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Draft Environmental Assessment For Installation Development at Joint Base Langley-Eustis, VA

**PREPARED FOR:
Department of the Air Force**

July 2016

Letters or other written comments provided may be published in the Final EA. As required by law, substantive comments will be addressed in the Final EA and made available to the public. Any personal information provided will be kept confidential. Private addresses will be compiled to develop a mailing list for those requesting copies of the Final EA. However, only the names of the individuals making comments and their specific comments will be disclosed. Personal home addresses and phone numbers will not be published in the Final EA.

**DRAFT FINDING OF NO SIGNIFICANT IMPACT
AND FINDING OF NO PRACTICABLE ALTERNATIVE**

**Installation Development Environmental Assessment
Joint Base Langley-Eustis, Langley AFB, Virginia**

Pursuant to provisions of the National Environmental Policy Act (NEPA), Title 42 United States Code (USC) Sections 4321 to 4347, implemented by Council on Environmental Quality (CEQ) Regulations, Title 40, Code of Federal Regulations (CFR) §1500-1508, and 32 CFR §989, Environmental Impact Analysis Process, the U.S. Air Force (Air Force) assessed the potential environmental consequences associated with the replacement of the existing drainage system at the airfield runway clear zones, the construction of a new parking lot near the hospital, and the construction of a new headquarters facility for the 363d Intelligence, Surveillance and Reconnaissance (ISR) Wing and associated demolition at Joint Base Langley Eustis, Langley Air Force Base (JBLE-Langley), Hampton, Virginia.

The purpose of installation development is to address deficiencies of function and capability in the facilities and infrastructure at JBLE-Langley that arise through obsolescence, deterioration, and evolving needs. These deficiencies are remedied through an ongoing process of construction of new facilities and new infrastructure, the repair of existing facilities, and the demolition of redundant facilities. Left unchecked, these deficiencies would degrade the ability of the installation to meet Air Force, State, and/or Federal requirements, and to support current and future mission requirements. The need for installation development at JBLE-Langley is to provide and maintain infrastructure that is adequate to the needs of the 633d Air Base Wing (ABW) and its tenant units. Project specific purpose and needs are identified below.

Clear Zone Drainage System Replacement: The purpose is to reduce current surface irregularities which can result in damage to landing aircraft. Ponding areas within the Clear Zone can attract birds which has the potential to increase the Bird Aircraft Strike Hazard (BASH). The need is to ensure the safety of aircraft during takeoff and landing. The action would reduce the chance of a bird collision and increase safety for personnel and aircraft.

Parking Lot Construction near Hospital, F. 257: The purpose is to reduce a deficiency in parking spaces. The need for the parking lot is required to accommodate the increased number of patients resulting from the trend of increased caseload seen at the hospital.

363d ISR Wing HQ Construction: The purpose for the new building is to consolidate existing personnel into one place and allow space for additional personnel. Currently, the HQ occupies space in four separate facilities which are insufficient for new staff. The purpose of the proposed demolition is to remove three of the previously occupied buildings as they would become obsolete with the new construction. The need is to construct a new building to provide adequate work space in order to accomplish their mission. The need for demolition is to focus resources only on the infrastructure needed to perform JBLE-Langley's mission.

The EA, incorporated by reference into this finding, analyzes the potential environmental consequences of activities associated with the Clear Zone Project, Parking Lot Project, and

363d ISR Wing HQ Project, and provides environmental protection measures to avoid or reduce adverse environmental impacts.

The EA considers all potential impacts of the following project-specific alternatives:

Clear Zone Drainage System Replacement

- Preferred Alternative: Fill or enclose existing drainage ditches, install new drainage inlets, piping and outfalls with water directed to collection points by swales and ridges. Grading not to exceed 2% slope. This is needed to alleviate water accumulation in low areas of the current 2-each Clear Zone Graded Areas, which are serving as habitats to wildlife, including birds, and is creating a bird-strike hazard for the airplanes.
- No Action Alternative: Taking no action to alleviate the water accumulation would result in continued use of the low-area water collection areas by birds creates a bird-strike hazard that may result in aircraft damage and/or possible loss of human life. It has been deemed unreasonable due to risk to human life and the prevention of safe aircraft operation.

Parking Lot Construction near Hospital F. 257

- Preferred Alternative: Construction of a 130,000 sf parking lot providing an additional 613 parking spaces east of the hospital, F. 257, with a pedestrian bridge providing access across Brown's Creek. This would help alleviate an installation-wide deficiency in parking spaces.
- No Action Alternative: Taking no action to alleviate the parking space deficiency on the installation and delays installation development.

363d ISR Wing HQ Facility

- Alternative 1: Construction of a new headquarters building at the southeast corner of South Roma Road and Helms Avenue with an expansion of existing parking.
- Alternative 2 (Preferred Alternative): Construction of a new headquarters building directly across Weyland Road from the 497 ISRG Building, F. 1302, with the provision of parking in accordance with the approved MILCON.
- No Action Alternative: The 363d ISRW would be left without sufficient space to accommodate personnel increases or the ability to accomplish their mission.

SUMMARY OF FINDINGS

The analyses of the affected environment and environmental consequences of implementing the Proposed Action (or alternatives) presented in the EA concluded that by implementing environmental protection measures, as discussed in Section 5.2 of the EA, JBLE-Langley would be in compliance with all terms and conditions and reporting requirements for implementation of reasonable and prudent measures stipulated by the United States Fish and Wildlife Service (USFWS), with the conditions stipulated in Section 106 of the National Historic Preservation Act and implementing regulations (36 CFR Part 800), with compliance Section 7 of the Endangered Species Act, Migratory Bird Treaty Act, Coastal Zone Management Act.

The EA concluded that no significant adverse effects would result to the following resources as a result of the Proposed Action: land use, transportation, utilities, geology and soils, water resources, biological resources, cultural resources, visual resources, socioeconomics, solid and hazardous waste, air quality, and noise. No significant adverse cumulative impacts would result from activities associated with the preferred alternatives for each project when considered with past, present, or reasonably foreseeable future projects at JBLE-Langley. In addition, the EA concluded that the action alternatives would not affect airspace, environmental justice and protection of children, and safety.

Notice of Wetland Involvement

As guided by Executive Order (EO) 11990, Protection of Wetlands, and Air Force Instruction (AFI) 32-7064, *Integrated Natural Resources Management*, the U.S. Air Force (USAF) hereby provides notice of the potential for wetland impacts. Implementation of the proposed Clear Zone project would result in the loss of approximately 20 acres of wetlands. Loss of wetland acreage would likely require a U.S. Army Corps of Engineers Clean Water Act (CWA) Section 404(b) permit.

Notice of Proposed Construction within the 100-year Floodplain

As guided by EO 11988, Floodplain Management, and EO 13690, Establishing a Federal Risk Standard and Process for Further Solicitation and Considering Stakeholder Input, the USAF hereby provides notice of proposed construction within the 100-year floodplain. Most of JBLE-Langley lies within the 100-year floodplain due to its location and elevation. In order to comply with EOs 11988 and 13690, JBLE-Langley would design structures to reduce the risk of severe damage from flooding. Additionally, as JBLE-Langley is heavily developed, it provides minimal flood control for downriver areas. Therefore, the proposed projects would not contribute to any measurable loss with regard to flood control capacity.

FINDING OF NO PRACTICABLE ALTERNATIVE

Per 32 CFR §989.14(g), there are no practicable alternatives to avoid wetlands and construction within the 100-year floodplain. To improve surface irregularities for aircraft takeoff and landing safety and to reduce the chance of a bird/aircraft strike event the removal of wetlands within the Clear Zones is necessary. In order to conduct installation development needs, construction within the 100-year floodplain is unavoidable. Other alternatives were reviewed during the EA development process under the requirements of the National Environmental Policy Act (NEPA), but were eliminated from further detailed analysis in the EA because they did not meet the stated purpose and need for the action, were not practicable, or would have led to greater overall environmental impact. The only practicable alternative is described in the “Description of the Proposed Action” section above. For the reasons stated in the EA, the dismissed alternatives are not practicable alternatives to avoiding the potential wetland impacts. I find that there is no practicable alternative to implementing the Preferred Alternative within the 100-year floodplain and wetlands.

FINDING OF NO SIGNIFICANT IMPACT

Based on my review of the facts and analyses contained in the attached EA, conducted under the provisions of NEPA, CEQ Regulations, and 32 CFR Part 989, I conclude that none of the

projects analyzed as part of this multi-project EA (the Clear Zone Project, the Parking Lot Construction near Hospital F. 257, and the 363d ISR Wing HQ Facility) would not have a significant environmental impact, either by itself or cumulatively with other projects at JBLE-Langley. Accordingly, an Environmental Impact Statement is not required. The signing of this Finding of No Significant Impact completes the environmental impact analysis process.

SIGNATORY NAME, Rank/Title

Date _____

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112 **Acronyms and Abbreviations**

113	ACHP	Advisory Council on Historic Preservation
114	ACM	Asbestos Containing Material
115	AFB	Air Force Base
116	AFI	Air Force Instruction
117	BASH	Bird Aircraft Strike Hazard
118	CAA	Clean Air Act
119	CEQ	Council on Environmental Quality
120	CFR	Code of Federal Regulations
121	CUP	Central Utility Plant
122	CWA	Clean Water Act
123	CZMA	Coastal Zone Management Act
124	dB	Decibels
125	DNL	Day-Night Average Sound Level
126	EA	Environmental Assessment
127	ERP	Environmental Restoration Program
128	EO	Executive Order
129	GHG	Greenhouse Gases
130	HQ	Headquarters
131	IPaC	Information for Planning and Conservation
132	IRP	Installation Restoration Program
133	ISR	Intelligence, Surveillance, and Reconnaissance
134	JBLE	Joint Base Langley-Eustis
135	kV	Kilovolt
136	LaRC	Langley Research Center
137	LBP	Lead-Based Paint
138	LTA	Lighter-Than-Air
139	MGD	Million Gallons per Day
140	MMRP	Military Munitions Response Program
141	MRA	Munitions Response Area
142	MRS	Munitions Response Site

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143	MVA	Megavolt amperes
144	NAAQS	National Ambient Air Quality Standards
145	NASA	National Aeronautics and Space Administration
146	NEPA	National Environmental Policy Act
147	NHPA	National Historic Preservation Act
148	NPDES	National Pollutant Discharge Elimination System
149	RCRA	Resource Conservation and Recovery Act
150	ROI	Region of Influence
151	sf	Square Foot
152	SHPO	State Historic Preservation Office
153	USACE	United States Army Corps of Engineers
154	USEPA	United States Environmental Protection Agency
155	USFWS	United States Fish and Wildlife Service
156	VCRMP	Virginia Coastal Resources Management Program
157	VDCR	Virginia Department of Conservation and Recreation
158	VDEQ	Virginia Department of Environmental Quality
159	VSMP	Virginia Stormwater Management Program

160 Glossary of Selected Terms

- 161 Abatement – The ending, reduction, or lessening of something.
- 162 Alluvium – Materials that are eroded and reshaped by a river then deposited downstream.
- 163 Aquifer – An underground layer of rock or soil that contains water.
- 164 Decibel – A unit used to measure the intensity of a sound or the power level of an electrical signal
165 by comparing it with a given level on a logarithmic scale. In general use, a degree of loudness.
- 166 Dredging – To clean out the bottom of (a harbor, river, or other area of water) by scooping out
167 mud, weeds, and rubbish with a dredge.
- 168 Enterococcus – A streptococcus bacteria that occurs naturally in the intestine but causes
169 inflammation and blood infection if introduced from an outside source (e.g., by a cut) elsewhere
170 in the body.
- 171 Emergent Wetland – A wetland dominated by water-tolerant trees and shrubs. This vegetation is
172 present for most of the growing season in most years
- 173 Estuarine – of or found in an estuary.
- 174 Estuary – An estuary is a partly enclosed coastal body of brackish water with one or more rivers
175 or streams flowing into it, and with a free connection to the open sea. Estuaries form a transition
176 zone between river environments and maritime environments.
- 177 Fecal Coliform – Bacteria that live in the intestines of warm-blooded animals and are excreted in
178 the feces. Humans can get bacterial diseases from contaminated water.
- 179 Fluvial – Of or found in a river.
- 180 Friable – easy crumbled.
- 181 Lithologic – General physical characteristics of rocks.
- 182 Marine – Of, found in, or produced in the sea.
- 183 Neotropical migrants – Birds that spend the winter in Central and South America and fly to North
184 America to breed during the spring and summer.
- 185 100-year floodplain – The area adjacent to a body of water that naturally floods during a flood
186 event that statistically has a 1-percent chance of occurring in any given year.
- 187 Palustrine – Of or related to shallow, open waterbodies such as ponds.
- 188 Potable - safe to drink; drinkable.
- 189 Scrub-Shrub Wetland – A wetland dominated by woody vegetation less than 6 m (20 feet) tall.
190 The species include true shrubs, young trees, and trees or shrubs that are small or stunted because
191 of environmental conditions.
- 192 Stratigraphic Unit – A volume of rock that age and origin can be identified based on specific visual
193 features.
- 194 Watershed – An area of land that drains to a common outlet.

195 **1.0 PURPOSE AND NEED FOR ACTION**

196 **1.1 INTRODUCTION**

197 The 633d Air Base Wing (ABW) at Joint Base Langley-Eustis (JBLE), Langley Air Force Base
198 (hereafter, JBLE-Langley) have identified priorities for installation development projects and
199 proposes to implement them over the next five years. This Installation Development
200 Environmental Assessment (IDEA) was prepared to evaluate the potential environmental impacts
201 of these proposed projects in compliance with the National Environmental Policy Act of 1969
202 (NEPA) (42 United States Code [USC] 4331 et seq.), the regulations of the President’s Council
203 on Environmental Quality (CEQ) that implement NEPA procedures (40 Code of Federal
204 Regulations [CFR] 1500-1508), the Air Force Environmental Impact Assessment Process
205 Regulations at 32 CFR Part 989, and Air Force Instruction 32-7061 (Secretary of the Air Force,
206 2003).

207 The intent of the ongoing process of installation development at JBLE-Langley is to provide
208 infrastructure improvements necessary to support the mission of the 633 ABW and tenant units.
209 The three projects considered in this IDEA were identified as priorities for installation
210 development as a result of the 2013 JBLE-Langley General Plan (General Plan). This plan
211 identifies requirements for the improvement of the physical infrastructure and functionality of
212 JBLE-Langley, including current and future mission and facility requirements, development
213 constraints and opportunities, and land use relationships. The General Plan is under revision to
214 be republished as the JBLE-Langley Installation Development Plan

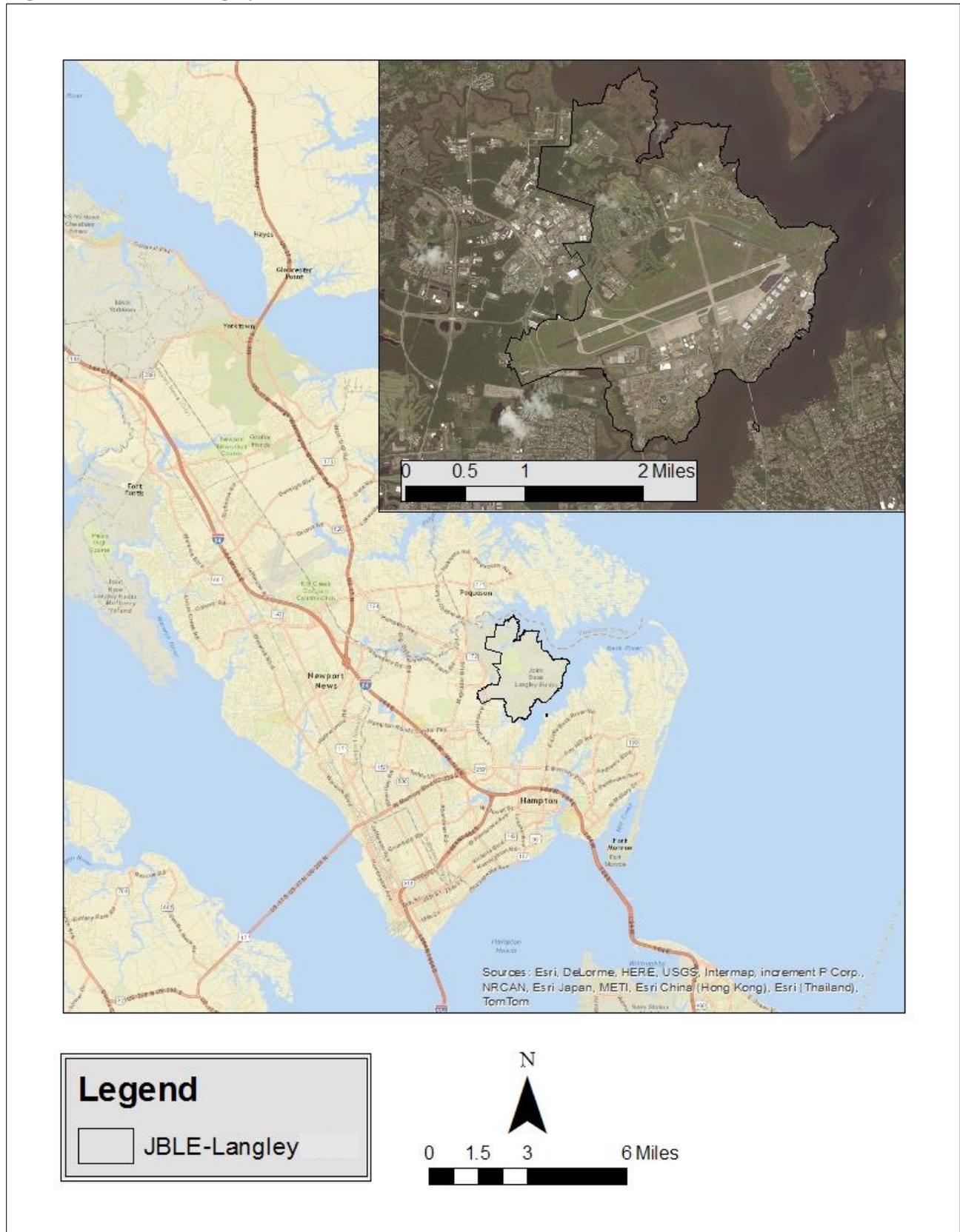
215 JBLE-Langley is located near the south end of the lower Virginia Peninsula, 175 miles south of
216 Washington, D.C., and occupies 2,883 acres of land. It was established in 1916 and has hosted a
217 variety of missions and aircraft types throughout its history. JBLE-Langley is home to the 633
218 ABW. Currently, F-22A Raptors operate from JBLE-Langley.

