

PLAN

Maintenance and Monitoring Plan

Cessna Aircraft Company

Former GA1 Facility

VRP1460391735

Columbus, Muscogee County, Georgia



Cessna Aircraft Company

April 5, 2022

**CDM
Smith**

Table of Contents

Section 1 Introduction.....	1-1
1.1 Risk Reduction Standards.....	1-1
1.2 Property Use Limitations	1-2
Section 2 Environmental Background.....	2-1
2.1 Property Description.....	2-1
2.2 Subsurface Conditions	2-1
2.3 Soil Corrective Action.....	2-2
2.4 Groundwater Corrective Action.....	2-3
Section 3 SVE System O&M	3-1
3.1 SVE System Maintenance	3-1
3.2 SVE System Monitoring Requirement	3-2
3.2.1 SVE System Sample Collection	3-2
3.2.2 Indoor Air Sample Collection.....	3-3
3.2.3 Analyses	3-3
3.3 SVE System Deactivation	3-3
Section 4 Groundwater System O&M	4-1
4.1 Groundwater System Maintenance.....	4-2
4.2 Groundwater Monitoring Requirement.....	4-2
4.2.1 Sample Collection	4-2
4.2.2 Laboratory Analyses & Data Collection	4-3
4.3 Groundwater System Deactivation	4-3
Section 5 Compliance with Limitations	5-1
5.1 Site-Wide Limitations	5-1
5.2 Groundwater.....	5-1
5.3 Soil Restricted Use Zone	5-2
5.4 Annual Inspection and Reporting.....	5-2

List of Figures

- Figure 2-1 Site Location
- Figure 2-2 Surrounding Properties
- Figure 2-3 Site Features
- Figure 2-4 Well Location Map
- Figure 2-5 SVE System

List of Tables

- Table 1-1 2016 Soil Risk Reduction Standards
- Table 1-2 2016 Groundwater Risk Reduction Standards
- Table 1-3 Target Indoor Air Concentrations
- Table 4-1 Groundwater Analyses & Data Collection

Attachments

- Attachment A Environmental Covenant
- Attachment B SVE System Components
- Attachment C Annual Report Template

Acronyms / Abbreviations

ACT	Uniform Environmental Covenants Act, O.C.G.A § 44-16-1
bls	below land surface
Cessna	Cessna Aircraft Company
CSR	Compliance Status Report
DCE	Dichloroethene
EC	Environmental Covenant
EPD	Environmental Protection Division
Ft	Foot/feet
Kemira	Kemira Chemicals, Inc.
M&MP	Monitoring and Maintenance Plan
NS	Norfolk Southern Corporation
O&M	Operation and maintenance
Property	Former GA1 facility
PVC	Polyvinyl chloride
RRS	Risk Reduction Standard
Rules	Georgia Chapter 391-3-19 Rules for Hazardous Site Response
RUZ	Restricted Use Zone
SVE	Soil vapor extraction
Textron	Textron Inc.
TIAC	Target Indoor Air Concentration
UIC	Underground Injection Control
VOC	Volatile organic compound
VRP	Voluntary Remediation Program

Section 1

Introduction

This Monitoring and Maintenance Plan (M&MP) has been prepared by CDM Smith for the Cessna Aircraft Company (Cessna) Former GA1 facility (Property) located in Columbus, Georgia. The Georgia Environmental Protection Division (EPD) accepted this site into the Voluntary Remediation Program (VRP) in 2016 in response to volatile organic compounds (VOCs) discovered in soil and groundwater at the Property. The site is identified as VRP1460391735 and is not listed on the Hazardous Site Inventory.

Cessna has completed corrective action for the Property and submitted a Compliance Status Report (CSR) to EPD on June 28, 2021. The CSR certifies that the Property is in compliance with applicable Risk Reduction Standards (RRSs) and can be viewed by accessing the Georgia EPD Online System at the link provided below.

[StreamDoc.ashx \(georgia.gov\)](#)

The CSR describes the corrective actions taken at the Property and summarizes the environmental status and results of the corrective actions. The CSR also includes Cessna's Certification of Compliance with the Type 5 RRSs in accordance with Georgia's Chapter 391-3-19 Rules for Hazardous Site Response (Rules). The compliance with the Type 5 RRSs means that an Environmental Covenant (EC) is required between Cessna and EPD and ongoing monitoring and maintenance is required for ongoing compliance. An EC is authorized by the Georgia Uniform Environmental Covenants Act, O.C.G.A § 44-16-1.

This M&MP describes the ongoing requirements that are required under the EC. A copy of the EC is included in **Attachment A** of this M&MP. The RRSs applicable to the Property are described below followed by a listing of the Property use limitations that are in the EC. Section 2 of this M&MP describes the environmental background for the Property. Section 3 and Section 4 describe the existing soil and groundwater remediation systems, respectively, and the ongoing monitoring and maintenance requirements for these systems. Section 5 identifies the ongoing requirements with the site-wide use limitations and the specific limitations applicable to the Soil Restricted Use Zone (RUZ).

1.1 Risk Reduction Standards

RRSs were established for the Property beginning in 2016 and are applicable to onsite locations using non-residential criteria and for offsite locations using residential criteria. The RRSs are applicable to select VOCs in soil and groundwater plus select metals in groundwater. The soil RRSs are summarized in **Table 1-1** and the groundwater RRSs are summarized in **Table 1-2**. RRSs are not directly applicable to indoor air but EPD recognizes the Target Indoor Air Concentrations (TIACs) as appropriate indoor air standards for the protection of human health. The TIACs are listed in **Table 1-3**.

The Property is currently complying with Type 5 RRSs for soil and groundwater that require the use of engineering and institutional controls that will be maintained by the implementation of the MMP and the EC.

1.2 Property Use Limitations

The EC identifies the 4 property use limitations listed below.

1. The Property shall be used only as non-residential property as defined in Section 391-3-19-.02(2)(i) of the Rules. Use of the Property as residential property, as defined in Rule 391-3-19-.02(2)(r), is prohibited.
2. The use or extraction of groundwater beneath the Property for drinking water or for any other non-remedial purposes shall be prohibited.
3. Any activity on the Property that may result in the release or exposure to the regulated substances that were contained as part as part of the Corrective Action, or create a new exposure pathway, is prohibited.
4. A RUZ for soil shall apply to the area shown in Exhibit B1 of the EC. The RUZ activity and use limitations apply to all soil within the RUZ that is beneath the warehouse floor slab and soil on the exterior of the warehouse at a depth of 5 feet (ft) below land surface or greater and below an elevation of 307 ft North American Vertical Datum 1988. The activity and use limitations for the RUZ are listed below.
 - a. Any intrusive construction activities within the RUZ will require a worker health and safety plan and a contaminated soil/debris management plan. These plans will be provided to EPD prior to initiating the construction work.
 - b. Soil removal from the RUZ shall be prohibited, except that soil may be transported to an appropriately permitted waste disposal facility with prior facility notification of soil conditions and prior acceptance by the facility.
 - c. The integrity of the warehouse concrete slab within the RUZ shall be maintained in its current condition or better to prevent occupants from contacting sub-slab materials and to minimize the potential for sub-slab vapors to enter the warehouse.

The EC also requires that an annual report be submitted to EPD that includes the Property owner's certification that the Property is complying with the use limitations. These reports will be submitted to EPD's Response and Remediation Program until Cessna is told to do otherwise by EPD. The annual report is described in Section 5.

Section 2

Environmental Background

The Property description, environmental setting, and a summary of the soil and groundwater corrective actions are provided below. Additional details concerning this information are provided in the CSR identified in Section 1.

2.1 Property Description

GA1 is a former Cessna facility located on Cargo Drive in Columbus, Georgia (**Figure 2-1**). The facility was built in 1982 and it was used to fabricate and assemble aviation parts until 2010. The former facility was leased for use as a warehouse from 2014 until 2020 and is currently unoccupied and is on the market for sale or lease. Pertinent property data are provided below.

Parcel ID No.: 112 003 002
Street Address: 4800 Cargo Drive
Columbus, Georgia 31907

Cessna is the sole Fee Simple Owner of the Property. Cessna is a subsidiary of Textron Inc. (Textron) and Textron has implemented the environmental response actions at the Property since 2014. The Property is zoned light industrial/manufacturing and is bordered by Cargo Drive to the west and a Norfolk Southern Corporation (NS) railroad to the immediate south (**Figure 2-2**). Beyond the NS railroad to the south is Kemira Chemicals, Inc. (Kemira). McCauley Propeller Systems manufacturing facility is north of the Property and this business is also a Textron subsidiary. A warehouse currently occupied by a Panasonic distribution center is also north of the Property. The two properties east of the site are owned and occupied by Kysor Warren and used for manufacturing and warehousing.

The former GA1 facility consisted of a manufacturing building, chemical storage building, and a parts storage building (**Figure 2-3**). The GA1 manufacturing building previously housed machinery workstations, a vapor degreaser, a wastewater treatment unit, and a metal plating area. The vapor degreaser and metal plating operations had concrete containment pits. The vapor degreaser used trichloroethene (TCE) and was concluded to be the source of VOCs released to soil and groundwater. The vapor degreaser was decommissioned in 2010. During decommissioning, all solvent was removed along with the secondary containment pit, which was cleaned and backfilled with concrete.

2.2 Subsurface Conditions

The subsurface conditions beneath the Property have been characterized by CDM Smith through investigation soil borings and well installation efforts. **Figure 2-4** shows the locations of existing wells on the Property. CDM Smith has identified three zones of hydrogeologic interest at the site, as summarized below.

- Unit A - Unconsolidated Coastal Plain Sediments and Recent Alluvium. This unit is present beneath the building and extends off site to the south. The upper 20-25 ft

consists of interbedded sand, silty sand, and silty clay. The lower portion of Unit A is permeable sand and permeable sand and gravel to a depth of approximately 30-35 ft below land surface (bls). The water table is at a depth of approximately 17-20 ft bls near the warehouse and from 5-7 ft bls downgradient and on the railroad property because the land surface elevation drops from approximately 312 ft down to 300 ft, as shown on Figure 2-1.

- Unit B - Piedmont Saprolite. Unit B is below Unit A and encountered at depths ranging from approximately 30-35 ft bls and ranges from less than 1 ft up to 15 ft thick. Although water bearing, Unit B is primarily silt and has a lower permeability than Unit A. An upward hydraulic gradient typically exists from Unit B into Unit A.
- Unit C - Piedmont Biotite Gneiss Bedrock. The bedrock depth ranges from approximately 30 ft to 45 ft bls. One monitoring well has been completed into bedrock, and the rock was dense biotite gneiss with few fractures. The water level in this well was considerably deeper than the water levels in Unit A and Unit B.

Groundwater in Units A and B was subject to the VOC release in the vicinity of the former vapor degreaser. The groundwater flow was to the southeast and VOCs were present along a path from the former vapor degreaser down to MW-5A/B and MW-7A and MA-7A/B.

2.3 Soil Corrective Action

A soil vapor extraction (SVE) system was designed and installed to depressurize the area beneath the warehouse floor and prevent VOC vapor intrusion into the warehouse. CDM Smith completed the SVE system design in August 2016. The system was designed to depressurize the area beneath the warehouse floor slab and prevent sub-slab vapor intrusion. Although the extraction of VOCs in soil vapors will reduce the VOC concentrations in soil, soil remediation is not the primary objective for the SVE system. Construction was completed in accordance with the design and full-scale operation began in February 2017. SVE system monitoring has been completed semiannually since the system began operating.

The SVE system consists of 4 SVE wells installed to depths of 15 ft bls within the warehouse (**Figure 2-5**). Three vapor monitoring points are used to measure sub-slab vacuums beneath the floor slab. Extracted soil vapors are conveyed from the SVE wells through 2-inch diameter schedule 80 polyvinyl chloride (PVC) piping and into a 3-inch header pipe. The header pipe is attached to the ceiling and exits the warehouse through a wall penetration. The piping then runs down the exterior wall to the blower system. A 3-inch carbon steel exhaust pipe is attached to the exterior wall of the warehouse and extends above the roof line. Routine monitoring of the exhaust has shown that the exhaust does not require treatment.

All 4 SVE wells were operated continuously from 2017 to 2021. In 2021, SVE-3 and SVE-4 were shut down in response to declining VOC concentrations that were below the TIACs. SVE-1 and SVE-2 continued operation.

2.4 Groundwater Corrective Action

A total of 16 groundwater monitoring wells and 16 injection wells have been installed since 2010. The existing wells and monitoring status are shown on Figure 2-4. The injection wells have been used to support groundwater bioremediation and after 2.5 years of treatment the bioremediation has been successful in treating the source VOC TCE and generated the breakdown products cis-1,2-dichloroethene (DCE) and vinyl chloride. The vinyl chloride concentrations in groundwater have remained low while the DCE concentrations have been slower to dissipate and remain above the non-residential RRS. In addition, the bioremediation caused manganese to be mobilized in groundwater from the natural soil and manganese has been above the non-residential RRS.

Continued groundwater monitoring is needed to monitor the DCE and manganese progression to concentrations near or below the RRSs. As a contingency, replenishment of the bioremediation agents may be needed if VOC concentrations in groundwater are observed to be increasing. It is anticipated that a bioremediation replenishment would be effective if it were focused on select injection wells and not all 16.

Section 3

SVE System O&M

This section describes work that is required to maintain compliance with Type 5 RRSs in soil and includes operation and maintenance (O&M) of the SVE system. The O&M includes performing routine maintenance and non-routine repairs and troubleshooting on the SVE system components and monitoring soil vapors associated with the system operations.

This work also includes assessing the soil vapor data and providing conclusions and recommendations concerning SVE system operations. The system operational modifications could include the following examples.

- Activating or deactivating individual SVE well operation
- Modifying the soil vapor monitoring frequency
- Collecting indoor air samples to assess the appropriateness of system deactivation
- Deactivating the SVE system
- Abandoning SVE wells upon final system deactivation

Ultimately, EPD will be required to approve operational modifications. The recommendations concerning operational modifications will be reported to EPD in the reports described in Section 5 or Cessna may elect to request approval for operational modifications in separate letter requests to EPD.

3.1 SVE System Maintenance

The SVE system layout is shown on Figure 2-5. The system is relatively simple and operation relies on an electric vacuum pump, control panel, and a 3-phase, 230-volt electric supply. The system has a 40-gallon condensate air-water separator that has a high-level shutdown switch. Details for the system components are included in **Attachment B**.

The most frequent SVE system maintenance item is to empty the condensate collection tank. The system typically operates throughout the summer months without requiring emptying. However, the tank requires emptying at approximately 1 to 2-month intervals during the winter months. The actual frequency will depend somewhat on the indoor temperature of the warehouse. The electric vacuum pump will automatically shut down when a high condensate collection tank level occurs and will require emptying before the system can be switched back on.

The condensate water is transferred into 250-gallon polyethylene totes and assumed to be “wastewater” for disposal purposes, although laboratory analyses have shown that the water did not contain VOCs above the quantification limits.

The vacuum pump also has a high vacuum level shutdown switch that activates when the intake vacuum exceeds 17 inches of mercury. If this switch is activated frequently the system needs to be supplied with additional air flow from either the SVE wells or an ambient air bleed valve.

As shown in the vacuum pump operating instructions in Appendix B, the vacuum pump requires periodic cleaning of the inlet air filter and changing of the gear oil. This service is recommended annually.

Otherwise, the SVE system requires no additional routine maintenance. Inspections should be performed to check that the polyvinyl chloride (PVC) piping is sound, not leaking, and not cracked. A complete SVE system inspection and O&M form is included in **Attachment C** along with the annual inspection form discussed in Section 5.

Past use of the warehouse has included forklift operation and piping breaks have occurred from these operations. The repairs can typically be made using conventional PVC fittings installed using solvent welds. It should be assumed that the vacuum pump electric motor will require rebuilding or replacement in the future but the timing for this cannot be reasonably estimated. A troubleshooting guide is also included in Attachment B along with a list of spare parts.

3.2 SVE System Monitoring Requirement

The SVE system has 6 locations for vapor sample collection: the 4 SVE wells and the combined system discharge. These locations have been sampled and laboratory analyzed for VOCs semiannually. The SVE well results are used to assess the effectiveness of the SVE system in removed VOCs from the sub-slab soil vapors and provide conclusions and recommendations on SVE well operations and potential shutdown. In addition, measurements are required for temperature, barometric pressure, and differential pressure across the combined system flow to calculate the flowrate and VOC emission estimates. Vacuum pressures are also measured at the 3 sub-slab vapor monitoring points to assess the system's effectiveness in depressurizing the sub-slab zone.

Under this MMP, these monitoring events are required annually at a minimum. However, Cessna will continue monitoring with a semiannual frequency through 2024, at which time the system is expected to achieve the ultimate results that could lead to the termination of system operations. It is expected that this action will need to include a demonstration that VOCs are not rebounding in soil gas and indoor air VOC concentrations are below the TIACs.

3.2.1 SVE System Sample Collection

Samples collected from the SVE system will be collected as grab samples and not time-weighted composite samples. The samples will be collected using Summa canisters at the sample ports installed on each SVE well and at the vacuum pump. Disposable tubing will be used to connect the Summa canister to the sample port, and the canister flow controller will be fully opened to allow the vacuum in the canister to draw in the vapors. The canisters come from the analytical laboratory supplied with a preset flow controller and a vacuum between approximately 27-29 inches of mercury. When the canister vacuum reaches approximately 5 inches of mercury, the flow controller will be closed and the Summa canister will be ready for delivery to the analytical laboratory. Information that must be recorded on the chain of custody form includes the sample code, sample start and finish time, canister start and finish vacuum pressure, canister serial number, and flow controller identification number.

