills organisms such as molds.

EPA.....Environmental Protection Agency

Fungi .....Fungi are neither animals nor plants and are classified in a kingdom of their own. Fungi include molds, yeasts, mushrooms, and puffballs. In this document, the terms fungi and mold are used interchangeably. Molds reproduce by making spores. Mold spores waft through the indoor and outdoor air continually. When mold spores land on a damp spot indoors, they may begin growing and digesting whateverthey are growing on. Molds can grow on virtually any organic substance, providing moisture and oxygen are present. It is estimated that more than 1.5 million species of fungi exist.

Fungicide.....Substance or chemical that kills fungi.

HEPA .....High-Efficiency Particulate Air

Hypersensitivity.....Great or excessive sensitivity

IAQ .....Indoor Air Quality

Mold.....Molds are a group of organisms that belong to the kingdom Fungi. In this document, the terms fungi and mold are used interchangeably. There are over 20,000 species of mold.

National Air Duct Cleaners Association (NADCA)
(202) 737-2926 www.nadca.com
Duct cleaning information

National Association of the Remodeling Industry (NARI)
(847) 298-9200 www.nari.org
Consumer information on remodeling, including help finding a professional remodeling contractor

National Institute of Building Sciences (NIBS)
(202) 289-7800 http://nibs.org
Information on building regulations, science, and technology

National Institute for Occupational Safety and Health (NIOSH)
(800) CDC-INFO (232-4636) www.cdc.gov/niosh
Health and safety information with a workplace orientation

National Pesticide Information Center (NPIC)
(800) 858-7378 http://npic.orst.edu/
Regulatory information, safety information, and product information on antimicrobials

New York City Department of Health and Mental Hygiene
www.nyc.gov/html/doh/html/epi/moldrpt1.shtml
"Guidelines on Assessment and Remediation of Fungi in Indoor Environments"

Occupational Safety & Health Administration (OSHA)
(800) 321-OSHA (800-321-6742) www.osha.gov
Information on worker safety, includes topics such as respirator use and safety in the workplace

Restoration Industry Association
(800) 272-7012 www.ascr.org/
Disaster recovery, water and fire damage, emergency tips, referrals to professionals

Sheet Metal & Air Conditioning Contractors' National Association (SMACNA)
(703) 803-2980 www.smacna.org
Technical information on topics such as air conditioning and air ducts

Smithsonian Museum Conservation Institute
(301) 238-1240 www.si.edu/mci
Guidelines for caring for and preserving furniture and wooden objects, paper-based materials; preservation studies

University of Michigan Herbarium
(734) 615-6200 www.herbarium.lsa.umich.edu
Specimen-based information on fungi; information on fungal ecology

University of Tulsa Indoor Air Program
(918) 631-5246 www.utulsa.edu/iaqprogram
Courses, classes, and continuing education on indoor air quality

References

American Academy of Pediatrics. Committee on Environmental Health. "Toxic Effects of Indoor Air Molds." *Pediatrics*. Volume 101, pp. 712-714. 1996.

American Conference of Governmental Industrial Hygienists. *Bioaerosols: Assessment and Control*. Macher, J., editor. ACGIH. Cinncinati, OH. ISBN 1-882417-29-1. 1999.

American Conference of Governmental Industrial Hygienists. *Guidelines for the Assessment of Bioaerosols in the Indoor Environment*. ISBN 0-936712-83-X. 1989.

American Industrial Hygiene Association. *Field Guide for the Determination of Biological Contaminants in Environmental Samples*. Dillon, H. K., Heinsohn, P. A., and Miller, J. D., editors. Fairfax, VA. 1996.

American Society of Heating, Refrigerating, and Air Conditioning Engineers. *Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size*. ASHRAE Standard 52.2. 2000.

American Society for Microbiology. *Manual of Environmental Microbiology*. Hurst, C., Editor in Chief. ASM Press. Washington, DC. 1997.

Canada Mortgage and Housing Corporation. *Clean-up Procedures for Mold in Houses*. ISBN 0-662-21133-2. 1993.

Eastern New York Occupational and Environmental Health Center. *Proceedings of the International Conference*. Saratoga Springs, NY. October 6-7, 1994. *Fungi and Bacteria in Indoor Air Environments - Health Effects, Detection, and Remediation*. Johanning, E., and Yang, C., editors. Eastern New York Occupational Health Program. Latham, NY. 1995.

Eastern New York Occupational and Environmental Health Center. *Bioaerosols, Fungi and Mycotoxins: Health Effects, Assessment, Prevention and Control*. Johanning, E., editor. Albany, NY. 1999. (Proceedings of the Third International Conference on Fungi, Mycotoxins and Bioaerosols: Health Effects, Assessment, Prevention and Control. September 23-25, 1998.)

Gravesen, S., Frisvad, J., and Samson, R. *Microfungi*. Munksgaard. Copenhagen, Denmark. 1994.

"Indoor Mold and Children's Health." *Environmental Health Perspectives*, Vol. 107, Suppl. 3, June 1999.

Institute of Inspection. Cleaning and Restoration Certification. *IICRC S500, Standard and Reference Guide for Professional Water Damage Restoration*. 2nd Edition. 1999.

Lstiburek, J. *Building Science Corporation Builder's Guide. Mixed-Humid Climates*. Building Science Corporation and the Energy Efficient Building Association. 1999.

National Academy of Sciences, Committee on the Assessment of Asthma and Indoor Air. *Clearing the Air: Asthma and Indoor Air Exposures*. National Academy Press. 2000.

National Academy of Sciences. *Indoor Allergens: Assessing and Controlling Adverse Health Effects*. National Academy Press. 1993.

National Institute for Occupational Safety and Health. *Guide to the Selection and Use of Particulate Respirators Certified under 42 CFR 84*. DHHS (NIOSH) Publication No. 96-101. January 1996.

New York City Department of Health, Bureau of Environmental & Occupational Disease Epidemiology. *Guidelines on Assessment and Remediation of Fungi in Indoor Environments*. 2000.

Occupational Safety & Health Administration. *Respiratory Protection Standard, 29 CFR 1910.134*. 63 FR 1152. January 8, 1998.

U.S. Environmental Protection Agency. *Should You Have the Air Ducts In Your Home Cleaned?* EPA-402-K-97-002. October 1997.

U.S. Environmental Protection Agency. *IAQ Tools for Schools*. EPA-402-K-95-001. May 1995.

Appendix A – Glossary

Allergen.....Substance (such as mold) that can cause an allergic reaction.

APR.....Air purifying respirator

Biocide.....Substance or chemical that kills organisms such as molds.

EPA.....Environmental Protection Agency

Fungi .....Fungi are neither animals nor plants and are classified in a kingdom of their own. Fungi include molds, yeasts, mushrooms, and puffballs. In this document, the terms fungi and mold are used interchangeably. Molds reproduce by making spores. Mold spores waft through the indoor and outdoor air continually. When mold spores land on a damp spot indoors, they may begin growing and digesting whateverthey are growing on. Molds can grow on virtually any organic substance, providing moisture and oxygen are present. It is estimated that more than 1.5 million species of fungi exist.

Fungicide.....Substance or chemical that kills fungi.

HEPA .....High-Efficiency Particulate Air

Hypersensitivity.....Great or excessive sensitivity

IAQ .....Indoor Air Quality

Mold.....Molds are a group of organisms that belong to the kingdom Fungi. In this document, the terms fungi and mold are used interchangeably. There are over 20,000 species of mold.

Appendix A – Glossary

Allergen.....Substance (such as mold) that can cause an allergic reaction.

APR.....Air purifying respirator

Biocide.....Substance or chemical that kills organisms such as molds.

EPA.....Environmental Protection Agency

Fungi .....Fungi are neither animals nor plants and are classified in a kingdom of their own. Fungi include molds, yeasts, mushrooms, and puffballs. In this document, the terms fungi and mold are used interchangeably. Molds reproduce by making spores. Mold spores waft through the indoor and outdoor air continually. When mold spores land on a damp spot indoors, they may begin growing and digesting whateverthey are growing on. Molds can grow on virtually any organic substance, providing moisture and oxygen are present. It is estimated that more than 1.5 million species of fungi exist.

Fungicide.....Substance or chemical that kills fungi.

HEPA .....High-Efficiency Particulate Air

Hypersensitivity.....Great or excessive sensitivity

IAQ .....Indoor Air Quality

Mold.....Molds are a group of organisms that belong to the kingdom Fungi. In this document, the terms fungi and mold are used interchangeably. There are over 20,000 species of mold.

Appendix A – Glossary

Allergen.....Substance (such as mold) that can cause an allergic reaction.

APR.....Air purifying respirator

Biocide.....Substance or chemical that kills organisms such as molds.

EPA.....Environmental Protection Agency

Fungi .....Fungi are neither animals nor plants and are classified in a kingdom of their own. Fungi include molds, yeasts, mushrooms, and puffballs. In this document, the terms fungi and mold are used interchangeably. Molds reproduce by making spores. Mold spores waft through the indoor and outdoor air continually. When mold spores land on a damp spot indoors, they may begin growing and digesting whateverthey are growing on. Molds can grow on virtually any organic substance, providing moisture and oxygen are present. It is estimated that more than 1.5 million species of fungi exist.

Fungicide.....Substance or chemical that kills fungi.

HEPA .....High-Efficiency Particulate Air

Hypersensitivity.....Great or excessive sensitivity

IAQ .....Indoor Air Quality

Mold.....Molds are a group of organisms that belong to the kingdom Fungi. In this document, the terms fungi and mold are used interchangeably. There are over 20,000 species of mold.

mVOC .....Microbial volatile organic compound, a chemical made by a mold which may have a moldy or musty odor.

OSHA.....Occupational Safety and Health Administration

PAPR.....Powered air purifying respirator

PPE.....Personal Protective Equipment

Remediate .....Fix

Sensitization.....Repeated or single exposure to an allergen that results in the exposed individual becoming hypersensitive to the allergen.

Spore .....Molds reproduce by means of spores. Spores are microscopic; they vary in shape and size (2 – 100 micrometers). Spores may travel in several ways—they may be passively moved (by a breeze or waterdrop), mechanically disturbed (by a person or animal passing by), or actively discharged by the mold (usually under moist conditions or high humidity).

Appendix B – Introduction to Molds

Molds in the Environment

Molds live in the soil, on plants, and on dead or decaying matter. Outdoors, molds play a key role in the breakdown of leaves, wood, and other plant debris. Molds belong to the kingdom Fungi, and unlike plants, they lack chlorophyll and must survive by digesting plant materials, using plant and other organic materials for food. Without molds, our environment would be overwhelmed with large amounts of dead plant matter.

Molds produce tiny spores to reproduce, just as some plants produce seeds. These mold spores can be found in both indoor and outdoor air, and settled on indoor and outdoor surfaces. When mold spores land on a damp spot, they may begin growing and digesting whatever they are growing on in order to survive. Since molds gradually destroy the things they grow on, you can prevent damage to building materials and furnishings and save money by eliminating mold growth.

Moisture control is the key to mold control. Molds need both food and water to survive; since molds can digest most things, water is the factor that limits mold growth. Molds will often grow in damp or wet areas indoors. Common sites for indoor mold growth include bathroom tile, basement walls, areas around windows where moisture condenses, and near leaky water fountains or sinks. Common sources or causes of water or moisture problems include roof leaks, deferred maintenance, condensation associated with high humidity or cold spots in the building, localized flooding due to plumbing failures or heavy rains, slow leaks in plumbing fixtures, and malfunction or poor design of humidification systems. Uncontrolled humidity can also be a source of moisture leading to mold growth, particularly in hot, humid climates.

Health Effects and Symptoms Associated with Mold Exposure

When moisture problems occur and mold growth results, building occupants may begin to report odors and a variety of health problems, such as headaches, breathing difficulties, skin irritation, allergic reactions, and aggravation of asthma symptoms; all of these symptoms could potentially be associated with mold exposure.

All molds have the potential to cause health effects. Molds produce allergens, irritants, and in some cases, toxins that may cause reactions in humans. The types and severity of symptoms depend, in part, on the types of mold present, the extent of an individual's exposure, the ages of the individuals, and their existing sensitivities or allergies. Specific reactions to mold growth can include the following:

Allergic Reactions: Inhaling or touching mold or mold spores may cause allergic reactions in sensitive individuals. Allergic reactions to mold are common—these reactions can be immediate or delayed. Allergic responses include hay fever-type symptoms, such as sneezing, runny nose, red eyes, and skin rash (dermatitis). Mold spores and fragments can produce allergic reactions in sensitive individuals regardless of whether the mold is dead or alive. Repeated or single exposure to mold or mold spores may cause previously non-sensitive individuals to become sensitive. Repeated exposure has the potential to increase sensitivity.

Asthma: Molds can trigger asthma attacks in persons who are allergic (sensitized) to molds. The irritants produced by molds may also worsen asthma in non-allergic (non-sensitized) people.