219 The intent of the 633 ABW and Headquarters Air Combat Command (HQ ACC) is to streamline
220 NEPA compliance and facilitate the installation development process by evaluating in one
221 integrated document the potential impacts on the human environment of the projects proposed
222 for execution at JBLE-Langley. These projects include: install a new drainage system and
223 properly grade the Runway 08 and 26 Clear Zones; construct a 130,000 square foot (sf), 613
224 space parking lot near the Hospital, F. 257; and construct a 94,800 sf facility to serve as the 363d
225 Intelligence, Surveillance, and Reconnaissance (ISR) Wing HQ.

226 The information presented in this document will serve as the basis for deciding whether the
227 proposed action would result in a significant impact to the human environment, requiring the
228 preparation of an environmental impact statement (EIS), or whether no significant impacts would
229 occur, in which case a finding of no significant impact (FONSI) would be appropriate. If the
230 execution of any of the proposed action would involve “construction” in a wetland as defined in
231 Executive Order (EO) 11990, *Protection of Wetlands*, or “action” in a floodplain under EO
232 11988, *Floodplain Management* as amended by EO 13690, *Establishing a Federal Flood Risk
233 Management Standard and a Process for Further Soliciting and Considering Stakeholder Input*,
234 a Finding of No Practicable Alternative (FONPA) would be prepared in conjunction with the
235 FONSI.

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236 **Figure 1 – JBLE-Langley Location**



237

238 1.2 PURPOSE OF INSTALLATION DEVELOPMENT

239 The purpose of installation development is to address deficiencies of function and capability in
240 the facilities and infrastructure at JBLE-Langley that arise through obsolescence, deterioration,
241 and evolving needs. These deficiencies are remedied through an ongoing process of construction
242 of new facilities and new infrastructure, the repair of existing facilities, and the demolition of
243 redundant facilities. Left unchecked, these deficiencies would degrade the ability of the
244 installation to meet Air Force, Local, State, and/or Federal requirements, and to support current
245 and future mission requirements.

246 1.3 NEED FOR INSTALLATION DEVELOPMENT

247 The need for installation development at JBLE-Langley is to provide and maintain
248 infrastructure that is adequate to the needs of 633 ABW and its tenant units, and to do so in a
249 manner that:

- 250 • Meets applicable DoD installation master planning criteria, consistent with UFC 2-100-01,
251 *Installation Master Planning*.
- 252 • Aligns with the 2011 Air Force Civil Engineer Strategic Plan (U.S. Air Force, 2011)
- 253 • Meets current Air Force requirements for functional space, consistent with Air Force
254 Manual 32-1084, *Facility Requirements* (26 Feb 2016).
- 255 • Meets applicable DoD antiterrorism/force protection (AT/FP) criteria, consistent with
256 Unified Facilities Criteria (UFC) 4-010-01, *DoD Minimum Antiterrorism Standards for*
257 *Buildings* and the Air Force Installation Force Protection Guide.
- 258 • Reduces the consumption of fuel, energy, water, and other resources; maximizes the use of
259 existing facilities; and reduces the footprint of unnecessary or redundant facilities and
260 infrastructure in accordance with Executive Order (EO) 13693, *Planning for Federal*
261 *Sustainability in the Next Decade*, the Energy Policy Act of 2005, and the Air Force's 20/20
262 by 2020 initiative.
- 263 • Provides reliable utilities and an efficient transportation system to support JBLE-Langley,
264 consistent with Air Force Manual 32-1084.
- 265 • Supports and enhances the morale and welfare of personnel assigned to the installation,
266 their families, and civilian staff, consistent with Department of Defense Instruction
267 1015.10, *Military Morale, Welfare, and Recreation (MWR) Programs* (6 July 2009).
- 268 • Conforms to the Langley Air Force Base Design Compatibility Guidelines (Mar 06), which
269 helps to ensure a consistent and coherent architectural character throughout JBLE-Langley.

270 1.4 PURPOSE OF AND NEED FOR INDIVIDUAL PROPOSED ACTIONS

271 Each of the three projects included in the proposed action has a specific purpose and need, which
272 is presented below.

273

274 **Clear Zone Drainage System Replacement:**

275 The purpose is to reduce current surface irregularities which can result in damage to landing
276 aircraft. Ponding areas within the Runway 08 and 26 Clear Zones can attract birds which has the
277 potential to increase the Bird Aircraft Strike Hazard (BASH).

278 The need is to ensure the safety of aircraft during takeoff and landing. The action would reduce
279 the chance of a bird collision and increase safety for personnel and aircraft.

280 **Proposed Hospital Parking Lot near F. 257:**

281 The purpose is to reduce a deficiency in parking spaces.

282 The need for the parking lot is required to accommodate the increased number of patients
283 resulting from the trend of increased caseload seen at the hospital.

284 **363d ISR Wing HQ Construction:**

285 The purpose for the new building is to consolidate existing personnel into one place and allow
286 space for additional personnel. Currently, the HQ occupies space in four separate facilities
287 which are insufficient for new staff. The purpose of the proposed demolition is to remove three
288 of the previously occupied buildings as they would become obsolete with the new construction.

289 The need is to construct a new building to provide adequate work space in order to accomplish
290 their mission. The need for demolition is to focus resources only on the infrastructure needed to
291 perform JBLE-Langley's mission.

292 **1.5 INTERAGENCY/INTERGOVERNMENTAL COORDINATION AND**
293 **CONSULTATIONS**

294 **1.5.1 Interagency Coordination and Consultations**

295 NEPA requirements help ensure that information is made available to the public during the
296 decision making process and prior to Federal actions being taken. The Intergovernmental
297 Coordination Act and EO 12372, *Intergovernmental Review of Federal Programs*, require
298 Federal agencies to cooperate with and consider state and local views in implementing a Federal
299 proposal. Through this process, JBLE-Langley notifies relevant Federal, state, and local
300 agencies of the Proposed Action and alternatives.

301 The Virginia Department of Environmental Quality's Office of Environmental Impact Review
302 coordinates the review of all federal actions on behalf of state agencies. At the beginning of the
303 agency coordination period, JBLE-Langley submitted this EA to VDEQ for a 60 day review
304 period. During this time, VDEQ disseminated the document to appropriate agencies who had the
305 opportunity to conduct a review of the EA. Once complete, VDEQ collected and submitted all
306 comments to JBLE-Langley.

307 Appendix A contains the list of agencies consulted during the process and will include copies of
308 correspondence received in the Final IDEA.

309 **1.5.2 Government to Government Consultations**

310 E.O. 13175, *Consultation and Coordination with Indian Tribal Governments* directs Federal

311 agencies to coordinate and consult with Native American tribal governments whose interests
312 might be directly and substantially affected by activities on federally administered lands.
313 Consistent with that executive order, DoDI 4710.02, *Interactions with Federally-Recognized*
314 *Tribes*, and AFI 90-2002, *Air Force Interaction with Federally-recognized Tribes*, federally-
315 recognized tribes that are historically affiliated with the JBLE-Langley geographic region will be
316 invited to consult on all proposed undertakings that have a potential to affect properties of
317 cultural, historical, or religious significance to the tribes. The tribal consultation process is
318 distinct from NEPA consultation or the interagency coordination process, and it requires separate
319 notification of all relevant tribes. The timelines for tribal consultation are also distinct from
320 those of other consultations. The JBLE-Langley point-of-contact for Native American tribes is
321 the Installation Commander.

322 The Native American tribal governments that will be coordinated or consulted with regarding
323 these actions are listed in Section 3.7. Results from the coordination with the Native American
324 tribal governments will be included in Appendix A of the Final IDEA.

325 1.5.3 Other Agency Consultations

326 Per the requirements of Section 7 of the Endangered Species Act and implementing regulations,
327 Migratory Bird Treaty Act (MBTA), and Coastal Zone Management Act (CZMA), findings of
328 effect and request for concurrence will be transmitted to the Commonwealth of Virginia and the
329 US Fish and Wildlife Service/National Marine Fisheries Service. To satisfy Section 106 of the
330 National Historic Preservation Act and implementing regulations (36 CFR Part 800), JBLE-
331 Langley will coordinate with the State Historic Preservation Officer (SHPO) on individual
332 projects at a later date, separate from this IDEA.

333 All correspondence will be included in Appendix A of the Final IDEA.

334 1.6 PUBLIC AND AGENCY REVIEW OF EA

335 Because the Proposed Action area occurs within wetlands and/or floodplains, it is subject to the
336 requirements and objectives of EO 11990, *Protection of Wetlands* and EO 11988, *Floodplain*
337 *Management* as amended by EO 13690, *Establishing a Federal Flood Risk Management*
338 *Standard and a Process for Further Soliciting and Considering Stakeholder Input*. The Air
339 Force published early notice that the proposed action would occur in a floodplain/wetland in the
340 newspapers of record (listed below) on 9-11 March 2016 and 13 March 2016. The comment
341 period for public and agency input on these projects ended on 28 March 2016.

342 A Notice of Availability (NOA) of the Draft EA and Finding of No Significant Impact
343 (FONSI)/Finding of No Practicable Alternative (FONPA) was published in the newspapers of
344 record (listed below), announcing the availability of the EA for review. The NOA invited the
345 public to review and comment on the Draft EA for a period of 30 days. The NOA and public
346 agency comments are provided in Appendix A.

347 The NOA and early notice of project execution in a floodplain/wetland was published in the
348 following newspapers: The Daily Press, Newport News, Virginia (VA).

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349 Copies of the Draft EA and FONSI/FONPA were also made available for review at the following
350 locations:

Bateman Library (BLDG 161) 42 Ash Avenue Langley AFB, VA 23665	Hampton Library 4207 Victoria Boulevard Hampton, VA 23669	Poquoson Library 500 City Hall Avenue Poquoson, VA 23662
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351 **1.7 DECISION TO BE MADE**

352 The EA evaluates whether the proposed actions would result in significant impacts on the human
353 environment. If significant impacts are identified, JBLE-Langley would undertake mitigation to
354 reduce impacts to below the level of significance, undertake the preparation of an EIS addressing
355 the proposed action, or abandon the proposed action.

356 This EA is a planning and decision-making tool that will be used to guide JBLE-Langley in
357 implementing the proposed actions in a manner consistent with Air Force standards for
358 environmental stewardship.

359 **2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES**

360 **2.1 PROPOSED ACTION**

361 This EA evaluates the potential environmental impacts that may arise from the implementation
362 of the three projects which have been developed from the General Plan as and approved as
363 installation development priorities for the next five years at JBLE-Langley. This document treats
364 each project as a discrete proposed action, and evaluates each project and its alternative
365 separately. These projects include initiatives for facility construction, infrastructure
366 construction, and demolition (Figure 2).

367 **2.2 SELECTION STANDARDS FOR PROJECT ALTERNATIVES**

368 The scope and location of each proposed action and, where applicable, their alternatives, have
369 undergone extensive review by 633d Civil Engineer Squadron (633 CES) personnel, local
370 government agencies, and supporting installation and Air Force staff specialists.

371 Potential alternatives to the proposed actions were each evaluated based on four universal
372 selection standards, which were applied to all alternatives.

373 **Standard 1:** The alternative(s) must meet the purpose of the proposed actions, to remedy
374 deficiencies in the infrastructure of JBLE-Langley. The alternative(s) must also address the need
375 to provide and maintain infrastructure that is adequate to support the installation's mission and
376 applicable Air Force, State, and Federal requirements. It must also satisfy the purpose of and
377 need for each project (see Sections 1.2 through 1.4).

378 **Standard 2:** The alternative(s) must make as much use as possible of existing land and
379 facilities, avoid creating or maintaining redundant space or infrastructure, avoid or minimize
380 operational inefficiencies, and represent the most cost-effective and sustainable alternative.

381 **Standard 3:** The alternative(s) must be consistent with the General Plan zoning requirements,
382 applicable installation architectural compatibility guides, and relevant legal and regulatory
383 requirements, and must accommodate applicable, known man-made and natural development
384 constraints (e.g., explosive quantity-safety distances, imaginary surfaces associated with the
385 installation's runways, wetlands, floodplains).

386 **Standard 4:** The alternative(s) must maintain or improve the quality of life enjoyed by
387 personnel and dependents at JBLE-Langley.

388 **Figure 2 – Location of Proposed Actions**



389

390 2.3 PROPOSED ACTIONS AND ALTERNATIVES

391 The National Environmental Policy Act (NEPA) and the Council on Environmental Quality
392 (CEQ) regulations mandate the consideration of reasonable alternatives to the proposed actions.
393 “Reasonable alternatives” are those that also could be utilized to meet the purpose of and need
394 for each proposed action.

395 The NEPA process is intended to support flexible, informed decision-making; the analysis
396 provided by this EA and feedback from the public and other agencies will inform decisions made
397 about whether, when and how to execute the proposed actions. Among the alternatives evaluated
398 for each project is a No-Action alternative. The No-Action alternative will substantively analyze
399 the consequences of not undertaking the proposed action, not simply conclude no impact, and
400 will serve to establish a comparative baseline for analysis.

401 The scope, location, and objectives of the proposed actions are described here, grouped by
402 project category. This section also presents reasonable and practicable alternatives, for projects
403 where multiple viable courses of action exist. Those alternatives are assessed relative to the
404 universal selection standards and project-specific selection standards, where applicable.
405 Alternatives that met all four selection standards were considered reasonable and retained for
406 consideration in this EA. Alternatives that did not meet one or more of the standards were
407 considered unreasonable and are not retained for consideration in the EA.

408 2.3.1 Clear Zone Drainage System Replacement Project

409 This project would replace the existing drainage system and regrade the Runway 08 and 26 Clear
410 Zones. The Clear Zone comprises 1,000 feet past each end of the runway and 1,000 feet to each
411 side of the overrun centerline, totaling approximately 92 acres of land.

412 **Additional Project-Specific Selection Standards:** None.

413 **Alternatives Considered but Eliminated from Further Analysis:** Except the alternatives
414 considered below, no other alternatives were capable of answering the project’s purpose and
415 need. Therefore, no practicable alternatives were eliminated from consideration.

416 **Alternatives Considered for this Project:**

417 *Preferred Alternative (Figures 3-6):* Under this alternative, the existing drainage ditches would
418 be filled or enclosed. New drainage inlets, piping, and outfalls would be installed and water
419 would be directed to the collection points by swales and ridges. Each area would be graded so
420 that the maximum longitudinal grade does not exceed 2% and if needed, areas adjacent to the
421 Clear Zones would be graded to match. The potential disturbed area would be approximately
422 100 acres. The areas of potential disturbance are currently undeveloped, grassy areas maintained
423 by mowing. Upon completion of the proposed project, the previously disturbed areas would
424 return to undeveloped, grassy areas.