3.2.2 Indoor Air Sample Collection

Indoor air sample collection will adhere to EPD's Final Guidance for Evaluating the Vapor Intrusion Exposure Pathway (August 31, 2021), Section 4 Sampling Guidelines.

Samples will be collected using Summa canisters as for the SVE system but will be time-weighted composite samples. The analytical laboratory will be responsible for setting the canister flow controller appropriate for the desired sample collection time. Consistent with the EPD draft guidance, the samples will be collected as 10-hour composite samples during normal business hours. The duration and times may be modified to match the building occupancy patterns when the warehouse becomes occupied in the future. The Summa canister air intake will be set at a height of approximately 5-ft above floor level.

When the building is occupied, any chemicals potentially containing VOCs from the site-specific indoor air analytical list in Table 1-3 will be removed from the warehouse at least 24 hours prior to the air sampling event. The EPD draft guidance prefers enough indoor air samples to represent seasonal variations, but a single event is also recognized as potentially sufficient for large commercial facilities. Cessna proposes to collect indoor air samples in one event and discuss with EPD whether an additional sampling event is needed.

3.2.3 Analyses

SVE system and indoor air samples will be laboratory analyzed for the VOCs from the site-specific indoor air analytical list in Table 1-3. The analytical method will be EPA Method TO-15. The laboratory detection limits should be lower than the TIACs listed in Table 1-3.

3.3 SVE System Deactivation

Once a determination has been made to permanently deactivate the SVE system, the SVE wells should be properly abandoned in accordance with EPD requirements and the concrete floor patched with concrete and the repair sealed. The overhead SVE piping can be removed and the skid mounted SVE system taken offline and sold or recycled.

Section 4

Groundwater O&M

This section describes work that is required to maintain compliance with Type 5 RRSs in groundwater and includes O&M of the groundwater remediation and monitoring system. The O&M includes performing routine maintenance, inspections and repairs, and a contingency for replenishing the subsurface bioremediation agents to support further treatment of the VOCs in groundwater. Because bioremediation agent replenishment remains a possibility, the existing Underground Injection Control (UIC) Permit (Number W000724) must also be maintained until it expires on October 30, 2023. Additional UIC Permit compliance requirements are listed in Section 4.1 below.

This work also includes assessing the groundwater data and providing conclusions and recommendations concerning the groundwater remediation status. The groundwater remediation and monitoring modifications that are expected to be appropriate in the future could include the following examples.

- Modifying the groundwater monitoring frequency
- Ceasing all groundwater monitoring
- Abandoning monitoring wells
- Abandoning injection wells
- Replenishing the bioremediation agents

Ultimately, EPD will be required to approve such modifications. The recommendations concerning modifications will be reported to EPD in the reports described in Section 5 or Cessna may elect to request approval for modifications in separate letter requests to EPD.

4.1 UIC Permit

The UIC Permit is not transferable to a new operator under the permit. If an entity other than Cessna becomes a responsible operator under the existing permit, the new operator must agree in writing with EPD to comply with all permit conditions and provide documentation to support financial assurances to plug all existing injection wells.

The UIC Permit requires that all groundwater reports be submitted to the UIC Program in addition to the Response and Remediation Program and quarterly reporting of any bioremediation agents. This reporting requirement has been fulfilled in the past by including the UIC Program on the distribution list for the routine semiannual reports. The UIC permit also requires that UIC Program be notified of any injection well plugging. The UIC Program must also be notified 30 days in advance in writing of any future injections.

The existing permit expires on October 30, 2023, and new application should be submitted to EPD 90 days prior to this date if the permit is to be renewed. Once EPD's Response and Remediation Program agrees that future bioremediation agents will not be needed, the injection wells must be plugged and abandoned and reported to the UIC Program within 30 days.

4.2 Groundwater Maintenance

Monitoring wells will be inspected during each sampling event and injection wells will be inspected annually at a minimum. The following items will be noted during the inspections.

- Concrete pad condition
- Lid on protective cover (intact and bolted down)
- Well caps and locks
- Casing damage

A list of damaged or missing items will be prepared and repairs will be made, as necessary. Because the wells are all flush-mount wells, serious damage requiring abandonment or replacement is not likely.

4.3 Groundwater Monitoring Requirement

The groundwater monitoring network has 11 monitoring wells that are routinely used for groundwater sampling. These locations have been sampled and laboratory analyzed for VOCs semiannually.

Under this MMP, groundwater monitoring events are required annually at a minimum or until the groundwater results are below the applicable RRSs for over 1 year from a minimum of 2 consecutive annual events or demonstrated to be stable or declining for over 2 years from a minimum of 3 consecutive annual events. However, Cessna will continue monitoring with a semiannual frequency through 2024, at which time the remediation status is expected to achieve the desired results. An increasing groundwater VOC status for 2 or more annual events will require an evaluation of the need to replenish the bioremediation agents.

A stable or declining groundwater VOC status will be determined using established statistical methodology that is recognized by EPD and the U.S. Environmental Protection Agency. This status will be used to assess groundwater compliance. The data used for statistical analyses will include the 8 most recent groundwater data sets to maintain a sufficient data quantity to support meaningful statistical analysis. Data sets with less than 50 percent detections are not meaningful for statistical analysis. Non-detect results will use the actual method detection limit and not the quantification limit and detections reported below the quantification limit will be used at the estimated “J” values.

4.3.1 Sample Collection

The well purging and groundwater sampling protocols remain unchanged from those used for the routine semiannual monitoring and will be consistent with the EPA Region 4 Operating Procedure for Groundwater Sampling (SESDPROC-301-R4, April 26, 2017). The low-flow method with the tubing-in-screened-interval well purging and sampling techniques will be used. Well purging was performed using peristaltic pumps. However, bedrock well MW-3C typically requires use of a stainless-steel submersible pump and the VOCs will be collected using a disposable bailer. Dedicated Teflon® tubing was previously installed in each well for purging and sampling purposes.

During purging, the bottom of the tubing will be placed in the center of the saturated section of the well screen and the flow rate set to minimize excessive drawdown. The depth to the tubing intake will be documented on the field sheets. Temperature, pH, conductivity, reduction/oxidation potential, turbidity, dissolved oxygen, total dissolved solids, and water levels will be monitored and recorded during well purging. Sample collection will be performed when the following conditions are established.

- pH – Stabilization within 0.1 Standard Unit
- Conductivity - Stabilization within 5 percent
- Turbidity – Less than 10 nephelometric turbidity units

Well MW-7A/B has experienced difficulties with high turbidity in the past and the protocol for purging this well has been expanded.

4.3.2 Laboratory Analyses & Data Collection

In addition to VOCs, metals analyses are also completed for 7 wells. The metals are arsenic, barium, chromium, lead, and manganese. The groundwater laboratory results are used to assess the effectiveness of the groundwater bioremediation and provide conclusions and recommendations on future treatment and monitoring. As a result, groundwater from select wells are also laboratory analyzed for remediation parameters that include dissolved gases (ethane, ethene, and methane) and chemical oxygen demand and field testing is completed for nitrate, sulfate, ferrous iron, carbon dioxide, and alkalinity. In situ measurements are made for water level, turbidity, pH, temperature, specific conductance, oxidation-reduction potential, and dissolved oxygen.

Table 4-1: Groundwater Analyses & Data Collection

Well Code	Water Level	VOCs & In Situ	Metals	Remediation Parameters
MW-1A	X			
MW-2A	X	X		
MW-3A	X	X	X	X
MW-3B	X	X	X	X
MW-3C	X	X		
MW-4A	X	X	X	X
MW-4B	X	X	X	X
MW-5A/B	X	X	X	X
MW-6A	X	X		
MW-7A	X	X	X	X
MW-7A/B	X	X	X	X
MW-8A	X	X		X
GW-8	X			

4.4 Groundwater Well Network Decommissioning

Once all monitoring wells have achieved a stable or declining basis according to the timeframes described in Section 4.2 and EPD agrees with the decision, the groundwater well

network can be fully decommissioned. Decommissioning will consist of plugging and abandoning all monitoring wells and injection wells. The EPD UIC Permit requires that the wells will be properly abandoned in accordance with EPD Manual for Groundwater Monitoring (EPD 1991).

All the wells were constructed with proper grout seals and many of the wells are in locations that make it impractical to access the wells using conventional drilling equipment. As a result, the removal of well casings/screens or over drilling is not practical and is not necessary. A filler such as neat cement will be installed inside the well from the bottom of the screen by the tremie pipe method to completely fill the well. The casings will be cut 1-2 ft. below grade any remaining void will be filled with concrete and leveled. Care must be taken within the warehouse to completely seal the subsurface from the floor slab and prevent creating a pathway for vapor intrusion.

Section 5

Compliance with Limitations

Limitations for the Property are listed in Section 1 and defined in the EC. The limitations include site-wide limitations, limitations on groundwater use, and limitations on activities that can be carried out in the soil RUZ. Compliance with these limitations will require that Cessna monitor site activities and inform any future occupants of the Property of these limitations. If the Property is sold or the ownership transferred, the EC and the MMP requirement “Runs with the Land and is Perpetual” pursuant to the Act and as stated in the EC.

Property inspections will be completed and records maintained to document compliance. The compliance status will be reported to EPD annually and an annual report template is in Attachment C. The compliance actions that will be taken by Cessna are described below.

5.1 Site-Wide Limitations

The EC requires that the Property be used only for non-residential uses and any residential use or residential habitation of the Property is prohibited. Prohibited uses also include the following non-residential uses.

- Water supply establishment
- Nursing or personal care facility
- General medical, psychiatric or specialty hospital
- School, college, university, or technical institute
- Child day care
- Religious establishment
- Correctional institution

Any activity on the Property that may result in the release or exposure to the regulated substances that were contained as part as part of the Corrective Action, or create a new exposure pathway, is prohibited. Compliance with this requirement is generally accomplished by complying with applicable environmental, chemical storage and use, and waste management regulations. The annual inspections will attempt to identify Property use activities that do not comply with the applicable regulations.

These site-wide limitations will be enforced by Cessna and compliance will be documented and certified to EPD on an annual basis.

5.2 Groundwater

The use or extraction of groundwater beneath the Property for drinking water or for any other non-remedial purposes shall be prohibited and will be enforced by Cessna and compliance will be documented and certified to EPD on an annual basis. The groundwater O&M requirements described in Section 4 are required under the EC including well maintenance, monitoring and reporting. As previously stated, groundwater monitoring and reporting will be completed semiannually through 2024 and these semiannual reports will be independent of

the annual report described in Section 5.4 below. After 2024, groundwater monitoring will be completed annually at minimum and the reporting will be incorporated into the annual reports.

5.3 Soil RUZ

The soil RUZ activity and use limitations apply within the RUZ limits beneath the warehouse floor slab and in soil on the exterior of the warehouse at a depth of 5 ft below land surface or greater and below an elevation of 307 ft. Intrusive construction activities in the RUZ will require a worker health and safety plan and a contaminated soil/debris management plan. The plans will be provided to EPD prior to initiating the work. Cessna and/or the construction contractor will be additionally responsible for determining whether the work requires fulfilling the OSHA Hazardous Waste Operations and Emergency Response requirements.

Soil removal from the RUZ is prohibited, except that soil may be transported to an appropriately permitted waste disposal facility with prior facility notification of soil conditions and prior acceptance by the facility. Soil from the RUZ cannot be relocated from the RUZ to a non-RUZ location on the Property and excavated soil should not be placed back into excavations.

The integrity of the warehouse concrete slab within the RUZ shall be maintained in its current condition or better to prevent occupants from contacting sub-slab materials and to minimize the potential for sub-slab vapors to enter the warehouse. This requirement will be enforced by Cessna and compliance will be documented and certified to EPD on an annual basis.

The SVE system O&M requirements described in Section 3 are required under the EC to provide protection for warehouse occupants against VOC vapor intrusion from the soil RUZ. The SVE system O&M includes system maintenance, soil vapor monitoring and reporting. As previously stated, monitoring and reporting will be completed semiannually through 2024 and these semiannual reports will be independent of the annual report described in Section 5.4 below. After 2024, SVE system monitoring will be completed annually at a minimum and the reporting will be incorporated into the annual reports.

5.4 Annual Inspection and Reporting

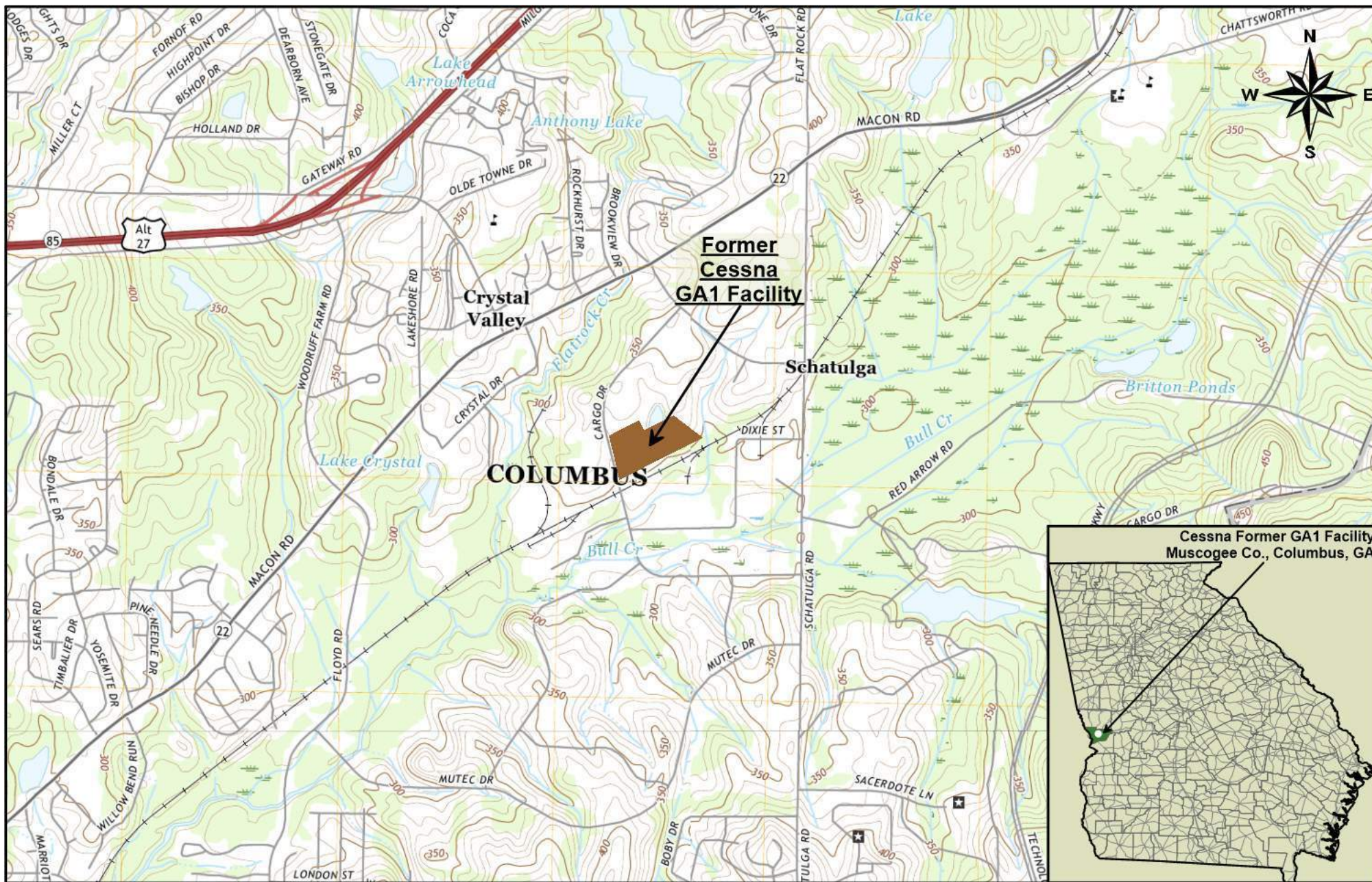
An annual inspection will be required under the EC to certify that the property complies with the property use limitations described above. An inspection questionnaire and form are in the Annual Report Template in Appendix C.

Semiannual monitoring will also be required for the SVE system and for groundwater. The SVE system monitoring will proceed according to the current locations, methods, and schedule used under the VRP. Annual reports will be submitted that include the monitoring results, SVE operations data, and any recommendations for changes in the SVE system operations or monitoring program. These recommendations will be subject to EPD acceptance.

Semiannual groundwater and SVE system monitoring and reporting will be completed through 2024.

Groundwater and SVE system reporting in the annual reports after 2023 will include the same subject matter as the current semiannual reports under the VRP and will include conclusions and recommendations pertaining to VOC rebound, compliance with the applicable RRSs, and proposed changes to the monitoring program or need for additional actions. All recommendations will be subject to EPD acceptance.