Hypersensitivity Pneumonitis: Hypersensitivity pneumonitis may develop following either short-term (acute) or long-term (chronic) exposure to molds. The disease resembles bacterial pneumonia and is uncommon.

Potential Health Effects Associated with Inhalation Exposure to Molds and Mycotoxins

- Allergic Reactions (e.g., rhinitis and dermatitis or skin rash)
- Asthma
- Hypersensitivity Pneumonitis
- Other Immunologic Effects

Research on mold and health effects is ongoing. This list is not intended to be all-inclusive.

The health effects listed above are well documented in humans. Evidence for other health effects in humans is less substantial and is primarily based on case reports or occupational studies.

Irritant Effects: Mold exposure can cause irritation of the eyes, skin, nose, throat, and lungs, and sometimes can create a burning sensation in these areas.

Opportunistic Infections: People with weakened immune systems (i.e., immune-compromised or immune-suppressed individuals) may be more vulnerable to infections by molds (as well as more vulnerable than healthy persons to mold toxins). *Aspergillus fumigatus*, for example, has been known to infect the lungs of immune-compromised individuals. These individuals inhale the mold spores which then start growing in their lungs. *Trichoderma* has also been known to infect immune-compromised children.

Healthy individuals are usually not vulnerable to opportunistic infections from airborne mold exposure. However, molds can cause common skin diseases, such as athlete's foot, as well as other infections such as yeast infections.

Mold Toxins (Mycotoxins)

Molds can produce toxic substances called mycotoxins. Some mycotoxins cling to the surface of mold spores; others may be found within spores. More than 200 mycotoxins have been identified from common molds, and many more remain to be identified. Some of the molds that are known to produce mycotoxins are commonly found in moisture-damaged buildings. Exposure pathways for mycotoxins can include inhalation, ingestion, or skin contact. Although some mycotoxins are well known to affect humans and have been shown to be responsible for human health effects, for many mycotoxins, little information is available.

Aflatoxin B_1 is perhaps the most well known and studied mycotoxin. It can be produced by the molds *Aspergillus flavus* and *Aspergillus parasiticus* and is one of the most potent carcinogens known. Ingestion of aflatoxin B_1 can cause liver cancer. There is also some evidence that inhalation of aflatoxin B_1 can cause lung cancer. Aflatoxin B_1 has been found on contaminated grains, peanuts, and other human and animal foodstuffs. However, *Aspergillus flavus* and *Aspergillus parasiticus* are *not* commonly found on building materials or in indoor environments.

Much of the information on the human health effects of inhalation exposure to mycotoxins comes from studies done in the workplace and some case studies or case reports.* Many symptoms and human health effects attributed to inhalation of mycotoxins have been reported including: mucous membrane irritation, skin rash, nausea, immune system suppression, acute or chronic liver damage, acute or chronic central nervous system damage, endocrine effects, and cancer. More studies are needed to get a clear picture of the health effects related to most mycotoxins. However, it is clearly prudent to avoid exposure to molds and mycotoxins.

Some molds can produce several toxins, and some molds produce mycotoxins only under certain environmental conditions. The presence of mold in a building does not necessarily mean that mycotoxins are present or that they are present in large quantities.

Toxic Molds

Some molds, such as *Aspergillus versicolor* and *Stachybotrys atra (chartarum)*, are known to produce potent toxins under certain circumstances. Although some mycotoxins are well known to affect humans and have been shown to be responsible for human health effects, for many mycotoxins, little information is available, and in some cases research is ongoing. For example, some strains of *Stachybotrys atra* can produce one or more potent toxins. In addition, preliminary reports from an investigation of an outbreak of pulomonary hemorrhage in infants suggested an association between pulmonary hemorrhage and exposure to *Stachybotrys chartarum*. Review of the evidence of this association at the Centers for Disease Control and Prevention (CDC) resulted in a published clarification stating that such an association was not established. Research on the possible causes of pulumonary hemorrhage in infants continues. Consult CDC for more information on pulmonary hemorrhage in infants (see Resources List, page 31, for CDC contact and other information).

* Information on ingestion exposure, for both humans and animals, is more abundant–a wide range of health effects has been reported following ingestion of moldy foods including liver damage, nervous system damage and immunological effects.

Microbial Volatile Organic Compounds (mVOCs)

Some compounds produced by molds are volatile and are released directly into the air. These are known as microbial volatile organic compounds (mVOCs). Because these compounds often have strong and/or unpleasant odors, they can be the source of odors associated with molds. Exposure to mVOCs from molds has been linked to symptoms such as headaches, nasal irritation, dizziness, fatigue, and nausea. Research on mVOCs is still in the early phase.

Glucans or Fungal Cell Wall Components (also known as ß-(1,3)-D-Glucans)

Glucans are small pieces of the cell walls of molds which may cause inflammatory lung and airway reactions. These glucans can affect the immune system when inhaled. Exposure to very high levels of glucans or dust mixtures including glucans may cause a flu-like illness known as Organic Dust Toxic Syndrome (ODTS). This illness has been primarily noted in agricultural and manufacturing settings.

Spores

Mold spores are microscopic (2 – 10 μm) and are naturally present in both indoor and outdoor air. Molds reproduce by means of spores. Some molds have spores that are easily disturbed and waft into the air and settle repeatedly with each disturbance. Other molds have sticky spores that will cling to surfaces and are dislodged by brushing against them or by other direct contact. Spores may remain able to grow for years after they are produced. In addition, whether or not the spores are alive, the allergens in and on them may remain allergenic for years.

All molds have the potential to cause health effects. Molds produce allergens, irritants, and in some cases, toxins that may cause reactions in humans. The types and severity of symptoms depend, in part, on the types of mold present, the extent of an individual's exposure, the ages of the individuals, and their existing sensitivities or allergies. Specific reactions to mold growth can include the following:

Allergic Reactions: Inhaling or touching mold or mold spores may cause allergic reactions in sensitive individuals. Allergic reactions to mold are common—these reactions can be immediate or delayed. Allergic responses include hay fever-type symptoms, such as sneezing, runny nose, red eyes, and skin rash (dermatitis). Mold spores and fragments can produce allergic reactions in sensitive individuals regardless of whether the mold is dead or alive. Repeated or single exposure to mold or mold spores may cause previously non-sensitive individuals to become sensitive. Repeated exposure has the potential to increase sensitivity.

Asthma: Molds can trigger asthma attacks in persons who are allergic (sensitized) to molds. The irritants produced by molds may also worsen asthma in non-allergic (non-sensitized) people.

Hypersensitivity Pneumonitis: Hypersensitivity pneumonitis may develop following either short-term (acute) or long-term (chronic) exposure to molds. The disease resembles bacterial pneumonia and is uncommon.

Potential Health Effects Associated with Inhalation Exposure to Molds and Mycotoxins

- Allergic Reactions (e.g., rhinitis and dermatitis or skin rash)
- Asthma
- Hypersensitivity Pneumonitis
- Other Immunologic Effects

Research on mold and health effects is ongoing. This list is not intended to be all-inclusive.

The health effects listed above are well documented in humans. Evidence for other health effects in humans is less substantial and is primarily based on case reports or occupational studies.

Irritant Effects: Mold exposure can cause irritation of the eyes, skin, nose, throat, and lungs, and sometimes can create a burning sensation in these areas.

Opportunistic Infections: People with weakened immune systems (i.e., immune-compromised or immune-suppressed individuals) may be more vulnerable to infections by molds (as well as more vulnerable than healthy persons to mold toxins). *Aspergillus fumigatus*, for example, has been known to infect the lungs of immune-compromised individuals. These individuals inhale the mold spores which then start growing in their lungs. *Trichoderma* has also been known to infect immune-compromised children.

Healthy individuals are usually not vulnerable to opportunistic infections from airborne mold exposure. However, molds can cause common skin diseases, such as athlete's foot, as well as other infections such as yeast infections.

Mold Toxins (Mycotoxins)

Molds can produce toxic substances called mycotoxins. Some mycotoxins cling to the surface of mold spores; others may be found within spores. More than 200 mycotoxins have been identified from common molds, and many more remain to be identified. Some of the molds that are known to produce mycotoxins are commonly found in moisture-damaged buildings. Exposure pathways for mycotoxins can include inhalation, ingestion, or skin contact. Although some mycotoxins are well known to affect humans and have been shown to be responsible for human health effects, for many mycotoxins, little information is available.

Aflatoxin B_1 is perhaps the most well known and studied mycotoxin. It can be produced by the molds *Aspergillus flavus* and *Aspergillus parasiticus* and is one of the most potent carcinogens known. Ingestion of aflatoxin B_1 can cause liver cancer. There is also some evidence that inhalation of aflatoxin B_1 can cause lung cancer. Aflatoxin B_1 has been found on contaminated grains, peanuts, and other human and animal foodstuffs. However, *Aspergillus flavus* and *Aspergillus parasiticus* are *not* commonly found on building materials or in indoor environments.

Much of the information on the human health effects of inhalation exposure to mycotoxins comes from studies done in the workplace and some case studies or case reports.* Many symptoms and human health effects attributed to inhalation of mycotoxins have been reported including: mucous membrane irritation, skin rash, nausea, immune system suppression, acute or chronic liver damage, acute or chronic central nervous system damage, endocrine effects, and cancer. More studies are needed to get a clear picture of the health effects related to most mycotoxins. However, it is clearly prudent to avoid exposure to molds and mycotoxins.

Some molds can produce several toxins, and some molds produce mycotoxins only under certain environmental conditions. The presence of mold in a building does not necessarily mean that mycotoxins are present or that they are present in large quantities.

Toxic Molds

Some molds, such as *Aspergillus versicolor* and *Stachybotrys atra (chartarum)*, are known to produce potent toxins under certain circumstances. Although some mycotoxins are well known to affect humans and have been shown to be responsible for human health effects, for many mycotoxins, little information is available, and in some cases research is ongoing. For example, some strains of *Stachybotrys atra* can produce one or more potent toxins. In addition, preliminary reports from an investigation of an outbreak of pulomonary hemorrhage in infants suggested an association between pulmonary hemorrhage and exposure to *Stachybotrys chartarum*. Review of the evidence of this association at the Centers for Disease Control and Prevention (CDC) resulted in a published clarification stating that such an association was not established. Research on the possible causes of pulumonary hemorrhage in infants continues. Consult CDC for more information on pulmonary hemorrhage in infants (see Resources List, page 31, for CDC contact and other information).

* Information on ingestion exposure, for both humans and animals, is more abundant–a wide range of health effects has been reported following ingestion of moldy foods including liver damage, nervous system damage and immunological effects.

Microbial Volatile Organic Compounds (mVOCs)

Some compounds produced by molds are volatile and are released directly into the air. These are known as microbial volatile organic compounds (mVOCs). Because these compounds often have strong and/or unpleasant odors, they can be the source of odors associated with molds. Exposure to mVOCs from molds has been linked to symptoms such as headaches, nasal irritation, dizziness, fatigue, and nausea. Research on mVOCs is still in the early phase.

Glucans or Fungal Cell Wall Components (also known as ß-(1,3)-D-Glucans)

Glucans are small pieces of the cell walls of molds which may cause inflammatory lung and airway reactions. These glucans can affect the immune system when inhaled. Exposure to very high levels of glucans or dust mixtures including glucans may cause a flu-like illness known as Organic Dust Toxic Syndrome (ODTS). This illness has been primarily noted in agricultural and manufacturing settings.

Spores

Mold spores are microscopic (2 – 10 μm) and are naturally present in both indoor and outdoor air. Molds reproduce by means of spores. Some molds have spores that are easily disturbed and waft into the air and settle repeatedly with each disturbance. Other molds have sticky spores that will cling to surfaces and are dislodged by brushing against them or by other direct contact. Spores may remain able to grow for years after they are produced. In addition, whether or not the spores are alive, the allergens in and on them may remain allergenic for years.

Appendix C – Communication With Building Occupants

Communication with building occupants is essential for successful mold remediation. Some occupants will naturally be concerned about mold growth in their building and the potential health impacts. Occupants' perceptions of the health risk may rise if they perceive that information is being withheld from them. The status of the building investigation and remediation should be openly communicated including information on any known or suspected health risks.

Mold in Schools

Special communication strategies may be desirable if you are treating a mold problem in a school. Teachers, parents, and other locally affected groups should be notified of significant issues as soon as they are identified. Consider holding a special meeting to provide parents with an opportunity to learn about the problem and ask questions of school authorities, particularly if it is necessary/advisable to ensure that the school is vacated during remediation. For more information on investigating and remediating molds in schools, refer to the U.S. EPA's *IAQ Tools for Schools* kit and the asthma companion piece for the *IAQ Tools for Schools* kit, entitled *Managing Asthma in the School Environment*.

Small remediation efforts will usually not require a formal communication process, but do be sure to take individual concerns seriously and use common sense when deciding whether formal communications are required. Individuals managing medium or large remediation efforts should make sure they understand and address the concerns of building occupants and communicate clearly what has to be done as well as possible health concerns.