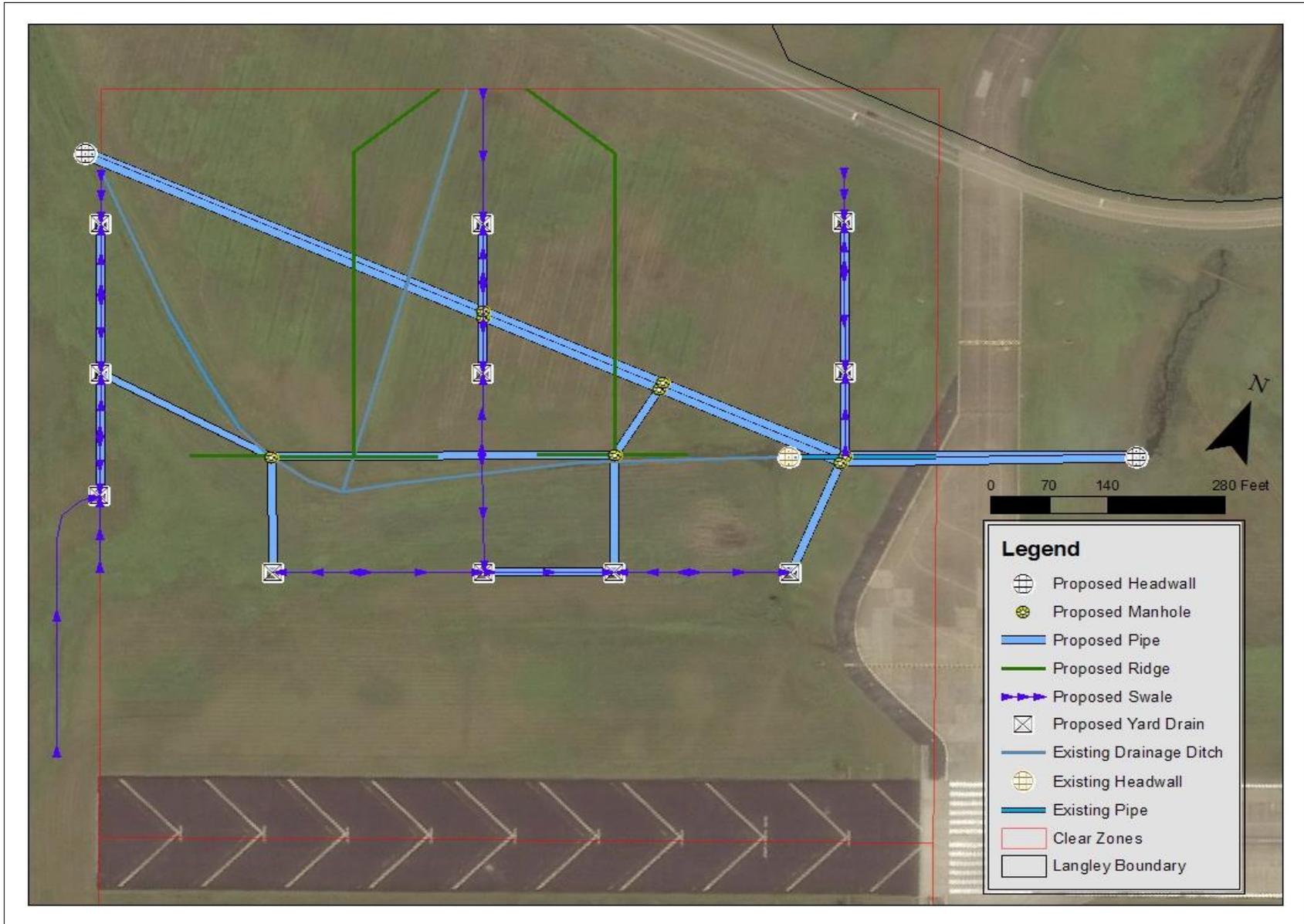
425 The preferred alternative was considered for this project because it met the selection standards
426 outlined in Section 2.2. Standard 1 would be achieved by meeting the purpose and need of the
427 project to correct surface irregularities and reduce the chance of a bird/aircraft strike, thereby
428 further enabling the installation’s mission. Standard 2 would be achieved by not moving the

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429 runways to a different location thereby ensuring utilization of existing space and a cost-effective
430 solution to the drainage problem. Standard 3 would be achieved because the project would be
431 consistent with current land use and through coordination would meet all regulatory
432 requirements for project constraints. Standard 4 would be achieved by increasing the safety of
433 personnel and aircraft on the installation.

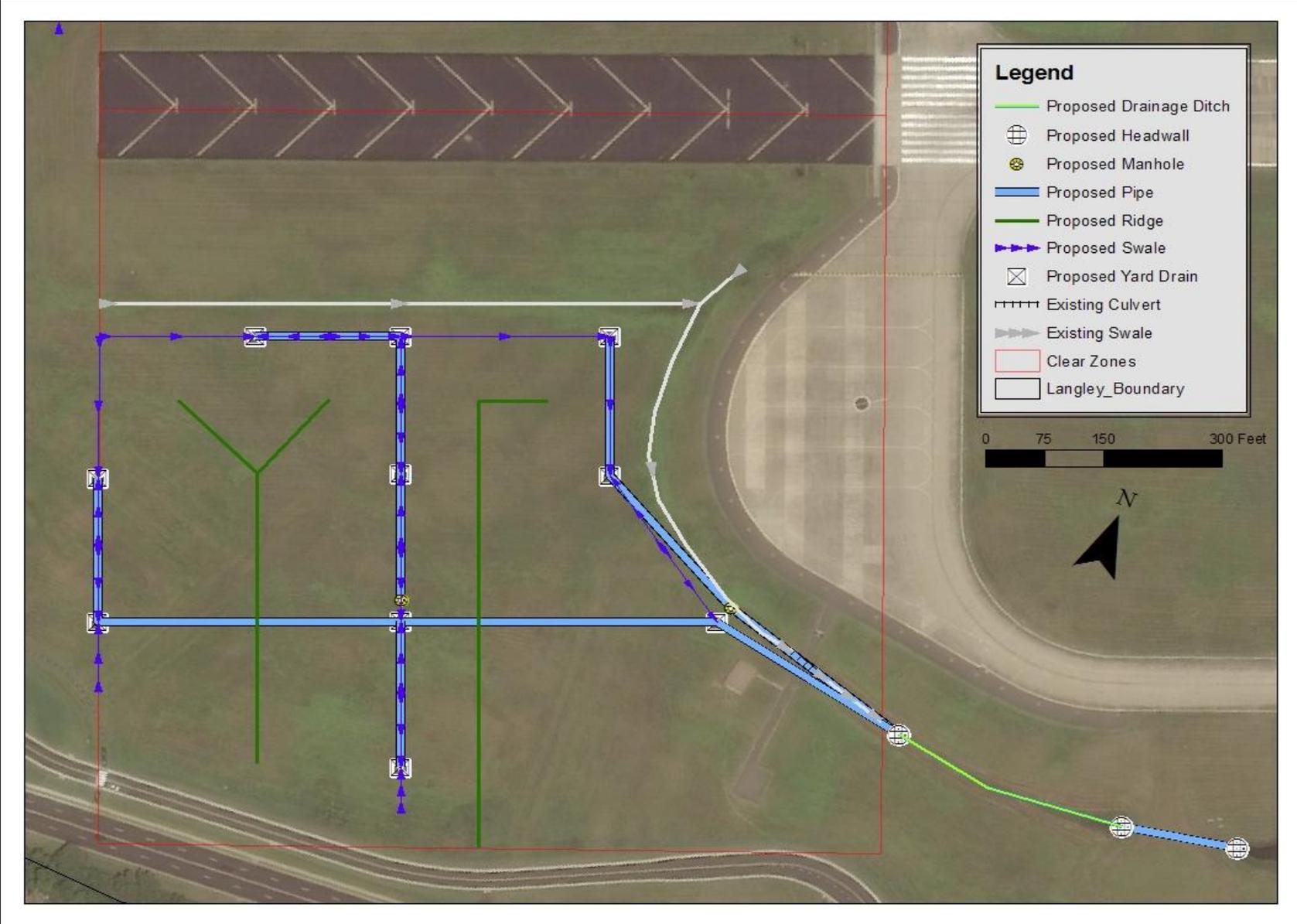
434 *No Action Alternative:* Under the No Action Alternative, this project would not be implemented
435 resulting in no change in the status quo. The current drainage configuration would be maintained
436 within the Clear Zones. The ditches and surface irregularities would result in damage to aircraft
437 landing in the area in emergency situations. The low areas within the Clear Zones would
438 continue to collect water which creates habitat for wildlife, especially birds. Aircraft could be
439 damaged from bird strikes with their continued presence. This outcome would increase the
440 chance of damage to aircrafts and possibly result in loss of human life. The No Action Alternative
441 for the Clear Zone Project is considered unreasonable because it would prevent safe aircraft
442 operation. The No-Action Alternative will be carried forward for further analysis, consistent
443 with CEQ regulations, to provide a baseline against which the impacts of the action alternative
444 can be assessed.

445 **Figure 3 – Runway 08 Clear Zone (north)**



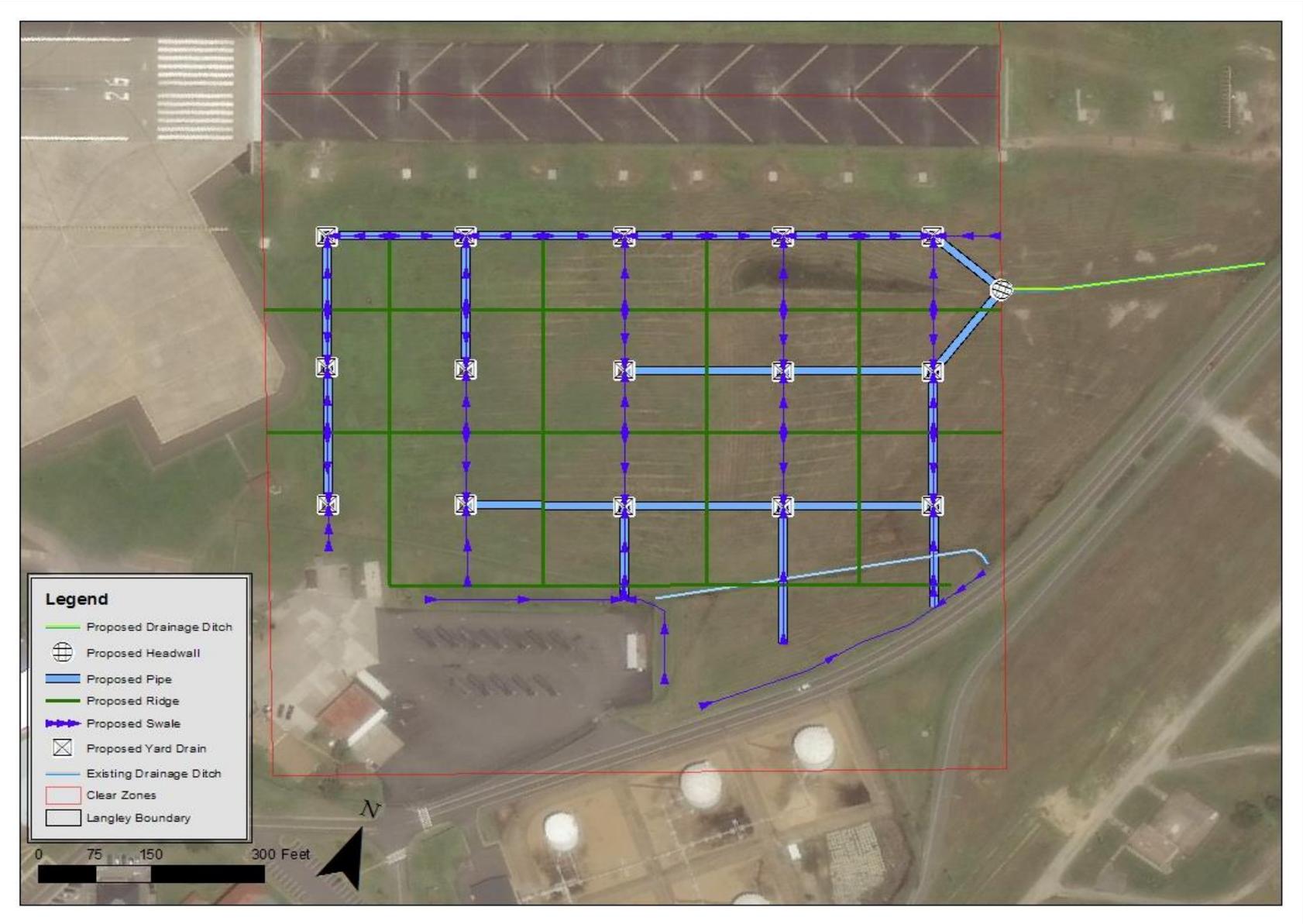
446

447 **Figure 4 – Runway 08 Clear Zone (south)**



448

449 **Figure 5 – Runway 26 Clear Zone (south)**



450

451 **Figure 6 – Runway 26 Clear Zone (north)**



452

453 2.3.2 Proposed Hospital Parking Lot near F. 257

454 This action consists of the construction of a parking lot to the east of the hospital.

455 **Additional Project-Specific Selection Standards:** None.

456 **Alternatives Considered but Eliminated from Further Analysis:** Except the alternatives
457 considered below, no other alternatives were capable of answering the project's purpose and
458 need. Therefore, no practicable alternatives were eliminated from consideration.

459 **Alternatives Considered for this Project:**

460 *Preferred Alternative (Figure 7):* The 130,000 sf parking lot would provide an additional 613
461 parking spaces. The proposed location would be east of the hospital on the area east of Brown's
462 Creek, between Nealy Avenue and Sweeney Boulevard. The area is currently undeveloped, open
463 area with scattered trees. The parking lot would include stormwater structures and lights.
464 Vehicular access would be off of Nealy Avenue and a paved pedestrian bridge would provide
465 access across Brown's Creek on an existing culvert crossing. The potential disturbed area would
466 be approximately three acres.

467 The preferred alternative was considered for this project because it met the selection standards
468 outlined in Section 2.2. Standard 1 would be achieved by meeting the purpose and need of the
469 project to help reduce the parking deficiency on the installation. Standard 2 would be achieved
470 by utilizing adjacent, available land thereby ensuring an efficient solution to the need of
471 additional parking near the hospital. Standard 3 would be achieved because the project would be
472 consistent with the proposed land use and planning on the installation. This site would meet all
473 regulatory requirements for project constraints. Standard 4 would be achieved by increasing the
474 amount of parking available to personnel and dependents visiting the hospital.

475 *No Action Alternative:* Under the No Action Alternative, this project would not be implemented
476 resulting in no change to the status quo. This would result in continued installation-wide
477 deficiency in parking spaces as noted in the General Plan. Staff and patients would be required
478 to park further from the hospital. With the selection of the No Action Alternative, this project
479 would remain as a standalone initiative. This would lengthen the timeline under which this
480 project is to be implemented and possibly result in its non-execution. This is not supportive of
481 the purpose and need for installation development nor the individual action. The No-Action
482 Alternative will be carried forward for further analysis, consistent with CEQ regulations, to
483 provide a baseline against which the impacts of the action alternative can be assessed.

484 **Figure 7 – Proposed Parking Lot near Hospital F. 257**



485

486 2.3.3 363d ISR Wing HQ Facility

487 The Proposed Action consists of the construction of a new two story building with collateral
488 space for Mission Support offices in the North Base Area. The new facility would be a two-
489 story, 94,800 sf building and would include space for 520 workstations and associated racks, as
490 well as communications equipment (Figure 8). The building would be constructed with a
491 concrete slab on pre-cast pile supported concrete foundations. The exterior walls would consist
492 of non-load bearing insulated light gauge stud framing back-up with veneer brick exterior finish.
493 The roof would be a steep-slope architectural standing seam system on insulated metal deck and
494 steel framing. Exterior gutters and downspouts would be incorporated. As part of the action
495 alternatives, three buildings would be demolished (Figure 9).

496 **Additional Project-Specific Selection Standards:** None.

497 **Alternatives Considered but Eliminated from Further Analysis:** Alternatives considered for
498 the 363d ISR Wing HQ included an addition to the 497 ISRG Building, F. 1302, and a location
499 within existing buildings. The addition to the 497 ISRG Building, F. 1302, was eliminated from
500 further analysis due to probable significant impacts to the environment. This did not meet
501 Selection Standard 3 as there were environmental constraints in the proposed location. An
502 alternative action would be for the 363d ISR Wing HQ to be placed within existing facilities,
503 however there are no current facilities available that meet the specific project requirements
504 thereby not meeting Selection Standard 1.