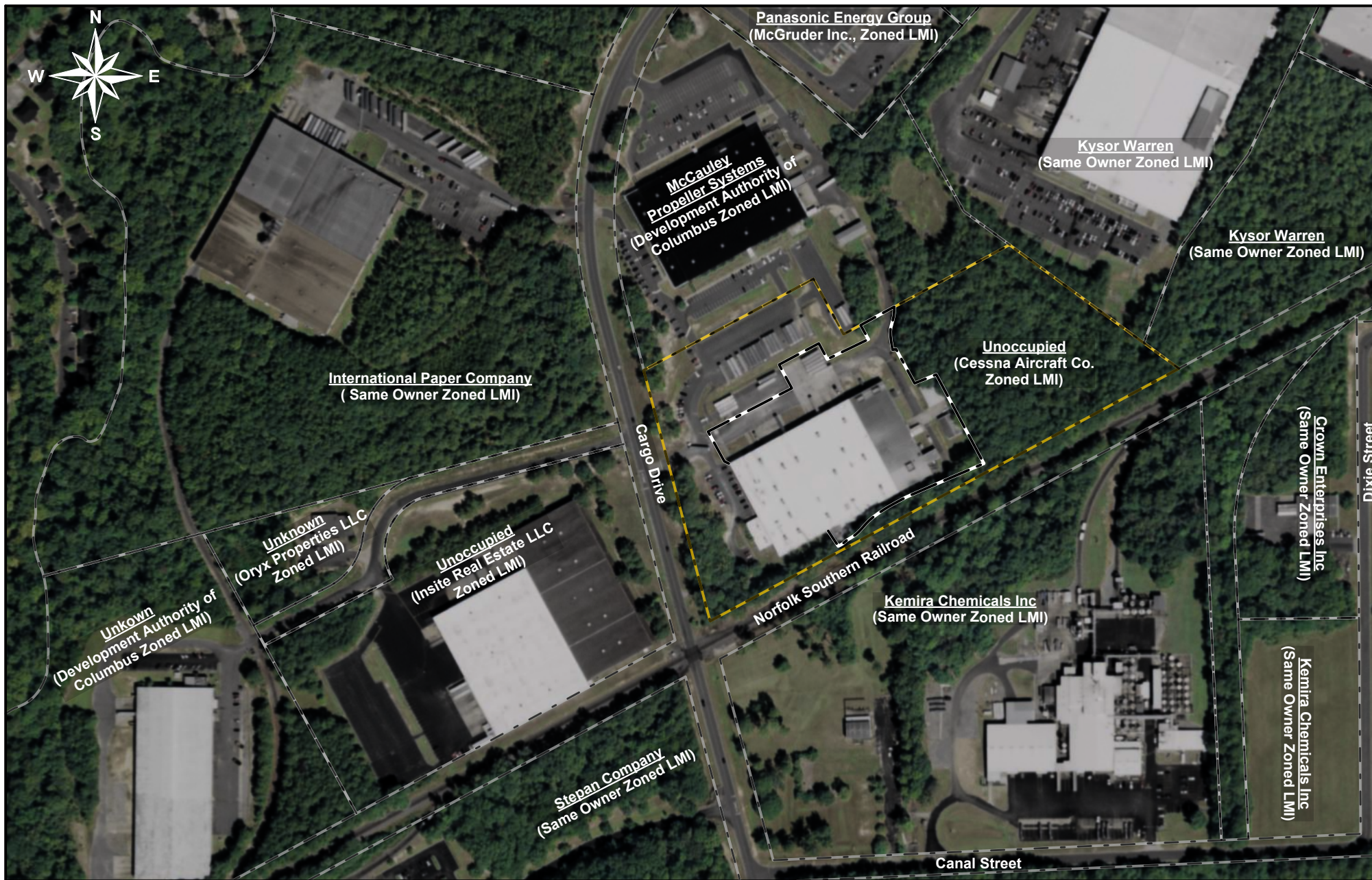
Figures



Map Sources: 7.5 Minute Series Quadrangles, Columbus, Fortson, Midland, and Ochilree, 2020, USGS.



Figure 2-1
Site Location
Cessna Former GA1 Facility
Columbus, Muscogee County, Georgia



Aerial Image: NAIP Digital Georectified Image, Fortson SE, Muscogee Co., Ga., USDA-FPAC-BC-APFO Aerial Photography Field Office, 9/12/2019.
 Property Lines: Public Access Site for Property Assessment & Tax Information, Columbus Consolidated Government, 3/24/2021.



Zoned LMI
 Light Manufacturing/Industrial

Property Boundary
 Offsite Properties

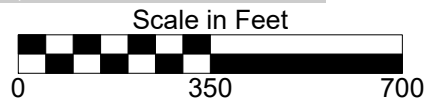
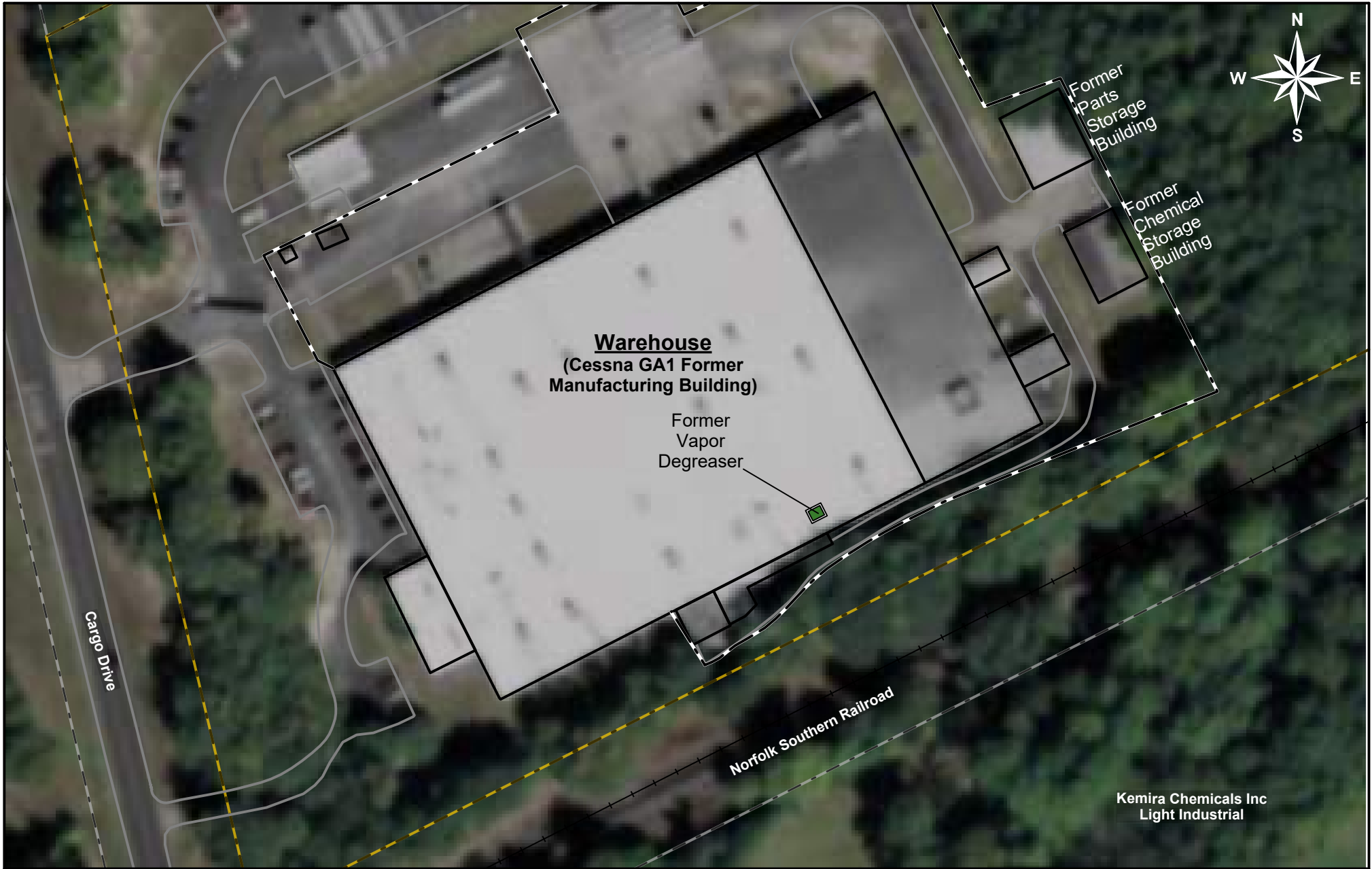


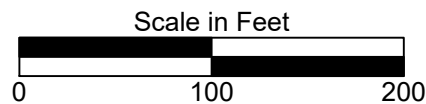
Figure 2-2
Surrounding Properties
 Cessna Former GA1 Facility
 Columbus, Muscogee County, Georgia



Aerial Image: NAIP Digital Georectified Image, Fortson SE, Muscogee Co., Ga., USDA-FPAC-BC-APFO Aerial Photography Field Office, 9/12/2019.
 Property Lines: Public Access Site for Property Assessment & Tax Information, Columbus Consolidated Government, 3/24/2021.

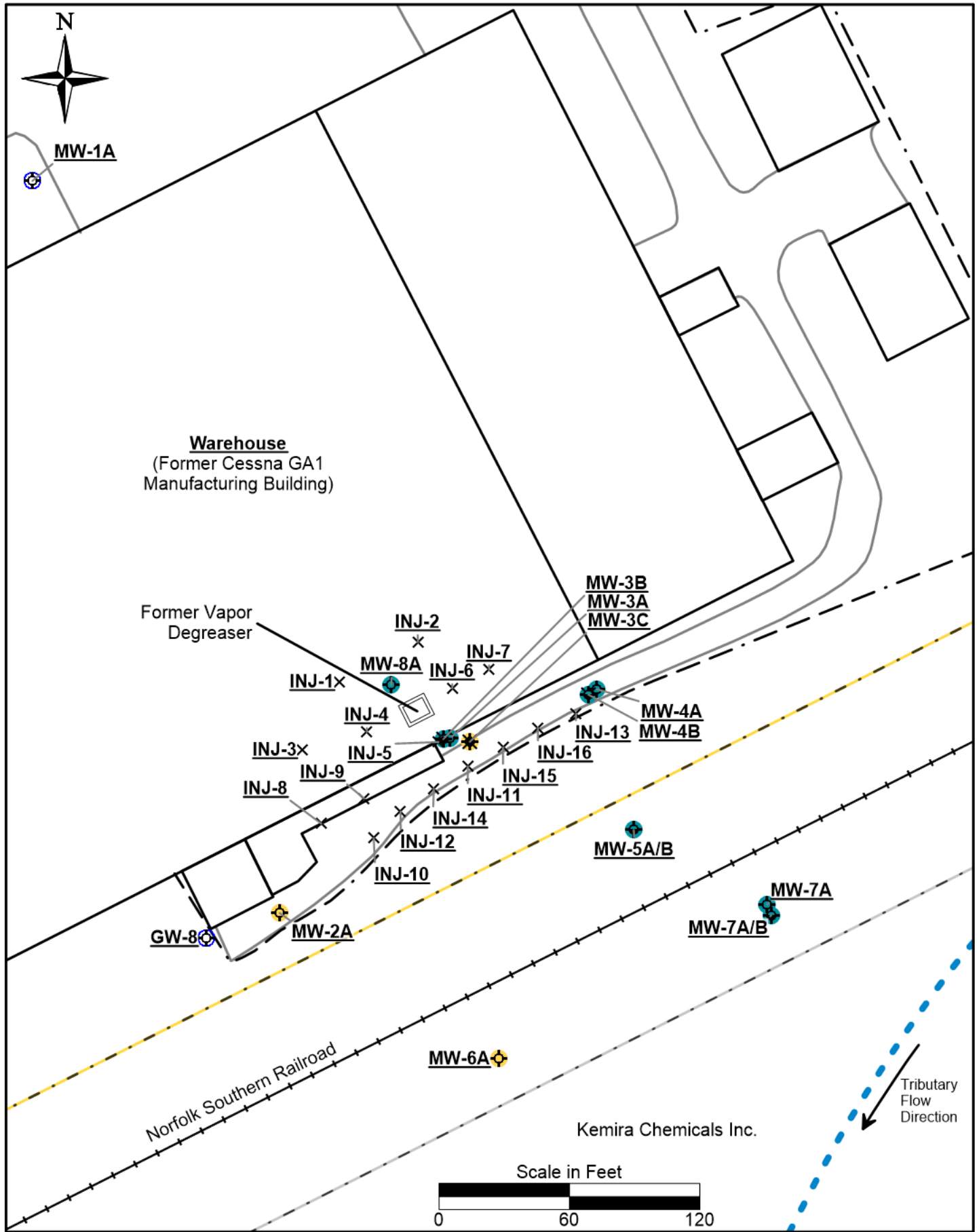


Property Boundary
 Offsite Properties



Former Vapor Degreaser Pit

Figure 2-3
Site Features
 Cessna Former GA1 Facility
 Columbus, Muscogee County, Georgia



- Offsite Properties
- Site Boundary
- ⊕ Unit A Sediments Monitoring Well
 - ⊕ Unit A/B Monitoring Well
 - ⊗ Unit B Saprolite Monitoring Well
 - ⊗ Unit C Upper Bedrock Monitoring Well
 - × Unit A/B Injection Well

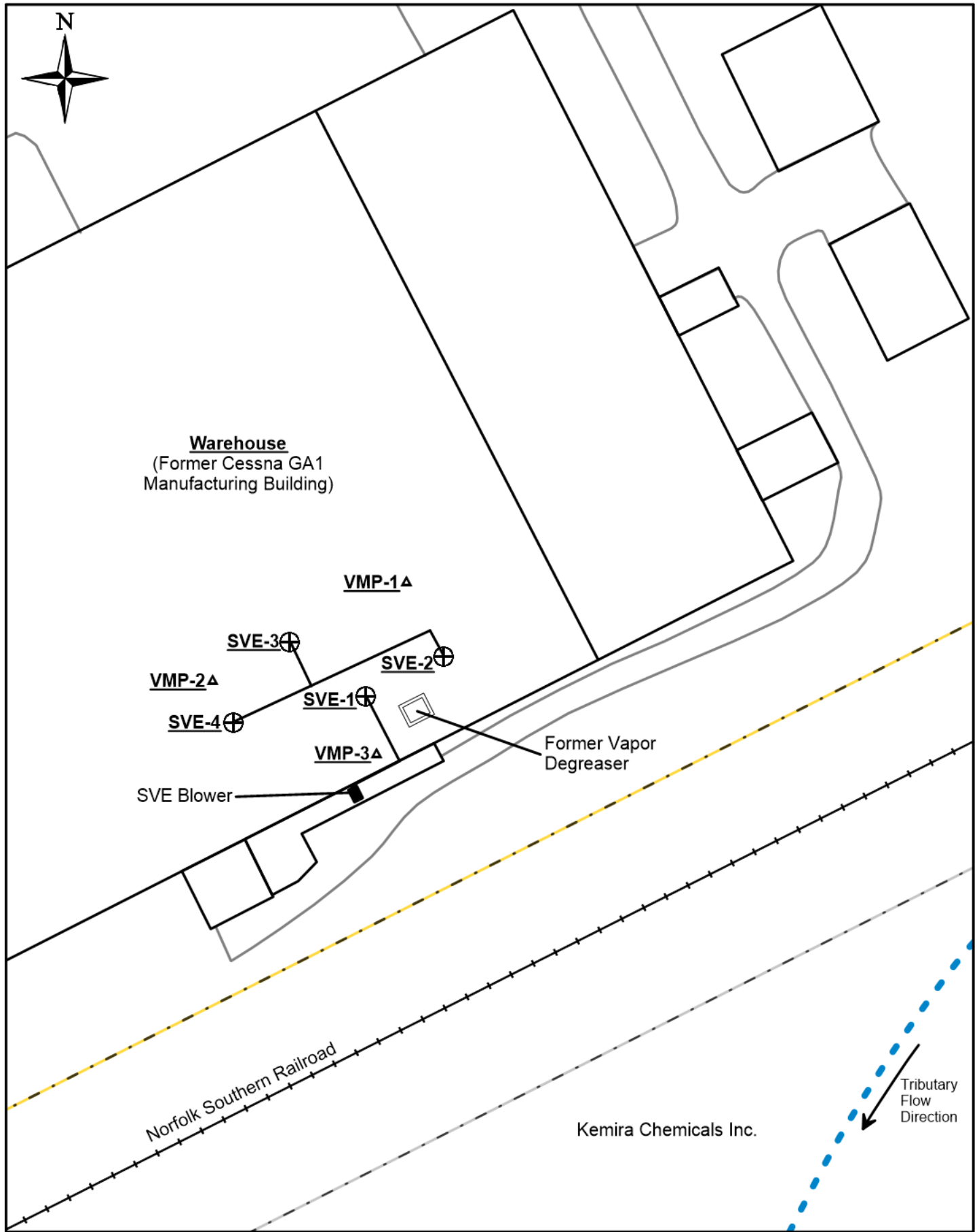
- Semi-Annual Performance Monitoring
- Semi-Annual Monitoring
- Water Level Only

Stream Tributary
(Possibly Intermittent)



Figure 2-4: Well Location Map

Cessna Former GA1 Facility
Columbus, Muscogee County, Georgia



Offsite Properties
 Site Boundary
 Stream Tributary
 (Possibly Intermittent)

⊕ Soil Vapor Extraction Well
 ▲ Sub-Slab Vapor Monitoring Point
 Scale in Feet
 0 60 120



Figure 2-5
SVE System
 Cessna Former GA1 Facility
 Columbus, Muscogee County, Georgia

Tables

Substance	CAS No.	Vadose Zone Soil 2016 RRSs, mg/kg						
		Max. Detected	Residential (offsite)			Non-Residential (onsite)		
			Type 1 Default	Type 2* HH	Type 2** SL	Type 3 Default	Type 4* HH	Type 4** SL
Acetone	67641	0.12	400	33,000	33	400	260,000	190
Trichloroethane, 1,1,1-	71556	0.076	20	2,300	19	20	11,000	98
Dichloroethane, 1,1-	75343	0.028	400	42	23	400	54	23
Dichloroethene, 1,1-	75354	0.0575	0.7	51	0.72	0.7	250	3.7
Trichloroethene	79016	14	0.5	1.4	0.036	0.5	7.1	0.037
Isopropyl benzene	98828	0.0031	21.88	890	6.9	21.88	4,800	33
Ethylbenzene	100414	0.055	70	92	16	70	120	16
Toluene	108883	0.028	100	3,600	14	100	33,000	72
Dichloroethene, 1,2-cis-	156592	0.0631	7	160	0.41	7	4,100	1.2
Xylenes	1330207	0.261	1,000	230	200	1,000	1,100	200
Lead	7439921	9.1	75	NC	NC	400	NC	NC
Arsenic	7440382	0.6	20	6.1	5.8	38	38	5.8
Zinc	7440666	14.4	100	23,000	5,800	2,800	610,000	39,000

RRS - Risk Reduction Standard **Bold shaded maximum detected values exceed one or more RRS.**

Type 1 - Default based on standard exposure assumptions and defined risk levels for residential properties.