Communication approaches include regular memos and/or meetings with occupants (with time allotted for questions and answers), depending on the scope of the remediation and the level of occupant interest. Tell the occupants about the size of the project, planned activities, and remediation timetable. Send or post regular updates on the remediation progress, and send or post a final memo when the project is completed or hold a final meeting. Try and resolve

Appendix C – Communication With Building Occupants

Communication with building occupants is essential for successful mold remediation. Some occupants will naturally be concerned about mold growth in their building and the potential health impacts. Occupants' perceptions of the health risk may rise if they perceive that information is being withheld from them. The status of the building investigation and remediation should be openly communicated including information on any known or suspected health risks.

Mold in Schools

Special communication strategies may be desirable if you are treating a mold problem in a school. Teachers, parents, and other locally affected groups should be notified of significant issues as soon as they are identified. Consider holding a special meeting to provide parents with an opportunity to learn about the problem and ask questions of school authorities, particularly if it is necessary/advisable to ensure that the school is vacated during remediation. For more information on investigating and remediating molds in schools, refer to the U.S. EPA's *IAQ Tools for Schools* kit and the asthma companion piece for the *IAQ Tools for Schools* kit, entitled *Managing Asthma in the School Environment*.

Small remediation efforts will usually not require a formal communication process, but do be sure to take individual concerns seriously and use common sense when deciding whether formal communications are required. Individuals managing medium or large remediation efforts should make sure they understand and address the concerns of building occupants and communicate clearly what has to be done as well as possible health concerns.

Communication approaches include regular memos and/or meetings with occupants (with time allotted for questions and answers), depending on the scope of the remediation and the level of occupant interest. Tell the occupants about the size of the project, planned activities, and remediation timetable. Send or post regular updates on the remediation progress, and send or post a final memo when the project is completed or hold a final meeting. Try and resolve

Communicate, When You Remediate

- Establish that the health and safety of building occupants are top priorities.
- Demonstrate that the occupants' concerns are understood and taken seriously.
- Present clearly the current status of the investigation or remediation efforts.
- Identify a person whom building occupants can contact directly to discuss questions and comments about the remediation activities.

issues and occupant concerns as they come up. When building-wide communications are frequent and open, those managing the remediation can direct more time toward resolving the problem and less time to responding to occupant concerns.

If possible, remediation activities should be scheduled during off-hours when building occupants are less likely to be affected. Communication is important if occupants are relocated during remediation. The decision to relocate occupants should consider the size of the area affected, the extent and types of health effects exhibited by the occupants, and the potential health risks associated with debris and activities during the remediation project. When considering the issue of relocation, be sure to inquire about, accommodate, and plan for individuals with asthma, allergies, compromised immune systems, and other health-related concerns. Smooth the relocation process and give occupants an opportunity to participate in resolution of the problem by clearly explaining the disruption of the workplace and work schedules. Notify individuals of relocation efforts in advance, if possible.

INDEX

NOTES

This is a reprint of EPA document 402-K-01-001, March 2001. The guidance has not changed. The Resources List has been updated.

Indoor Air Quality (IAQ)

AC Jacobs Report

1-3-2023

December DOC training was 12-13-22.

January DOC training will be 1-10-23 Sta. 91 7PM.

No December EST/Tender training.

January EST/Tender training will be 1-23-23 Sta. 93 7PM.

Safety Report

Last safety committee meeting was 11-30-22.

Next safety committee meeting will be 1-24-2023 Sta 91 7:30 PM.

No reported accidents/incidents since your last board meeting.

Safety Committee Meeting Minutes

11-30-2022

Reviewed two accident reports, one involving a firefighter bitten by a cat. This occurred while rescuing a cat, if possible avoid contact with animals. If we have to attempt to rescue a cat or other animal use caution when handling them. The second report involved a collision between squad 94 and another vehicle on Vernon Rd. the mirror on squad 94 was destroyed. The other vehicle did not stop, the complete report was not available at the time of the meeting, complete investigation will be at the January meeting.

Reviewed station safety inspections, several lighting issues are waiting for the electrician to repair them, the possible mold issue at station 94 is being investigated.

Be sure to use shoe chains when needed during icy weather, and be sure to install tire chains correctly. Above all be especially careful in winter weather.

Next safety committee meeting January 24, 2023 Sta. 91 7:30 PM.

TABLE OF CONTENTS

INDEPENDENT AUDITOR'S REPORT

Report on Internal Control over Financial Reporting and on Compliance and Other Matters Based on an Audit of Financial Statements Performed in Accordance with *Government Auditing Standards*

East County Fire and Rescue
January 1, 2020 through December 31, 2021

Board of Commissioners
East County Fire and Rescue
Camas, Washington

We have audited, in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards,* issued by the Comptroller General of the United States, the financial statements of East County Fire and Rescue, as of and for the years ended December 31, 2021 and 2020, and the related notes to the financial statements, which collectively comprise the District's financial statements, and have issued our report thereon dated December 21, 2022.

We issued an unmodified opinion on the fair presentation of the District's financial statements in accordance with its regulatory basis of accounting. We issued an adverse opinion on the fair presentation with regard to accounting principles generally accepted in the United States of America (GAAP) because the financial statements are prepared by the District using accounting practices prescribed by state law and the State Auditor's *Budgeting, Accounting and Reporting System* (BARS) Manual described in Note 1, which is a basis of accounting other than GAAP. The effects on the financial statements of the variances between the basis of accounting described in Note 1 and accounting principles generally accepted in the United States of America, although not reasonably determinable, are presumed to be material.

REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING

In planning and performing our audits of the financial statements, we considered the District's internal control over financial reporting (internal control) as a basis for designing audit procedures that are appropriate in the circumstances for the purpose of expressing our opinions on the financial statements, but not for the purpose of expressing an opinion on the effectiveness of the District's internal control. Accordingly, we do not express an opinion on the effectiveness of the District's internal control.

A *deficiency in internal control* exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, misstatements on a timely basis. A *material weakness* is a deficiency, or a combination of deficiencies, in internal control such that there is a reasonable possibility that a material misstatement of the District's financial statements will not be prevented, or detected and corrected on a timely basis. A *significant deficiency* is a deficiency, or a combination of deficiencies, in internal control that is less severe than a material weakness, yet important enough to merit attention by those charged with governance.

Our consideration of internal control was for the limited purpose described above and was not designed to identify all deficiencies in internal control that might be material weaknesses or significant deficiencies and therefore, material weaknesses or significant deficiencies may exist that were not identified.

Given these limitations, during our audit we did not identify any deficiencies in internal control that we consider to be material weaknesses.

REPORT ON COMPLIANCE AND OTHER MATTERS

As part of obtaining reasonable assurance about whether the District's financial statements are free from material misstatement, we performed tests of its compliance with certain provisions of laws, regulations, contracts and grant agreements, noncompliance with which could have a direct and material effect on the financial statements. However, providing an opinion on compliance with those provisions was not an objective of our audit, and accordingly, we do not express such an opinion.

The results of our tests disclosed no instances of noncompliance or other matters that are required to be reported under *Government Auditing Standards*.

PURPOSE OF THIS REPORT

The purpose of this report is solely to describe the scope of our testing of internal control and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the District's internal control or on compliance. This report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the District's internal control and compliance. Accordingly, this communication is not suitable for any other purpose. However,

this report is a matter of public record and its distribution is not limited. It also serves to disseminate information to the public as a reporting tool to help citizens assess government operations.

Pat McCarthy, State Auditor

Olympia, WA

December 21, 2022

INDEPENDENT AUDITOR'S REPORT

Report on the Audit of the Financial Statements

East County Fire and Rescue
January 1, 2020 through December 31, 2021

Board of Commissioners
East County Fire and Rescue
Camas, Washington

REPORT ON THE AUDIT OF THE FINANCIAL STATEMENTS

Unmodified and Adverse Opinions

We have audited the financial statements of East County Fire and Rescue, as of and for the years ended December 31, 2021 and 2020, and the related notes to the financial statements, as listed in the financial section of our report.

Unmodified Opinion on the Regulatory Basis of Accounting (BARS Manual)

As described in Note 1, the District has prepared these financial statements to meet the financial reporting requirements of state law and accounting practices prescribed by the State Auditor's *Budgeting, Accounting and Reporting System* (BARS) Manual. Those accounting practices differ from accounting principles generally accepted in the United States of America (GAAP). The differences in these accounting practices are also described in Note 1.

In our opinion, the accompanying financial statements referred to above present fairly, in all material respects, the cash and investments of East County Fire and Rescue, and its changes in cash and investments, for the years ended December 31, 2021 and 2020, on the basis of accounting described in Note 1.

Adverse Opinion on U.S. GAAP

The financial statements referred to above were not intended to, and in our opinion, they do not, present fairly, in accordance with accounting principles generally accepted in the United States of America, the financial position of East County Fire and Rescue, as of December 31, 2021 and 2020, or the changes in financial position or cash flows thereof for the years then ended, because of the significance of the matter discussed below.

TABLE OF CONTENTS

INDEPENDENT AUDITOR'S REPORT

Report on Internal Control over Financial Reporting and on Compliance and Other Matters Based on an Audit of Financial Statements Performed in Accordance with *Government Auditing Standards*

East County Fire and Rescue
January 1, 2020 through December 31, 2021

Board of Commissioners
East County Fire and Rescue
Camas, Washington

We have audited, in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards,* issued by the Comptroller General of the United States, the financial statements of East County Fire and Rescue, as of and for the years ended December 31, 2021 and 2020, and the related notes to the financial statements, which collectively comprise the District's financial statements, and have issued our report thereon dated December 21, 2022.

We issued an unmodified opinion on the fair presentation of the District's financial statements in accordance with its regulatory basis of accounting. We issued an adverse opinion on the fair presentation with regard to accounting principles generally accepted in the United States of America (GAAP) because the financial statements are prepared by the District using accounting practices prescribed by state law and the State Auditor's *Budgeting, Accounting and Reporting System* (BARS) Manual described in Note 1, which is a basis of accounting other than GAAP. The effects on the financial statements of the variances between the basis of accounting described in Note 1 and accounting principles generally accepted in the United States of America, although not reasonably determinable, are presumed to be material.

REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING

In planning and performing our audits of the financial statements, we considered the District's internal control over financial reporting (internal control) as a basis for designing audit procedures that are appropriate in the circumstances for the purpose of expressing our opinions on the financial statements, but not for the purpose of expressing an opinion on the effectiveness of the District's internal control. Accordingly, we do not express an opinion on the effectiveness of the District's internal control.

Office of the Washington State Auditor
Pat McCarthy

Financial Statements Audit Report

East County Fire and Rescue

For the period January 1, 2020 through December 31, 2021

Published December 29, 2022

Report No. 1031727

Find out what's new at SAO by scanning this code with your smartphone's camera

A *deficiency in internal control* exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, misstatements on a timely basis. A *material weakness* is a deficiency, or a combination of deficiencies, in internal control such that there is a reasonable possibility that a material misstatement of the District's financial statements will not be prevented, or detected and corrected on a timely basis. A *significant deficiency* is a deficiency, or a combination of deficiencies, in internal control that is less severe than a material weakness, yet important enough to merit attention by those charged with governance.

Our consideration of internal control was for the limited purpose described above and was not designed to identify all deficiencies in internal control that might be material weaknesses or significant deficiencies and therefore, material weaknesses or significant deficiencies may exist that were not identified.

Given these limitations, during our audit we did not identify any deficiencies in internal control that we consider to be material weaknesses.

REPORT ON COMPLIANCE AND OTHER MATTERS

As part of obtaining reasonable assurance about whether the District's financial statements are free from material misstatement, we performed tests of its compliance with certain provisions of laws, regulations, contracts and grant agreements, noncompliance with which could have a direct and material effect on the financial statements. However, providing an opinion on compliance with those provisions was not an objective of our audit, and accordingly, we do not express such an opinion.

The results of our tests disclosed no instances of noncompliance or other matters that are required to be reported under *Government Auditing Standards*.

PURPOSE OF THIS REPORT

The purpose of this report is solely to describe the scope of our testing of internal control and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the District's internal control or on compliance. This report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the District's internal control and compliance. Accordingly, this communication is not suitable for any other purpose. However,

this report is a matter of public record and its distribution is not limited. It also serves to disseminate information to the public as a reporting tool to help citizens assess government operations.

Pat McCarthy, State Auditor

Olympia, WA

December 21, 2022

INDEPENDENT AUDITOR'S REPORT

Report on the Audit of the Financial Statements

East County Fire and Rescue
January 1, 2020 through December 31, 2021

Board of Commissioners
East County Fire and Rescue
Camas, Washington

REPORT ON THE AUDIT OF THE FINANCIAL STATEMENTS

Unmodified and Adverse Opinions

We have audited the financial statements of East County Fire and Rescue, as of and for the years ended December 31, 2021 and 2020, and the related notes to the financial statements, as listed in the financial section of our report.