505 **Alternatives Considered for this Project:**

506 *Alternative 1 (Figures 8 and 9):* Under this alternative the new building would be constructed at
507 the southeast corner of South Roma Road and Helms Avenue. This location is mostly open land,
508 only currently occupied by a recreational softball field. Parking for the structure would be
509 located within the existing parking lot west of South Roma Road which would be expanded to
510 the west and south. The proposed parking lot location is mostly open land currently occupied by
511 a recreational softball field to the south and a small part of the existing parking for the previous
512 temporary living facility which have been demolished. The potential disturbed area would be
513 approximately six acres.

514 *Alternative 2 (Preferred Alternative):* Under this alternative the new building would be
515 constructed directly across Weyland Road from the 497 ISRG Building, F. 1302. The proposed
516 building location is currently the existing parking for the previous temporary living facility. As
517 part of this alternative, a proposed parking lot would be constructed south of the proposed
518 building. The proposed parking lot location is currently open land. The potential disturbed area
519 would be approximately six acres.

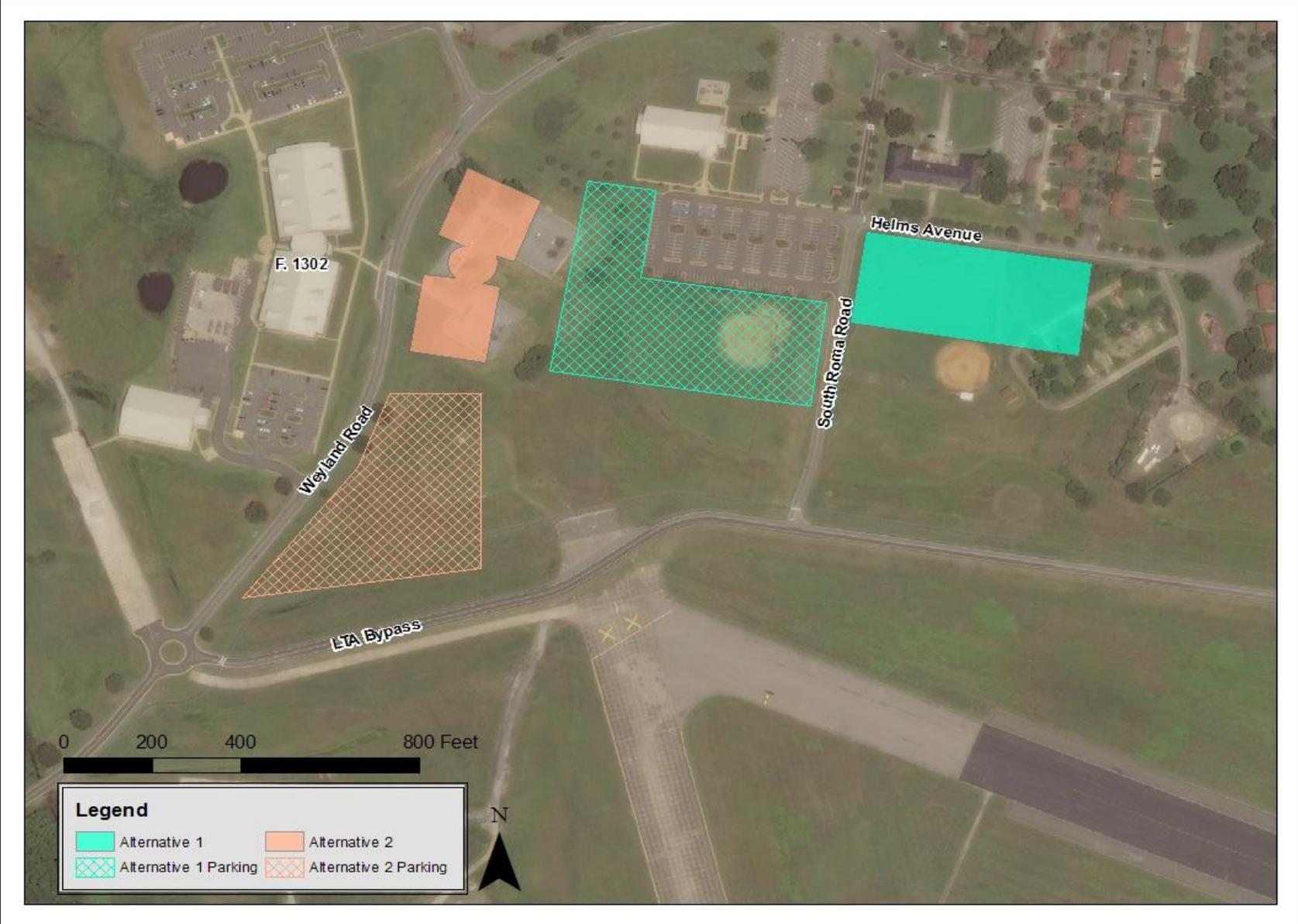
520 Demolition of Buildings 326, 333, and 337 would be included as part of either action alternative
521 selected. Building 326 is a one-story structure covering approximately 13,200 square feet of
522 area. Building 333 is a two-story structure covering approximately 7,300 square feet of area.
523 Building 337 is a one-story structure covering approximately 5,700 square feet of area. The
524 buildings would be demolished and the materials disposed of in accordance with Air Force
525 requirements.

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526 Both alternatives were considered for this project because they met the selection standards
527 outlined in Section 2.2. Standard 1 would be achieved by meeting the purpose and need of the
528 project to provide adequate space for the 363d ISR Wing and eliminating underutilized
529 buildings, thereby further enabling the installation's mission. Standard 2 would be achieved by
530 utilizing existing, available land for development and avoiding operational inefficiencies by
531 combining the HQ into one facility versus the current multi-building situation. Standard 3 would
532 be achieved because the project would be consistent with planned land use and development
533 identified for the North Base Area. These sites would meet all regulatory requirements for
534 project constraints. Standard 4 would be achieved by ensuring personnel have adequate space
535 within their work environment.

536 *No Action Alternative:* The No Action Alternative would result in 363d ISR Wing HQ without
537 sufficient space to accommodate personnel increases or the ability to accomplish their mission.
538 This alternative would result in no change to the status quo.

539 **Figure 8 – 363d ISR Wing Headquarters Building and Parking Alternatives**



540

541 **Figure 9 – Proposed Demolition**



542

543 **3.0 AFFECTED ENVIRONMENT**

544 This EA primarily focuses the analysis on the components of the environment that would be
545 affected by the implementation of the three proposed projects within a certain area known as a
546 region of influence. The Region of Influence (ROI) identified for analysis, unless otherwise
547 stated, is JBLE-Langley. These resources include land use, transportation, utilities, geology and
548 soils, water resources, wetlands, floodplains, coastal zone management, vegetation, fish and
549 wildlife, threatened and endangered species, cultural resources, visual resources,
550 socioeconomics, air quality, and noise. Three resources are not carried forward for analysis and
551 are listed below.

552 **Airspace** addresses the safe, orderly, and compatible use of the nation's airspace through a
553 system of flight rules and regulations, airspace management actions, and air traffic control
554 procedures. The national airspace system is designed and managed to protect aircraft operations
555 around most airports and along air traffic routes connecting these airports, as well as within
556 special areas where activities such as military flight testing and training are conducted. The
557 three proposed projects considered in this EA do not involve modifications to the airspace or
558 the introduction or changing of aircraft assigned to JBLE-Langley. As such, detailed analysis of
559 this resource is not carried forward.

560 **Environmental Justice and Protection of Children** addresses the disproportionate effect a
561 federal action may have on low-income or minority populations or on children. In 1994, EO
562 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-*
563 *Income Populations* was issued to focus attention of federal agencies on human health and
564 environmental conditions in minority and low-income communities and to ensure that
565 disproportionately high and adverse human health or environmental effects on these
566 communities are identified and addressed. In 1997, EO 13045, *Protection of Children from*
567 *Environmental Health Risks and Safety Risks (Protection of Children)*, was issued to ensure
568 the protection of children. The three proposed projects would not pose a risk to these
569 communities or population centers nor disproportionately impact low-income or minority
570 populations and would not pose environmental and safety risks to children. All of the
571 demolition and construction activities would be limited to JBLE-Langley. Since no minority
572 or low-income groups are located on JBLE-Langley, no disproportionate impacts to these
573 groups would occur. Barriers would be erected, as needed, to prevent children from entering
574 construction areas; children would not be placed at risk by implementation any of the proposed
575 projects on JBLE-Langley. Further analysis of this resource in this EA is not warranted.

576 **Safety** addresses the potential impact that the proposed actions or alternatives would have on
577 human health and safety. Neither of the three proposed projects would introduce novel safety
578 hazards to JBLE-Langley. Both actions would involve the inherent risks associated from
579 construction and demolition activities; however, all applicable state, federal, and Air Force
580 regulations would be followed. Typical safeguards during construction and demolition work
581 would be site fencing to eliminate the possibility of base personnel or children from entering an
582 active work site and standard safety practices as directed by the Occupational Health and
583 Safety Administration for construction work areas. Safety standards and procedures for

584 general construction projects at JBLE-Langley would be applied. Therefore, detailed analysis
585 of this resource is not carried forward.

586 3.1 LAND USE

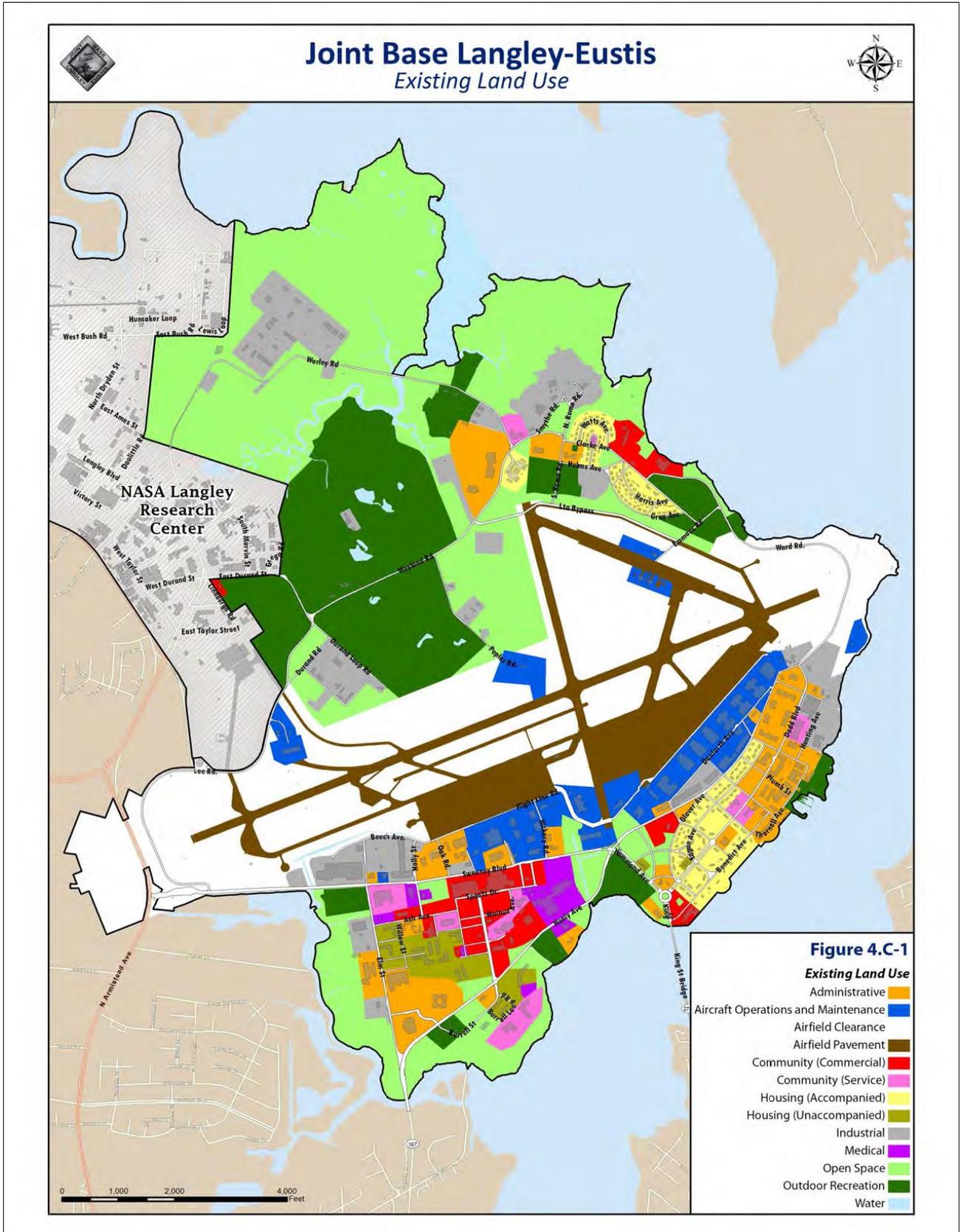
587 Land use comprises the natural condition or human-modified activities occurring at a particular
588 location. Land uses are frequently regulated by management plans, policies, ordinances, and
589 regulations that determine the types of activities that are allowable or provide protection for
590 specially designated or environmentally sensitive areas.

591 3.1.1 Affected Environment

592 JBLE-Langley is comprised of approximately 2,883 acres of developed and undeveloped land.
593 There are currently thirteen land use categories at the installation (Figure 10). Developed lands
594 include administrative, aircraft operations and maintenance, airfield clearance, airfield pavement,
595 community (commercial), community (service), housing (accompanied), housing
596 (unaccompanied), industrial, and medical. Undeveloped lands include open space, outdoor
597 recreation, and water. Land uses on the base are grouped by function into geographic areas. For
598 example, the northwest portion of the installation is dedicated primarily to open space and
599 outdoor recreation. Residential areas are found in the northeastern and southeastern portions of
600 the base. Community services are located in the southwestern part of the installation. The
601 flightline, located in the center of the base, is dedicated to aircraft operations and maintenance
602 (JBLE-Langley, 2013a). JBLE-Langley utilizes plans to guide land use on the installation.
603 Currently, the General Plan, a long-term planning document, is under revision to be republished
604 as the JBLE-Langley Installation Development Plan.

605

606 **Figure 10 – Existing Land Use Figure from 2013 JBLE-Langley General Plan**



607

608 3.2 TRANSPORTATION

609 Transportation is the movement of goods and people between locations. Roadways, vehicles,
610 and trails comprise the transportation system discussed in this EA.

611 3.2.1 Affected Environment

612 JBLE-Langley is located approximately three miles northeast of Interstate 64, which provides
613 regional access to the installation. As such, the ROI for analysis of potential transportation
614 impacts is three miles. Several roads serve as access points including, LaSalle Avenue (State
615 Route 167), Armistead Avenue (State Route 134), and King Street (State Route 278). LaSalle
616 Avenue is a four-lane road which provides access to the Main Gate and Visitor Center. LaSalle
617 Avenue has an average weekday volume of approximately 12,000 vehicles with low traffic
618 congestion during peak morning and afternoon travel times (TPO, 2015). Nealy Avenue begins
619 at the Main Gate and continues northeast through the installation. Armistead Avenue is a four-
620 lane road which provides access to the West Gate. Armistead Avenue has an average weekday
621 volume of approximately 25,000 vehicles with low traffic congestion during peak morning and
622 afternoon travel times (TPO, 2015). Sweeney Boulevard begins at the West Gate and is the
623 primary east-west road on the installation. King Street is a two-lane road which provides access
624 to the King Street Gate. King Street has an average weekday volume of approximately 7,000
625 vehicles with low to moderate traffic congestion during the peak morning and afternoon travel
626 times (TPO, 2015). The National Aeronautics and Space Administration (NASA) Langley
627 Research Center (LaRC) Durand Gate, in the north central portion of the base, provides access to
628 base civilian and active duty personnel. Traffic congestion primarily occurs at the Main and
629 West gates during peak hours and on Sweeney Boulevard (JBLE-Langley, 2013a). Construction
630 vehicles would access the installation via Armistead Avenue and the West Gate.

631 3.3 UTILITIES

632 In the context of this EA, utilities refer to electricity, potable water, and wastewater.

633 3.3.1 Affected Environment

634 The ROI to analyze potential utility related impacts includes the installation and surrounding
635 communities up to five miles. This distance enables analysis on the area which provide utility
636 service to JBLE-Langley.

637 Dominion Virginia Power provides electricity to much of Virginia including JBLE-Langley. On
638 the installation, a single 40 megavolt amperes (MVA) transformer steps incoming voltage down
639 from 110 kilovolt (kV) to 34.5 kV. Two 34.5 kV feeders leave substation and feed a loop of
640 twelve unit substations around the base. The system has a maximum combined peak demand
641 load of 25.3 megawatts (JBLE-Langley, 2013a). The 2010 electric use for JBLE-Langley was
642 145,172,330 kilowatts hour (JBLE-Langley, 2012).