Type 2 - Based on site-specific risk assessment for residential properties.

Type 3 - Default based on standard exposure assumptions and defined risk levels for non-residential properties.

Type 4 - Based on site-specific risk assessment for non-residential properties.

* - Calculated using standard exposure assumptions and excludes vapor intrusion. Values are rounded to two significant digits to be consistent with the toxicity database.

** - Based on an assumed dilution attenuation factor (DAF) of 20 for a 0.13-acre source area. Values are rounded to two significant digits to be consistent with the toxicity database. If a SL RRS is implemented for corrective action, data will be collected to derive a site-specific DAF and the SL RRS will be re-evaluated.

CAS - Chemical Abstract System

SL - Soil leaching to groundwater.

NC - Not calculated.

HH - Human health effects.

PQL - Practical quantification limit.

Table 1-1: 2016 Soil Risk Reduction Standards

Cessna Former GA1 Facility
Columbus, Muscogee County, Georgia

Substance	CAS No.	2016 Groundwater RRSs, µg/L				
		Max. Detected	Residential (offsite)		Non-Residential (onsite)	
			Type 1	Type 2*	Type 3	Type 4*
Acetone	67641	630	4,000	8,000	4,000	46,000
Chloroform	67663	57	80	2.6	80	3.4
Trichloroethane, 1,1,1-	71556	6	200	2,700	200	14,000
Vinyl Chloride	75014	4.8****	2	NC	2	3.3
Carbon Disulfide	75150	63	4,000	330	4,000	1,700
Bromodichloromethane	75274	7	80	1.6	80	2.1
Dichloroethane, 1,1-	75343	72	4,000	32	4,000	46
Dichloroethene, 1,1-	75354	120	7	100	7	520
2-Butanone	78933	250	2,000	2,300	2,000	12,000
Trichloroethene	79016	16,600	5	1.0	5	5.2
Dichloroethene, 1,2-cis-	156592	1,200****	70	31	70	200
Lead	7439921	13.1	15	NC	15	NC
Manganese	7439965	7,940****	NC	380	NC	2,500
Arsenic	7440382	11.2***	10	0.57	10	1.9
Barium	7440393	4,810****	200	3,100	200	20,000
Chromium	7440473	44.2	100	NC	100	NC

RRS - Risk Reduction Standard

Bold shaded values exceed one or more RRS.

Type 1 - Default based on standard exposure assumptions and defined risk levels for residential properties.

Type 2 - Based on site-specific risk assessment for residential properties.

Type 3 - Default based on standard exposure assumptions and defined risk levels for non-residential properties.

Type 4 - Based on site-specific risk assessment for non-residential properties.

* - Calculated using standard exposure assumptions and excludes vapor intrusion. Values are rounded to two significant digits to be consistent with the toxicity database.

** - Based on an assumed dilution attenuation factor (DAF) of 20 for a 0.13-acre source area. Values are rounded to two significant digits to be consistent with the toxicity database. If a SL RRS is implemented for corrective action, data will be collected to derive a site-specific DAF and the SL RRS will be re-evaluated.

*** - Estimated value, matrix interference.

**** - Exceedance caused by bioremediation.

CAS - Chemical Abstract System

NC - Not calculated.

Table 1-2: 2016 Groundwater Risk Reduction Standards

Cessna Former GA1 Facility
Columbus, Muscogee County, Georgia

Substance	CAS No.	Max . Detected	TIAC
Acetone	67641	52	135,000
Carbon disulfide	75150	19	3,070
2-Butanone	78933	17	21,900
Trichloroethene	79016	31	8.76
Naphthalene	91203	4.2	3.61
Ethylbenzene	100414	1.1	49.1
Toluene	108883	6.9	21,900
cis-1,2-Dichloroethene	156592	1.7	NC
Xylene (total)	1330207	7.8	438

Concentrations are µg/m³.

Substance	CAS No.	Max . Detected	TIAC
Isopropyl alcohol	67630	52	876
Benzene	71432	19	15.7
Chloromethane	74873	17	394
Methylene chloride	75092	31	2,630
Chlorodifluoromethane	75456	4.2	219,000
Trichlorofluoromethane	75694	1.1	NC
Dichlorodifluoromethane	75718	6.9	438
Methyl Isobutyl Ketone	78933	1.7	13,100
1,1,2,2-Tetrachloroethane	79345	7.8	2.11
1,2,4-Trimethylbenzene	95636	2.4	263
Styrene	100425	4.3	4,380
Tetrahydrofuran	109999	19	8,760
n-Hexane	110543	44	3,070
Cyclohexane	110827	0.98	26,300

Compound detected in soil and/or groundwater.

< - Less than, concentration shown is the detection limit.

TIAC - Target Indoor Air Concentration. Determined using U.S. Environmental Protection Agency Vapor Intrusion Screening Level Calculator. NC - Not calculated, chemical does not have inhalation toxicity data.

TIACs were calculated based on a Hazard Quotient of 1 and a Target Risk of 1×10^{-5} .

J - Estimated value detected below the practical quantification limit.

Bold shaded values exceed the TIAC.

Attachment A
Environmental Covenant

After Recording Return to:
Bradley White
Senior Vice President, Operations
Cessna Aircraft Company
One Cessna Boulevard
Wichita, Kansas 67277

CROSS-REFERENCE:
County: _____
Deed Book: _____
Page(s): _____

Environmental Covenant

This instrument is an Environmental Covenant executed pursuant to the Georgia Uniform Environmental Covenants Act, O.C.G.A. § 44-16-1 *et seq.*, as may be amended from time to time (hereinafter “Act”). This Environmental Covenant is entered into by the entities executing this Environmental Covenant and subjects the property identified below to the activity and/or use limitations and other requirements. This Environmental Covenant further grants such other rights in favor of EPD and Cessna Aircraft Company (hereinafter “Cessna”) as set forth herein.

Fee Simple Owner(s)/Grantor(s): Cessna Aircraft Company
One Cessna Boulevard
Wichita, Kansas 67277

Grantee/Holder with the power to enforce: Cessna Aircraft Company
One Cessna Boulevard
Wichita, Kansas 67277

Grantee/Entity with express power to enforce: State of Georgia
Department of Natural Resources
Environmental Protection Division
2 Martin Luther King Jr. Drive, SE
Suite 1456 East Tower
Atlanta, GA 30334-9000

Persons with Interests other than Fee Simple: None

Property Subject

The property subject to this Environmental Covenant is a tract of approximately 16.24 acres of real property located at 4800 Cargo Drive, Columbus, Muskogee County, Georgia, which is further identified by the tax parcel ID number below (hereinafter “Property”). The Property was conveyed on February 26, 1999 to The Cessna Aircraft Company; such conveyance is recorded in Deed Book 5259, Page 167, of the Muskogee County deed records. The Property is located in Land Lot 58 of the 9th District of Muskogee County, Georgia.

To be replaced by the executed Environmental Covenant before the final filing of this plan.

The tax parcel of the Property is 112 003 002 of Muskogee County, Georgia. The Property appears as Lot 100C and a legal description of the Property is attached as Exhibit A and a map of the Property is attached as Exhibit B.

The entire Property will be subject to the activity and use limitations described herein and The Restricted Use Zone (“RUZ”) at the Property that will be subject to additional activity and use limitations is approximately 0.34 acres measuring 100 feet by 150 feet lying entirely within the Property. A map of the RUZ is attached as Exhibit B1.

Environmental Covenant Runs with the Land and is Perpetual

Pursuant to the Act, this Environmental Covenant shall run with the land and shall be perpetual unless terminated or amended pursuant to terms herein or in accordance with provisions of the Act. This Environmental Covenant shall be binding upon Cessna and all successors, assigns and transferees of any interest in the Property or any portion thereof.

Administrative Records

This Environmental Covenant imposes activity and/or use limitations and other requirements on the Property that arise under corrective action performed and/or being performed at the Cessna facility/site. Records pertaining to this corrective action are available at the following EPD location(s):

Georgia Environmental Protection Division
Land Protection Branch
Response and Remediation Program, Voluntary Remediation Unit
2 Martin Luther King Jr. Drive
Suite 1054 East
Atlanta, GA 30334-9000
Monday-Friday 8:00 AM to 4:30 PM, excluding state holidays

Activity and Use Limitations. The Property is subject to the following activity and/or use limitations:

- A. **Monitoring and Maintenance.** The Monitoring and Maintenance Plan dated April 5, 2022 (as may be amended from time to time with EPD’s written approval) shall be implemented to ensure that annual inspections are performed within the RUZ to verify the integrity of the engineered controls, document their condition, and ensure that they are fully restored following any utility work or other activities which breach such engineered controls. Monitoring and maintenance shall also be performed to ensure the continued operation of the soil vapor extraction (SVE) system to mitigate vapor intrusion and groundwater monitoring will also be conducted to document the continued groundwater quality until such time that continued SVE system operation and maintenance and groundwater monitoring is determined no longer necessary. The official records for this Property, including the current version of the approved Monitoring and Maintenance Plan, will be maintained at the EPD office listed above.

- B. The Property shall be used only as non-residential property as defined in Section 391-3-19-.02(2)(i) of the Rules. Use of the Property as residential property, as defined in Rule 391-3-19-.02(2)(r), is prohibited.
- C. The use or extraction of groundwater beneath the Property for drinking water or for any other non-remedial purposes shall be prohibited.
- D. Any activity on the Property that may result in the release or exposure to the regulated substances that were contained as part as part of the Corrective Action, or create a new exposure pathway, is prohibited.
- E. A RUZ for soil shall apply to the area shown in Exhibit B1. The RUZ activity and use limitations apply to all soil within the RUZ that is beneath the warehouse floor slab and soil on the exterior of the warehouse at a depth of 5 feet below land surface or greater and below an elevation of 307 feet North American Vertical Datum 1988. The activity and use limitations for the RUZ are listed below.
 - 1. Any intrusive construction activities within the RUZ will require a worker health and safety plan and a contaminated soil/debris management plan. These plans will be provided to EPD prior to initiating the construction work.
 - 2. Soil removal from the RUZ shall be prohibited, except that soil may be transported to an appropriately permitted waste disposal facility with prior facility notification of soil conditions and prior acceptance by the facility.
 - 3. The integrity of the warehouse concrete slab within the RUZ shall be maintained in its current condition or better to prevent occupants from contacting sub-slab materials and to minimize the potential for sub-slab vapors to enter the warehouse.

Other Requirements. The Property is subject to the following additional requirements.

- A. Notice of Limitations and Requirements in Future Conveyances. Each instrument hereafter conveying any interest in the Property or any portion thereof that may affect the activity and use limitations described herein shall include a statement that the Property is subject to this Environmental Covenant and any amendments thereto, Deed Book 5259, Page 167, of the Muskogee County deed records where this Environmental Covenant and any amendments thereto are recorded and a copy of this Environmental Covenant and any amendments thereto.
- B. Notice to EPD of Future Conveyances. Within thirty (30) days after each conveyance of a fee simple interest in the Property or any portion thereof, a notice shall be sent to EPD. The notice shall include the new owner's name, address, telephone number and other pertinent contact information, the date of the conveyance and the location (County, Deed Book and Page) where the conveyance

is recorded, and, if the conveyance is a portion of the Property, a survey map showing the boundaries of the real property conveyed.

- C. Notice of Change of Use. If such activity will materially affect any required monitoring or maintenance of any institutional or engineering controls described herein, the owner of the Property must provide to EPD thirty (30) days' advance written notice of the owner's intent to change the use of the Property.
- D. The Grantor shall maintain the soil vapor extraction (SVE) system and monitor groundwater and soil vapors for the time required by EPD. These activities will be conducted in accordance with the EPD-approved Monitoring and Maintenance Plan.
- E. Annually, but no later than 90 days following the effective date of this environmental covenant, Grantor shall submit to EPD an Annual Report as specified in the Monitoring and Maintenance Plan including: groundwater monitoring results, SVE operations, soil vapor results, and certification of the compliance status with the Property activity and use limitations.

Environmental Covenant Does Not Authorize Use Otherwise Prohibited

Pursuant to the Act, this Environmental Covenant shall not be construed to authorize a use of the Property that is otherwise prohibited by zoning, ordinance, local law or general law or by a recorded instrument that has priority over this Environmental Covenant.

Rights of Access and Enforcement

Authorized representatives of EPD and Cessna shall have the right to enter the Property at reasonable times in connection with implementation, compliance, or enforcement of this Environmental Covenant, including but not limited to the right to conduct inspections, examine related records, or to take samples.

This Environmental Covenant shall be enforceable by EPD and other parties as provided in the Act. Such rights of access and enforcement herein shall not limit EPD's authority under other applicable law.

No Interest in Real Property in EPD

EPD's rights under this Environmental Covenant and the Act shall not be considered an interest in real property.

Recording of Environmental Covenant and Service on Other Persons

Within thirty (30) days after execution of this Environmental Covenant by the Director of EPD, Cessna shall record the Environmental Covenant in every county in which any portion of the

Property is located in accordance with the law governing the recording and priority of interests in real property. Upon recording of the Environmental Covenant, Cessna shall provide in a manner deemed acceptable by EPD a copy of the executed, recorded Environmental Covenant to each of the persons or entities identified in O.C.G.A. § 44-16-7.

Representations and Warranties by Grantor(s). Cessna represents and warrants that all of the following are true and correct:

- A. Cessna holds fee simple title to the Property.
- B. Cessna has the authority to enter into this Environmental Covenant, has the authority to grant any rights granted by it within, has the ability to carry out the obligations described within and, based upon information and belief after reasonable inquiry, does not know of any anticipated material change in the practices, ownership, or authority of Cessna that will alter this representation and warranty.
- C. The execution and delivery of this Environmental Covenant and carrying out the obligations described within will not conflict with any of the provisions of the organizational documents, operating agreement of Cessna nor will it violate, contravene and/or constitute a breach or default under any agreement, contract, order or instrument to which Cessna is a party or by which Cessna may be bound.
- D. There are no persons with existing interests other than fee simple in the Property.
- E. This Environmental Covenant does not authorize a use of the Property that is otherwise prohibited by zoning, ordinance, local law or general law or by a recorded instrument that has priority over this Environmental Covenant.
- F. At least thirty (30) days prior to presenting this Environmental Covenant to EPD for execution, Cessna served a copy of the proposed final text of this Environmental Covenant on all persons or entities required to be noticed in accordance with O.C.G.A. § 44-16-7.

Submission of Required Documents and Communications

Documents and communications required by this Environmental Covenant shall be submitted to:

Georgia Environmental Protection Division
Branch Chief
Land Protection Branch
2 Martin Luther King Jr. Drive SE
Suite 1054 East Tower
Atlanta, GA 30334

EPD's Environmental Covenants Registry

This Environmental Covenant and any amendment thereto or termination thereof may be included in EPD's registry for environmental covenants.

Severability

Should any provision of this Environmental Covenant be found by a court of competent jurisdiction to be invalid and/or unenforceable in any respect, the remaining provisions shall continue in full force and effect.

Effective Date

This Environmental Covenant shall be effective on the date the fully executed Environmental Covenant is recorded in accordance with O.C.G.A. § 44-16-8(a).

