

veriDART™: Quick Start Training Guide for Dilution Test Project Plans



Plan

A comprehensive test plan is designed for your floor plan, HVAC system, and risk factors.



Spray

Qualified professionals release patented airborne tracers throughout the building.



Circulate

Airborne tracers disperse through building spaces and air ducting.



Sample

Air or surface samples are collected and tested for selected points throughout the building.



Results

A diagnostic report provides heat maps and analysis, enabling customers to plan air safety improvements.

January 2021

v2

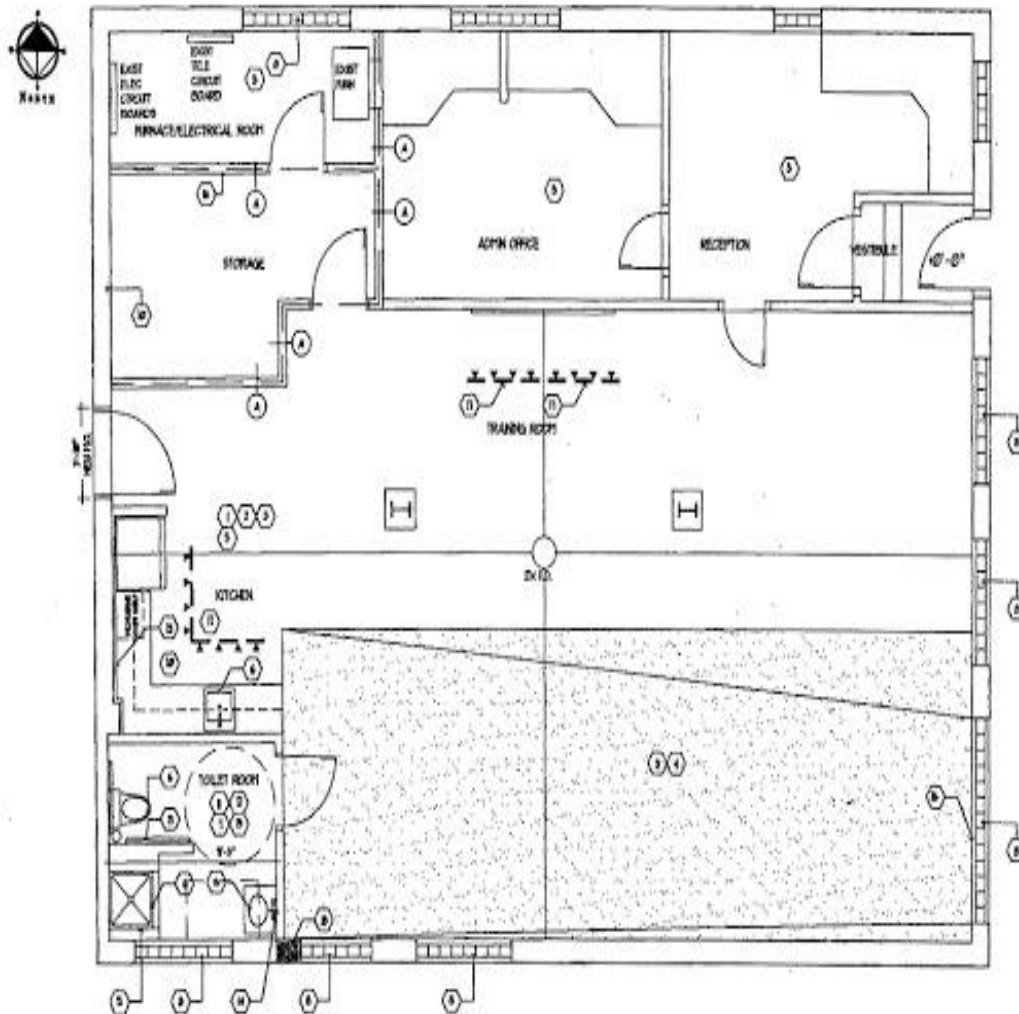


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1. Create the Project Plan for a Dilution Test

Obtain the Facility Map



Describe the Scenario

Definitions

Scenario: The test conditions.

(Ex., Normal HVAC Settings, Changed HVAC Settings, With HEPA-Filter, W/O HEPA-Filter, etc.)