643 Newport News Waterworks supplies potable water to JBLE-Langley with a direct connection to
644 an on-base 20-inch line near Lee Road and a second connection at the King Street Gate. There is
645 a two million gallon water storage tank located on the west end of the installation, a three million
646 gallon tank located in the Shellbank area, and a three million gallon tank near the marina. These
647 tanks act as a supplement to the direct and secondary connections. Average water demand on

648 base is 0.33 million gallons per day (MGD) and increases in the summer to 0.6 MGD (JBLE-
649 Langley, 2013a). The annual water consumption is approximately 175 million gallons. The
650 Newport News Waterworks draws approximately two MGD from local aquifers and 45 MGD
651 from surface water sources (JBLE-Langley, 2012).

652 Wastewater is collected through a system of 65 lift stations and approximately 95,000 linear feet
653 of concrete, clay, and PVC sewer lines. Wastewater leaves the installation through the lift
654 station in Building 1369. Off-base, wastewater is transferred to the York River Wastewater
655 Treatment Facility by the Hampton Roads Sanitation District (JBLE-Langley, 2013a). JBLE-
656 Langley has a discharge permit from HRSD for 495,000 gallons per day. The average discharge
657 is 325,000 gallons per day.

658 3.4 GEOLOGY AND SOILS

659 3.4.1 Affected Environment

660 The ROI to analyze potential geology and soil related impacts includes the proposed project area
661 and a 100 foot radius. This distance enables analysis on the area which are not expected to but
662 could have impacts during construction and operation due to the proximity to the project area.

663 The surface geology at JBLE-Langley consists of three stratigraphic units: Yorktown Formation,
664 Tabb Formation, and Recent Deposits. The age, depositional environment, and texture of the
665 three units are briefly summarized below (youngest to oldest):

- 666 • Recent Deposits: Alluvium (silt, sand, and clay), Marsh Sediment (peat, silt, sand, and
667 clay with organic matter), Sand (beach and dune sand, occurring as a tidal mud flat).
- 668 • Tabb Formation (Pleistocene): Lynnhaven Member, sand and clay deposited in a near
669 shore marine depositional environment.
- 670 • Yorktown Formation (Pliocene): Sand and silt deposited in a shallow marine
671 depositional environment.

672 The subsurface geology beneath JBLE-Langley has been characterized into three distinct
673 lithologic units as interpreted from a 2,083.8 foot core hole drilled on nearby NASA property.
674 From youngest to oldest, the units are:

- 675 • 774.3 feet of post-impact Coastal Plain deposits (774.3 feet deep to top of the core hole);
- 676 • 1,280.4 feet of impact generated crater fill materials (2,054.7 feet to 774.3 feet deep);
- 677 • Crystalline bedrock at 2,054.7 feet deep (JBLE-Langley, 2014a).

678 Soils in this region are mostly unconsolidated fluvial, marine, and estuarine deposits underlain
679 by beach sands, sandy clays, and gravels from the Tabb and Lynnhaven formations. Land
680 moving and filling activities at JBLE-Langley have altered soil profiles to the extent that site soil
681 profiles do not concur with local soil surveys from adjacent counties (JBLE-Langley, 2013b).
682 Soils of the area encompassing the proposed project locations are identified in the table below.

683 **Table 1 – Proposed Project Area Soils**

Proposed Project	Soil Name	Soil Map Unit	Percentage
Runway 08 Clear Zone (north)	Chickahominy-Urban land complex	8	85%
	Udorthents-Dumps complex	26	15%
Runway 08 Clear Zone (south)	Chickahominy-Urban land complex	8	75%
	Udorthents-Dumps complex	26	25%
Runway 26 Clear Zone (south)	Udorthents-Dumps complex	26	80%
	Urban Land	27	20%
Runway 26 Clear Zone (north)	Udorthents-Dumps complex	26	100%
Hospital Parking Lot	Udorthents-Dumps complex	26	100%
363d ISR Alternative 1	Udorthents-Dumps complex	26	100%
363d ISR Alternative 2	Udorthents-Dumps complex	26	100%
363d ISR Alternative 2 Parking Lot	Udorthents-Dumps complex	26	100%
Building 326 (Demolition)	Urban Land	27	100%
Building 333 (Demolition)	Urban Land	27	100%
Building 337 (Demolition)	Urban Land	27	100%

684 **Chickahominy-Urban land complex, 0 to 2 percent slopes** are a mix of typically 80% nearly
685 level, depressions and drainage ways and typically 20% urban land (see below) in the Atlantic
686 Coast Flatwoods and Tidewater Area major land resource areas. This complex is made up of
687 poorly drained loamy, clay alluvial sediments. **Udorthents-Dumps complex** consist of waste
688 rock and soil material used for fill during road or building construction. **Urban land** consists of
689 developed areas such as roads, parking lots, and buildings.

690 3.5 WATER RESOURCES

691 Water resources for this EA include surface water, groundwater, stormwater drainage, wetlands,
692 floodplains, and coastal zone management. Surface and groundwater resources are protected by
693 federal and state laws and regulations, including the Clean Water Act (CWA) [Sections 401, 402,
694 and 303(d)], the Safe Drinking Water Act, Section 438 of the Energy Independence and Security
695 Act, and the United States Environmental Protection Agency’s (USEPA) National Pollutant
696 Discharge Elimination System (NPDES), administered by the Virginia Department of
697 Environmental Quality (VDEQ).

698 The Virginia Stormwater Management Program (VSMP) regulations (4 VAC 3-20),
699 administered by the Virginia Department of Conservation and Recreation (VDCR), require that
700 construction and land development activities incorporate measures to protect aquatic resources

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701 from the effects of increased stormwater runoff and non-point source pollution. The VSMP also
702 requires a Stormwater Pollution Prevention Plan and a VDCR permit prior to any land-disturbing
703 activity of one acre or more (JBLE-Langley, 2013b).

704 EO 11990, *Protection of Wetlands*, directs federal agencies to avoid, to the extent possible, the
705 long- and short-term adverse impacts associated with the destruction or modification of
706 wetlands, and to avoid direct or indirect support of new construction in wetlands whenever there
707 is a practicable alternative. Under Section 404 of the CWA, the United States Army Corps of
708 Engineers (USACE) is responsible for making jurisdictional wetland determinations and issuing
709 permits for construction in wetlands. Wetlands are those areas that are inundated or saturated by
710 surface or ground water at a frequency and duration sufficient to support, and that under normal
711 circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil
712 conditions. The USACE defines a federal jurisdictional wetland as a wetland that is adjacent to
713 a navigable waterway, significant nexus to a navigable waterway, or wetland that directly abuts a
714 tributary of a non-navigable waterway that are relatively permanent. Types of wetlands are
715 described in the 1987 USACE Wetland Delineation Manual.

716 The Commonwealth of Virginia also regulates impacts to state waters, including wetlands,
717 under the Virginia Water Protection Permit Program. This program is administered by the
718 VDEQ's Division of Water Quality, Office of Wetlands and Water Protection/Compliance.
719 Activities requiring a permit include dredging, filling, or discharging any pollutant into or
720 adjacent to surface waters, or otherwise altering the physical, chemical, or biological properties
721 of surface waters, excavating in wetlands, or conducting the following activities in a wetland:
722 1) new activities to cause drainage that significantly alters or degrades existing wetland acreage
723 or functions, 2) filling or dumping, 3) permanent flooding or impounding, or 4) new activities
724 that cause significant alteration or degradation of existing wetland acreage or functions.
725 Federal, state, and local wetland construction permits are required for any construction within
726 the wetland and coastal zone management areas prior to commencing with any proposed
727 construction project (JBLE-Langley, 2014b).

728 EO 11988, *Floodplain Management*, requires federal agencies to determine whether a proposed
729 action would occur within a floodplain and consider alternatives to avoid adverse effects and
730 incompatible development in floodplains. EO 11988 directs federal agencies to avoid
731 floodplains unless the agency determines that there is no practicable alternative. The Federal
732 Emergency Management Agency oversees and regulates floodplain management. Regulatory
733 floodplains are delineated in FEMA Flood Insurance Rate Maps. EO 11988 was amended by EO
734 13690, *Establishing a Federal Risk Standard and Process for Further Solicitation and*
735 *Considering Stakeholder Input*. Federal agencies are required to utilize a revised definition of
736 floodplain in determining impacts. When establishing the flood elevation and hazard area for an
737 action Federal agencies have three options. JBLE-Langley utilizes the approach to build two-feet
738 above the 100-year flood elevation. Also, where possible, Federal agencies are directed to use
739 natural systems, ecosystem processes, and nature-based approaches when developing
740 alternatives.

741 The coastal zone includes those lands governed by the Virginia Coastal Resources Management
742 Program (VCRMP), pursuant to the federal Coastal Zone Management Act (CZMA) of 1972.

743 The CZMA requires that “federal agency activity within or outside the coastal zone that affects
744 land, water use, or natural resources of the coastal zone shall be carried out in a manner
745 consistent with approved state management programs” (16 U.S.C. 1456(c)(1)(A)). The VCRMP
746 outlines land and water use programs within Virginia’s coastal zone. The Chesapeake Bay
747 Protection Act, adopted by the General Assembly in 1988, provides for the protection and
748 improvement of water quality of the Chesapeake Bay, its tributaries, and other state waters by
749 minimizing the effects of human activity upon these waters (JBLE-Langley, 2013b).

750 3.5.1 Affected Environment

751 JBLE-Langley is located on the lower Virginia Peninsula, between the Northwest Branch and
752 Southwest Branch of the Back River, a tributary of the Chesapeake Bay. The land occupied by
753 the installation lies entirely within the Lynnhaven-Poquoson watershed. The surface water
754 surrounding JBLE-Langley is brackish to saline and occurs in an estuarine setting. The Back
755 River, New Market Creek, Brick Kiln Creek, and Tabbs Creek provide drainage for the area.
756 Two are listed on the 2014 Impaired Waters list; Brick Kiln Creek and Northwest Branch of
757 Back River for recreation use impairments from enterococcus and Northwest Branch of Back
758 River for shellfish condemnation areas from fecal coliform. Total Daily Maximum Loads
759 (TDMLs) for the Back River watershed were approved by USEPA Region III in April 2014
760 (VDEQ, 2014; USEPA, 2014). However, no fecal coliform reduction is required for JBLE-
761 Langley as the major source in the area is wildlife, which does not impact downstream segments
762 (VDEQ, 2014). The groundwater structure in the area consists of the Water Table Aquifer, the
763 Yorktown-Eastover Aquifer, and the Chickahominy Point Aquifer (JBLE-Langley, 2013a).

764 **Table 2 – Impaired Waters and Associated TDML Information**

Impaired Area	Pollutant Identified	Current Load (cfu/day)	Allowable Load (cfu/day)	Required Reduction (%)
NW Branch Back River and Brick Kiln Creek	Fecal Coliform	2.43E+11	8.64E+10	64%
	<i>Enterococci</i>	3.00E+13	2.40E+12	92%

765 JBLE-Langley is serviced by a stormwater drainage system that discharges to the Back
766 River and its tributaries: Brown Creek, Tides Mill Creek, Kiln Creek, and Tabbs Creek.
767 Surface water also may drain directly to these water bodies. Stormwater drainage on JBLE-
768 Langley is carried by a series of pipes, box culverts, and open ditches to 59 outfalls (JBLE-
769 Langley, 2014b). Due to the flat relief of the area, standing water accumulates during heavy
770 storm events. Stormwater runoff from parking lots and aircraft parking aprons has the
771 potential to carry spilled oil, grease, hydraulic fluid, and jet fuel to outfalls. The USEPA has
772 granted local NPDES permitting authority to the VDEQ under the Virginia Pollutant Discharge
773 Elimination System (VPDES). The base is under VPDES Industrial Stormwater Permit Number
774 VA0025216. The permit expires on 31 August 2020. The VPDES permit identifies effluent
775 limitations and requires semi-annual sampling and management of runoff and sediment and

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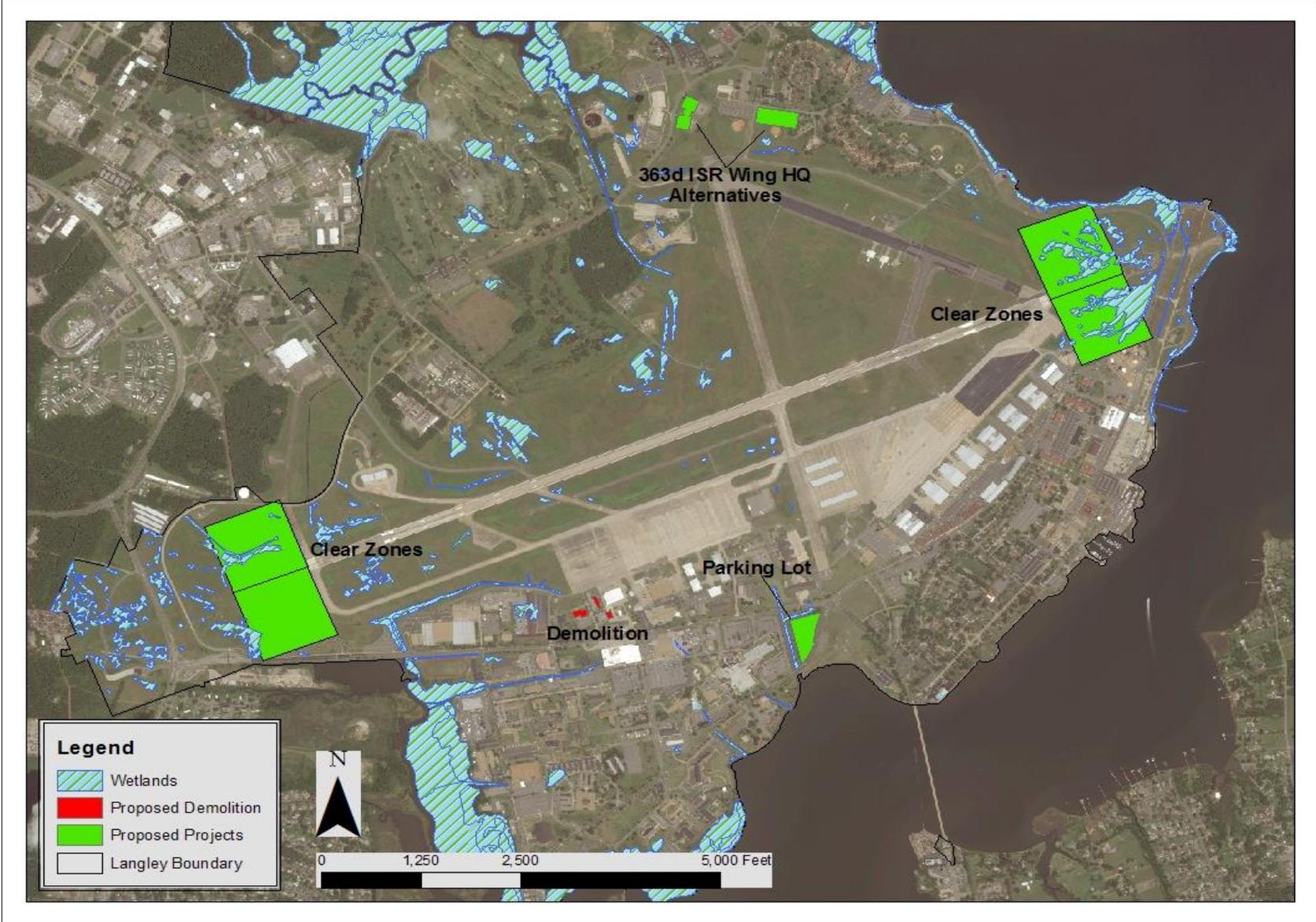
776 erosion control. This permit requires analytical sampling of various stormwater outfalls and
777 the results tracked and reported to the appropriate regulatory agencies as they occur (JBLE-
778 Langley, 2014b).

779 Wetlands at JBLE-Langley encompass approximately 652 acres (Figure 11), of those 462 acres
780 are non-freshwater estuarine wetlands. Salt and freshwater marshes of the northwest and
781 southwest branches of the Back River, New Market Creek, Brick Kiln Creek, Tabbs Creek,
782 and Tides Mill Creek surround the base on three sides. Tidal flow from the Chesapeake Bay is
783 substantial along these margins; however, most inland freshwater wetlands have been filled,
784 drained to ditches, or converted into golf course features. Most wetlands at JBLE-Langley are
785 located at the northern boundary of the base along the Northwest Branch of the Back River and
786 are tidal, estuarine wetlands. Freshwater wetlands on base include palustrine forested, emergent,
787 and scrub-shrub wetlands. Forest and scrub-shrub wetlands occur in low-lying upland areas
788 with nutrient-poor sandy soils and are dominated by bottomland hardwood trees and shrubs.
789 Isolated palustrine emergent wetlands occur throughout the flightline area (JBLE-Langley,
790 2014a). These wetlands have been determined jurisdictional by the USACE and the delineation
791 is valid until February 2018.