Grantor

Cessna Aircraft Company

(Signature)

Bradley White

Senior Vice President, Operations

Signed in the presence of:

Unofficial Witness (signature)

Unofficial Witness (print name)

State of _____

County of _____

This instrument was signed or attested before
me this ___ day of _____, 20___, by

_____.

Personally Known
 Produced Identification

Notary Public (Signature)

My Commission Expires:

(NOTARY SEAL) _____

For the Environmental Protection Division, Department of Natural Resources, State of Georgia,
this _____ day of _____, 20_____:

(Signature)

Signed in the presence of:

[Name]
Director, Environmental Protection Division

Unofficial Witness (*signature*)

Unofficial Witness (*print name*)

State of Georgia
County of Fulton

This instrument was signed or attested before
me this ___ day of _____, 20___, by

[Name]

Personally Known
 Produced Identification

Notary Public (*Signature*)

My Commission Expires:

(NOTARY SEAL) _____

Exhibit A
Legal Description of Property

LEGAL DESCRIPTION

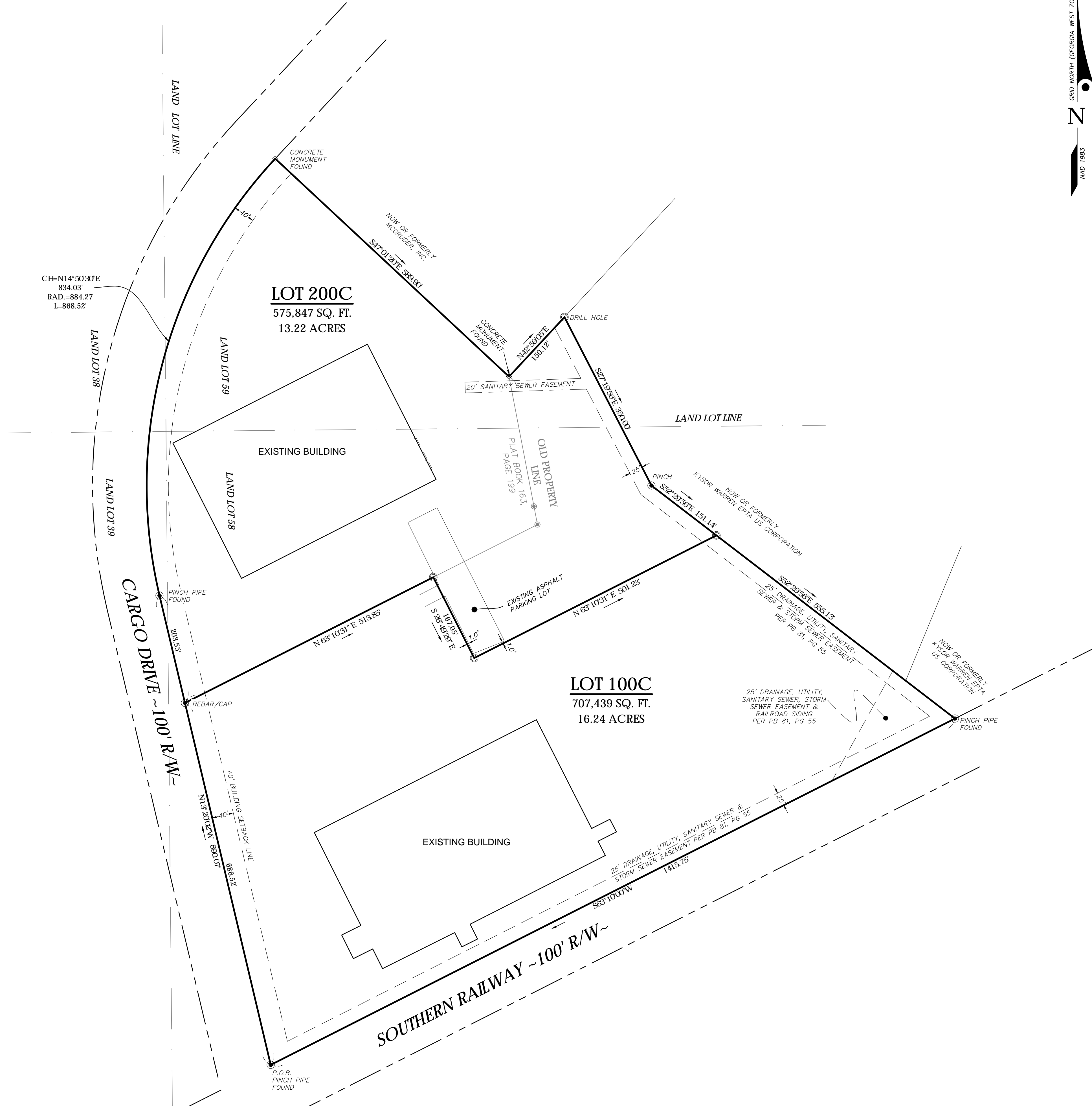
LOT 100C

ALL THAT TRACT OR PARCEL OF LAND LYING AND BEING IN LAND LOT 58, IN THE 9TH DISTRICT OF COLUMBUS, MUSCOGEE COUNTY, GEORGIA, CONTAINING 16.24 ACRES, MORE OR LESS, AND BEING MORE ACCURATELY DESCRIBED AS FOLLOWS:

BEGINNING AT A PINCH PIPE AT THE INTERSECTION OF THE NORTHERLY RIGHT-OF-WAY LINE OF NORFOLK SOUTHERN RAILROAD (100 FEET IN WIDTH) AND EASTERLY RIGHT-OF-WAY LINE OF CARGO DRIVE (100 FEET IN WIDTH); THENCE RUNNING ALONG THE EASTERLY RIGHT-OF-WAY LINE OF CARGO DRIVE NORTH 13 DEGREES 20 MINUTES 02 SECONDS WEST FOR A DISTANCE OF 686.52 FEET TO A CAPPED REBAR; THENCE DEPARTING FROM SAID RIGHT-OF-WAY LINE AND RUNNING NORTH 63 DEGREES 10 MINUTES 31 SECONDS EAST FOR A DISTANCE OF 513.85 FEET TO A CAPPED REBAR; THENCE RUNNING SOUTH 26 DEGREES 49 MINUTES 29 SECONDS EAST FOR A DISTANCE OF 167.05 FEET TO A CAPPED REBAR; THENCE RUNNING NORTH 63 DEGREES 10 MINUTES 31 SECONDS EAST FOR A DISTANCE OF 501.23 FEET TO A CAPPED REBAR; THENCE RUNNING SOUTH 52 DEGREES 29 MINUTES 56 SECONDS EAST FOR A DISTANCE OF 555.13 FEET TO A PINCH PIPE ON THE NORTHERLY RIGHT-OF-WAY LINE OF NORFOLK SOUTHERN RAILROAD ; THENCE RUNNING ALONG THE NORTHERLY RIGHT-OF-WAY OF NORFOLK SOUTHERN RAILROAD SOUTH 63 DEGREES 10 MINUTES 00 SECONDS WEST FOR A DISTANCE OF 1415.75 FEET THE **POINT OF BEGINNING**.

Exhibit B
Map of Property

THIS BLOCK IS RESERVED FOR THE CLERK OF THE SUPERIOR COURT



SURVEY NOTES:

1. THE PROPERTY SHOWN HEREON APPEARS ON THE FEMA FLOOD INSURANCE RATE MAP COVERING COLUMBUS CONSOLIDATED GOVERNMENT, MUSCOGEE COUNTY, GEORGIA, MAP NO. 135158 0038F, AND IS NOT SHOWN NOT TO BE IN A FLOOD ZONE AREA.
2. EQUIPMENT USED: NIKON NPL 362 SERIES TOTAL STATION. THE FIELD DATA UPON WHICH THIS PLAT IS BASED HAS A CLOSURE PRECISION OF 1 FOOT IN 15,100+ FEET AND AN ANGULAR ERROR OF 2 SECONDS PER ANGLE POINT AND WAS ADJUSTED USING THE COMPASS RULE.
3. THIS PLAT HAS BEEN CALCULATED FOR CLOSURE AND IS FOUND TO BE ACCURATE WITHIN 1 FOOT IN 345,906.2 FEET.
4. THERE MAY BE MATTERS OF RECORD, SUCH AS CONVEYANCES, EASEMENTS, RIGHTS-OF-WAY, ETC., THAT AFFECT THE TITLE TO THE SUBJECT PROPERTY WHICH ARE NOT KNOWN TO THE SURVEYOR AND NOT DISCLOSED BY THIS SURVEY.

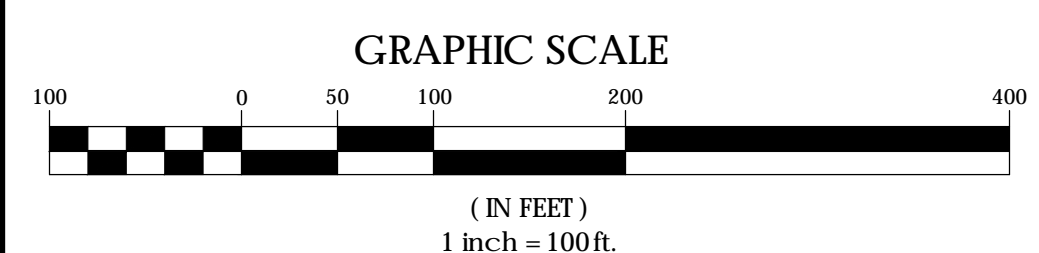
REFERENCES:

REPLAT OF PART OF LAND LOT 38, 39, 58 & 59, 9TH DISTRICT, COLUMBUS, GEORGIA FOR CESSNA AIRCRAFT COMPANY DATED SEPTEMBER 15, 2010 PREPARED BY BECKER SURVEY COMPANY AND RECORDED IN PLAT BOOK 162, PG 297.

CORRECTIVE REPLAT OF REPLAT OF LOTS 100A AND 200A, PART OF LAND LOT 38, 39, 58 & 59, 9TH DISTRICT, COLUMBUS GEORGIA FOR CESSNA AIRCRAFT COMPANY, DATED MARCH 20TH, 2012, REVISED MAY 7TH 2012 PREPARED BY BECKER SURVEY COMPANY AND RECORDED IN PLAT BOOK 163, PG 199.

LEGEND

- IRON PIN SET
- IRON PIN FOUND



LEGEND

- IRON PIN SET
- IRON PIN FOUND

FOR REVIEW ONLY

OWNER'S CERTIFICATE:

STATE OF GEORGIA
COUNTY OF MUSCOGEE

THE UNDERSIGNED CERTIFIES THAT HE OR SHE IS THE FEE SIMPLE OWNER OF THE LAND SHOWN ON THIS PLAT AND THAT THE PLAT AND THE PUBLIC IMPROVEMENTS CONTAINED THEREIN OR ASSOCIATED THEREWITH MEET ALL APPLICABLE REQUIREMENTS AND STANDARDS OF THE COLUMBUS UNIFIED DEVELOPMENT CODE.

OWNER CESSNA AIRCRAFT COMPANY

OWNERS ADDRESS ONE CESSNA BOULEVARD
WICHITA, KS 67215-1424

OWNERS SIGNATURE _____ DATE _____

DEPARTMENT OF ENGINEERING

STATE OF GEORGIA
STREETS AND STORM DRAINAGE DESIGN, CONSTRUCTION PLANS AND EASEMENTS MEET THE REQUIREMENTS OF THE COUNCIL OF COLUMBUS, GEORGIA AND ARE APPROVED BY THE DEPARTMENT OF ENGINEERING OF COLUMBUS, GEORGIA.

DATE _____

DEPARTMENT OF ENGINEERING _____

PLANNING DIVISION

ALL REQUIREMENTS OF THE COLUMBUS UNIFIED DEVELOPMENT CODE HAVING BEEN REPRESENTED AS BEING FULFILLED BY THIS PLAT, AND THE RELATED AS-BUILT SURVEYS APPROVED ON (_____), THE UNDERSIGNED ACTING UNDER THE AUTHORITY OF THE CITY COUNCIL OF THE COLUMBUS CONSOLIDATED GOVERNMENT HEREBY APPROVES THIS PLAT FOR RECORDATION BY THE CLERK OF THE SUPERIOR COURT ALONG WITH THE ACCOMPANYING DEEDS OF DEDICATION OF ALL STREETS, EASEMENTS, AND OTHER PUBLIC AREAS AND IMPROVEMENTS SHOWN THEREON, SUBJECT TO MAINTENANCE AND GUARANTEE BY THE OWNER FOR TWO YEARS FROM THE DATE OF APPROVAL.

DATE _____

PLANNING DIVISION _____

NOTES

CONSOLIDATED GOVERNMENT OF COLUMBUS SHALL NOT BE RESPONSIBLE FOR ANY EROSION TO SAID BANKS OR THE RESTORATION AND STABILIZATION THEREOF.

ALL DRAINAGE AND/OR SEWER EASEMENTS SHOWN HEREON ARE PRIVATE EASEMENTS EXCEPT THOSE CROSS HATCHED (//////) WHICH ARE PUBLIC.

PRIOR TO COMMENCING ANY LAND DISTURBING ACTIVITY ON ANY LOT HEREON, A TREE PROTECTION/PLANTING PLAN MUST BE APPROVED BY THE CITY ARBORIST. SAID PLAN MUST PROVIDE FOR A MINIMUM OF 10 TREE DENSITY UNITS PER ACRE AND COMPLY WITH THE APPLICABLE SECTIONS OF CITY ORDINANCE NO. 02-43.

SURVEYOR'S CERTIFICATE:

AS REQUIRED BY SUBSECTION (j) OF O.C.G.A. SECTION 15-6-67, THIS PLAT HAS BEEN PREPARED BY A LAND SURVEYOR AND APPROVED BY ALL APPLICABLE LOCAL JURISDICTIONS FOR RECORDING AS EVIDENCED BY APPROVAL CERTIFICATES, SIGNATURES, STAMPS OR STATEMENTS HEREON. SUCH APPROVALS OR AFFIRMATIONS SHOULD BE CONFIRMED WITH THE APPROPRIATE GOVERNMENTAL BODIES BY ANY PURCHASER OR USER OF THIS PLAT AS TO INTENDED USE OF ANY PARCEL.

FURTHERMORE, THE UNDERSIGNED LAND SURVEYOR CERTIFIES THAT THIS PLAT COMPLIES WITH THE MINIMUM TECHNICAL STANDARDS FOR PROPERTY SURVEYS IN GEORGIA AS SET FORTH IN THE RULES AND REGULATIONS OF THE GEORGIA BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS AND LAND SURVEYORS AND AS SET FORTH IN O.C.G.A. SECTION 15-6-67.

TERRY D. BECKER _____ DATE: _____
GEORGIA REGISTERED LAND SURVEYOR #2579

**REPLAT OF
LOTS 100B AND 200B
PART OF LAND LOTS 38, 39, 58 & 59, 9TH DISTRICT
COLUMBUS, MUSCOGEE COUNTY, GEORGIA
FOR
CESSNA AIRCRAFT COMPANY**

SCALE: 1" = 100' APRIL 27th, 2021

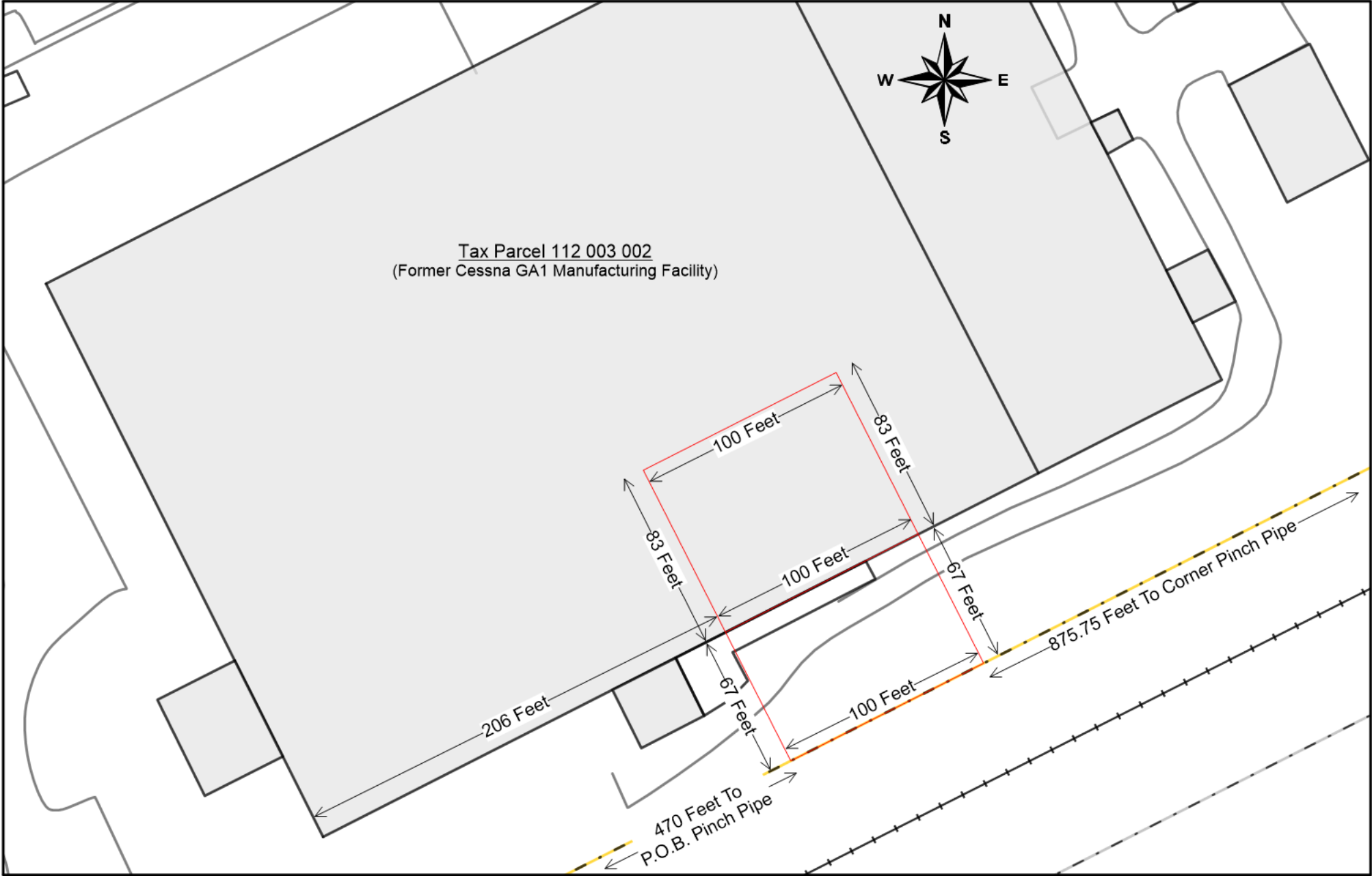
BECKER
ESTD 1953
SURVEY COMPANY, INC.