Unmodified Opinion on the Regulatory Basis of Accounting (BARS Manual)

As described in Note 1, the District has prepared these financial statements to meet the financial reporting requirements of state law and accounting practices prescribed by the State Auditor's *Budgeting, Accounting and Reporting System* (BARS) Manual. Those accounting practices differ from accounting principles generally accepted in the United States of America (GAAP). The differences in these accounting practices are also described in Note 1.

In our opinion, the accompanying financial statements referred to above present fairly, in all material respects, the cash and investments of East County Fire and Rescue, and its changes in cash and investments, for the years ended December 31, 2021 and 2020, on the basis of accounting described in Note 1.

Adverse Opinion on U.S. GAAP

The financial statements referred to above were not intended to, and in our opinion, they do not, present fairly, in accordance with accounting principles generally accepted in the United States of America, the financial position of East County Fire and Rescue, as of December 31, 2021 and 2020, or the changes in financial position or cash flows thereof for the years then ended, because of the significance of the matter discussed below.

Basis for Unmodified and Adverse Opinions

We conducted our audit in accordance with auditing standards generally accepted in the United States of America (GAAS) and *Government Auditing Standards*. Our responsibilities under those standards are further described in the Auditor's Responsibilities for the Audit of the Financial Statements section of our report. We are required to be independent of the District, and to meet our other ethical responsibilities, in accordance with the relevant ethical requirements relating to our audit. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit unmodified and adverse opinions.

Matter Giving Rise to Adverse Opinion on U.S. GAAP

Auditing standards issued by the American Institute of Certified Public Accountants (AICPA) require auditors to formally acknowledge when governments do not prepare their financial statements, intended for general use, in accordance with GAAP. As described in Note 1 of the financial statements, the financial statements are prepared by the District in accordance with state law using accounting practices prescribed by the BARS Manual, which is a basis of accounting other than accounting principles generally accepted in the United States of America. The effects on the financial statements of the variances between the regulatory basis of accounting and accounting principles generally accepted in the United States of America, although not reasonably determinable, are presumed to be material and pervasive.

Responsibilities of Management for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with the financial reporting provisions of state law and the BARS Manual described in Note 1. This includes determining that the basis of accounting is acceptable for the presentation of the financial statements in the circumstances. Management is also responsible for the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is required to evaluate whether there are conditions or events, considered in the aggregate, that raise substantial doubt about the District's ability to continue as a going concern for twelve months beyond the financial statement date, including any currently known information that may raise substantial doubt shortly thereafter.

Auditor's Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinions. Reasonable assurance is a high level of assurance but is not absolute assurance and therefore is not a guarantee that an audit conducted in accordance with GAAS and

Basis for Unmodified and Adverse Opinions

We conducted our audit in accordance with auditing standards generally accepted in the United States of America (GAAS) and *Government Auditing Standards*. Our responsibilities under those standards are further described in the Auditor's Responsibilities for the Audit of the Financial Statements section of our report. We are required to be independent of the District, and to meet our other ethical responsibilities, in accordance with the relevant ethical requirements relating to our audit. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit unmodified and adverse opinions.

Matter Giving Rise to Adverse Opinion on U.S. GAAP

Auditing standards issued by the American Institute of Certified Public Accountants (AICPA) require auditors to formally acknowledge when governments do not prepare their financial statements, intended for general use, in accordance with GAAP. As described in Note 1 of the financial statements, the financial statements are prepared by the District in accordance with state law using accounting practices prescribed by the BARS Manual, which is a basis of accounting other than accounting principles generally accepted in the United States of America. The effects on the financial statements of the variances between the regulatory basis of accounting and accounting principles generally accepted in the United States of America, although not reasonably determinable, are presumed to be material and pervasive.

Responsibilities of Management for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with the financial reporting provisions of state law and the BARS Manual described in Note 1. This includes determining that the basis of accounting is acceptable for the presentation of the financial statements in the circumstances. Management is also responsible for the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is required to evaluate whether there are conditions or events, considered in the aggregate, that raise substantial doubt about the District's ability to continue as a going concern for twelve months beyond the financial statement date, including any currently known information that may raise substantial doubt shortly thereafter.

Auditor's Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinions. Reasonable assurance is a high level of assurance but is not absolute assurance and therefore is not a guarantee that an audit conducted in accordance with GAAS and

Government Auditing Standards will always detect a material misstatement when it exists. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control. Misstatements are considered material if there is a substantial likelihood that, individually or in the aggregate, they would influence the judgment made by a reasonable user based on the financial statements.

Performing an audit in accordance with GAAS and *Government Auditing Standards* includes the following responsibilities:

- Exercise professional judgment and maintain professional skepticism throughout the audit;
- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, and design and perform audit procedures responsive to those risks. Such procedures include examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements;
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the District's internal control. Accordingly, no such opinion is expressed;
- Evaluate the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluate the overall presentation of the financial statements;
- Conclude whether, in our judgment, there are conditions or events, considered in the aggregate, that raise substantial doubt about the District's ability to continue as a going concern for a reasonable period of time; and
- We are required to communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit, significant audit findings, and certain internal control-related matters that we identified during the audit.

Supplementary Information

Our audits were conducted for the purpose of forming opinions on the financial statements that collectively comprise the District's financial statements. The Schedules of Liabilities are presented for purposes of additional analysis, as required by the prescribed BARS Manual. These schedules are not a required part of the financial statements. Such information is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the financial statements. The information has been subjected to the auditing procedures applied in the audit of the financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the financial statements or to the financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the

United States of America. In our opinion, the information is fairly stated, in all material respects, in relation to the financial statements taken as a whole.

OTHER REPORTING REQUIRED BY GOVERNMENT AUDITING STANDARDS

In accordance with *Government Auditing Standards*, we have also issued our report dated December 21, 2022 on our consideration of the District's internal control over financial reporting and on the tests of its compliance with certain provisions of laws, regulations, contracts and grant agreements and other matters. The purpose of that report is to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the District's internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the District's internal control over financial reporting and compliance.

Pat McCarthy, State Auditor

Olympia, WA

December 21, 2022

FINANCIAL SECTION

East County Fire and Rescue
January 1, 2020 through December 31, 2021

FINANCIAL STATEMENTS

SUPPLEMENTARY AND OTHER INFORMATION

East County Fire and Rescue
Fund Resources and Uses Arising from Cash Transactions
For the Year Ended December 31, 2021

		Total for All Funds (Memo Only)	001 General Fund	101 EMS Fund	201 General Obligation Bond Fund
Beginning Cash and Investments					
308	Beginning Cash and Investments	2,584,957	2,584,957	-	-
388 / 588	Net Adjustments	-	-	-	-
Revenues					
310	Taxes	3,528,601	2,854,603	673,993	5
320	Licenses and Permits	-	-	-	-
330	Intergovernmental Revenues	1,843	1,843	-	-
340	Charges for Goods and Services	44,773	44,773	-	-
350	Fines and Penalties	-	-	-	-
360	Miscellaneous Revenues	368,973	368,973	-	-
Total Revenues:		3,944,190	3,270,192	673,993	5
Expenditures					
510	General Government	-	-	-	-
520	Public Safety	2,999,597	2,325,604	673,993	-
530	Utilities	-	-	-	-
540	Transportation	-	-	-	-
550	Natural/Economic Environment	-	-	-	-
560	Social Services	-	-	-	-
570	Culture and Recreation	-	-	-	-
Total Expenditures:		2,999,597	2,325,604	673,993	-
Excess (Deficiency) Revenues over Expenditures:		944,593	944,588	-	5
Other Increases in Fund Resources					
391-393, 596	Debt Proceeds	-	-	-	-
397	Transfers-In	550,758	-	-	550,758
385	Special or Extraordinary Items	-	-	-	-
381, 382, 389, 395, 398	Other Resources	9,793	9,793	-	-
Total Other Increases in Fund Resources:		560,551	9,793	-	550,758
Other Decreases in Fund Resources					
594-595	Capital Expenditures	69,820	69,820	-	-
591-593, 599	Debt Service	550,758	-	-	550,758
597	Transfers-Out	550,758	550,758	-	-
585	Special or Extraordinary Items	-	-	-	-
581, 582, 589	Other Uses	-	-	-	-
Total Other Decreases in Fund Resources:		1,171,336	620,578	-	550,758
Increase (Decrease) in Cash and Investments:		**333,808**	**333,803**	**-**	**5**
Ending Cash and Investments					
50821	Nonspendable	-	-	-	-
50831	Restricted	-	-	-	-
50841	Committed	1,037,661	1,037,661	-	-
50851	Assigned	5	-	-	5
50891	Unassigned	1,881,094	1,881,094	-	-
Total Ending Cash and Investments		**2,918,760**	**2,918,755**	**-**	**5**

The accompanying notes are an integral part of this statement.

East County Fire and Rescue
Fund Resources and Uses Arising from Cash Transactions
For the Year Ended December 31, 2020

		Total for All Funds (Memo Only)	001 General Fund	101 EMS Fund	201 General Obligation Bond Fund
Beginning Cash and Investments					
308	Beginning Cash and Investments	2,009,404	2,009,404	-	-
388 / 588	Net Adjustments	-	-	-	-
Revenues					
310	Taxes	3,242,776	2,772,532	470,243	1
320	Licenses and Permits	-	-	-	-
330	Intergovernmental Revenues	1,726	1,726	-	-
340	Charges for Goods and Services	34,940	34,940	-	-
350	Fines and Penalties	-	-	-	-
360	Miscellaneous Revenues	56,788	56,788	-	-
Total Revenues:		3,336,230	2,865,986	470,243	1
Expenditures					
510	General Government	-	-	-	-
520	Public Safety	2,638,931	2,168,688	470,243	-
530	Utilities	-	-	-	-
540	Transportation	-	-	-	-
550	Natural/Economic Environment	-	-	-	-
560	Social Services	-	-	-	-
570	Culture and Recreation	-	-	-	-
Total Expenditures:		2,638,931	2,168,688	470,243	-
Excess (Deficiency) Revenues over Expenditures:		697,299	697,298	-	1
Other Increases in Fund Resources					
391-393, 596	Debt Proceeds	-	-	-	-
397	Transfers-In	250,777	-	-	250,777
385	Special or Extraordinary Items	-	-	-	-
381, 382, 389, 395, 398	Other Resources	198,736	198,736	-	-
Total Other Increases in Fund Resources:		449,513	198,736	-	250,777
Other Decreases in Fund Resources					
594-595	Capital Expenditures	69,707	69,707	-	-
591-593, 599	Debt Service	250,778	-	-	250,778
597	Transfers-Out	250,777	250,777	-	-
585	Special or Extraordinary Items	-	-	-	-
581, 582, 589	Other Uses	-	-	-	-
Total Other Decreases in Fund Resources:		571,262	320,484	-	250,778
Increase (Decrease) in Cash and Investments:		**575,550**	**575,550**	-	-
Ending Cash and Investments					
50821	Nonspendable	-	-	-	-
50831	Restricted	-	-	-	-
50841	Committed	829,461	829,461	-	-
50851	Assigned	-	-	-	-
50891	Unassigned	1,755,496	1,755,496	-	-
Total Ending Cash and Investments		**2,584,957**	**2,584,957**	-	-

The accompanying notes are an integral part of this statement.

Note 1 - Summary of Significant Accounting Policies

East County Fire and Rescue was incorporated on May 26, 2006, as the result of a successful merger between Clark County Fire District #1 and Clark County Fire District #9, and operates under the laws of the state of Washington applicable to a Fire Department. East County Fire and Rescue is a special purpose local government and provides fire protection and emergency response services.

The district reports financial activity in accordance with the *Cash Basis Budgeting, Accounting and Reporting System* (BARS) Manual prescribed by the State Auditor's Office under the authority of Washington State law, Chapter 43.09 RCW. This manual prescribes a financial reporting framework that differs from generally accepted accounting principles (GAAP) in the following manner:

- Financial transactions are recognized on a cash basis of accounting as described below.
- Component units are required to be disclosed, but are not included in the financial statements (see *Notes to the Financial Statements*).
- Government-wide statements, as defined in GAAP, are not presented.
- All funds are presented, rather than a focus on major funds.
- The *Schedule of Liabilities* is required to be presented with the financial statements as supplementary information.
- Supplementary information required by GAAP is not presented.
- Ending balances are presented using classifications that are different from the ending net position classifications in GAAP.

A. Fund Accounting

Financial transactions of the government are reported in individual funds. Each fund uses a separate set of self-balancing accounts that comprises its cash and investments, revenues and expenditures. The government's resources are allocated to and accounted for in individual funds depending on their intended purpose. Each fund is reported as a separate column in the financial statements, except for fiduciary funds, which are presented by fund types. The total column is presented as "memo only" because any interfund activities are not eliminated. The following fund types are used:

GOVERNMENTAL FUND TYPES:

General Fund 001

This fund is the primary operating fund of the government. It accounts for all financial resources except those required or elected to be accounted for in another fund.