792 The majority of JBLE-Langley lies within the 100-year floodplain. JBLE-Langley occasionally
793 has severe flooding with some strong Nor'easters and hurricanes. Flood-prone areas on the
794 installation include any land below nine feet mean sea level, along the base's perimeter, and
795 adjacent to waterbodies (JBLE-Langley, 2013b).

796 All of JBLE-Langley is within Virginia's Coastal Zone, as defined by the Virginia Coastal
797 Program. Federal lands such as JBLE-Langley are statutorily excluded from Virginia's coastal
798 zone. However, federal approval of the VCRMP triggers Section 307 of the CZMA and
799 mandates that activities on federal lands that have the potential to affect coastal resources or uses
800 on non-federal lands comply to the maximum extent practicable with the enforceable policies of
801 the VCRMP. Virginia's Coastal Zone Management Program includes the following resource
802 areas: tidal and nontidal wetlands, fisheries (finfish and shellfish resources and commercial or
803 recreational fisheries), subaqueous lands, dunes and beaches, point source air pollution, point
804 source water pollution, nonpoint source water pollution, shoreline sanitation (septic tanks), and
805 coastal lands (VDEQ, undated).

806 **Figure 11 - JBLE-Langley Wetlands**



807

808 3.6 BIOLOGICAL RESOURCES

809 Vegetation discusses the plants and their geographic characteristics. Fish and wildlife discusses
810 the animals and their habitats that occur within the region. Federal agencies proposing project
811 development are required to determine the project's potential impacts to environmental resources
812 protected by Federal statutes. Threatened and endangered species identifies any federally or
813 state listed species in or around JBLE-Langley. Section 7 of the Endangered Species Act, as
814 amended (16 USC, Chapter 35 §§ 1531-1544), requires federal agencies evaluate the efforts of
815 the Proposed Actions on protected plant and animal species and their habitats and take
816 appropriate measures to conserve and protect these species. Special-status species include plants
817 and animals listed as sensitive, threatened, or endangered by the United States Fish and Wildlife
818 Service (USFWS), as well as those that are candidates or proposed for listing as threatened or
819 endangered. Special status species also include those species protected by the Migratory Bird
820 Treaty Act, the Bald and Golden Eagle Protection Act, and the Marine Mammal Protection Act.

821 3.6.1 Affected Environment

822 JBLE-Langley lies within the Mid-Atlantic Coastal Plain. Historically, the area would have been
823 mixed pine-hardwood forest containing loblolly pine (*Pinus taeda*), basket oak (*Quercus*
824 *montana*), willow oak (*Q. phellos*), red maple (*Acer rubrum*), black gum (*Nyssa sylvatica*), and
825 white oak (*Q. alba*). Much of the historic, native vegetative cover has been removed from JBLE-
826 Langley and only remnant patches of native upland forest vegetation, salt marsh, and inland
827 wetlands remain. Approximately 230 acres (8 percent) of the base is forested or in its natural
828 state. The forested areas contain loblolly pine, white oak, willow oak, black cherry (*Prunus*
829 *serotina*), sweet gum, red maple, tulip poplar (*Liriodendron tulipifera*), dogwood (*Cornus*
830 *florida*), sassafras (*Sassafras albidum*), wax myrtle (*Myrica cerifera*), and various grass and forb
831 species. The largest areas of marsh are located along Tabbs Creek and the Northwest Branch of
832 the Back River. The marsh area is characterized by seven plant communities including: cord
833 grass, dwarf cord grass, salt meadow hay, salt grass, rush, marsh elder, and salt brush. Species
834 distribution is dependent on salinity, drainage, slope, substrate, elevation, and tidal inundation
835 (JBLE-Langley, 2014a). The majority of the base now consists of managed lawns and
836 landscaped areas composed of ornamental trees and shrubs and industrial areas of buildings,
837 structures, and pavement.

838 Wildlife that utilize the installation are wide-spread species that are habitat generalists or tolerant
839 of disturbance. A wide variety of common songbirds, shorebirds, and game birds can be found
840 on the base. Birds that are frequently found in open field areas include abundant and more
841 common species, such as American robin, European starling, American crow, common grackle,
842 and Brown-headed cowbird. The proximity of the base to estuarine and marine habitats of
843 Chesapeake Bay provides habitat for a variety of neotropical migrants and waterfowl.
844 Waterfowl that may use salt marsh community include canvasbacks, ruddy ducks, greater and
845 lesser scaups, bufflehead, redhead, common golden-eye, blue-winged teal, common loon,
846 double-crested cormorant, and American coot. Characteristic game birds include wild turkey;
847 northern bobwhite, and mourning dove (JBLE-Langley, 2014a). Raptors common to the area
848 include black vulture, turkey vulture, osprey, northern harrier, bald eagle, red-tailed hawk,
849 American kestrel, eastern screech owl, and great horned owl. The Migratory Bird Treaty Act

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850 (MBTA) protects almost all birds, including their nests and eggs, which occur in the vicinity of
851 JBLE-Langley. Nonnative species are not covered under the MBTA. The Bald and Golden
852 Eagle Protection Act expands protection of these two species beyond the MBTA to prevent
853 detrimental activities around a nest site.

854 Important native mammals expected to be found near forested areas on base include white-tailed
855 deer, raccoon, red fox, gray and fox squirrels, Virginia opossum, and various species of small
856 rodents. Mammals that frequent open grassland areas include various species of shrews, moles,
857 the meadow jumping mouse, meadow vole, eastern cottontail rabbit, and striped skunk. Open
858 grassland areas are also important foraging areas for various species of bats known to inhabit the
859 region. Reptiles, which may inhabit the wetland communities, include the six-lined racerunner,
860 eastern hognose snake, black racer, the black rat snake, and the canebrake rattlesnake.

861 JBLE-Langley does not routinely have any operations that require the utilization of the Back
862 River; however, the species and habitats that exist in this estuarine ecosystem are an important
863 resource. Efforts are taken to prevent unnecessary impacts to this estuarine system. The
864 Chesapeake Bay is home to approximately 350 species of fish, many of which are commercially
865 important (Chesapeake Bay Program, 2013). Finfish and shellfish (crabs, oysters, and clams) are
866 common along the shorelines of JBLE-Langley. Additionally, a number of federally managed,
867 commercially important species have Essential Fish Habitat located in the vicinity of JBLE-
868 Langley.

869 The waters off JBLE-Langley and the nearby Chesapeake Bay also support a number of marine
870 mammal species. The most common species that could be present adjacent to JBLE-Langley is
871 the bottlenose dolphin (*Tursiops truncatus*). All marine mammals are protected under the
872 Marine Mammal Protection Act.

873 The USFWS's Information for Planning and Conservation (IPaC) is a planning tool for
874 environmental reviews. An IPaC Trust Resource Report was generated for this EA using the
875 JBLE-Langley boundary. There were no species listed as threatened or endangered under the
876 ESA, designated critical habitat, or wildlife refuges within the boundary of the installation
877 (USFWS, 2015). Plum Tree Island National Wildlife Refuge is located just under two miles to
878 the northeast of the installation. All ground disturbance activities would cease and coordination
879 would occur if any threatened or endangered species is encountered.

880 The VDCR Division of Natural Heritage maintains a list of special status species. The following
881 table identifies species that are listed for Hampton, Virginia (VDCR, 2015). There have been no
882 special status species documented on JBLE-Langley (JBLE-Langley, 2014a).

883 **Table 3 – Special Status Species, Hampton, Virginia**

Common Name	Scientific Name	Federal Status	State Status	Occurrence
Mabee’s Salamander	<i>Ambystoma mabeei</i>	None	Threatened	None observed. Habitat occurs on JBLE-Langley.
Piping Plover	<i>Charadrius melodus</i>	Threatened	Threatened	None observed. No habitat on JBLE-Langley.
Gull-billed Tern	<i>Gelochelidon nilotica</i>	None	Threatened	None observed. Habitat occurs on JBLE-Langley.
Northeastern Beach Tiger Beetle	<i>Cicindela dorsalis dorsalis</i>	Threatened	Threatened	None observed. No habitat on JBLE-Langley.
Atlantic Sturgeon	<i>Acipenser oxyrinchus</i>	Endangered	Endangered	None observed. No habitat on JBLE-Langley.
Canebrake Rattlesnake	<i>Crotalus horridus</i>	None	Endangered	None observed. Habitat occurs on JBLE-Langley.
Virginia Least Trillium	<i>Trillium pusillum var. virginianum</i>	Species of Concern	None	None observed. No habitat on JBLE-Langley.

884 **3.7 CULTURAL RESOURCES**

885 In accordance with the National Historic Preservation Act (NHPA) of 1966 and its implementing
886 regulations, 36 CFR Part 800, “Protection of Historic Properties” (incorporating amendments
887 effective August 5, 2004), and Section 106 of the Act, requires Federal agencies to take into
888 account the effects of their undertakings on historic properties and afford the Advisory Council
889 on Historic Preservation (ACHP) a reasonable opportunity to comment on such undertakings.
890 The Section 106 process seeks to accommodate historic preservation concerns with the needs of
891 Federal undertakings through consultation among the agency officials and other parties with an
892 interest in the effects of the undertaking on historic properties, commencing at the early stages of
893 project planning. The goal of consultation is to identify historic properties potentially affected
894 by the undertaking, assess its effects and seek ways to avoid, minimize or mitigate any adverse
895 effects on historic properties.

896 **3.7.1 Affected Environment**

897 Eleven archeological studies have been conducted at JBLE-Langley which have identified a total
898 of 31 archaeological sites (Figure 12). Seven sites are recommended eligible for listing on the
899 NRHP and one requires further evaluation for listing (JBLE-Langley, 2015a).

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900 Architectural surveys at JBLE-Langley have identified an area encompassing the North Base
901 Area and airfield areas as eligible for the NRHP as the Langley Field Historic District. Langley
902 Field Historic District resources (ca. 1917 to 1945) illustrate the evolution of construction within
903 the Army Air Corps and are associated with the development of Langley Field, the Army Air
904 Corps, and the National Advisory Committee on Aeronautics (NACA), NASA’s forerunner.
905 There are 244 contributing properties in the district. Property types include aircraft operations
906 facilities; administration, residential, and recreational facilities; wind tunnels; laboratories;
907 runways; taxiways; road systems; and landscape features. There are two additional buildings
908 located outside the district.

909 There are six National Historic Landmarks on JBLE-Langley, all of which were designated on
910 the merit of their contributions to the aeronautics and space program between 1915 and 1972.
911 They are owned by NASA and contribute to the NASA Langley Research Center Historic
912 District.

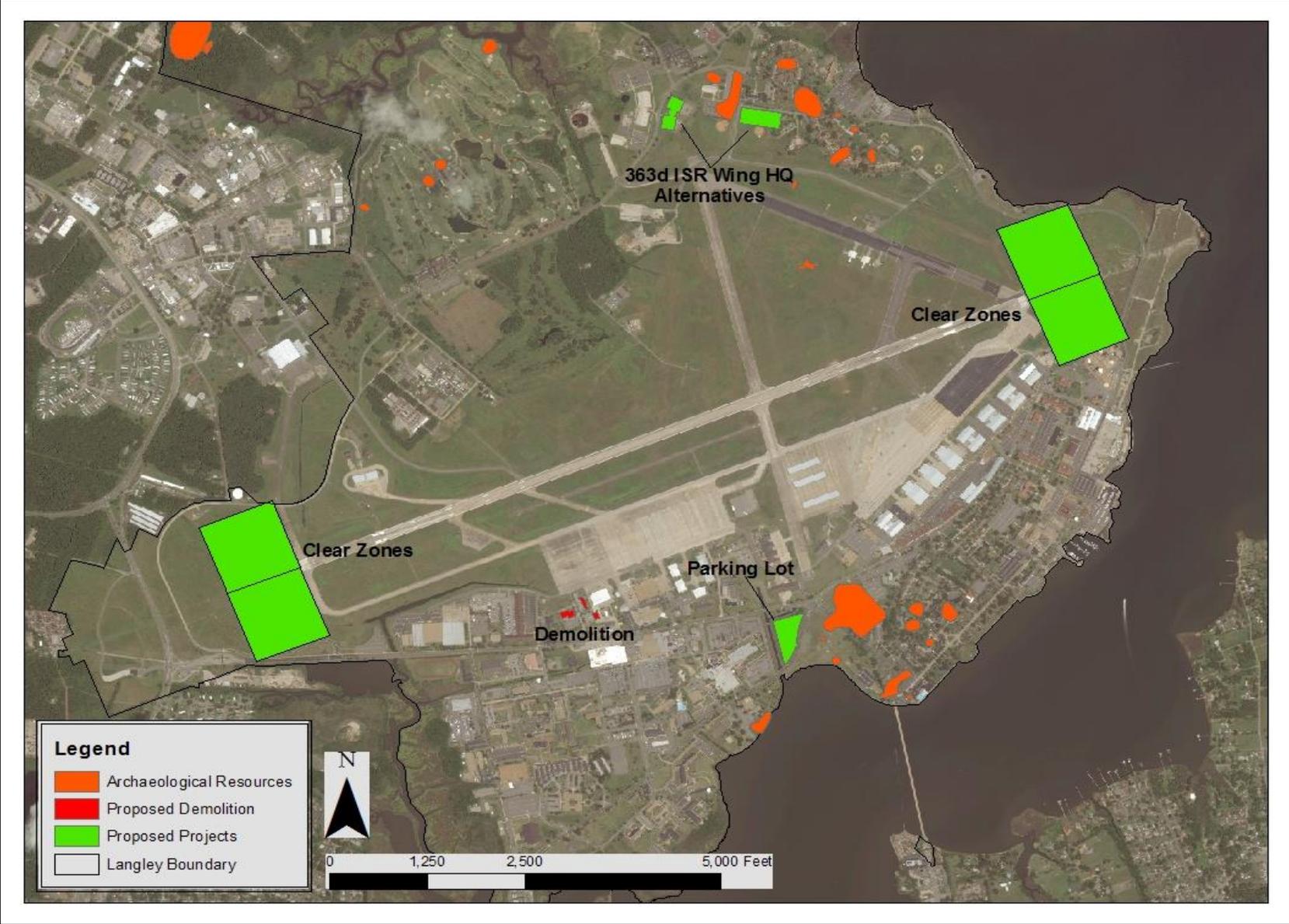
913 According to the 2015 Integrated Cultural Resources Management Plan, no known traditional
914 cultural resources or sacred sites have been identified at JBLE-Langley. Five federally-
915 recognized and seven state-recognized Native American tribes have expressed interest or
916 potential interest in cultural resources associated with the installation.

917 **Table 4 – Recognized Native American Tribes**

Federally Recognized Tribes
Eastern Band of Cherokee Indians in North Carolina
Cherokee Nation in Oklahoma
Pamunkey
United Keetoowah Band of Cherokee Indians in Oklahoma
Tuscarora Tribe
State Recognized Tribes
Chickahominy
Eastern Chickahominy
Mattaponi
Monacan Indian Nation
Nansemond
Rappahannock
Upper Mattaponi

918

919 **Figure 12 - JBLE-Langley Architectural Sites**



920

921 **3.8 VISUAL RESOURCES**

922 Visual resources for this EA are defined as the natural and human aspects of land use that
923 comprise the aesthetic qualities of an area. This includes the natural environment, such as trees,
924 topography, and land structure, as well as any man-made structures that currently exist within the
925 area. The importance of a change in visual character is influenced by social considerations,
926 including public value placed on the resource, public awareness of the area, and general
927 community concern for visual resources in the area (JBLE-Langley, 2013b).

928 **3.8.1 Affected Environment**

929 The largest structures on base are the aircraft operations and maintenance facilities located in the
930 southern portion of the base. NASA operates a facility complex in the northwestern, southern,
931 and southeastern portion of the base. The large wind tunnels and aeronautical test equipment that
932 comprise the NASA facility resemble a large industrial area. A number of older buildings on
933 base, such as the Albert Kahn designed hangars, give the base a character reflecting its history as
934 an important airbase from the beginning of the aviation era.

935 Much of the vegetation on base was planted at the time of the base's original construction (circa
936 1916). Towering oak trees are the dominant species of trees in the Langley Field Historic District.
937 They have been used mainly as street plantings and as decorative plantings around many buildings.
938 Significant trees, those which exhibit unique and unusual size or appearance, are a part of the
939 historic character of the base. The Langley General Plan indicates visual resources are taken into
940 consideration for all installation improvement projects (JBLE-Langley, 2013a).

941 **3.9 SOCIOECONOMICS**

942 Socioeconomics is the study and analysis of the human environment. For this EA, the focus of
943 the socioeconomics section will focus on population, employment, personal income, housing,
944 and public services.