Billing Address:
3821 Willow Bend Run
Columbus, GA 31907
www.beckersurvey.com

Field Office:
7000 Storage Court, Suite 7
Columbus, GA 31907
Office: 706 562-8714
Fax: 800 786-2978
C.O.A. - CA-1035-15

Exhibit B1
Map of RUZ

Tax Parcel 112 003 002
 (Former Cessna GA1 Manufacturing Facility)



Property Boundary

Soil Restricted Use Zone

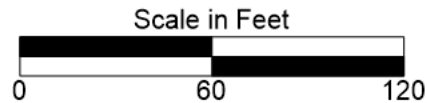


Exhibit B1
Restricted Use Zone
 Cessna GA1 Facility
 Columbus, Muscogee County, Georgia

Attachment B

SVE System Components



Phone: 770-538-0020

Fax: 770-538-0022

pdblowers, Inc.
2280 Chicopee Mill Rd SW
Gainesville GA 30504
USA

Quote Number: 16585

Quote

Page: 1 of 2

<p>Quote To:</p> <p>Kemron Environmental 1359-A Ellsworth Industrial Blvd. Atlanta GA 30318 USA</p> <p>Phone: 404-394-6037 Fax:</p>	<p>Date: 9/8/2016</p> <p>Expires: 9/23/2016</p> <p>Reference:</p> <p>Sales Person: Danny Kelley</p> <p>Fax: 770-538-0020 dkelley@pdblowers.com</p>
-------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Terms: Credit Card Only

Ship Via:

Base Currency.

Line	Part	Description	Rev	Drawing
1	16585.001	Enviromental Equipment, Claw vacuum pump, separator		

Lead Time

Soil Vapor Extraction System will include:

Busch MM1142 BV
MM1142.BV06.11XX
Item No. 1342.916.027
103 ACFM
28.4" Hg End vacuum
5 HP, 230/460 Volt, 3 Phase, 60 hz TEFC motor

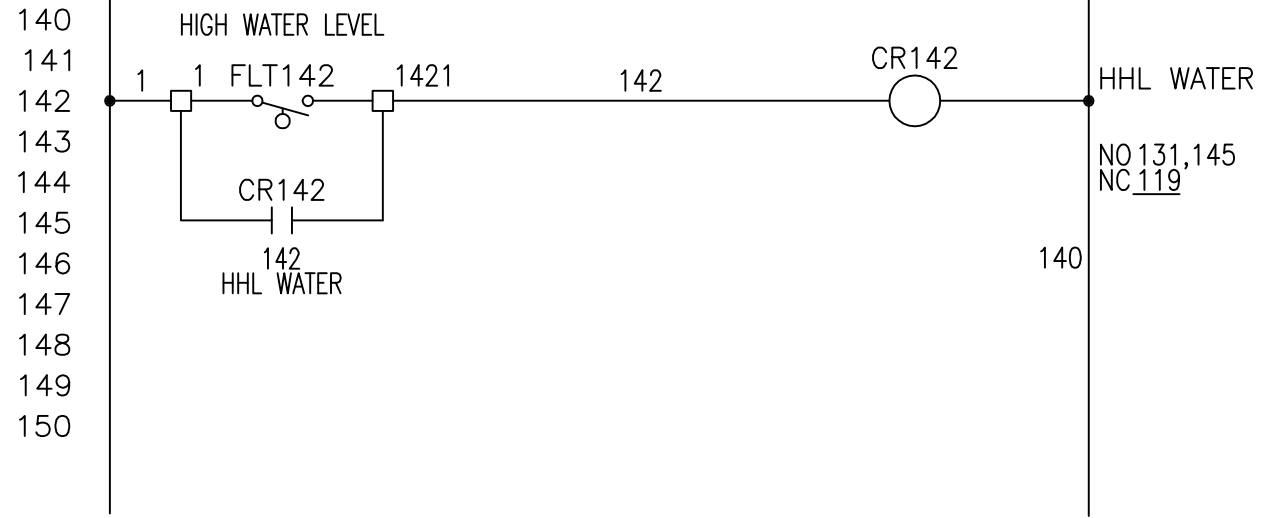
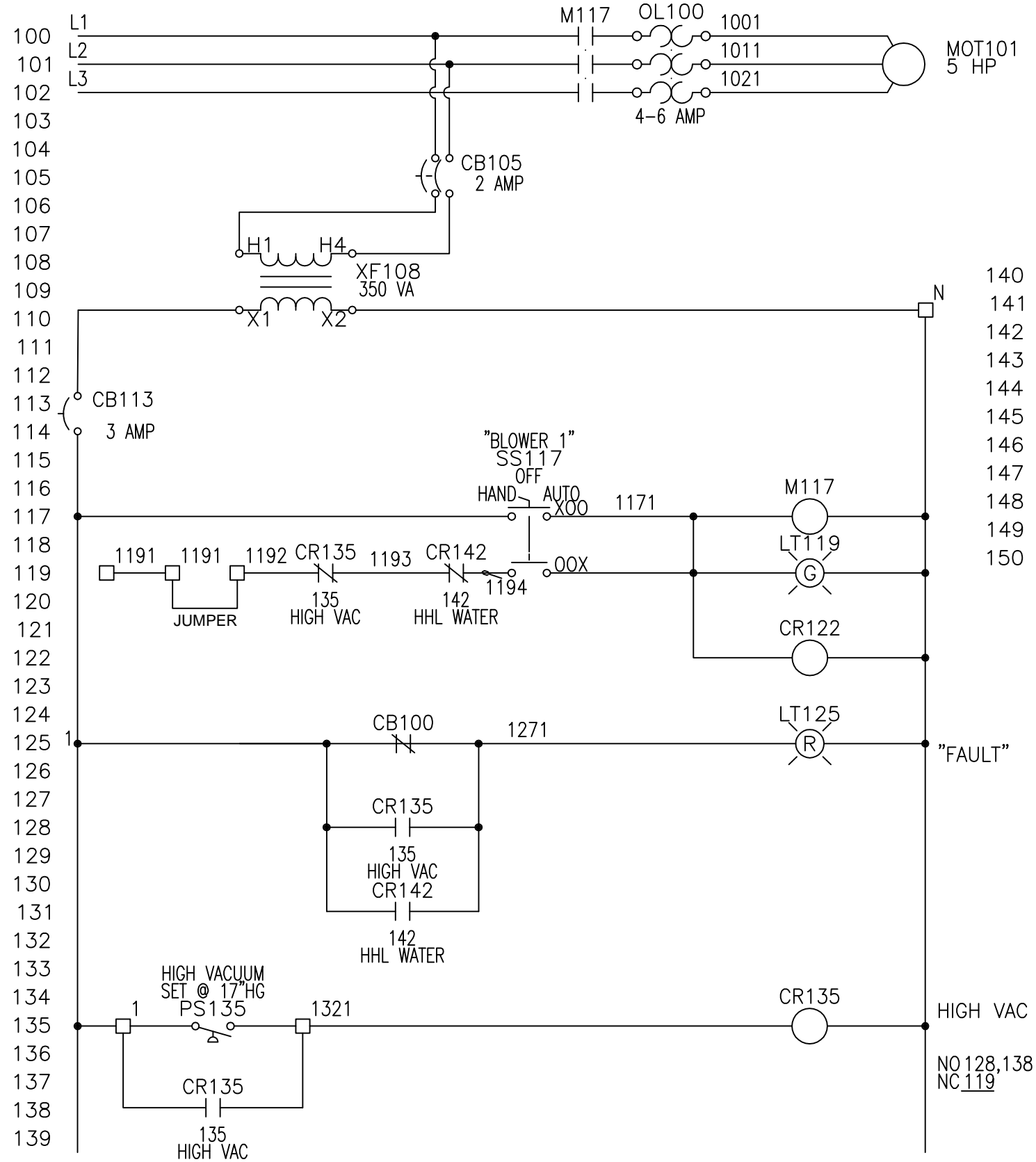
Separator, 40 gallon
Hlgh High level switch
PVC sightglass
Vacuum gauge
Manual Drain (no pump)
Vacuum relief valve

Inline Filter
Dilution filter with gate valve
Outlet Temperature gauge
pitot tube with Magnehelic gauge shipped separately

Motor Starter Panel
230 volt/ 3 phase
Contactora/overload only
H-O-A switch
terminal blocks for switches

Skid, painted grey with forkways, with all equipment mounted

Quantity	Unit Price	Discount %	Net Price
1.00EA	15,250.00 /1		15,250.00 USD



REV	DESCRIPTION	DATE	BY
		pdblowers, INC. 2280 CHICOPEE MILL RD SW GAINESVILLE, GA. 30504 TOLL FREE: (800) 536-9933, (770) 538-0020, FAX: (770) 538-0022	
SCALE:	N.T.S.	TITLE: SO# 362777 BLOWER SYSTEM	
DRAWN BY:	MDR	DATE:	11/14/2016
CHECKED BY:		DATE:	
APPD. BY:		DATE:	
CUSTOMER		DRAWING NO.	SHEET NO. REV.
		MC 65079	1/1



Installation and Operating Instructions

Vacuum Pumps

Mink MM 1104, 1144, 1102, 1142 BV



Busch Produktions GmbH
Schauinslandstr. 1
79689 Maulburg
Germany

Table of Contents

Preface	2
Product Description	3
Use	3
Principle of Operation	3
Cooling	3
On/off Switch	3
Safety	4
Intended Use	4
Safety Notes	4
Noise Emission	4
Transport	4
Transport in Packaging	4
Transport without Packaging	4
Storage	4
Short-term Storage	4
Conservation	4
Installation and Commissioning	5
Installation Prerequisites	5
Mounting Position and Space	5
Suction Connection	5
Gas Discharge	5
Electrical Connection / Controls	5
Installation	6
Mounting	6
Checking Synchronising Gear Oil	6
Connecting Electrically	6
Connecting Lines/Pipes	6
Recording of Operational Parameters	6
Operation Notes	7
Use	7
Conveying Condensable Vapours	7
Maintenance	7
Maintenance Schedule	7
Monthly:	8
Every 3 Months:	8
Every 6 Months:	8
Every Year:	8
Every 20000 Operating Hours:	8
Changing Synchronising Gear Oil	8
Overhaul	8
Removal from Service	8
Temporary Removal from Service	8
Recommissioning	8
Dismantling and Disposal	9
Troubleshooting	10
Sectional Drawing	13
Spare Parts	14
Spare Parts Kits	14
Accessories	14
Oil	14
EC-Declaration of Conformity	15
Technical Data	16
Busch – All over the World in Industry	17

Preface

Congratulations on your purchase of the Busch vacuum pump. With watchful observation of the field's requirements, innovation and steady development Busch delivers modern vacuum and pressure solutions worldwide.

These operating instructions contain information for

- product description,
- safety,
- transport,
- storage,
- installation and commissioning,
- maintenance,
- overhaul,
- troubleshooting and
- spare parts

of the vacuum pump.

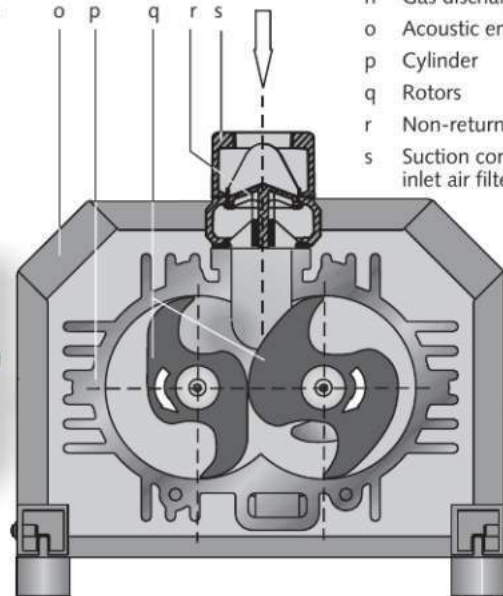
For the purpose of these instructions, "handling" the vacuum pump means the transport, storage, installation, commissioning, influence on operating conditions, maintenance, troubleshooting and overhaul of the vacuum pump.

Prior to handling the vacuum pump these operating instructions shall be read and understood. If anything remains to be clarified please contact your Busch representative!

Keep these operating instructions and, if applicable, other pertinent operating instructions available on site.



- a Directional arrows
- b Nameplate, vacuum pump
- c Terminal box
- d Oil drain plug
- e Oil sight glass
- f Nameplate, drive motor
- g Eye bolt
- h Oil fill plug (=venting valve, underneath lid)
- i Inlet air filter (optional)
- j Suction connection (with inlet air filter)
- k Cooling air outlet
- l Cooling air inlet
- m Position of condensate drain cock (optional for version "Aqua")
- n Gas discharge
- o Acoustic enclosure
- p Cylinder
- q Rotors
- r Non-return valve
- s Suction connection (without inlet air filter)



Product Description

Use

The vacuum pump is intended for

- the suction of
- air and other dry, non-aggressive, non-toxic and non-explosive gases

Conveying media with a higher density than air leads to an increased thermal and mechanical load on the vacuum pump and is permissible only after prior consultation with Busch.

Max. allowed temperature of the inlet gas: 40 °C

Standard-version:

The gas shall be free from vapours that would condensate under the temperature and pressure conditions inside the vacuum pump.

Version "Aqua":

The vacuum pump features the corrosion protection coating CPC and is capable of conveying water vapour (→ Installation and Commissioning ↘ Operating Notes ↘ Conveying Condensable Vapours). Conveyance of other vapours shall be agreed upon with Busch. Conveyance of water or other liquids in liquid phase increases the power consumption and shall therefore be avoided (risk of drive overload).

The vacuum pump is intended for the placement in a non-potentially explosive environment.

The vacuum pump is thermally suitable for continuous operation.

The vacuum pump is ultimate pressure proof.

Principle of Operation

The vacuum pump works on the claw principle.

The components are dimensioned such, that on the one hand there is never contact between the two claws or between a claw and the cylinder, on the other hand the gaps are small enough to keep the clearance loss between the chambers low.

In order to avoid the suction of solids, the vacuum pump is equipped with a screen (715) in the suction connection.

In order to avoid reverse rotation after switching off, the vacuum pump is equipped with a non-return valve (r, 714).

The vacuum pump compresses the inlet gas absolutely oil-free. A lubrication of the pump chamber is neither necessary nor allowed.

Cooling

The vacuum pump is cooled by

- radiation of heat from the surface of the vacuum pump
- the air flow from the fan wheel of the drive motor
- the process gas
- the air flow from the fan wheel on the shaft of the vacuum pump

On/off Switch

The vacuum pump comes without on/off switch. The control of the vacuum pump is to be provided in the course of installation.

Safety

Intended Use

Definition: For the purpose of these instructions, "handling" the vacuum pump means the transport, storage, installation, commissioning, influence on operating conditions, maintenance, troubleshooting and overhaul of the vacuum pump.

The vacuum pump is intended for industrial use. It shall be handled only by qualified personnel.

The allowed media and operational limits (→ Product Description) and the installation prerequisites (→ Installation and Commissioning ▾ Installation Prerequisites) of the vacuum pump shall be observed both by the manufacturer of the machinery into which the vacuum pump is to be incorporated and by the operator.

The maintenance instructions shall be observed.

Prior to handling the vacuum pump these operating instructions shall be read and understood. If anything remains to be clarified please contact your Busch representative!

Safety Notes

The vacuum pump has been designed and manufactured according to the state-of-the-art. Nevertheless, residual risks may remain. These operating instructions inform about potential hazards where appropriate. Safety notes are tagged with one of the keywords DANGER, WARNING and CAUTION as follows:



DANGER

Disregard of this safety note will always lead to accidents with fatal or serious injuries.



WARNING

Disregard of this safety note may lead to accidents with fatal or serious injuries.



CAUTION

Disregard of this safety note may lead to accidents with minor injuries or property damage.

Noise Emission

For the sound pressure level in free field according to EN ISO 2151 → Technical Data.



CAUTION

The vacuum pump emits noise of high intensity in a narrow band.

Risk of damage to the hearing.

Persons staying in the vicinity of a non noise insulated vacuum pump over extended periods shall wear ear protection.

Transport

Transport in Packaging

Packed on a pallet the vacuum pump is to be transported with a forklift.

Transport without Packaging

In case the vacuum pump is packed in a cardboard box with inflated cushions:

Remove the inflated cushions from the box

In case the vacuum pump is in a cardboard box cushioned with rolled corrugated cardboard:

Remove the corrugated cardboard from the box

In case the vacuum pump is laid in foam:

Remove the foam

In case the vacuum pump is bolted to a pallet or a base plate:

Remove the bolting between the vacuum pump and the pallet/base plate

In case the vacuum pump is fastened to the pallet by means of tightening straps:

Remove the tightening straps



CAUTION

Do not walk, stand or work under suspended loads.

Note: The position of the eyebolt (g, 615) fits to the centre of gravity of a vacuum pump incl. drive motor. If a vacuum pump without drive motor is to be lifted, attach another belt/rope at a suitable point.

Make sure that the eyebolt (g, 615) is fully screwed in

Attach lifting gear securely to the eyebolt (g, 615) on the synchronising gear

Attach the lifting gear to a crane hook with safety latch

Lift the vacuum pump with a crane

In case the vacuum pump was bolted to a pallet or a base plate:

Remove the stud bolts from the rubber feet

Storage

Short-term Storage

Make sure that the suction connection and the gas discharge are closed (leave the provided plugs in)

Store the vacuum pump

- if possible in original packaging,
- indoors,
- dry,
- dust free and
- vibration free

Conservation

In case of adverse ambient conditions (e.g. aggressive atmosphere, frequent temperature changes) conserve the vacuum pump immediately. In case of favourable ambient conditions conserve the vacuum pump if a storage of more than 3 months is scheduled.