Special Revenue Funds 101
This is the primary Fund used for accounting of Emergency Medical Services (EMS) Levy funds that are "passed through" East County Fire and Rescue to City of Camas via their EMS fund 6620. The collection and transfer of these funds is done in accordance with a service agreement for the Emergency Medical Transport Services Program. Participants in this agreement include East County Fire and Rescue, City of Camas, and the City of Washougal.

Debt Service Funds 201
These funds account for the financial resources that are restricted, committed, or assigned to expenditures for principal, interest and related costs on general long-term debt.

B. Basis of Accounting and Measurement Focus
Financial statements are prepared using the cash basis of accounting and measurement focus. Revenues are recognized when cash is received and expenditures are recognized when paid.

C. Cash and Investments
See Note 4 - *Deposits and Investments.*

D. Capital Assets
Capital assets are assets with an initial individual cost of more than $5,000 and an estimated useful life in excess of one year. Capital assets and inventory are recorded as capital expenditures when purchased.

E. Compensated Absences
Vacation leave may be accumulated up to one and one half times the annual accrual for LEOFF personnel, up to two times the annual accrual for all other full time personnel, and is payable upon separation or retirement. Sick leave may be accumulated up to 1352 hours for LEOFF personnel, 1200 hours for OPEIU personnel, 1040 for the Fire Chief, and may accrue indefinitely but only carry over 40 hours to the next year for all other personnel. Upon separation or retirement, employees do not receive payment for unused sick leave. Payments are recognized as expenditures when paid.

The total Compensated Absence value as of December 31, 2021 was $76,774.54.

F. Long-Term Debt
See Note 5 – *Debt Service Requirements.*

Note 2 - Budget Compliance

East County Fire and Rescue adopts annual appropriated budgets for the General Fund (6291), the Debt Service fund (6248), and the EMS Levy fund. These budgets are appropriated at the fund level. The budget constitutes the legal authority for expenditures at that level. Annual appropriations for these funds lapse at the fiscal year end.

Annual appropriated budgets are adopted on the same basis of accounting as used for financial reporting. The appropriated and actual expenditures for the legally adopted budgets were as follows:

Fund/Department	Final Appropriated Amounts	Actual Expenses	Variance
001 - General Fund	3304901	2946186	358715
101 - EMS Fund	675,374	673,993	1,381
201 - General Obligation Bond Fund	255,718	550,758	(295,041)

Budgeted amounts are authorized to be transferred between object classes within departments; however, any revisions that alter the total expenditures of a fund, or that affect the number of authorized employee positions, salary ranges, hours, or other conditions of employment must be approved by East County Fire and Rescue's legislative body.

The 2021 General Fund final appropriated amount excludes $261,574 of interfund transfers.

The General Obligation Bond Fund 2007A was paid off from the sale of Station 95 (211 39th St.) proceeds.

Note 3 – COVID-19 Pandemic

In February 2020, the Governor of the state of Washington declared a state of emergency in response to the spread of the deadly new virus known as COVID-19. In the months following the declaration, precautionary measures to slow the spread of the virus were ordered. These measures included closing schools, cancelling public events, limiting public and private gatherings, and restricting business operations, travel and non-essential activities.

East County Fire and Rescue has not been significantly impacted financially at this point. However, there is a possibility that the District may see reduced assessed values, which will reduce future property tax revenue. There is also a possibility of increased labor costs if crew members are quarantined due to exposure or illness.

Employee exposure to Covid-19, or actual illness, could impact the District's ability to operate. To prevent exposure the District requires response personnel to wear proper PPE for all EMS responses. The Clark County Medical Program Director has set PPE requirements for EMS response. Response personnel practice social distancing on other incident types. In addition, most personnel have been fully vaccinated for Covid-19.

The District's Board of Commissioners has changed the format of their Board meetings to a virtual platform to eliminate the need for their physical presence at the fire stations. The District has also restricted public access to the buildings. Staff members use a bleach solution to sanitize the stations on a daily basis. All staff members practice social distancing in the stations. Self-screening checks upon entry into the fire station have been implemented for all personnel.

The length of time these measures will continue to be in place, and the full extent of the financial impact on the District is unknown at this time.

Note 4 – Deposits and Investments

East County Fire and Rescue cash and investments are held by the Clark County Treasurer, in the Clark County Investment Pool, as its agent in the District's name.

All deposits and certificates of deposit are covered by the Federal Deposit Insurance Corporation or the Washington Public Deposit Protection Commission, where appropriate. All of the investments, within the Clark County investment pool, including the portion that is held at the State LGIP, is either insured, guaranteed (implied or expressly), or collateralized. The pool is not rated and not registered with the SEC. Rather, oversight is provided by the State Finance Committee in accordance with Chapter 43.250 RCW.

The District's interest in the investment pool on December 31, 2021 was $2,918,754.02, which is stated at fair market value. Investments in the County's pool are not subject to categorization, as specific instruments cannot be distinguished between those participating in the pool.

Note 5 – Long-Term Debt *(formerly Debt Service Requirements)*

The accompanying Schedule of Liabilities (09) provides more details of the outstanding debt and liabilities of East County Fire and Rescue and summarizes East County Fire and Rescue's debt transactions for year ended December 31, 2021

The debt service requirements for general obligation bonds are as follows:

Year	Principal	Interest	Total Debt Service
2022	175,000	25,425	200,425
2023	180,000	19,300	199,300
2024	190,000	13,000	203,000
2025	45,000	5,400	50,400
2026	45,000	3,600	48,600
2027	45,000	1,800	46,800
Totals	680,000	68,525	748,525

Note 6 – Pension Plans

A. State Sponsored Pension Plans

Substantially all East County Fire and Rescue's full-time and qualifying part-time employees participate in the following statewide retirement systems administered by the Washington State Department of Retirement Systems (DRS), under cost-sharing, multiple-employer public employee defined benefit and defined contribution retirement plans LEOFF II, PERS II, and PERS III.

Office of the Washington State Auditor
Pat McCarthy

December 29, 2022

Board of Commissioners
East County Fire and Rescue
Camas, Washington

Report on Financial Statements

Please find attached our report on East County Fire and Rescue's financial statements.

We are issuing this report in order to provide information on the District's financial activities and condition.

Sincerely,

Pat McCarthy

Pat McCarthy, State Auditor

Olympia, WA

Americans with Disabilities

In accordance with the Americans with Disabilities Act, we will make this document available in alternative formats. For more information, please contact our Office at (564) 999-0950, TDD Relay at (800) 833-6388, or email our webmaster at webmaster@sao.wa.gov.

The State Legislature establishes, and amends, laws pertaining to the creation and administration of all public retirement systems.

The Department of Retirement Systems, a department within the primary government of the State of Washington, issues a publicly available comprehensive annual financial report (ACFR) that includes financial statements and required supplementary information for each plan. The DRS ACFR may be obtained by writing to:

Department of Retirement Systems
Communications Unit
P.O. Box 48380
Olympia, WA 98540-8380

Also, the DRS ACFR may be downloaded from the DRS website at www.drs.wa.gov.

East County Fire and Rescue also participates in the Volunteer Fire Fighters' and Reserve Officers' Relief and Pension Fund (VFFRPF) administered by the State Board for Volunteer Fire Fighters and Reserve Officers. Detailed information about the plan is included in the State of Washington ACFR available from the Office of Financial Management website at www.ofm.wa.gov.

At June 30, 2021, the District's proportionate share of the collective net pension liabilities, as reported on the Schedule of Liabilities (09), was as follows:

Plan Type	Employer Contributions	Allocation Percentage	Plan Liability / Asset	NPL	NPA
PERS 1 UAAL	13733.38	0.00184400%	1,221,234,000	22,520	
PERS 2/3	22442.42	0.00236900%	-9,961,609,000		(235,991)
LEOFF 2	60805.03	0.03050300%	-5,808,414,000		(1,771,741)
VFFRPF	210	0.110000%	-$22,005,000		(23,756)
		Totals		$ 22,520	$ (2,031,487)

LEOFF Plan 2
The district also participates in the LEOFF Plan 2. The Legislature, by means of a special funding arrangement, appropriates money from the state general fund to supplement the current service liability and fund the prior service costs of Plan 2 in accordance with the recommendations of the Pension Funding Council and the LEOFF Plan 2 Retirement Board. This special funding situation is not mandated by the state constitution and could be changed by statute.

Note 7 - Property Tax

The county treasurer acts as an agent to collect property tax levied in the county for all taxing authorities. Collections are distributed at the end of each month.

Property tax revenues are recognized when cash is received by district. Delinquent taxes are considered fully collectible because a lien affixes to the property after tax is levied.

The district's regular levy for the year 2021 was $1.4590967844 per $1,000 on an assessed valuation of $1,931,844,056 for a total regular levy of $2,818,747.45.

East County Fire and Rescue also levied an amount for Emergency Transport Services. When collected, these funds are automatically transferred to City of Camas (Fund 6620) and used to defray EMS costs incurred by the District. The collection and transfer of these funds is done in accordance with a service agreement for the Emergency Medical Transport Services Program. Participants in this agreement include East County Fire and Rescue, City of Camas, and the City of Washougal.

East County Fire and Rescue's EMS levy for the year 2021 was $0.3496006823 per $1,000 on an assessed valuation of $ 1,931,844,056 for a total EMS levy of $675,374.00

Note 8 – Risk Management

East County Fire and Rescue is a member of Clark County Fire Rescue Risk Management Group, Inc. MacIlvennie Associates, Inc. is the insurer for the Clark County Fire and Rescue Management Group. This is a joint venture with Clark County FPD #6, Clark County Fire and Rescue, Cowlitz 2 Fire and Rescue, Cowlitz County FPD #6, and the Fairgrounds Fire Facility Board. Insurance coverage within the risk management pool includes auto, buildings, personal property, and general liability. Deductibles for coverage within the risk pool are as follows: Buildings and personal property $1000, loss due to flood $1000, earthquake 2%, automobile $250, portable equipment $100. Financial statements for the Clark County Fire Rescue Risk Management Group can be obtained from Clark County Fire District #6, in Vancouver, Washington.

Note 9 – Other Disclosures

Per RCW 43.09.240, the Clark County Treasurer granted an ongoing exception to daily deposits on December 5, 2016. The District is authorized to deposit cash weekly.

The District has five Committed Funds, previously reported as Reserve Funds.
Ending Cash and Investments for these funds as of December 31, 2021 consist of the following:

Type of Deposit or Investment	ECFR Funds at Clark Co. Treasurer
6291-1 Apparatus Replacement	490,502
6291-2 Capital Facility	172,715
6291-3 Leave Accrual	45,844
6291-4 Equipment Reserve	326,413
6291-5 Copier	2,187
Totals	1,037,660

The District sold Station 95 located at 211 39th St, in 2021 and used the proceeds to pay off Bond 2007A.

Note 1 - Summary of Significant Accounting Policies

East County Fire and Rescue was incorporated on May 26, 2006, as the result of a successful merger between Clark County Fire District #1 and Clark County Fire District #9, and operates under the laws of the state of Washington applicable to a Fire Department. East County Fire and Rescue is a special purpose local government and provides fire protection and emergency response services.

The district reports financial activity in accordance with the *Cash Basis Budgeting, Accounting and Reporting System* (BARS) Manual prescribed by the State Auditor's Office under the authority of Washington State law, Chapter 43.09 RCW. This manual prescribes a financial reporting framework that differs from generally accepted accounting principles (GAAP) in the following manner:

- Financial transactions are recognized on a cash basis of accounting as described below.
- Component units are required to be disclosed, but are not included in the financial statements.
- Government-wide statements, as defined in GAAP, are not presented.
- All funds are presented, rather than a focus on major funds.
- The *Schedule of Liabilities* is required to be presented with the financial statements as supplementary information.
- Supplementary information required by GAAP is not presented.
- Ending balances are not presented using the classifications defined in GAAP.

A. Fund Accounting

Financial transactions of the government are reported in individual funds. Each fund uses a separate set of self-balancing accounts that comprises its cash and investments, revenues and expenditures. The government's resources are allocated to and accounted for in individual funds depending on their intended purpose. Each fund is reported as a separate column in the financial statements, except for fiduciary funds, which are presented by fund types. The total column is presented as "memo only" because any interfund activities are not eliminated. The following fund types are used:

GOVERNMENTAL FUND TYPES:

General Fund 001

This fund is the primary operating fund of the government. It accounts for all financial resources except those required or elected to be accounted for in another fund.

Special Revenue Funds 101

This is the primary Fund used for accounting of Emergency Medical Services (EMS) Levy funds that are "passed through" East County Fire and Rescue to City of Camas via their EMS fund 6620. The collection and transfer of these funds is done in accordance with a service agreement for the Emergency Medical Transport Services Program. Participants in this agreement include East County Fire and Rescue, City of Camas, and the City of Washougal.