Use the Facility Map to Select and Pinpoint 4 Origin Points

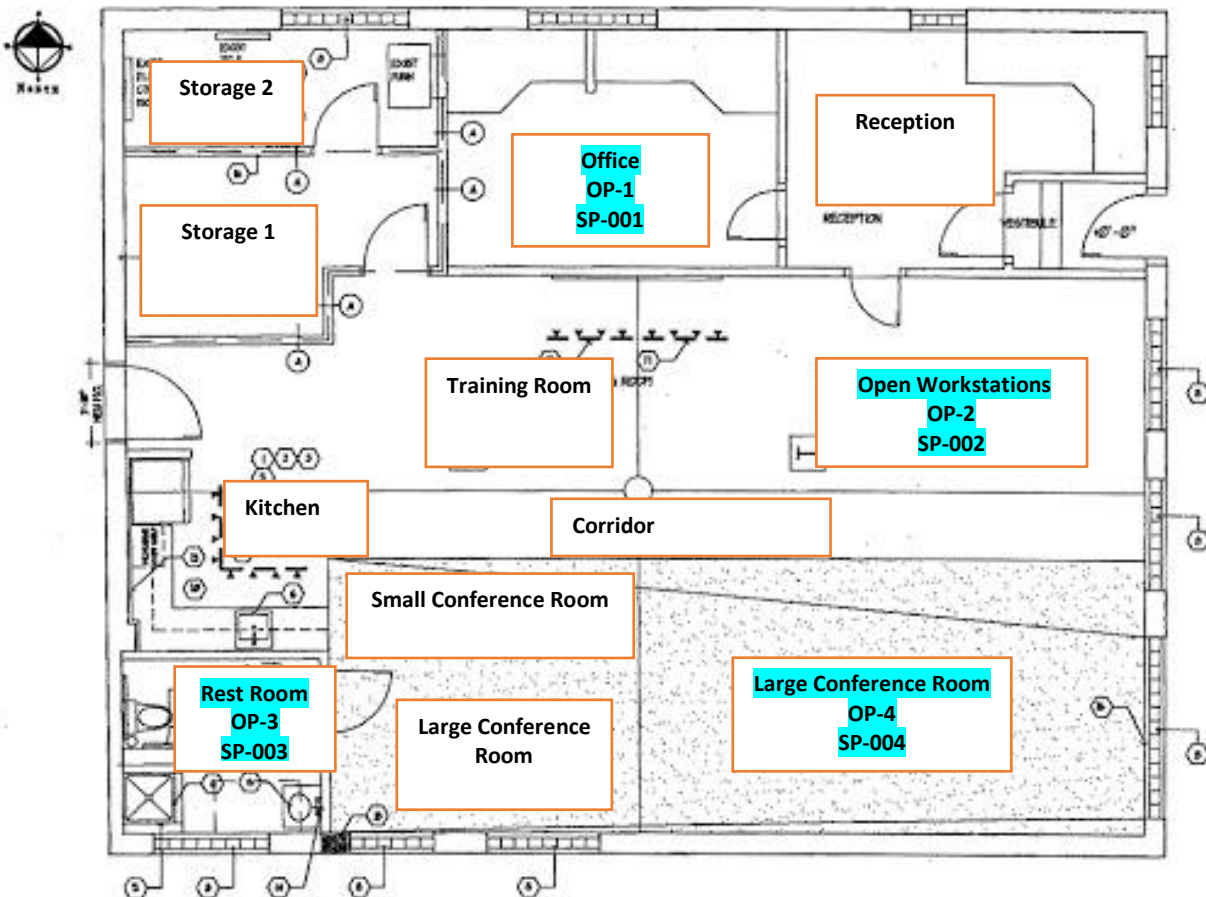
Definitions

Origin Point: The location that the Tag solution is released.
(OP-1 to OP-4)

Use the Facility Map to Select and Pinpoint 4 Sample Points

Definitions

Sample Point: The location where the air sampler pump collects the sample.
(SP-001 to SP-004)



Create the Project Plan Overview

Definitions

Origin Point Tag: The unique DNA Sequence released at each Origin Point.
(C1-C8)

Intervals: The number of samples taken at a Sample Point.

Sample Number: The unique number assigned to each sample.