945 **3.9.1 Affected Environment**

946 JBLE-Langley is located in Hampton, Virginia. Adjacent communities includes Newport News,
947 Poquoson, and York County. It is anticipated that any potential socioeconomic impacts due to
948 the proposed actions would be concentrated within these areas surrounding the installation and as
949 such is the ROI for this analysis.

950 The population estimate as of 2015 for the ROI was 398,735. This was a three percent increase
951 from the 2010 Census. Newport News and York County populations increased and Hampton
952 and Poquoson saw decreases (USCB, 2015). The table below shows population numbers for the
953 ROI. JBLE-Langley identified 23,880 personnel divided into four core groups: 9,437
954 appropriated fund military, 10,542 military dependents, 3,250 appropriated fund civilians, and
955 651 non-appropriated fund civilians, contractors, and private business (JBLE-Langley, 2013a).

956 **Table 5 – Population in Areas Surrounding JBLE-Langley**

	Hampton	Newport News	Poquoson	York County	Total
Population Estimate 2015	136,454	182,385	12,059	67,837	398,735
Population 2010 Census	137,436	180,719	12,150	65,464	395,769
Percent Change	-0.8%	0.8%	-0.8%	4.1%	3.3%

957 JBLE-Langley has a significant, positive impact on the region. The base's payroll and local
 958 expenditures account for more than \$1.2 billion per year. Much of this is spent in the local
 959 region for housing, food, and other consumer products. In addition, JBLE-Langley purchases
 960 materials, equipment, and supplies from local and regional firms. These purchases amounted to
 961 more than \$314 million in FY10. The estimated value of indirect jobs created was more than
 962 \$267 million (JBLE-Langley, 2013a).

963 The largest contributors to employment in the surrounding ROI are education and health care
 964 services sector. For Hampton, the next largest contributing sectors are manufacturing, retail, and
 965 professional services. For Newport News, the next largest contributing sectors are retail,
 966 manufacturing, and entertainment/accommodation/food sectors. For Poquoson, the next largest
 967 contributing sectors are professional services, manufacturing, and construction. For York
 968 County, the next largest contributing sectors are public administration, professional services, and
 969 manufacturing (USCB, 2014).

970 As shown in the table below, income of Poquoson and York County were greater than that of
 971 Hampton and Newport News. Unemployment in Hampton and Newport News was
 972 approximately twice as great as the unemployment rates in Poquoson and York County.

973 **Table 6 – Employment in Areas Surrounding JBLE-Langley (2010-2014)**

	Civilian Labor Force	Armed Forces Labor Force	Unemployment Rate	Median Household Income	Per Capita Income in past 12 months
Hampton	67,264	4,169	10.5%	49,879	25,131
Newport News	91,321	7,866	9.6%	51,000	25,408
Poquoson	6,136	137	4.7%	83,460	38,295
York County	31,412	3,003	5.6%	80,900	36,004

974 In the ROI as of 2014, there were 169,717 housing units with an averaged median value of
975 \$250,925. The averaged median gross rent in the ROI was \$1,137 dollars a month as of 2014.
976 Housing and rental vacancy rates within the ROI was approximately 2% and 7.5%, respectively
977 (USCB, 2015). In the ROI as of April 2016, there were 1,715 single family homes and 21 multi-
978 family homes listed for sale and 580 properties for rent (National Association of Realtors, 2016).
979 Military Family Housing is sub-divided into two areas: the Langley Family Housing area and
980 main base housing. JBLE-Langley recently completed new dorms for unaccompanied housing
981 on the installation. Temporary housing is provided in Bayview Tower (JBLE-Langley, 2013a).
982 Military personnel select housing based on their individual needs and situation, whether on or off
983 the installation.

984 There are two school systems which serve JBLE-Langley students. Main base housing residents
985 attend Hampton City Schools, with 36 schools and approximately 23,000 students. There is one
986 elementary, middle, and high school which serve as primary feeder schools (JBLE-Langley,
987 2013a). In 2012, Hampton City Schools received \$578,455 in impact aid from the federal
988 government for the loss of tax revenue for those living on federal property (FEBP, 2015). The
989 nearby Langley Family Housing area (Bethel Manor) residents attend York County Schools,
990 with 19 schools and approximately 13,000 students. Residents are serviced by one of two
991 elementary, middle, or high schools each, depending on the location of their home in the Langley
992 Family Housing area (JBLE-Langley, 2013a). In 2012, York County Schools received
993 \$4,792,665 in impact aid (FEBP, 2015). Families may choose to expand educational
994 opportunities for their children by applying to a magnet school. There are also numerous private
995 schools in the ROI.

996 USAF Hospital Langley is a full-service, 65-bed hospital providing inpatient, outpatient, and
997 emergency care which provides services to active and retired military personnel as well as their
998 dependents. The surrounding communities also offer hospital services. Hampton has a 224-bed
999 hospital and Newport News has two hospitals totaling 675 beds (Sentara, 2016; Riverside,
1000 undated; Bon Secours, 2016). In addition, the ROI also has specialized facilities for mental
1001 health, children, rehabilitation, and numerous facilities for senior citizens.

1002 The 633d Security Forces Squadron provide law enforcement and force protection within the
1003 Joint Base Langley-Eustis community (JBLE-Langley, undated). Police protection in the
1004 surrounding communities is provided by each local city and the Virginia State Police. Each
1005 county and independent city also has a sheriff's department. JBLE-Langley Fire Department
1006 (633 CES/CEF) operates two fires stations, one on the main base and one in the Langley Family
1007 Housing area. There are also Mutual Aid Agreements with Hampton, Newport News, Poquoson,
1008 and York County. Mutual aid is also available from two other military installations in the area
1009 (JBLE-Langley, 2013a).

1010 3.10 SOLID AND HAZARDOUS WASTE

1011 EO 13693 requires that Federal agencies promote pollution prevention and eliminate waste. The
1012 EO requires agencies to minimize the use of toxic and hazardous chemicals and pursue
1013 acceptable alternatives. It also requires agencies to minimize the quantity of toxic and hazardous
1014 chemicals and materials used, particularly where such reduction will help meet greenhouse gas

1015 emission reduction targets, divert at least 50 percent of non-hazardous solid waste annually, and
1016 divert at least 50 percent of non-hazardous construction and demolition debris.

1017 Hazardous materials, listed under Resource Conservation and Recovery Act (RCRA) and the
1018 Emergency Planning and Community Right-to-Know Act, are defined as any substance that, due
1019 to quantity, concentration, or physical, chemical, or infectious characteristics, may present
1020 substantial danger to public health, welfare, or the environment. Hazardous materials are
1021 federally regulated by the USEPA in accordance with the Federal Water Pollution Control Act;
1022 CWA; Toxic Substance Control Act; RCRA; the Comprehensive Environmental Response,
1023 Compensation, and Liability Act; and Clean Air Act (CAA). The federal government is required
1024 to comply with these acts and all applicable state regulations under EO 12088, Federal
1025 Compliance with Pollution Control Standards. Additionally, EO 12088, under the authority of
1026 the USEPA, ensures that necessary actions are taken for the prevention, management, and
1027 abatement of environmental pollution from hazardous materials (JBLE-Langley, 2013b).

1028 3.10.1 Affected Environment

1029 The ROI to analyze potential waste related impacts includes the installation and surrounding
1030 communities up to five miles. This distance enables analysis on the areas which accept waste
1031 from JBLE-Langley.

1032 Operations at JBLE-Langley require the use and storage of many hazardous materials. The
1033 majority of hazardous materials used by Air Force and contractor personnel are controlled
1034 through the base's Hazardous Materials Pharmacy (HAZMART). This process provides
1035 centralized management of the procurement, handling, storage, and issuing of hazardous
1036 materials and turn-in, recovery, reuse, or recycling of hazardous materials.

1037 JBLE-Langley is a large-quantity hazardous waste generator. In keeping with the requirements
1038 outlined in the JBLE-Langley Hazardous Waste Management Plan, hazardous waste is properly
1039 segregated, stored, characterized, labeled, and packaged for collection at designated initial
1040 satellite accumulation points. A licensed contractor transports the waste from the accumulation
1041 points to the single designated 90-day Hazardous Waste Storage Area on JBLE-Langley where it
1042 is processed for disposal before 90 days has expired. A licensed disposal contractor picks up the
1043 waste and transports it off base for disposal in a licensed disposal facility. Accumulated wastes
1044 gathered at a 90-day Hazardous Waste Storage Area are analyzed, characterized, prepared for
1045 shipment, and forwarded to the Defense Reutilization and Marketing Office in Norfolk, which is
1046 responsible for arranging permanent disposal (JBLE-Langley, 2014c).

1047 Asbestos-containing material (ACM) includes materials that contain more than one percent
1048 asbestos; it is categorized as either friable or non-friable. The 633 ABW Asbestos Management
1049 and Operations Plan provides guidance on the identification and management of ACM. An
1050 asbestos facility register is maintained by 633 CES. Persons inspecting, designing, or conducting
1051 asbestos response actions in public or commercial buildings must be properly trained and
1052 accredited through an applicable asbestos training program. The design of building alteration
1053 projects and requests for self-help projects are reviewed to determine if ACM is present in the
1054 proposed work area and, if so, is properly removed and disposed of in an off base permitted
1055 landfill.

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1056 Lead-based paint (LBP) includes paint having lead levels equal to or exceeding 0.5 percent by
1057 weight. The 633 ABW Lead-Based Paint Management and Operations Plan contains policies
1058 and procedures associated with the management of lead-based paint. The plan is designed to
1059 establish operations and management organizational responsibilities and procedures so that
1060 personnel at JBLE-Langley are not exposed to excessive levels of lead-contaminated dust or
1061 soils. Plan components identify management actions for worker training, notification, and
1062 labeling; the JBLE-Langley Work Request program; recordkeeping; personal protective
1063 equipment; construction inspection; the disposal of LBP-containing wastes; and lead toxicity
1064 investigations. Upon classification as friable or non-friable, all waste ACM should be disposed
1065 of in accordance with the Virginia Solid Waste Management Regulations (9 VAC 20-80-640),
1066 and transported in accordance with the Virginia regulations governing Transportation of
1067 Hazardous Materials (9 VAC 20-110-10 et seq.).

1068 In addition to asbestos and lead, renovation and demolition activities have the potential to disturb
1069 mercury and polychlorinated biphenyls. These materials are also regulated under Toxic
1070 Substance Control Act as RCRA Universal Waste. Buildings may contain liquid mercury in
1071 thermostats and thermometers, and fluorescent lighting fixtures typically contain elemental
1072 mercury in the fluorescent light bulbs; compact fluorescent lamps also contain mercury. In
1073 addition, fluorescent lighting fixture ballasts have the potential to contain polychlorinated
1074 biphenyls.

1075 JBLE-Langley's environmental cleanup program is managed under the DoD Environmental
1076 Restoration Program (ERP). There are two cleanup sub-programs under the ERP: The
1077 Installation Restoration Program (IRP) and the Military Munitions Response Program (MMRP).
1078 There are 66 total IRP sites, of which 48 have reached site closure (Figure 13). The 13 sites are
1079 currently in the long-term management phase and include site types such as a former fire training
1080 area, storage area, paint shop, wastewater treatment plant, pesticide/herbicide storage area, and
1081 several former landfills. The remaining five are in the study phase but are expected to achieve
1082 RC/SC in the near future. One site is designated as the installation-wide groundwater site.
1083 Concurrence for a no-further action record of decision on the groundwater site is currently being
1084 pursued. These sites have undergone various remedial activities, including remedial
1085 investigations, feasibility studies, remedial design, remedial action, and/or long-term
1086 management. Specific details on the ERP can be found in the JBLE-Langley ERP Site Status
1087 Summaries (December 2005).

1088 LF-01 is an abandoned landfill in Runway 26 Clear Zone (north) which is in long term
1089 monitoring. The following three sites have achieved site closure and no further remedial action
1090 is planned. ST-27 is the Danforth fuel line leak with its northeastern end in Runway 26 Clear
1091 Zone (south). ST-28 is a fuel saturated area associated with the BX Service Station which is
1092 located where the proposed parking lot is planned. ST-34 is the Bulk Fuel Storage Area with its
1093 northern end in Runway 26 Clear Zone (south). SS-03 is a fuel saturated area with its
1094 northwestern end in Runway 26 Clear Zone (south).

1095 Under the MMRP there are two Munitions Response Areas (MRAs) with a total of five
1096 Munitions Response Sites (MRSs); the Historical Bombing Range MRA has three MRSs while

1097 the remaining MRA, the Skeet Range, has two MRSs with one addressing affected land and the
1098 other affected water. The historical bombing range has three MRSs: the golf course area, the
1099 marsh area and the target area. The Skeet Range MRA has two MRSs; a land portion and a
1100 water portion. Both the skeet range and the historical bombing range are in the remedial
1101 investigation phase.

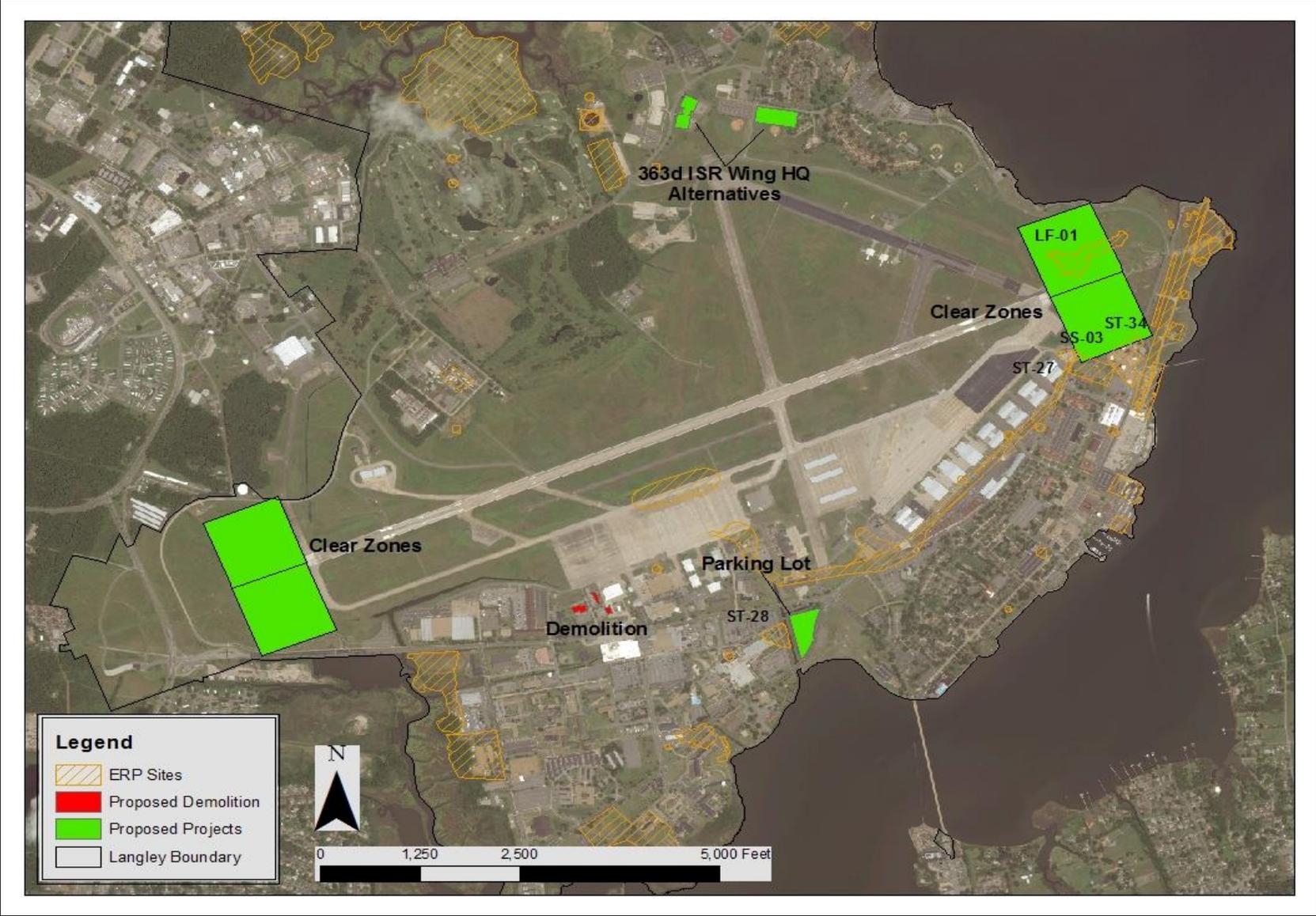
1102 Solid waste generated on JBLE-Langley is removed by contract services to either the City of
1103 Hampton's Bethel Landfill or to the Hampton/NASA LaRC Steam Plant for incineration (JBLE-
1104 Langley, 2015b). Bethel Landfill is a sanitary landfill but accepts construction and demolition
1105 waste. As of December 2014, Bethel Landfill had a total remaining capacity of about
1106 23,301,051 tons. Bethel Landfill has a remaining useful life of about 91 years (VDEQ, 2015).
1107 The Hampton/NASA LaRC Steam Plant was built in 1980 and generates energy for Langley
1108 Research Center by burning trash from Hampton, NASA LaRC, JBLE-Langley, and the Newport
1109 News shipyard (JBLE-Langley, 2013). The facility converts 240 tons of trash every day into 1.6
1110 million pounds of steam to help power the NASA LaRC

1111 3.11 AIR QUALITY

1112 Public concern about air quality resulted in federal and state actions under the Clean Air Act
1113 (CAA) of 1970 and the CAA Amendments of 1977 and 1990. Under authority of the CAA, the
1114 EPA promulgated primary and secondary National Ambient Air Quality Standards (NAAQS),
1115 presented below, for six "criteria" pollutants: particulate matter with an aerodynamic diameter
1116 less than or equal to 10 microns (PM₁₀), PM 2.5 microns in aerodynamic diameter and smaller
1117 (PM_{2.5}), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), lead (Pb), ozone (O₃), and carbon
1118 monoxide (CO).