Debt Service Funds 201
These funds account for the financial resources that are restricted, committed, or assigned to expenditures for principal, interest and related costs on general long-term debt.

B. Basis of Accounting and Measurement Focus
Financial statements are prepared using the cash basis of accounting and measurement focus. Revenues are recognized when cash is received and expenditures are recognized when paid.

C. Cash and Investments
See Note 4 - Deposits and Investments.

D. Capital Assets
Capital assets are assets with an initial individual cost of more than $5,000 and an estimated useful life in excess of one year. Capital assets and inventory are recorded as capital expenditures when purchased.

E. Compensated Absences
Vacation leave may be accumulated up to one and one half times the annual accrual for LEOFF personnel, up to two times the annual accrual for all other full time personnel, and is payable upon separation or retirement. Sick leave may be accumulated up to 1352 hours for LEOFF personnel, 1200 hours for OPEIU personnel, 1040 for the Fire Chief, and may accrue indefinitely but only carry over 40 hours to the next year for all other personnel. Upon separation or retirement, employees do not receive payment for unused sick leave. Payments are recognized as expenditures when paid.

F. Long-Term Debt
See Note 5 - *Debt Service Requirements*.

Note 2 - Budget Compliance

East County Fire and Rescue adopts annual appropriated budgets for the General Fund (6291), the Debt Service fund (6248), and the EMS Levy fund. These budgets are appropriated at the fund level. The budget constitutes the legal authority for expenditures at that level. Annual appropriations for these funds lapse at the fiscal year end.

Annual appropriated budgets are adopted on the same basis of accounting as used for financial reporting.

The appropriated and actual expenditures for the legally adopted budgets were as follows:

Fund/Department	Final Appropriated Amounts	Actual Expenses	Variance
001 - General Fund	2687238	2489169.43	198068.57
101 - EMS Fund	471000	470243.48	756.52
201 - General Obligation Bond Fund	250777.5	250777.5	

Budgeted amounts are authorized to be transferred between object classes within departments; however, any revisions that alter the total expenditures of a fund, or that affect the number of authorized employee positions, salary ranges, hours, or other conditions of employment must be approved by East County Fire and Rescue's legislative body.

The 2020 general fund final appropriated amount excludes $405,573 of interfund transfers.

Note 3 – COVID-19 Pandemic

In February 2020, the Governor of the state of Washington declared a state of emergency in response to the spread of the deadly new virus known as COVID-19. In the months following the declaration, precautionary measures to slow the spread of the virus were ordered. These measures included closing schools, cancelling public events, limiting public and private gatherings, and restricting business operations, travel and non-essential activities.

East County Fire and Rescue has not been significantly impacted financially at this point. However, there is a possibility that the District may see reduced assessed values, which will reduce future property tax revenue. There is also a possibility of increased labor costs if crew members are quarantined due to exposure or illness.

Employee exposure to Covid-19, or actual illness, could impact the District's ability to operate. To prevent exposure the District requires response personnel to wear proper PPE for all EMS responses. The Clark County Medical Program Director has set PPE requirements for EMS response. Response personnel practice social distancing on other incident types. In addition, most personnel have been fully vaccinated for Covid-19.

The District's Board of Commissioners has changed the format of their Board meetings to a virtual platform to eliminate the need for their physical presence at the fire stations. The District has also restricted public access to the buildings. Staff members use a bleach solution to sanitize the stations on a daily basis. All staff members practice social distancing in the stations. Self-screening checks upon entry into the fire station have been implemented for all personnel.

These measures will be in place until there is no longer a threat of Covid-19 or until directed by the Governor and Medical Program Director. The full extent of the financial impact on the District is unknown at this time.

Note 4 – Deposits and Investments

East County Fire and Rescue cash and investments are held by the Clark County Treasurer, in the Clark County Investment Pool, as its agent in the District's name.

All deposits and certificates of deposit are covered by the Federal Deposit Insurance Corporation or the Washington Public Deposit Protection Commission, where appropriate. All of the investments, within the Clark County investment pool, including the portion that is held at the State LGIP, is either insured, guaranteed (implied or expressly), or collateralized. The pool is not rated and not registered with the SEC. Rather,

oversight is provided by the State Finance Committee in accordance with Chapter 43.250 RCW.

The District's interest in the investment pool on December 31, 2020 was $2,584,955.54, which is stated at fair market value. Investments in the County's pool are not subject to categorization, as specific instruments cannot be distinguished between those participating in the pool.

Note 5 – Long-Term Debt *(formerly Debt Service Requirements)*

The accompanying Schedule of Liabilities (09) provides more details of the outstanding debt and liabilities of East County Fire and Rescue and summarizes East County Fire and Rescue's debt transactions for year ended December 31, 2020.

The debt service requirements for general obligation bonds are as follows:

Year	Principal	Interest	Total Debt Service
2021	210,000	45,718	255,718
2022	220,000	40,303	260,303
2023	180,000	32,040	212,040
2024	190,000	25,740	215,740
2025	45,000	18,140	63,140
2026-2027	350,000	30,880	380,880
Totals	$ 1,195,000	$ 192,821	$ 1,387,821

Note 6 – Pension Plans

A. State Sponsored Pension Plans

Substantially all East County Fire and Rescue's full-time and qualifying part-time employees participate in the following statewide retirement systems administered by the Washington State Department of Retirement Systems (DRS), under cost-sharing, multiple-employer public employee defined benefit and defined contribution retirement plans LEOFF II, PERS II, and PERS III.

The State Legislature establishes, and amends, laws pertaining to the creation and administration of all public retirement systems.

The Department of Retirement Systems, a department within the primary government of the State of Washington, issues a publicly available comprehensive annual financial report (ACFR) that includes financial statements and required supplementary information for each plan. The DRS ACFR may be obtained by writing to:

Department of Retirement Systems
Communications Unit
P.O. Box 48380
Olympia, WA 98540-8380

Also, the DRS ACFR may be downloaded from the DRS website at www.drs.wa.gov.

East County Fire and Rescue also participates in the Volunteer Fire Fighters' and Reserve Officers' Relief and Pension Fund (VFFRPF) administered by the State Board for Volunteer Fire Fighters and Reserve Officers. Detailed information about the plan is included in the State of Washington ACFR available from the Office of Financial Management website at www.ofm.wa.gov.

At June 30, 2020, the district's proportionate share of the collective net pension liabilities, as reported on the Schedule of Liabilities (09), was as follows:

Plan Type	Employer Contributions	Allocation Percentage	Plan Liability / Asset	NPL	NPA
PERS 1 UAAL	12373.46	0.00170700%	3,530,540,000	60,266	
PERS 2/3	20483.4	0.00222300%	1,278,943,000	28,431	
LEOFF 2	52100.31	0.02663300%	(2,039,854,000)		(543,274)
VFFRPF	180	0.090000%	(35,240,000)		(32,655)
		Totals		$ 88,697	$ (575,929)

LEOFF Plan 2
The district also participates in the LEOFF Plan 2. The Legislature, by means of a special funding arrangement, appropriates money from the state general fund to supplement the current service liability and fund the prior service costs of Plan 2 in accordance with the recommendations of the Pension Funding Council and the LEOFF Plan 2 Retirement Board. This special funding situation is not mandated by the state constitution and could be changed by statute.

Note 7 - Property Tax

The county treasurer acts as an agent to collect property tax levied in the county for all taxing authorities. Collections are distributed at the end of each month.

Property tax revenues are recognized when cash is received by district. Delinquent taxes are considered fully collectible because a lien affixes to the property after tax is levied.

The district's regular levy for the year 2020 was $1.5000000000 per $1,000 on an assessed valuation of $1,844,529,631 for a total regular levy of $2,766,794.45.

East County Fire and Rescue also levied an amount for Emergency Transport Services. When collected, these funds are automatically transferred to City of Camas (Fund 6620) and used to defray EMS costs

incurred by the District. The collection and transfer of these funds is done in accordance with a service agreement for the Emergency Medical Transport Services Program. Participants in this agreement include East County Fire and Rescue, City of Camas, and the City of Washougal.

East County Fire and Rescue's EMS levy for the year 2020 was $0.2549520388 per $1,000 on an assessed valuation of $ 1,844,529,631 for a total EMS levy of $470,266.59

Note 8 – Risk Management

East County Fire and Rescue is a member of Clark County Fire Rescue Risk Management Group, Inc. MacIlvennie Associates, Inc. is the insurer for the Clark County Fire and Rescue Management Group. This is a joint venture with Clark County FPD #6, Clark County Fire and Rescue, Cowlitz 2 Fire and Rescue, Cowlitz County FPD #6, and the Fairgrounds Fire Facility Board. Insurance coverage within the risk management pool includes auto, buildings, personal property, and general liability. Deductibles for coverage within the risk pool are as follows: Buildings and personal property $1000, loss due to flood $1000, earthquake 2%, automobile $250, portable equipment $100. Financial statements for the Clark County Fire Rescue Risk Management Group can be obtained from Clark County Fire District #6, in Vancouver, Washington.

Note 9 – Other Disclosures

Per RCW 43.09.240, the Clark County Treasurer granted an ongoing exception to daily deposits on December 5, 2016. The District is authorized to deposit cash weekly.

The District has five Committed Funds, previously reported as Reserve Funds.
Ending Cash and Investments for these funds consist of the following:

Fund Name	Ending Balance	Description
6291-1	$373,494.95	Apparatus Replacement
6291-2	$157,482.58	Capital Facility Repair/Maintenance
6291-3	$45,552.64	Leave Accrual Payout
6291-4	$250,756.78	Major Equipment Purchases
6291-5	$2,173.04	Copier Replacement

East County Fire and Rescue
Schedule of Liabilities
For the Year Ended December 31, 2021

ID. No.	Description	Due Date	Beginning Balance	Additions	Reductions	Ending Balance
General Obligation Debt/Liabilities						
251.11	G.O. Bond 2007A	12/31/2027	350,000	-	350,000	-
251.11	G.O. Bond 2012	12/31/2027	845,000	-	165,000	680,000
	Total General Obligation Debt/Liabilities:		**1,195,000**	**-**	**515,000**	**680,000**
Revenue and Other (non G.O.) Debt/Liabilities						
259.12	Compensated Absences		86,523	-	9,748	76,775
264.30	Pension Liabilities		88,697	-	66,177	22,520
	Total Revenue and Other (non G.O.) Debt/Liabilities:		**175,220**	**-**	**75,925**	**99,295**
	Total Liabilities:		**1,370,220**	**-**	**590,925**	**779,295**

East County Fire and Rescue
Schedule of Liabilities
For the Year Ended December 31, 2020

ID. No.	Description	Due Date	Beginning Balance	Additions	Reductions	Ending Balance
General Obligation Debt/Liabilities						
251.11	G.O. Bond 2007A	12/31/2027	390,000	-	40,000	350,000
251.11	G.O. Bond 2012	12/31/2027	1,005,000	-	160,000	845,000
	Total General Obligation Debt/Liabilities:		**1,395,000**	**-**	**200,000**	**1,195,000**
Revenue and Other (non G.O.) Debt/Liabilities						
259.12	Compensated Absences		80,724	5,799	-	86,523
264.30	Pension Liabilities		88,176	521	-	88,697
	Total Revenue and Other (non G.O.) Debt/Liabilities:		**168,900**	**6,320**	**-**	**175,220**
	Total Liabilities:		**1,563,900**	**6,320**	**200,000**	**1,370,220**

ABOUT THE STATE AUDITOR'S OFFICE

The State Auditor's Office is established in the Washington State Constitution and is part of the executive branch of state government. The State Auditor is elected by the people of Washington and serves four-year terms.

We work with state agencies, local governments and the public to achieve our vision of increasing trust in government by helping governments work better and deliver higher value.

In fulfilling our mission to provide citizens with independent and transparent examinations of how state and local governments use public funds, we hold ourselves to those same standards by continually improving our audit quality and operational efficiency, and by developing highly engaged and committed employees.

As an agency, the State Auditor's Office has the independence necessary to objectively perform audits, attestation engagements and investigations. Our work is designed to comply with professional standards as well as to satisfy the requirements of federal, state and local laws. The Office also has an extensive quality control program and undergoes regular external peer review to ensure our work meets the highest possible standards of accuracy, objectivity and clarity.

Our audits look at financial information and compliance with federal, state and local laws for all local governments, including schools, and all state agencies, including institutions of higher education. In addition, we conduct performance audits and cybersecurity audits of state agencies and local governments, as well as state whistleblower, fraud and citizen hotline investigations.

The results of our work are available to everyone through the more than 2,000 reports we publish each year on our website, www.sao.wa.gov. Additionally, we share regular news and other information via an email subscription service and social media channels.

We take our role as partners in accountability seriously. The Office provides training and technical assistance to governments both directly and through partnerships with other governmental support organizations.