1. **What is the Test Name?** Dilution
2. **What is the Test Number?** 1
3. **How many Scenario(s)?** 2
4. **What are the Scenarios?** S1: HEPA Filter Off; S2: HEPA Filter On
5. **How many Origin Points in the plan? (4)** OP-1, OP-2, OP-3, OP-4
6. **What Origin Point Tags will be used? (C1-C8)** C1, C2, C3, C4, C5, C6, C7, C8
7. **How many Sample Points in the plan? (4)** SP-001, SP-002, SP-003, SP-004
8. **How many Intervals at each Sample Point?** 3
9. **What is the Interval Duration in minutes?** 0-10 min, 10-20 min, 20-30 min
10. **What is the total number of samples in the plan?** 24
11. **What are the Sample Numbers?** SN-001, SN-002, SN-003, SN-004, SN-005, SN-006, SN-007, SN-008, SN-009, SN-010, SN-011, SN-012, SN-013, SN-014, SN-015, SN-016, SN-017, SN-018, SN-019, SN-020, SN-021, SN-022, SN-023, SN-024

Document Project Plan Overview

Test Name ¹	Test Number ²	Scenarios ³	OP Count ⁵	OP Tag ⁶	Tag Lot Number(s)
Dilution	1	2	4	C1-C8	See Tag Label
SP Count ⁷	Interval Count ⁸	Interval Duration ⁹	Sample Count ¹⁰	Sample Number Starts ¹¹	Sample Number Ends ¹¹
4	3	10 min	24	SN-001	SN-024



Test #1 Scenario 1 (HEPA Filter Off) and OP Information

Test	Scenario	OP**	OP Name	OP Tag	Tag Lot #
1	1	OP-1	Office	C1	See Tag Label
1	1	OP-2	Open Workstations	C2	See Tag Label
1	1	OP-3	Restroom	C3	See Tag Label
1	1	OP-4	Large Conference Room	C4	See Tag Label

Test #1 Scenario 1 (HEPA Filter Off) and SP Information

Airflow L/min	SP Count	Interval Count (I)	Sample Count	Interval Duration	Interval Times
2.5	4	3	12	10 min	0-10 min, 10-20 min, 20-30 min

Scenario	Sample** Point	Sample Point Name	I1	I2	I3
1	SP-001	Office	SN-001	SN-002	SN-003
1	SP-002	Open Workstations	SN-004	SN-005	SN-006
1	SP-003	Restroom	SN-007	SN-008	SN-009
1	SP-004	Large Conference Room	SN-010	SN-011	SN-012

**OP Tags are typically used in multiples of eight and Sample Numbers are typically multiples of 12 which allows 96 tests to be completed at one time.

Test #1 Scenario 2 (HEPA Filter On) and OP Information

Test	Scenario	OP	OP Name	OP Tag	Tag Lot #
1	2	OP-1	Office	C5	See Tag Label
1	2	OP-2	Open Workstations	C6	See Tag Label
1	2	OP-3	Restroom	C7	See Tag Label
1	2	OP-4	Large Conference Room	C8	See Tag Label

Test #1 Scenario 2 (HEPA Filter On) and SP Information

Airflow L/min	SP Count	Interval Count (I)	Sample Count	Interval Duration	Interval Times
2.5	4	3	12	10 min	0-10 min, 10-20 min, 20-30 min

Scenario	Sample Point	Sample Point Name	I1	I2	I3
2	SP-001	Office	SN-013	SN-014	SN-015
2	SP-002	Open Workstations	SN-016	SN-017	SN-018
2	SP-003	Restroom	SN-019	SN-020	SN-021
2	SP-004	Large Conference Room	SN-022	SN-023	SN-024

2. Determine What Equipment is Needed to Complete the Project Plan

Equipment	Quantity
Labeled Bucko Sprayers with Tags (C1-C8) (A1-A2)	8 (20 ml Each)
Air Sample Pumps (2.5 L/min)	12
Cassette, 25mm, 3 Piece, Clear Styrene	24
Grade A-E Glass Microfiber Filter Media 2.5 cm Diameter	24
Labels (Origin Points, Sample Points and Samples)	4OP/4SP/SN: 001-024