Make sure that all ports are firmly closed; seal all ports that are not sealed with PTFE-tape, gaskets or o-rings with adhesive tape

Note: VCI stands for "volatile corrosion inhibitor". VCI-products (film, paper, cardboard, foam) evaporate a substance that condenses in molecular thickness on the packed good and by its electro-chemical properties effectively suppresses corrosion on metallic surfaces. However, VCI-products may attack the surfaces of plastics and elastomers. Seek advice from your local packaging dealer! Busch uses CORTEC VCI 126 R film for the overseas packaging of large equipment.

Wrap the vacuum pump in VCI film

Store the vacuum pump

- if possible in original packing,
- indoors,
- dry,
- dust free and
- vibration free.

For commissioning after conservation:

Make sure that all remains of adhesive tape are removed from the ports

Commission the vacuum pump as described in the chapter → Installation and Commissioning

Installation and Commissioning

Installation Prerequisites



CAUTION

In case of non-compliance with the installation prerequisites, particularly in case of insufficient cooling:

Risk of damage or destruction of the vacuum pump and adjoining plant components!

Risk of injury!

The installation prerequisites must be complied with.

Make sure that the integration of the vacuum pump is carried out such that the essential safety requirements of the Machine Directive 98/37/EC are complied with (in the responsibility of the designer of the machinery into which the vacuum pump is to be incorporated; note in the → EC-Declaration of Conformity)

Mounting Position and Space

Make sure that the environment of the vacuum pump is not potentially explosive

Make sure that the following ambient conditions will be complied with:

- Ambient temperature: 0 ... 40 °C
- Ambient pressure: atmospheric

Make sure that the environmental conditions comply with the protection class of the drive motor (according to the nameplate)

Make sure that the vacuum pump will be placed or mounted horizontally

Make sure that the base for placement / mounting base is even

Make sure that in order to warrant a sufficient cooling there will be a clearance of minimum 1 m between the vacuum pump and nearby walls

Make sure that no heat sensitive parts (plastics, wood, cardboard, paper, electronics) will touch the surface of the vacuum pump

Make sure that the installation space or location is vented such that a sufficient cooling of the vacuum pump is warranted



CAUTION

During operation the surface of the vacuum pump may reach temperatures of more than 70 °C.

Risk of burns!

Make sure that the vacuum pump will not be touched inadvertently during operation, provide a guard if appropriate

Make sure that the sight glass (e, 76) of the synchronising gear will remain accessible

In case the synchronising gear oil change is planned to be carried out on location:

Make sure that the drain port (d, 80) and the filling port (h, 72) of the synchronising gear will remain easily accessible

Suction Connection



CAUTION

Intruding foreign objects or liquids can destroy the vacuum pump.

In case the inlet gas can contain dust or other foreign solid particles:

Make sure that a suitable filter (5 micron or less) is installed upstream the vacuum pump

Make sure that the suction line fits to the suction connection (j, s) of the vacuum pump

Make sure that the gas will be sucked through a vacuum-tight flexible hose or a pipe

In case of using a pipe:

Make sure that the pipe will cause no stress on the vacuum pump's connection, if necessary use bellows

Make sure that the line size of the suction line over the entire length is at least as large as the suction connection (j, s) of the vacuum pump

In case of very long suction lines it is prudent to use larger line sizes in order to avoid a loss of efficiency. Seek advice from your Busch representative!

In case the vacuum shall be maintained after shutdown of the vacuum pump:

Provide a manual or automatic operated valve (= non-return valve) in the suction line

Version "Aqua", if very humid process gases and/or adverse operating cycles bear the risk, that condensates remain in the vacuum pump:

Provide a shut-off valve, a drip-leg and a drain cock in the suction line, so that condensates can be drained from the suction line

Provide a valve for the unthrottled suction of ambient air (ambient air valve) between the shut-off valve and the vacuum pump (in order to dry the vacuum pump after process end).

Make sure that the anti-pulsation chamber is equipped with a condensate drain cock (m) (optional; if the condensate drain cock is missing contact the Busch service)

Make sure that the suction line does not contain foreign objects, e.g. welding scales

Gas Discharge

The following guidelines for the discharge line do not apply, if the aspirated air is discharged to the environment right at the vacuum pump.

Make sure that the discharge line fits to the gas discharge (n) of the vacuum pump

In case of using a pipe:

Make sure that the pipe will cause no stress on the vacuum pump's connection, if necessary use bellows

Make sure that the line size of the discharge line over the entire length is at least as large as the gas discharge (n) of the vacuum pump

In case the length of the discharge line exceeds 2 m it is prudent to use larger line sizes in order to avoid a loss of efficiency and an overload of the vacuum pump. Seek advice from your Busch representative!

Make sure that the discharge line either slopes away from the vacuum pump or provide a liquid separator or a drip leg with a drain cock, so that no liquids can back up into the vacuum pump

Electrical Connection / Controls

Make sure that the stipulations acc. to the EMC-Directive 89/336/EEC and Low-Voltage-Directive 73/23/EEC as well as the EN-standards, electrical and occupational safety directives and the local or national regulations, respectively, are complied with (this is in the responsibility of the designer of the machinery into which

the vacuum pump is to be incorporated; → note in the EC-Declaration of Conformity).

Make sure that the power supply for the drive motor is compatible with the data on the nameplate of the drive motor

Make sure that an overload protection according to EN 60204-1 is provided for the drive motor

Make sure that the drive of the vacuum pump will not be affected by electric or electromagnetic disturbance from the mains; if necessary seek advice from the Busch service

In case of mobile installation:

Provide the electrical connection with grommets that serve as strain-relief

Installation

Mounting

Make sure that the ↘ Installation Prerequisites are complied with

Set down or mount the vacuum pump at its location

Checking Synchronising Gear Oil

The vacuum pump is delivered with oil filled synchronising gear.

The level shall be slightly above the middle of the sight glass (e, 76).

Check on the sight glass (e, 76) that the proper amount of oil is filled

Connecting Electrically



WARNING

Risk of electrical shock, risk of damage to equipment.

Electrical installation work must only be executed by qualified personnel that knows and observes the following regulations:

- IEC 364 or CENELEC HD 384 or DIN VDE 0100, respectively,
- IEC-Report 664 or DIN VDE 0110,
- BGV A2 (VBG 4) or corresponding national accident prevention regulation.



CAUTION

The connection schemes given below are typical. Depending on the specific order or for certain markets deviating connection schemes may apply.

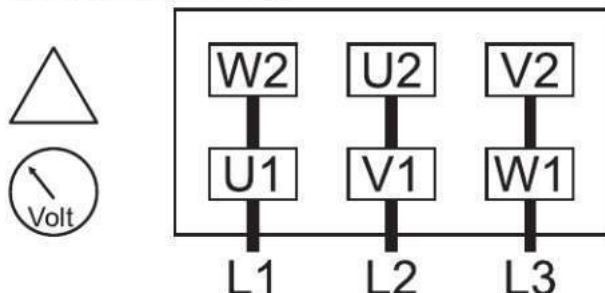
Risk of damage to the drive motor!

The inside of the terminal box shall be checked for drive motor connection instructions/schemes.

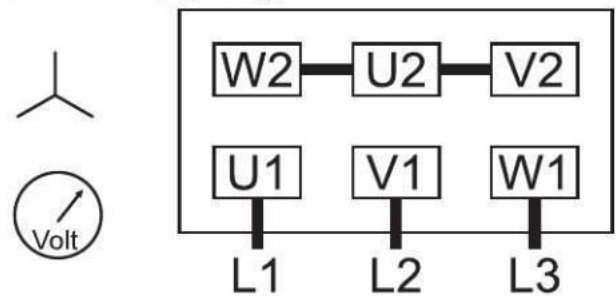
Electrically connect the drive motor

Connect the protective earth conductor

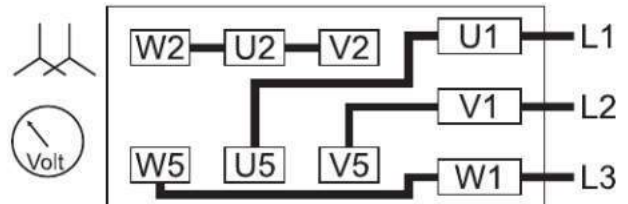
Delta connection (low voltage):



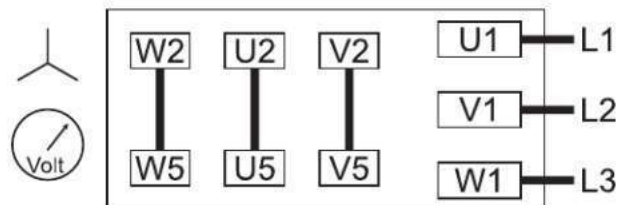
Star connection (high voltage):



Double star connection, multi-voltage motor (low voltage):



Star connection, multi-voltage motor (high voltage):



CAUTION

Operation in the wrong direction of rotation can destroy the vacuum pump in short time.

Prior to starting-up it must be made sure that the vacuum pump is operated in the proper direction.

Determine the intended direction of rotation with the arrow (a) (stuck on or cast)

"Bump" the drive motor

Watch the fan wheel of the drive motor and determine the direction of rotation just before the fan wheel stops

If the rotation must be changed:

Switch any two of the drive motor wires

Connecting Lines/Pipes

Connect the suction line

Connect the discharge line

Installation without discharge line:

Make sure that the gas discharge (n) is open

Make sure that all provided covers, guards, hoods etc. are mounted

Make sure that cooling air inlets and outlets are not covered or obstructed and that the cooling air flow is not affected adversely in any other way

Recording of Operational Parameters

As soon as the vacuum pump is operated under normal operating conditions:

Measure the drive motor current and record it as reference for future maintenance and troubleshooting work

Operation Notes

Use



CAUTION

The vacuum pump is designed for operation under the conditions described below.

In case of disregard risk of damage or destruction of the vacuum pump and adjoining plant components!

Risk of injury!

The vacuum pump must only be operated under the conditions described below.

The vacuum pump is intended for

- the suction

of

- air and other dry, non-aggressive, non-toxic and non-explosive gases

Conveying media with a higher density than air leads to an increased thermal and mechanical load on the vacuum pump and is permissible only after prior consultation with Busch.

Max. allowed temperature of the inlet gas: 40 °C

Standard-version:

The gas shall be free from vapours that would condensate under the temperature and pressure conditions inside the vacuum pump.

Version "Aqua":

The vacuum pump features the corrosion protection coating CPC and is capable of conveying water vapour (↘ Conveying Condensable Vapours). Conveyance of other vapours shall be agreed upon with Busch. Conveyance of water or other liquids in liquid phase increases the power consumption and shall therefore be avoided (risk of drive overload).

The vacuum pump is intended for the placement in a non-potentially explosive environment.

The vacuum pump is thermally suitable for continuous operation.

The vacuum pump is ultimate pressure proof.



CAUTION

During operation the surface of the vacuum pump may reach temperatures of more than 70 °C.

Risk of burns!

The vacuum pump shall be protected against contact during operation, it shall cool down prior to a required contact or heat protection gloves shall be worn.



CAUTION

The vacuum pump emits noise of high intensity in a narrow band.

Risk of damage to the hearing.

Persons staying in the vicinity of a non noise insulated vacuum pump over extended periods shall wear ear protection.

Make sure that all provided covers, guards, hoods etc. remain mounted

Make sure that protective devices will not be disabled

Make sure that cooling air inlets and outlets will not be covered or obstructed and that the cooling air flow will not be affected adversely in any other way

Make sure that the installation Prerequisites (→ Installation and Commissioning ↘ Installation Prerequisites) are complied with and will remain complied with, particularly that a sufficient cooling will be ensured

Conveying Condensable Vapours

Version "Aqua":



CAUTION

Due to the corrosion protection coating CPC the vacuum pump is capable of conveying water vapour.

Very humid process gases and/or adverse operating cycles can lead to residual condensates, though, which cause corrosion.

If this is the case, it is necessary to counteract residual condensates by warming up the vacuum pump, conveyance of ambient air after process end and regular draining of the anti-pulsation chamber (m).

Close the shut-off valve in the suction line

Warm up the vacuum pump for approx. 10 minutes

At process start:

Open the shut-off valve in the suction line

At the process end:

Close the shut-off valve in the suction line

Open the ambient air valve

Operate the vacuum pump for another approx. 10 minutes

Close the ambient air valve

Regularly drain condensate from the anti-pulsation chamber (m)

Maintenance



DANGER

In case the vacuum pump conveyed gas that was contaminated with foreign materials which are dangerous to health, harmful material can reside in filters.

Danger to health during inspection, cleaning or replacement of filters.

Danger to the environment.

Personal protective equipment must be worn during the handling of contaminated filters.

Contaminated filters are special waste and must be disposed of separately in compliance with applicable regulations.



CAUTION

During operation the surface of the vacuum pump may reach temperatures of more than 70 °C.

Risk of burns!

Prior to disconnecting connections make sure that the connected pipes/lines are vented to atmospheric pressure

Maintenance Schedule

Note: The maintenance intervals depend very much on the individual operating conditions. The intervals given below shall be considered as starting values which should be shortened or extended as appropriate. Particularly heavy duty operation, such like high dust loads in the environment or in the process gas, other contaminations or ingress of process material, can make it necessary to shorten the maintenance intervals significantly.

Monthly:

Make sure that the vacuum pump is shut down and locked against inadvertent start up

In case an inlet air filter is installed:

Check the inlet air filter, if necessary clean (with compressed air) or replace

In case of operation in a dusty environment:

Clean as described under ↗ Every 6 Months:

Every 3 Months:

Make sure that the vacuum pump is shut down

Check the level of the synchronising gear oil

The level shall be slightly above the middle of the sight glass (e, 76).

The level of the synchronising gear should stay constant over the life-time of the oil. If the level does fall, the gear is leaky and the vacuum pump requires repair (Busch service).

Every 6 Months:

Make sure that the housing is free from dust and dirt, clean if necessary

Make sure that the vacuum pump is shut down and locked against inadvertent start up

Remove the acoustic enclosure

Note: Make sure that the foam mats do **not** get soaked with water.

Clean the fan cowlings, fan wheels, the ventilation grilles and cooling fins

Mount the acoustic enclosure

Every Year:

Make sure that the vacuum pump is shut down and locked against inadvertent start up

In case an inlet air filter is installed:

Clean (with compressed air) or replace the inlet air filter

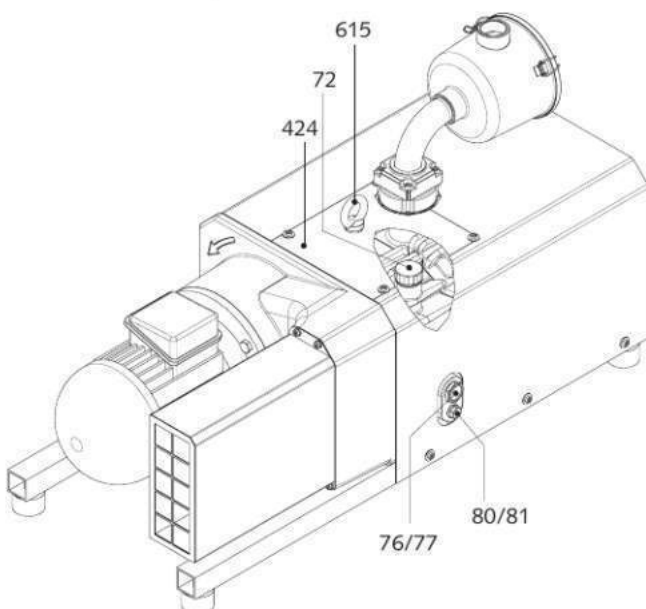
Check the inlet screen (715), clean if necessary

Every 20000 Operating Hours:

Change the synchronising gear oil

Changing Synchronising Gear Oil

Make sure that the vacuum pump is shut down and locked against inadvertent start up



Remove the eyebolt (g, 615)

Remove the lid (424)

Undo the venting valve (h, 72) for venting

Place a drain tray underneath the drain plug (d, 80)

Open the drain plug (d, 80) and drain the oil

Make sure that the seal ring on the drain plug (d, 80) is serviceable, replace if necessary

Firmly reinsert the drain plug (d, 80) together with the seal ring

Remove the venting valve (h, 72) completely

Fill in new gear oil until the level is slightly above the middle of the sight glass (e, 76)

Make sure that the seal ring on the venting valve (h, 72) is undamaged, if necessary replace the venting valve (h, 72)

Firmly reinsert the venting valve (h, 72) together with the seal ring

Mount the lid (424)

Reinsert the eyebolt (g, 615)

Dispose of the used oil in compliance with applicable regulations

Overhaul



CAUTION

In order to achieve best efficiency and a long life the vacuum pump was assembled and adjusted with precisely defined tolerances.

This adjustment will be lost during dismantling of the vacuum pump.

It is therefore strictly recommended that any dismantling of the vacuum pump that is beyond of what is described in this manual shall be done by Busch service.



In case the vacuum pump conveyed gas that was contaminated with foreign materials which are dangerous to health, harmful material can reside in pores, gaps and internal spaces of the vacuum pump.

Danger to health during dismantling of the vacuum pump.

Danger to the environment.

Prior to shipping the vacuum pump shall be decontaminated as good as possible and the contamination status shall be stated in a "Declaration of Contamination" (form downloadable from www.busch-vacuum.com).