Stay connected at sao.wa.gov

- Find your audit team
- Request public records
- Search BARS manuals (GAAP and cash), and find reporting templates
- Learn about our training workshops and on-demand videos
- Discover which governments serve you — enter an address on our map
- Explore public financial data with the Financial Intelligence Tool

Other ways to stay in touch

- Main telephone: (564) 999-0950
- Toll-free Citizen Hotline: (866) 902-3900
- Email: webmaster@sao.wa.gov

7624 SW Mohawk Street
Tualatin, OR 97062
www.merina.com
503.723.0300

MERINA+CO

December 19, 2022

East County Fire and Rescue
600 NE 267th Ave
Camas, WA 98607

Attn: Mike Carnes, Fire Chief

Dear Mr. Carnes,

Thank you for the opportunity to meet with you on September 30th and attend the Strategic Planning Workshop on December 7th to discuss East County Fire and Rescue's (ECFR) wants and needs related to helping the District develop financial projections and make informed decisions regarding the District's portfolio of facilities. We believe that our experience and skill sets are a solid match with this project and encourage you to let us know if you have any questions about our proposed approach outlined in detail below.

Scope of Work:

Merina+Co (MCO) will prepare an updated financial projection model based on current resource and expenditure trends and patterns to assist the District in capital planning and operational decision-making over the course of a five (5) year period.

MCO will work with ECFR to identify potential financing/funding strategies based on the financial projections and possible facility upgrades and/or new construction alternatives, as identified by ECFR. This modeling will be based on "order of magnitude" cost benchmarks for varying scenarios (cost per square foot) and will be established for the sole purpose of exploring likely financing and funding alternatives available to the District.

Additional expertise and analysis from licensed professionals will be required for more detailed information on actual facility needs and costs. MCO will assist the District in identifying a roadmap for pursuing this additional expertise and analysis, including but not limited to:

- Facility condition data regarding deficiencies and costs for correcting deficiencies,
- Commercial appraisals for buy/sell decisions,
- Future facility needs and locations based on a programming study, etc.

Our approach includes the following tasks:

Task 1: Five (5) Year Financial Projection Model

1. Request and review background data and documentation to establish an initial understanding of resources and expenditures, including:
    a. Current and past years' budget documents
    b. Audited financial statements
    c. Interlocal agreements

d. Capital plan and/or equipment replacement schedule

2. Prepare, discuss, and refine resource and operational expenditure assumptions with ECFR leadership.
3. Develop projections of resources and operational expenditures using an Excel-based financial model.
4. Based on the five-year financial projections, develop a summary of the District's current financial state with respect to current resources and operational expenditures (not including capital projects such as new stations or major remodels).

Deliverable: Completed Five-Year Financial Projections Model and summary of current financial position.

Task 2: Modeling Capital Planning Scenarios

5. Conduct information gathering with ECFR leadership to:
    a. Gather available information regarding current facilities (original cost, accumulated depreciation, current condition, planned maintenance, policies regarding major maintenance and replacement, etc.)
    b. Establish near-term (within the next 5 years) priorities for desired facility-related capital projects and possible alternatives.
6. Prepare, discuss, and revise assumptions for "order of magnitude" cost scenarios* for capital project priorities.

    **Order of magnitude cost scenarios will be prepared for the sole purpose of identifying the financing options available to ECFR for pursuit of capital project priorities within the next five years. These scenarios will not include specific details regarding station deficiencies, programming needs, location, or actual construction cost estimates.*
7. Model order of magnitude cost scenarios within the financial projection model to provide information regarding possible financing and funding alternatives.

Deliverable: Updated Five-Year Financial Projections Model with summary of possible funding/financing options for various capital project scenarios.

Task 3: Roadmap for Pursuing Capital Project Decision-Making

8. Identify next steps for ECFR leadership to identify the necessary expertise, information, and timelines for pursuing various making informed decisions regarding capital project scenarios.
9. Document a high-level roadmap with timelines and possible resource requirements for these next steps.

Deliverable: Roadmap with steps and timelines for gathering necessary information to make informed decisions regarding potential capital projects.

Expected Outcomes:

MCO expects to provide ECFR with an updated five (5) year financial projection model to facilitate high-level decision making regarding financial position and capacity for financing operations and near-term capital project priorities.

Timing and Fees:
We anticipate beginning this engagement in January 2023 with an anticipated project duration of 3 to 6 months, depending on availability of key personnel. To accomplish the above scope of work we propose a not-to-exceed fee of:

- **Task 1:** $12,600
- **Task 2:** $6,000
- **Task 3:** $3,000

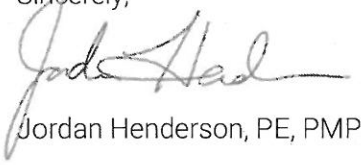
Our standard rates for services are:

- Partner $300/hour
- Managing Consultant $250/hour
- Sr. Consultant $200/hour
- Consultant $150/hour

As your Project Manager, I am authorized to represent our firm and available to answer any potential questions you may have. I can be reached by phone at (503) 510.6628 or email at jhenderson@merina.com.

Our proposal will remain in effect for thirty (30) days after receipt by ECFR.

Sincerely,



Jordan Henderson, PE, PMP | Partner

Financial and Facilities Analysis

"Questions Asked"

- What are the budget projections for the next 5 years (similar to previous, have a neutral person do this)?
  - MCO Response: This would be completed as part of our proposed scope of work.

- What would be required to upgrade Station 93 or Station 94 to make it code compliant as our potential future main station?
  - MCO Response: These questions will need to be answered by an architect, or facility planning professional. This is usually accomplished through:
    - Facility condition assessments (FCAs) which evaluate the condition of each facility and their components as well as identify non-compliant issues. FCAs also provide information on when deficiencies need to be addressed and the possible cost to correct them.
    - Programming studies to identify space needs (square footage), station amenities, and equipment necessary for a future main station.

- ** When would this need to begin? Cost? How long would this take? Would speaking with an architect be beneficial?
  - MCO Response: We can help identify a roadmap for pursuing help from an architect to answer some of these specific questions.

- What are the needs for station 94? Is it time to look at replacement or upgrade, and if not now, when?
  - MCO Response: These questions would need to be addressed by an architect.

- If we consider a sale of Station 91, what is the transition timeline in relation to relocating to another station? Should we consider a temporary lease

during another station upgrade (assuming we use funds from the sale for the upgrade)?

- MCO Response: Some of this comes down to what the actual facility needs are and whether it makes financial sense to sell/build or remodel.

- I would like to see a "road map" or timeline with this information plotted so that we can see how it all fits together.
  - MCO Response: We can help put together a high-level roadmap for answering some of these questions once we have a better understanding of the goals/needs.

- What budget limit does the board want for any consultant we may hire?

EAST COUNTY FIRE & RESCUE

RESOLUTION # 313-01032023

A RESOLUTION PROVIDING FOR THE DISPOSAL OF EQUIPMENT DEEMED TO BE SURPLUS TO THE REASONABLY FORESEEABLE NEEDS OF EAST COUNTY FIRE & RESCUE.

WHEREAS, the equipment (MSA Firehawk SCBA Fleet – Retiring all MSA SCBA equipment) shown in Attachment A and B, belonging to East County Fire & Rescue are not repairable/obsolete and no longer used by the District; and

WHEREAS, the value, not repairable and condition of this equipment makes it impractical to trade the same in on newer equipment;

NOW, THEREFORE, BE IT RESOLVED by the Board of Commissioners of East County Fire & Rescue as follows:

1. Based upon the findings and recommendations of the Fire Chief, this equipment is declared to be surplus to the foreseeable needs of the District.
2. That it is deemed to be for the common benefit of the residents of said District to dispose of this equipment.
3. That the Fire Chief is authorized to dispose of this equipment in a manner that will be to the best advantage of East County Fire & Rescue.

ADOPTED at a Regular Meeting of the Board of Commissioners for East County Fire & Rescue this 3rd day of January, 2023, with the following Commissioners being present and voting:

_____
Chair Person

_____
Commissioner

_____
Commissioner

_____
Commissioner

_____
Commissioner

DISTRICT SEAL:

ATTEST:

_____
District Secretary

East County Fire & Rescue

Property Salvage Report

Tag Number	Description of Asset	Serial Number	Status of Asset – Choose One					Comments
			Lost	Stolen*	Sold	Recycle or Scrap	Returned to Vendor	
See attached	MSA Firehawk SCBA fleet	See attached				✓		Retiring All MSA SCBA equipment

* A copy of the police report and/or a Lost or Stolen Equipment form must be submitted along with this form for stolen items.

Approved: _____
Signature

Surplus Resolution Number 313-01032023

Date: 1/3/22

Attachment A

Record I	Item Number	Item Description	Brand	Model Name
397	0364	Self Contained Breathing App	MSA	FireHawk M7
398	0365	Self Contained Breathing App	MSA	FireHawk M7
399	0366	Self Contained Breathing App	MSA	FireHawk M7
400	0367	Self Contained Breathing App	MSA	FireHawk M7
401	0368	Self Contained Breathing App	MSA	FireHawk M7
402	0369	Self Contained Breathing App	MSA	FireHawk M7
403	0370	Self Contained Breathing App	MSA	FireHawk M7
404	0371	Self Contained Breathing App	MSA	FireHawk M7
405	0372	Self Contained Breathing App	MSA	FireHawk M7
406	0373	Self Contained Breathing App	MSA	FireHawk M7
407	0374	Self Contained Breathing App	MSA	FireHawk M7
408	0375	Self Contained Breathing App	MSA	FireHawk M7
409	0376	Self Contained Breathing App	MSA	FireHawk M7
410	0377	Self Contained Breathing App	MSA	FireHawk M7
411	0378	Self Contained Breathing App	MSA	FireHawk M7
412	0379	Self Contained Breathing App	MSA	FireHawk M7
413	0380	Self Contained Breathing App	MSA	FireHawk M7
414	0381	Self Contained Breathing App	MSA	FireHawk M7
415	0382	Self Contained Breathing App	MSA	FireHawk M7
416	0383	Self Contained Breathing App	MSA	FireHawk M7
417	0384	Self Contained Breathing App	MSA	FireHawk M7
418	0385	Self Contained Breathing App	MSA	FireHawk M7
419	0386	Self Contained Breathing App	MSA	FireHawk M7
420	0387	Self Contained Breathing App	MSA	FireHawk M7
421	0388	Self Contained Breathing App	MSA	FireHawk M7
422	0389	Self Contained Breathing App	MSA	FireHawk M7
423	0390	Self Contained Breathing App	MSA	FireHawk M7
424	0391	Self Contained Breathing App	MSA	FireHawk M7
425	0392	Self Contained Breathing App	MSA	FireHawk M7
426	0393	Self Contained Breathing App	MSA	FireHawk M7
427	0394	Self Contained Breathing App	MSA	FireHawk M7
428	0395	Self Contained Breathing App	MSA	FireHawk M7
429	0396	Self Contained Breathing App	MSA	FireHawk M7
430	0397	Self Contained Breathing App	MSA	FireHawk M7
431	0398	Self Contained Breathing App	MSA	FireHawk M7
432	0399	Self Contained Breathing App	MSA	FireHawk M7
433	0400	Self Contained Breathing App	MSA	FireHawk M7
434	0401	Self Contained Breathing App	MSA	FireHawk M7
435	0402	Self Contained Breathing App	MSA	FireHawk M7
436	0403	Self Contained Breathing App	MSA	FireHawk M7
437	0404	Self Contained Breathing App	MSA	FireHawk M7
438	0405	Self Contained Breathing App	MSA	FireHawk M7
439	0406	Self Contained Breathing App	MSA	FireHawk M7
440	0407	Self Contained Breathing App	MSA	FireHawk M7
441	0408	Self Contained Breathing App	MSA	FireHawk M7
442	0409	Self Contained Breathing App	MSA	FireHawk M7
443	0410	Self Contained Breathing App	MSA	FireHawk M7
444	0411	Self Contained Breathing App	MSA	FireHawk M7
445	BA201	SCBA Mask	MSA	UltraElite
446	BA202	SCBA Mask	MSA	UltraElite
447	BA203	SCBA Mask	MSA	UltraElite
448	BA204	SCBA Mask	MSA	UltraElite
449	BA205	SCBA Mask	MSA	UltraElite
450	BA206	SCBA Mask	MSA	UltraElite
451	BA207	SCBA Mask	MSA	UltraElite
452	BA208	SCBA Mask	MSA	UltraElite