2.5 L/Min



Filter & Cassette



Spray Bucko with Tag-A01



OP, SP and Sample Labels

Complete the Materials and Equipment Needs Checklist

Tagging System			
Item	Need	Confirmed	Checked By
Labeled Tag Spray Bottles	C1-C8	Yes	MC
Labeled Tag Spray Bottles	A1-A2	Yes	MC
SDS	1	Yes	MC
Air Sample Pumps			
Air Sample Pumps	14	Yes	MC
Energy Supply			
AA Batteries (3 each pump)	48	Yes	MC
Laboratory Materials			
Filters	24	Yes	MC
Filter Cassettes	24	Yes	MC
Filter Caps (Red) and Bottoms (Blue)	24 Each	Yes	MC
Ziplock Bags for Samples (Large)	Box	Yes	MC
Cleaning Supplies			
Clean Gloves Large (Size Depends)	Box	Yes	MC
Chlorine Bleach Wipes	Bottle	Yes	MC
Printed Materials			
Clean Floor Plans	4	Yes	MC
Annotated Floor Plan	4	Yes	MC
Data Collection Form	4	Yes	MC
Materials and Equipment Checklist	1	Yes	MC
QC Checklist	1	Yes	MC
Chain of Custody Form	1	Yes	MC
Origin Point Labels	4	Yes	MC
Sample Point Labels	4	Yes	MC
Sample Number Labels	24	Yes	MC
Extra Set of OP/SP/SN Labels	1 Set Each	Yes	MC
Office Supplies			
Sharpies	2	Yes	MC
Pens	TBD	Yes	MC
Post-it-Notes	1 Pack	Yes	MC
Face Masks	TBD	Yes	MC
Clip Board(s)	TBD	Yes	MC