Busch service will only accept vacuum pumps that come with a completely filled in and legally binding signed "Declaration of Contamination" (form downloadable from www.busch-vacuum.com).

Removal from Service

Temporary Removal from Service

Prior to disconnecting pipes/lines make sure that all pipes/lines are vented to atmospheric pressure

Recommissioning

Observe the chapter → Installation and Commissioning

Dismantling and Disposal



In case the vacuum pump conveyed gas that was contaminated with foreign materials which are dangerous to health, harmful material can reside in pores, gaps and internal spaces of the vacuum pump.

Danger to health during dismantling of the vacuum pump.

Danger to the environment.

During dismantling of the vacuum pump personal protective equipment must be worn.

The vacuum pump must be decontaminated prior to disposal.

Drain the oil

Make sure that materials and components to be treated as special waste have been separated from the vacuum pump

Make sure that the vacuum pump is not contaminated with harmful foreign material

According to the best knowledge at the time of printing of this manual the materials used for the manufacture of the vacuum pump involve no risk.

Dispose of the used oil in compliance with applicable regulations

Dispose of the vacuum pump as scrap metal

Troubleshooting



WARNING

Risk of electrical shock, risk of damage to equipment.

Electrical installation work must only be executed by qualified personnel that knows and observes the following regulations:

- IEC 364 or CENELEC HD 384 or DIN VDE 0100, respectively,
- IEC-Report 664 or DIN VDE 0110,
- BGV A2 (VGB 4) or equivalent national accident prevention regulation.



CAUTION

During operation the surface of the vacuum pump may reach temperatures of more than 70 °C.

Risk of burns!

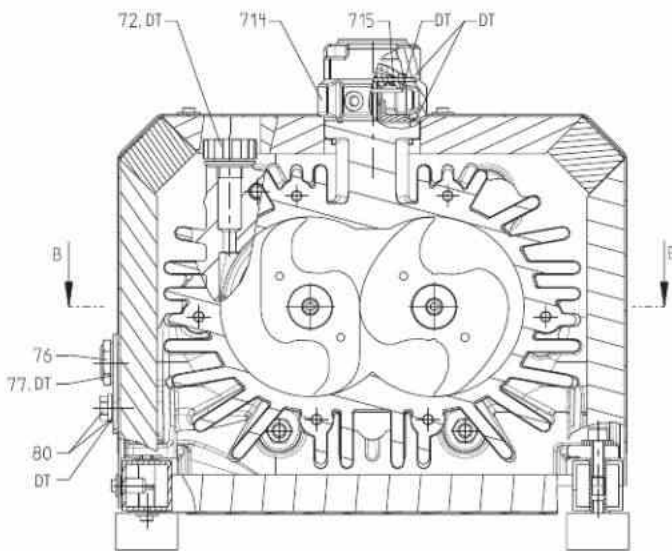
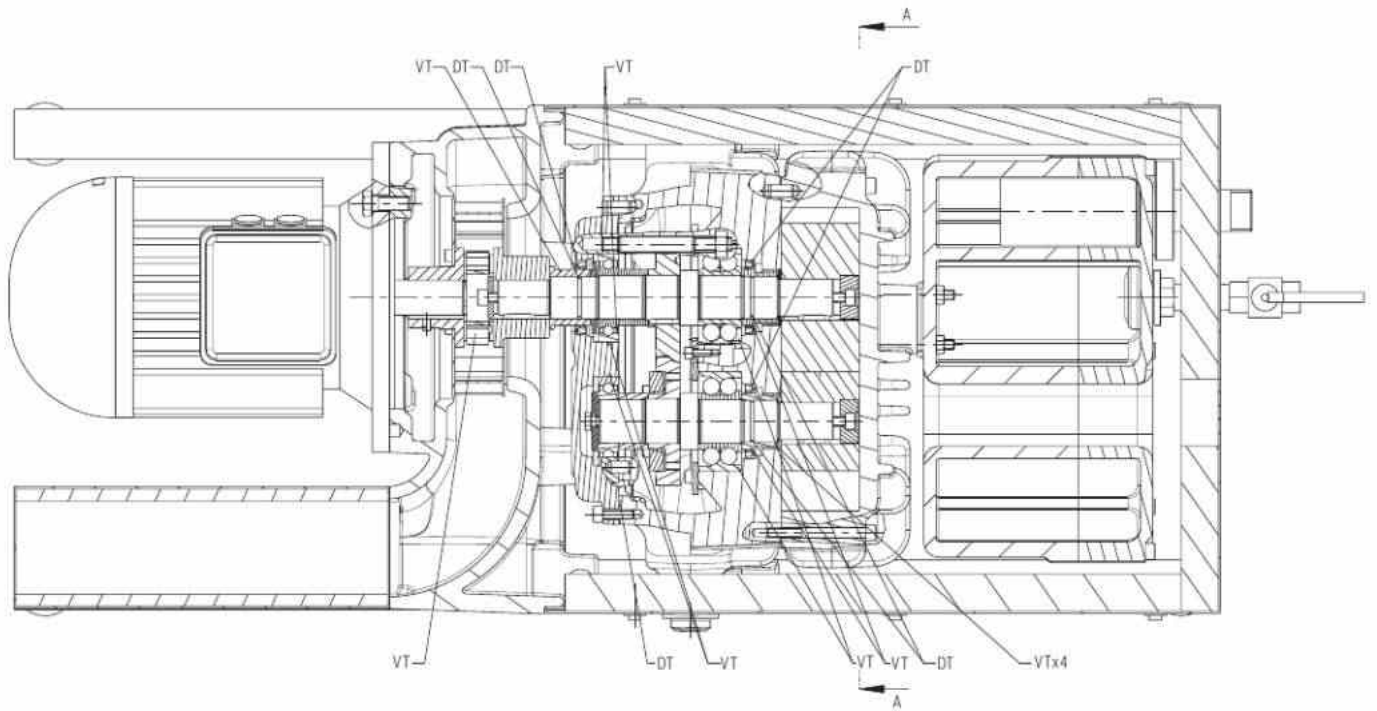
Let the vacuum pump cool down prior to a required contact or wear heat protection gloves.

Problem	Possible Cause	Remedy
The vacuum pump does not reach the usual pressure The drive motor draws a too high current (compare with initial value after commissioning) Evacuation of the system takes too long	The vacuum system or suction line is not leak-tight	Check the hose or pipe connections for possible leak
	In case a vacuum relief valve/regulating system is installed: The vacuum relief valve/regulating system is misadjusted or defective	Adjust, repair or replace, respectively
	The screen (715) in the suction connection (j, s) is partially clogged	Clean the screen (715) If cleaning is required too frequently install a filter upstream
	In case a filter is installed on the suction connection (j, s): The filter on the suction connection (j, s) is partially clogged	Clean or replace the inlet air filter, respectively
	Partial clogging in the suction, discharge or pressure line	Remove the clogging
	Long suction, discharge or pressure line with too small diameter	Use larger diameter
	The valve disk of the inlet non-return valve is stuck in closed or partially open position	Disassemble the inlet, clean the screen (715) and the valve (r, 714) as required and reassemble
	Internal parts worn or damaged	Repair the vacuum pump (Busch service)
The gas conveyed by the vacuum pump smells displeasing	Process components evaporating under vacuum	Check the process, if applicable
The vacuum pump does not start	The drive motor is not supplied with the correct voltage or is overloaded	Supply the drive motor with the correct voltage
	The drive motor starter overload protection is too small or trip level is too low	Compare the trip level of the drive motor starter overload protection with the data on the nameplate, correct if necessary In case of high ambient temperature: set the trip level of the drive motor starter overload protection 5 percent above the nominal drive motor current
	One of the fuses has blown	Check the fuses
	The connection cable is too small or too long causing a voltage drop at the vacuum pump	Use sufficiently dimensioned cable

	The vacuum pump or the drive motor is blocked	<p>Make sure the drive motor is disconnected from the power supply</p> <p>Remove the fan cover</p> <p>Try to turn the drive motor with the vacuum pump by hand</p> <p>If the unit is still frozen: remove the drive motor and check the drive motor and the vacuum pump separately</p> <p>If the vacuum pump is blocked:</p> <p>Repair the vacuum pump (Busch service)</p>
	The drive motor is defective	<p>Replace the drive motor (Busch service)</p> <p>(the proper function of the fan wheel requires the precise adjustment of the coupling on the motor shaft and on the pump shaft; therefore the motor can be mounted by the Busch service only)</p>
The vacuum pump is blocked	Solid foreign matter has entered the vacuum pump	<p>Repair the vacuum pump (Busch service)</p> <p>Make sure the suction line is equipped with a screen</p> <p>If necessary additionally provide a filter</p>
	Corrosion in the vacuum pump from remaining condensate	<p>Repair the vacuum pump (Busch service)</p> <p>Check the process</p> <p>Observe the chapter → Installation and Commissioning ↘ Operating Notes ↘ Conveying Condensable Vapours</p>
	The vacuum pump was run in the wrong direction	<p>Repair the vacuum pump (Busch service)</p> <p>When connecting the vacuum pump make sure the vacuum pump will run in the correct direction (→ Installation)</p>
The drive motor is running, but the vacuum pump stands still	The coupling between the drive motor and the vacuum pump is defective	<p>Replace the coupling element</p>
<p>The vacuum pump starts, but labours or runs noisily or rattles</p> <p>The drive motor draws a too high current (compare with initial value after commissioning)</p>	<p>Loose connection(s) in the drive motor terminal box</p> <p>Not all drive motor coils are properly connected</p> <p>The drive motor operates on two phases only</p>	<p>Check the proper connection of the wires against the connection diagram (particularly on motors with six coils)</p> <p>Tighten or replace loose connections</p>
	The vacuum pump runs in the wrong direction	<p>Verification and rectification → Installation and Commissioning</p>
	Foreign objects in the vacuum pump Stuck bearings	<p>Repair the vacuum pump (Busch service)</p>
The vacuum pump runs very noisily	Defective bearings	<p>Repair the vacuum pump (Busch service)</p>
	Worn coupling element	<p>Replace the coupling element</p>
	Low oil level in the synchronising gear	<p>The synchronising gear is leaky</p> <p>Repair the vacuum pump (Busch service)</p>
	Synchronising gear damaged due to operation with low oil level	<p>Repair the vacuum pump (Busch service)</p>
The vacuum pump runs very hot	Insufficient air ventilation	<p>Make sure that the cooling of the vacuum pump is not impeded by dust/dirt</p> <p>Clean the fan cowlings, the fan wheels, the ventilation grilles and the cooling fins</p> <p>Install the vacuum pump in a narrow space only if sufficient ventilation is ensured</p>
	Ambient temperature too high	<p>Observe the permitted ambient temperatures</p>
	Temperature of the inlet gas too high	<p>Observe the permitted temperatures for the inlet gas</p>

Mains frequency or voltage outside tolerance range	Provide a more stable power supply
Partial clogging of filters or screens Partial clogging in the suction, discharge or pressure line	Remove the clogging
Long suction, discharge or pressure line with too small diameter	Use larger diameter

Sectional Drawing



Spare Parts

Note: When ordering spare parts or accessories acc. to the table below please always quote the type and the serial no. of the vacuum pump. This will allow Busch service to check if the vacuum pump is compatible with a modified or improved part.

Pos.	Part	Qty	Part no.
72	Venting valve (=oil fill plug) with seal ring	1	0543 138 026
76	Sight glass	1	0583 000 001
77	Seal ring for sight glass	1	0480 000 271
80	Plug with magnet and seal ring	1	0415 134 870
81	Seal ring for plug with magnet	1	0482 137 352
714	Inlet flange, lower part, with non-return valve	1	0916 102 518
715	Screen	1	0534 000 018
—	Filter cartridge, paper, for inlet filter (optional)	1	0532 000 003
—	Filter cartridge, PP, for inlet filter (optional)	1	0532 119 435
—	Filter cartridge, polyester, for inlet filter (optional)	1	0532 121 863

Spare Parts Kits

Spare parts kit	Part no.
Overhaul kit (incl. set of seals, marking "VT" and "DT")	0993 138 031
Set of seals (marking "DT")	0990 138 032

Accessories

Accessories	Description	Part no.
Inlet air filter	inlet-side, horizontal, with paper cartridge, to separate solids	0945 118 998
Inlet air filter	inlet-side, horizontal, with PP-cartridge, to separate solids	0945 124 344
Inlet air filter	inlet-side, horizontal, with polyester cartridge, food proof, to separate solids	0945 124 531

Oil

Denomination	BP Enersyn HTX 220
ISO-VG	220
Base	PAO
Density [g/cm ³]	0.869
Kinematic viscosity at 40 °C [mm ² /s]	227
Kinematic viscosity at 100 °C [mm ² /s]	27
Flashpoint [°C]	270
Pourpoint [°C]	-36
Part no. 1 l packaging	0831 128 556
Filling quantity, approx. [l]	0.85

EC-Declaration of Conformity

Note: This Declaration of Conformity and the **CE**-mark affixed to the nameplate are valid for the vacuum pump within the Busch-scope of delivery. When this vacuum pump is integrated into a superordinate machinery the manufacturer of the superordinate machinery (this can be the operating company, too) must conduct the conformity assessment process acc. to the Directive Machinery 98/37/EC for the superordinate machine, issue the Declaration of Conformity for it and affix the **CE**-mark.

We

Busch Produktions GmbH
Schauinslandstr. 1
79689 Maulburg
Germany

declare that vacuum pumps **MM 1104, 1144, 1102, 1142 BV**

in accordance with the European Directives

"Machinery" 98/37/EC,

"Electrical Equipment Designed for Use within Certain Voltage Limits" (so called "Low Voltage") 73/23/EEC,

"Electromagnetic Compatibility" 89/336/EEC

have been designed and manufactured to the following specifications:

Standard	Title of the Standard
Harmonised Standards	
EN 12100-1 EN 12100-2	Safety of machinery - Basic concepts, general principles of design - Part 1 and 2
EN 294	Safety of machinery - Safety distance to prevent danger zones being reached by the upper limbs
EN 1012-1 EN 1012-2	Compressors and vacuum pumps - Safety requirements - Part 1 and 2
EN ISO 2151	Acoustics - Noise test code for compressors and vacuum pumps - Engineering method (grade 2)
EN 60204-1	Safety of machinery - Electrical equipment of machines - Part 1: General requirements
EN 61000-6-1 EN 61000-6-2	Electromagnetic compatibility (EMC) - Generic immunity standards
EN 61000-6-3 EN 61000-6-4	Electromagnetic compatibility (EMC) - Generic emission standards

Manufacturer



Dr.-Ing. Karl Busch
 General director

Technical Data

For motor connection parameters see nameplate

Type	Frequency [Hz]	Ultimate pressure standard-version [hPa abs = mbar abs]	Ultimate pressure version "Aqua" [hPa abs = mbar abs]	Nominal motor rating [kW]	Nominal speed [min ⁻¹]	Nominal suction capacity [m ³ /h]	Sound pressure level (EN ISO 2151) at 400 hPa (=mbar) abs. Inlet pressure [dB(A)]	Ambient temperature range [°C]	Ambient pressure	Synchronising gear oil qty [l]	Synchronising gear oil filled ex-works	Weight [kg]	
MM 1104 BV	50	60	100	1.1	1500	62	66	0 ... 40	atmospheric	0.85	BP Enersyn HTX 220	-166	
	60			1.5	1800	75	70					-172	
MM 1144 BV	50			1.5	1500	78	66					-172	
	60			2.2	1800	96	70					-180	
MM 1102 BV	50		60	60	2.2	3000	105					75	-168
	60				3.0	3600	135					79	-174
MM 1142 BV	50			3.0	3000	140	75					-179	
	60			4.0	3600	175	79					-187	

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Attachment C

Annual Report Template

Environmental Covenant Annual Compliance Report

(Date)

Former Cessna Aircraft Company GA1 Facility
Columbus, Muscogee County, Georgia

This Environmental Covenant (EC) Annual Compliance Report has been prepared to satisfy requirements of the EC between Cessna Aircraft Company and the Georgia Environmental Protection Division (EPD) and filed with the deed for Parcel Number 112 003 002 located at 4800 Cargo Drive, Columbus, Georgia (Property). Provided herein are inspection and maintenance results for the current year and a certification of compliance.

Property Owner Certification of Compliance

“I certify under penalty of law that this report and all attachments were prepared under my direction in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature

Typed Name

Title

SVE System O&M

System Description

System Maintenance

Monitoring Results

Conclusions and Recommendations

Groundwater O&M

Monitoring Description

Well Conditions

UIC Permit Status

Monitoring Results

Conclusions and Recommendations

Property Inspection

Compliance with Limitations

Property Questionnaire and Inspection Forms

Monitoring & Maintenance Plan Annual Inspection Form

**Cessna Former GA1 Facility, 4800 Cargo Drive
Columbus, Muscogee County, Georgia**

SVE System Inspection	
Inspection Date (mm/dd/yy)	
Record motor hours	
Record condensate collection tank level (inches)	
Record condensate storage tank volume (gallons)	
Record condensate storage tank volume remaining (gallons)	
Record blower temperature (degree Fahrenheit)	

Item	SVE System Inspection	Select One	
	Is SVE system operating?	YES	NO
	If NO, record any alarms or known causes for system shutdown		
	SVE well valve status (open, closed, partial) SVE-1 SVE-2 SVE-3 SVE-4		
	Is the PVC piping in good serviceable condition?	YES	NO
	If NO record, observed conditions		
	Are current warehouse uses conducive to potential SVE system damages?	YES	NO
	If YES, record conditions		

SVE System Notes (use additional pages as needed):



**CDM
Smith**