Attachment B

Record	Item Number	Item Description	Brand	Model Name
453	BA209	SCBA Mask	MSA	UltraElite
454	BA210	SCBA Mask	MSA	UltraElite
455	BA211	SCBA Mask	MSA	UltraElite
456	BA212	SCBA Mask	MSA	UltraElite
457	BA213	SCBA Mask	MSA	UltraElite
458	BA214	SCBA Mask	MSA	UltraElite
459	BA215	SCBA Mask	MSA	UltraElite
460	BA216	SCBA Mask	MSA	UltraElite
461	BA217	SCBA Mask	MSA	UltraElite
462	BA218	SCBA Mask	MSA	UltraElite
463	BA219	SCBA Mask	MSA	UltraElite
464	BA220	SCBA Mask	MSA	UltraElite
465	BA221	SCBA Mask	MSA	UltraElite
466	BA222	SCBA Mask	MSA	UltraElite
467	BA223	SCBA Mask	MSA	UltraElite
468	BA224	SCBA Mask	MSA	UltraElite
469	BA225	SCBA Mask	MSA	UltraElite
470	BA226	SCBA Mask	MSA	UltraElite
471	BA227	SCBA Mask	MSA	UltraElite
472	BA228	SCBA Mask	MSA	UltraElite
473	BA229	SCBA Mask	MSA	UltraElite
474	BA230	SCBA Mask	MSA	UltraElite
475	BA231	SCBA Mask	MSA	UltraElite
476	BA232	SCBA Mask	MSA	UltraElite
477	BA233	SCBA Mask	MSA	UltraElite
478	BA234	SCBA Mask	MSA	UltraElite
479	BA235	SCBA Mask	MSA	UltraElite
480	BA236	SCBA Mask	MSA	UltraElite
481	BA237	SCBA Mask	MSA	UltraElite
482	BA238	SCBA Mask	MSA	UltraElite
483	BA239	SCBA Mask	MSA	UltraElite
484	BA240	SCBA Mask	MSA	UltraElite
485	BA241	SCBA Mask	MSA	UltraElite
486	BA242	SCBA Mask	MSA	UltraElite
487	BA243	SCBA Mask	MSA	UltraElite
488	BA244	SCBA Mask	MSA	UltraElite
489	BA245	SCBA Mask	MSA	UltraElite
490	BA246	SCBA Mask	MSA	UltraElite
491	BA247	SCBA Mask	MSA	UltraElite
492	BA248	SCBA Mask	MSA	UltraElite
493	BA249	SCBA Mask	MSA	UltraElite
494	BA250	SCBA Mask	MSA	UltraElite
495	BA251	SCBA Mask	MSA	UltraElite
496	BA101	SCBA Cylinder	MSA	Stealth Carbon Wrapped
497	BA102	SCBA Cylinder	MSA	Stealth Carbon Wrapped
498	BA103	SCBA Cylinder	MSA	Stealth Carbon Wrapped
499	BA104	SCBA Cylinder	MSA	Stealth Carbon Wrapped
500	BA105	SCBA Cylinder	MSA	Stealth Carbon Wrapped
501	BA106	SCBA Cylinder	MSA	Stealth Carbon Wrapped
502	BA107	SCBA Cylinder	MSA	Stealth Carbon Wrapped
503	BA108	SCBA Cylinder	MSA	Stealth Carbon Wrapped
504	BA109	SCBA Cylinder	MSA	Stealth Carbon Wrapped
505	BA110	SCBA Cylinder	MSA	Stealth Carbon Wrapped
506	BA111	SCBA Cylinder	MSA	Stealth Carbon Wrapped
507	BA112	SCBA Cylinder	MSA	Stealth Carbon Wrapped
508	BA113	SCBA Cylinder	MSA	Stealth Carbon Wrapped

Record	Item Number	Item Description	Brand	Model Name
509	BA114	SCBA Cylinder	MSA	Stealth Carbon Wrapped
510	BA115	SCBA Cylinder	MSA	Stealth Carbon Wrapped
511	BA116	SCBA Cylinder	MSA	Stealth Carbon Wrapped
512	BA117	SCBA Cylinder	MSA	Stealth Carbon Wrapped
513	BA118	SCBA Cylinder	MSA	Stealth Carbon Wrapped
514	BA119	SCBA Cylinder	MSA	Stealth Carbon Wrapped
515	BA120	SCBA Cylinder	MSA	Stealth Carbon Wrapped
516	BA121	SCBA Cylinder	MSA	Stealth Carbon Wrapped
517	BA122	SCBA Cylinder	MSA	Stealth Carbon Wrapped
518	BA123	SCBA Cylinder	MSA	Stealth Carbon Wrapped
519	BA124	SCBA Cylinder	MSA	Stealth Carbon Wrapped
520	BA125	SCBA Cylinder	MSA	Stealth Carbon Wrapped
521	BA126	SCBA Cylinder	MSA	Stealth Carbon Wrapped
522	BA127	SCBA Cylinder	MSA	Stealth Carbon Wrapped
523	BA128	SCBA Cylinder	MSA	Stealth Carbon Wrapped
524	BA129	SCBA Cylinder	MSA	Stealth Carbon Wrapped
525	BA130	SCBA Cylinder	MSA	Stealth Carbon Wrapped
526	BA131	SCBA Cylinder	MSA	Stealth Carbon Wrapped
527	BA132	SCBA Cylinder	MSA	Stealth Carbon Wrapped
528	BA133	SCBA Cylinder	MSA	Stealth Carbon Wrapped
529	BA134	SCBA Cylinder	MSA	Stealth Carbon Wrapped
530	BA135	SCBA Cylinder	MSA	Stealth Carbon Wrapped
531	BA136	SCBA Cylinder	MSA	Stealth Carbon Wrapped
532	BA137	SCBA Cylinder	MSA	Stealth Carbon Wrapped
533	BA138	SCBA Cylinder	MSA	Stealth Carbon Wrapped
534	BA139	SCBA Cylinder	MSA	Stealth Carbon Wrapped
535	BA140	SCBA Cylinder	MSA	Stealth Carbon Wrapped
536	BA141	SCBA Cylinder	MSA	Stealth Carbon Wrapped
537	BA142	SCBA Cylinder	MSA	Stealth Carbon Wrapped
538	BA143	SCBA Cylinder	MSA	Stealth Carbon Wrapped
539	BA144	SCBA Cylinder	MSA	Stealth Carbon Wrapped
540	BA145	SCBA Cylinder	MSA	Stealth Carbon Wrapped
541	BA146	SCBA Cylinder	MSA	Stealth Carbon Wrapped
542	BA147	SCBA Cylinder	MSA	Stealth Carbon Wrapped
543	BA148	SCBA Cylinder	MSA	Stealth Carbon Wrapped
544	BA149	SCBA Cylinder	MSA	Stealth Carbon Wrapped
545	BA150	SCBA Cylinder	MSA	Stealth Carbon Wrapped
546	BA151	SCBA Cylinder	MSA	Stealth Carbon Wrapped
547	BA152	SCBA Cylinder	MSA	Stealth Carbon Wrapped
548	BA153	SCBA Cylinder	MSA	Stealth Carbon Wrapped
549	BA154	SCBA Cylinder	MSA	Stealth Carbon Wrapped
550	BA155	SCBA Cylinder	MSA	Stealth Carbon Wrapped
551	BA156	SCBA Cylinder	MSA	Stealth Carbon Wrapped
552	BA157	SCBA Cylinder	MSA	Stealth Carbon Wrapped
553	BA158	SCBA Cylinder	MSA	Stealth Carbon Wrapped
554	BA159	SCBA Cylinder	MSA	Stealth Carbon Wrapped
555	BA160	SCBA Cylinder	MSA	Stealth Carbon Wrapped
556	BA161	SCBA Cylinder	MSA	Stealth Carbon Wrapped
557	BA162	SCBA Cylinder	MSA	Stealth Carbon Wrapped
558	BA163	SCBA Cylinder	MSA	Stealth Carbon Wrapped
559	BA164	SCBA Cylinder	MSA	Stealth Carbon Wrapped
560	BA165	SCBA Cylinder	MSA	Stealth Carbon Wrapped
561	BA166	SCBA Cylinder	MSA	Stealth Carbon Wrapped
562	BA167	SCBA Cylinder	MSA	Stealth Carbon Wrapped
563	BA168	SCBA Cylinder	MSA	Stealth Carbon Wrapped
564	BA169	SCBA Cylinder	MSA	Stealth Carbon Wrapped

Record I	Item Number	Item Description	Brand	Model Name
565	BA170	SCBA Cylinder	MSA	Stealth Carbon Wrapped
566	BA171	SCBA Cylinder	MSA	Stealth Carbon Wrapped
567	BA172	SCBA Cylinder	MSA	Stealth Carbon Wrapped
568	BA173	SCBA Cylinder	MSA	Stealth Carbon Wrapped
569	BA174	SCBA Cylinder	MSA	Stealth Carbon Wrapped
570	BA175	SCBA Cylinder	MSA	Stealth Carbon Wrapped
572	BA176	SCBA Cylinder	MSA	Stealth Carbon Wrapped
573	BA177	SCBA Cylinder	MSA	Stealth Carbon Wrapped
574	BA178	SCBA Cylinder	MSA	Stealth Carbon Wrapped
575	BA179	SCBA Cylinder	MSA	Stealth Carbon Wrapped
576	BA180	SCBA Cylinder	MSA	Stealth Carbon Wrapped
577	BA181	SCBA Cylinder	MSA	Stealth Carbon Wrapped
578	BA182	SCBA Cylinder	MSA	Stealth Carbon Wrapped
579	BA183	SCBA Cylinder	MSA	Stealth Carbon Wrapped
580	BA184	SCBA Cylinder	MSA	Stealth Carbon Wrapped
581	BA185	SCBA Cylinder	MSA	Stealth Carbon Wrapped
582	BA186	SCBA Cylinder	MSA	Stealth Carbon Wrapped
583	BA187	SCBA Cylinder	MSA	Stealth Carbon Wrapped
584	BA188	SCBA Cylinder	MSA	Stealth Carbon Wrapped
585	BA189	SCBA Cylinder	MSA	Stealth Carbon Wrapped
586	BA190	SCBA Cylinder	MSA	Stealth Carbon Wrapped
587	BA191	SCBA Cylinder	MSA	Stealth Carbon Wrapped
588	BA192	SCBA Cylinder	MSA	Stealth Carbon Wrapped
589	BA193	SCBA Cylinder	MSA	Stealth Carbon Wrapped
590	BA194	SCBA Cylinder	MSA	Stealth Carbon Wrapped
591	BA195	SCBA Cylinder	MSA	Stealth Carbon Wrapped
592	BA196	SCBA Cylinder	MSA	Stealth Carbon Wrapped
593	BA197	SCBA Cylinder	MSA	Stealth Carbon Wrapped
602	BA252	SCBA Mask	MSA	UltraElite
603	BA253	SCBA Mask	MSA	UltraElite
604	BA254	SCBA Mask	MSA	UltraElite
605	BA255	SCBA Mask	MSA	UltraElite
606	BA256	SCBA Mask	MSA	UltraElite
607	BA257	SCBA Mask	MSA	UltraElite
608	BA259	SCBA Mask	MSA	UltraElite
609	BA260	SCBA Mask	MSA	UltraElite
610	BA258	SCBA Mask	MSA	UltraElite
611	BA261	SCBA Mask	MSA	UltraElite
667	CCFD1-0019	SCBA Cylinder	MSA	Stealth
671	CCFD1-0024	Amplified Mask	MSA	Ultra Elite
772	CCFD1-0142	Airpack	MSA	
773	CCFD1-0143	SCBA Cylinder	MSA	Stealth
785	CCFD1-0155	Airpack	MSA	
851	CCFD1-0226	RIT Kit	MSA	
971	0496	Thermal Imaging Camera	MSA	Evolution 5200
972	0177	Thermal Imaging Camera	MSA	Evolution 5200
995	0178	Thermal Imaging Camera	MSA	Evolution 5200
1073	BA262	SCBA Mask	MSA	UltraElite
1074	BA263	SCBA Mask	MSA	UltraElite
1195	BA264	SCBA Mask	MSA	UltraElite
1297	BA265	SCBA Mask	MSA	UltraElite

Jan 2023 - East County Fire & Rescue

Sun	Mon	Tue	Wed	Thur	Fri	Sat
Jan 1 C SHIFT	2 A SHIFT	3 B SHIFT **Events** Commissioner Meetir 18:30 - 21:00 Station 91	4 C SHIFT **Events** Strategic Planning Me 15:00 - 16:30 Station 91	5 A SHIFT	6 B SHIFT	7 C SHIFT **Events** Ammeter View HOA 13:45 - 16:15 Station 93
8 A SHIFT	9 B SHIFT	10 C SHIFT	11 A SHIFT	12 B SHIFT	13 C SHIFT	14 A SHIFT
15 B SHIFT	16 C SHIFT	17 A SHIFT **Events** Commissioner Meetir 18:30 - 21:00 Station 91	18 B SHIFT	19 C SHIFT	20 A SHIFT	21 B SHIFT
22 C SHIFT	23 A SHIFT	24 B SHIFT	25 C SHIFT	26 A SHIFT	27 B SHIFT	28 C SHIFT
29 A SHIFT	30 B SHIFT	31 C SHIFT				

*** Indicates time starts on following calendar day**
*** Events and Time Off follow default Split Time of Day of 07:00**