3. Origin Point Station Set-Up



Labeled Bucko Sprayer with Tag Solution must be placed at each Origin Point



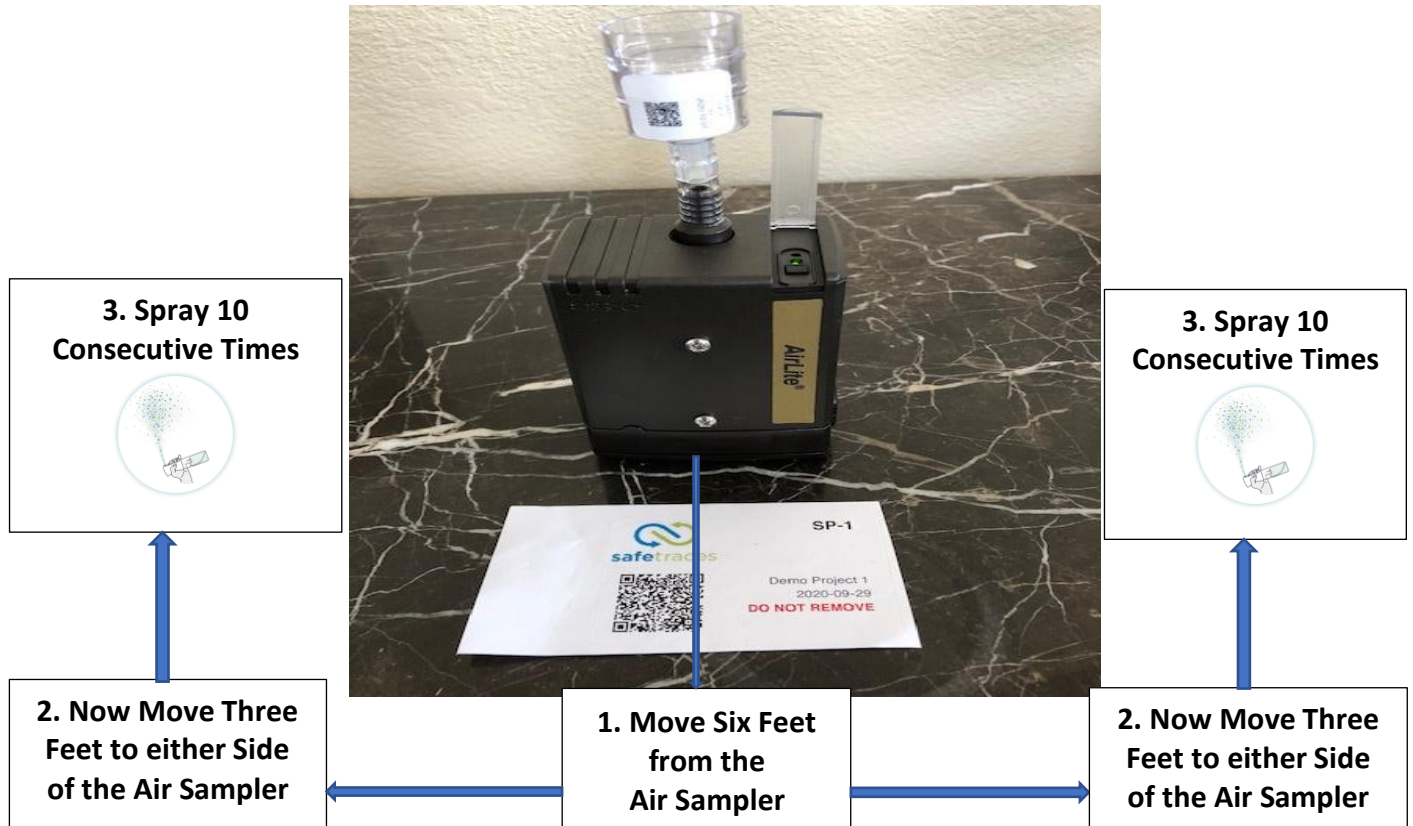
Origin Point Station Set-Up

4. Sample Point Station Set-Up for Dilution Test



Sample Point Set-Up
Note: Air Pump 1 (0-10 min) does not have a Cassette Top.
Cassette Tops are on Air Pump 2 (10-20 min)
and Air Pump 3 (20-30 min)

5. Tag Release Technique



Technical Information Questions and Answers

1. Why do we spray the tracers 10 times/OP?

Answer: During development we found the signal improved over longer distances by doing this. We get a ~4 log spread over ~80' this way. It is roughly equivalent to sneezing 10x times.

2. Why is the total release volume 10-12 ml important?

Answer: This is the same as 10x trigger pulls.

3. Why is the first Sample Point approximately 6 ft away and 3 ft to the side of the Origin Point?

Answer: This is somewhat arbitrary. Helps to keep airflow from drifting over the air sampler pumps as well as preventing saturation of the filters.

4. What is the most important consideration when determining release direction at different Origin Points?

Answer: Wind direction. You should avoid drifting the cloud over the air samplers and yourself.

6. Sample Collection for Filter Cassettes



Turn Air Sampler Pump Off



Place Cassette Top on Sample Cassette



Plug the top cap with the Red Plug and bottom with the Blue Plug



Complete the QC Checklist

Project Name: Dilution Test

Facility Name: Davis Office

Address: 123 - 4th St. Anyplace, CA 12345

Date of Samples: Jan. 4th, 2021

Total Number of Samples: 24

Completed by (Print): Steve Johnson

Send Copy with COC and Samples

Compare and verify sample quantity, locations, labels and integrity at each Sample Point.

Sample Point	Sample Number	Sample Number	Sample Point Location	Sampled By	Verified By	Comments
SP-001	SN-001	SN-013	Office	VE	SJ	
SP-001	SN-002	SN-014	Office	VE	SJ	
SP-001	SN-003	SN-015	Office	VE	SJ	
SP-002	SN-004	SN-016	Open Workstations	VE	SJ	No Filter SN-004
SP-002	SN-005	SN-017	Open Workstations	LC	SJ	
SP-002	SN-006	SN-018	Open Workstations	LC	SJ	
SP-003	SN-007	SN-019	Restroom	LC	SJ	
SP-003	SN-008	SN-020	Restroom	LC	SJ	Pump Stopped SN-008
SP-003	SN-009	SN-021	Restroom	DH	SJ	
SP-004	SN-010	SN-022	Large Conference Room	DH	SJ	
SP-004	SN-011	SN-023	Large Conference Room	DH	SJ	
SP-004	SN-012	SN-024	Large Conference Room	DH	SJ	



Complete the Chain of Custody

Ship To: SGS Laboratory

Attn: Laboratory

Shipped By: UPS, Fed-Ex, USPS, Other:

Shipping/Tracking Number:

Phone:

Lab Contact:

QC Checklist Attached: Yes

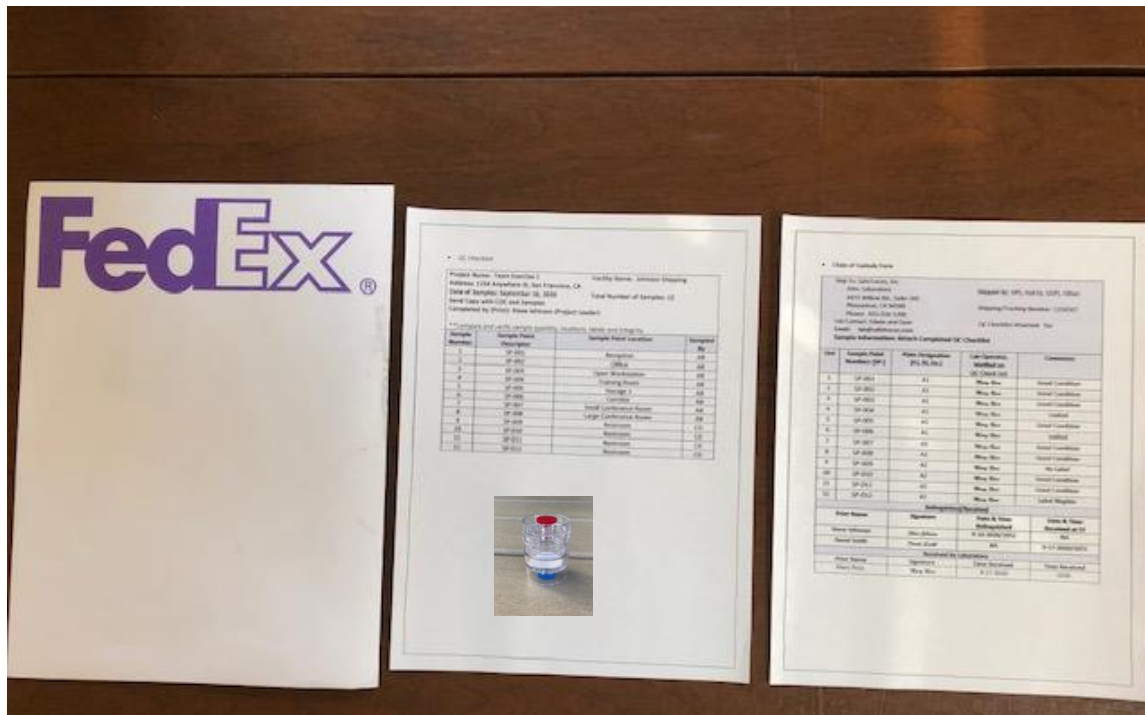
Email:

Sample Information: Attach Completed QC Checklist

Line	Sample Number	Plate Designation (A, B, C)	QC Check List Verifier	Comments
1	SN-001	C	SJ	
2	SN-002	C	SJ	
3	SN-003	C	SJ	
4	SN-004	C	SJ	No Filter
5	SN-005	C	SJ	
6	SN-006	C	SJ	
7	SN-007	C	SJ	
8	SN-008	C	SJ	Pump Stopped
9	SN-009	C	SJ	
10	SN-010	C	SJ	
11	SN-011	C	SJ	
12	SN-012	C	SJ	
13	SN-013	C	SJ	
14	SN-014	C	SJ	
15	SN-015	C	SJ	
16	SN-016	C	SJ	
17	SN-017	C	SJ	
18	SN-018	C	SJ	
19	SN-019	C	SJ	
20	SN-020	C	SJ	
21	SN-021	C	SJ	
22	SN-022	C	SJ	
23	SN-023	C	SJ	
24	SN-024	C	SJ	

Relinquished/Received at SafeTraces By			
Print Name	Signature	Date & Time Relinquished	Date & Time Received
Steve Johnson	Steve Johnson	1-4-2021 @ 1645	NA
Cindy Hayes	Cindy Hayes	NA	1-5-2021 @ 1218
Received at Laboratory By			
Print Name	Signature	Date Received	Time Received
Mary Stevens	Mary Stevens	1-5-2021	1300

7. Shipping Samples



1. Correct Address Label on Envelope
2. Completed Copy of QC Checklist in Envelope
3. Completed Copy of Chain of Custody in Envelope
4. Samples and Data Collection Information in Envelope