1119 .

1120 **Figure 13 - JBLE-Langley ERP Sites**



1121

1122 **Table 7 – National Ambient Air Quality Standards**

Pollutant	Averaging Time	National Primary	National Secondary
Ozone (O ₃)	8 Hours	0.070 ppm	Same as Primary
Carbon Monoxide (CO)	8 Hours (Maximum)	9 ppm	---
	1 Hour (Maximum)	35 ppm	
Nitrogen Dioxide (NO ₂)	Annual Mean	53 ppb	Same as Primary
	1 Hour Average	100 ppb	---
Sulfur Dioxide (SO ₂)	3 Hours (Maximum)	---	0.5 ppm
	1 Hour (Maximum)	75 ppb	---
Particulate Matter (PM ₁₀)	24 Hours (Maximum)	150 µg/m ³	Same as Primary
Particulate Matter (PM _{2.5})	Annual (Mean)	12 µg/m ³	15 µg/m ³
	24 Hours (Average)	35 µg/m ³	Same as Primary
Lead (Pb)	Rolling 3-month Average	0.15 µg/m ³	Same as Primary

1123 **Source:** <http://www3.epa.gov/ttn/naaqs/criteria.html>

1124 **Note:** ppm = parts per million; ppb = parts per billion; µg/m³ = micrograms per cubic meter

1125 ***Greenhouse Gases and Global Warming***

1126 Greenhouse Gases (GHGs) are gases which trap heat in the atmosphere. Three most common
1127 GHGs are carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O). EO 13693, *Planning*
1128 *for Federal Sustainability in the Next Decade*, outlines policies intended to ensure that federal
1129 agencies evaluate climate change risks and vulnerabilities and manage the short- and long-term
1130 effects of climate change on their operations and mission. The EO specifically requires federal
1131 agencies to measure, report, and reduce their GHG emissions from both their direct and indirect
1132 activities. In 2007, Virginia set a target to reduce GHG emissions to thirty percent below 2000
1133 levels by 2025.

1134 Direct activities include sources the agencies own and control and the generation of electricity,
1135 heat, or steam they purchase. Indirect activities include actions of their vendor supply chains,
1136 delivery services, and employee travel and commuting. Direct and indirect activities comprise
1137 Scope 1, 2, and 3 GHG emissions. Scope 1 GHG emissions originate from onsite sources such
1138 as natural gas combustion in boilers, and Scope 2 emissions are indirect emissions associated

1139 with consumption of purchased electricity. Scope 3 emissions are largely made up of employee
1140 commuting emissions.

1141 3.11.1 Affected Environment

1142 JBLE-Langley is located in the Hampton Roads Air Quality Region (JBLE-Langley, 2013a)
1143 which serves as the ROI for analysis. This region is currently in attainment for all of the
1144 NAAQS criteria pollutants. In 2008, the EPA revised the ozone 8-hour standard (USEPA,
1145 2015). Previously, the region had been in non-attainment for ozone. The VDEQ issued JBLE-
1146 Langley a state operating permit which sets base emission limits among other actions. The
1147 permit limits are identified in the table below.

1148 **Table 8 – JBLE-Langley State Operating Permit Limits**

Pollutant	Permit Limits
PM ₁₀	16.0 tons
SO ₂	23.4 tons
NO _x	98.0 tons
CO	69.4 tons
VOCs	32.9 tons

1149 3.12 NOISE

1150 Noise is any sound that is undesirable because it interferes with communication, is intense
1151 enough to damage hearing, or is otherwise intrusive. Human response to noise varies depending
1152 on the type and characteristics of the noise, the distance between the noise source and the
1153 receptor, receptor sensitivity, and the time of day. Noise is often generated by activities such as
1154 construction or vehicular traffic. Sound levels are expressed in decibels (dB) and various
1155 weighted dB scales (i.e., A, B, C) are used to approximate how people perceive different types of
1156 sounds. A-weighting accounts for the way the human ear perceives moderate sounds by
1157 accounting for low and very high frequencies not being well heard. USEPA defined a long-term
1158 average noise descriptor, the “equivalent” noise level, or Leq. The Day-Night Average Sound
1159 Level (DNL) consists of the Leq with a 10-dB penalty for night-time noise. This metric provides
1160 a single measure of overall noise impact and is the accepted measure of determining human
1161 noise impacts (JBLE-Langley, 2013b).

1162 3.12.1 Affected Environment

1163 The ROI to analyze potential noise related impacts is 1600 feet from the project areas. This
1164 distance enables analysis on the area which potentially would receive noise at levels found to be
1165 of annoyance to most people.

1166 Aircraft operations and maintenance activities are the primary source of noise at JBLE-Langley.
1167 The noise levels on and in the vicinity of JBLE-Langley range between 65 and 85+ DNL with

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1168 almost the entire base being located within the 70⁺ DNL contour (JBLE-Langley, 2013a). The
1169 daily operation of motor vehicles in and around JBLE-Langley is considered a minor source of
1170 noise. Typically, the noise level for vehicle operations would range from 50 dB (for light traffic)
1171 to 80 dB for diesel trucks. Noise due to construction and maintenance equipment is a common,
1172 ongoing occurrence on JBLE-Langley. Trucks as well as heavy equipment are usually found in
1173 the base environment on a daily basis to support numerous construction projects as well as
1174 upgrades to existing infrastructure and facilities (JBLE-Langley, 2013b).

1175 Overall, construction noise levels are governed primarily by the noisiest pieces of equipment
1176 (e.g., dump truck, excavator, and grader). Typically, the sound level attenuates, or diminishes, at
1177 a rate of 6 dBA for each doubling of the distance (i.e., if the noise level is 85 dBA at 50 ft, it is
1178 79 dBA at 100 ft) from a point source (JBLE-Langley, 2013b).

1179 **4.0 ENVIRONMENTAL CONSEQUENCES**

1180 Specific criteria used to determine potential environmental impacts of the alternatives are
1181 discussed at the beginning of each resource area subsection. The significance of an action is
1182 measured in terms of context and intensity. The terminology used within this IDEA is
1183 summarized below:

- 1184 • *Short-term or long-term.* Short-term impacts are those that would occur during the time
1185 required for construction or demolition activities. Long-term impacts are those that are
1186 expected to be persistent after the completion of the construction or demolition activities.
- 1187 • *Direct or indirect.* Direct impacts are caused by an action and occurs at the same time
1188 and in close proximity to the action. Indirect impacts are caused by an action but occurs
1189 later in time or be farther removed in distance. Indirect impacts are only included if seen
1190 as a reasonably foreseeable outcome of the action.
- 1191 • *Negligible, minor, moderate, or significant.* These terms characterize the magnitude or
1192 intensity of impacts. Negligible impacts are those which are perceptible but at a lower
1193 level of detection. Minor impacts are those which are slight but detectable. Moderate
1194 impacts are those which are readily apparent. Significant impacts are those that meet the
1195 thresholds for significance set forth in CEQ regulations (40 CFR 1508.27). Significant
1196 impacts warrant more attention and effort to develop mitigation in order to fulfill the
1197 policies set forth in NEPA.
- 1198 • *Adverse or beneficial.* Adverse impacts are those which have unfavorable or undesirable
1199 outcomes on the environment. Beneficial impacts are those which have positive
1200 outcomes.

1201 **4.1 LAND USE**

1202 Potential impacts to land use are considered significant if the Proposed Action would:

- 1203 • Conflict with applicable ordinances and/or permit requirements; or,
- 1204 • Cause nonconformance with the current general plans and land use plans, or preclude
1205 adjacent or nearby properties from being used for existing activities.

1206 4.1.1 Environmental Consequences – Clear Zone Project

1207 Proposed Action

1208 Based on the JBLE-Langley General Plan Update (2013a), the Clear Zones are mostly located in
1209 the airfield clearance land use. A small portion of Runway 26 Clear Zone (south) overlaps with
1210 the industrial land use designation. The Proposed Action would not change the current land use,
1211 therefore no significant impacts to land use would result from the Proposed Action.

1212 No Action Alternative

1213 Implementation of the No Action Alternative would have no significant impacts to land use
1214 because the Clear Zones would remain designated as airfield clearance.

1215 4.1.2 Environmental Consequences – Parking Lot near Hospital, F. 257

1216 Proposed Action

1217 The Proposed Action would convert approximately three acres from open space to medical land
1218 use designation for the parking lot. This land use change is relatively minor and would be
1219 consistent with the future plans for the installation by providing additional parking to the
1220 hospital. The proposed project site has been previously disturbed but is currently undeveloped.
1221 There would be no significant impact to land use as a result of the Proposed Action.

1222 No Action Alternative

1223 Implementation of the No Action Alternative would have no significant impacts to land use
1224 because the land use designation would remain open space.

1225 4.1.3 Environmental Consequences – 363d ISR Wing HQ Facility

1226 Alternative 1

1227 Selection of Alternative 1 would develop approximately six acres, which includes a softball
1228 field, but would not require a land use change. This development is relatively minor and would
1229 be consistent with the future plans for the installation by consolidating administrative facilities
1230 into one structure and opening up existing facilities to additional uses. The North Base Area
1231 Development Plan indicates future development for outdoor recreation which would offset the
1232 loss of the softball field. No change in land use would occur as a result of the proposed
1233 demolition. Alternative 1 would not result in significant impacts to land use.

1234 Alternative 2 (Preferred Alternative)

1235 Selection of Alternative 2 would develop approximately six acres and would not require a land
1236 use change. The remaining approximately three acres comprising the building and parking
1237 structure would occur within existing administrative designation resulting in no impact to land
1238 use. This development is relatively minor and would be consistent with the future plans for the
1239 installation by consolidating administrative facilities into one structure and opening up existing
1240 facilities to additional uses. No change in land use would occur as a result of the proposed
1241 demolition. Alternative 2 would not result in significant impacts to land use.

1242 No Action Alternative

1243 Implementation of the No Action Alternative would have no significant impacts to land use
1244 because the land use designations would remain the same.

1245 4.2 TRANSPORTATION

1246 The following thresholds were used to determine if an impact to transportation would be
1247 significant:

- 1248
- 1249 • Impacts would increase traffic on the installation and local roads in such a way that they
1250 would not be able to accommodate the additional vehicles;
 - 1251 • Impacts do not comply with local, state, or Federal laws and regulations; or,
 - Impacts constitute a substantial risk to human health or the environment.

1251 4.2.1 Environmental Consequences – Clear Zone Project

1252 Proposed Action

1253 The Proposed Action could result in short-term, minor, adverse impacts to transportation. Local
1254 roads overall experience low volume and congestion of vehicles. Impacts would likely be caused
1255 from the temporary increased use of vehicles for transportation of equipment and materials in
1256 order to replace the drainage system and regrade the soil. Appropriate routes for construction
1257 vehicles would be communicated prior to project implementation. Upon completion of the
1258 proposed project, there would be no impacts to transportation. Indirect impacts could include the
1259 shortening of the life of the roads used by construction vehicles and subsequent road
1260 maintenance. Overall, there would be no significant impacts to transportation.

1261 No Action Alternative

1262 Implementation of the No Action Alternative would have no significant impacts to transportation
1263 because there would not be construction related vehicles in use.

1264 4.2.2 Environmental Consequences – Parking Lot near Hospital, F. 257

1265 Proposed Action

1266 The Proposed Action could result in short-term, minor, adverse impacts to transportation during
1267 construction. Local roads overall experience low volume and congestion of vehicles. Impacts
1268 would likely be caused from the temporary increased use of vehicles for transportation of
1269 equipment and materials in the construction phase of the project. Appropriate routes for
1270 construction vehicles would be communicated prior to project implementation. The project does
1271 not require the alteration of existing roads, therefore the current traffic patterns on the installation
1272 are likely to remain the same. Long-term, minor, adverse impacts to transportation could occur
1273 from more vehicle trips on the roadways. The hospital has seen an increase in caseloads which is
1274 anticipated to continue. With this additional parking lot available to patients, more trips to the
1275 hospital could occur and increase the traffic congestion on the installation. Indirect impacts
1276 could include the shortening of the life of the roads used by construction and patient vehicles and
1277 subsequent road maintenance. Overall, there would be no significant impacts to transportation.

1278 No Action Alternative

1279 Implementation of the No Action Alternative would have no significant impacts to transportation
1280 because there would not be construction related vehicles in use.

1281 4.2.3 Environmental Consequences – 363d ISR Wing HQ Facility

1282 Alternative 1

1283 Selection of Alternative 1 could result in short-term, minor, adverse impacts to transportation.
1284 Local roads overall experience low volume and congestion of vehicles. Impacts would likely be
1285 caused from the temporary increased use of vehicles for the transportation of equipment and
1286 materials in the construction/demolition phase of the project. Appropriate routes for construction
1287 vehicles would be communicated prior to project implementation. The associated parking
1288 structure for Alternative 1 does not require the alteration of existing roads, therefore the current
1289 traffic patterns on the installation are likely to remain the same. However, short-term, negligible,

1290 adverse impacts to current parking lot due to expansion construction. Long-term, minor, adverse
1291 impacts to transportation would occur from more vehicle trips on the roadways as a result of the
1292 additional staff. With the additional parking lot available to staff, more trips to the area could
1293 occur and increase the traffic congestion on the installation. Indirect impacts could include the
1294 shortening of the life of the roads used by construction and staff vehicles and subsequent road
1295 maintenance. Overall, there would be no significant impacts to transportation.

1296 Alternative 2 (Preferred Alternative)

1297 Selection of Alternative 2 could result in short-term, minor, adverse impacts to transportation.
1298 Local roads overall experience low volume and congestion of vehicles. Impacts would likely be
1299 caused from the temporary increased use of vehicles for the transportation of equipment and
1300 materials in the construction/demolition phase of the project. Appropriate routes for construction
1301 vehicles would be communicated prior to project implementation. The associated parking
1302 structure for Alternative 2 does not require the alteration of existing roads, therefore the current
1303 traffic patterns on the installation are likely to remain the same. Long-term, minor, adverse
1304 impacts to transportation would occur from more vehicle trips on the roadways as a result of the
1305 additional staff. With the additional parking lot available to staff, more trips to the area could
1306 occur and increase the traffic congestion on the installation. Indirect impacts could include the
1307 shortening of the life of the roads used by construction and staff vehicles and subsequent road
1308 maintenance. Overall, there would be no significant impacts to transportation.

1309 No Action Alternative

1310 Implementation of the No Action Alternative would have no significant impacts to transportation
1311 because there would not be construction/demolition related or additional staff vehicles in use.

1312 **4.3 UTILITIES**

1313 The following thresholds were used to determine if an impact to utilities would be significant:

- 1314 • Impacts would increase demands on utility systems in such a way that existing systems
1315 cannot accommodate those demands;
- 1316 • Impacts do not comply with local, state, or Federal laws and regulations; or,
- 1317 • Impacts constitute a substantial risk to human health or the environment.

1318 **4.3.1 Environmental Consequences – Clear Zone Project**

1319 Proposed Action

1320 Implementation of the Proposed Action could have short term, minor, adverse impacts to
1321 utilities. The table below shows the number of lines which could be impacted by an interruption
1322 of service in order to safely replace the stormwater piping and yard drains within the Clear
1323 Zones. It is anticipated that the electrical lines would be shut off for one day however, backup
1324 power would be available to ensure essential services. Any other potential interruption of service
1325 for these specific lines due to the proposed project would be restored immediately upon the
1326 completion of the activity within that area.

1327 **Table 9 – Type and Number of Utility Lines within the Clear Zones**

	Water Line	Natural Gas Line	Electric Line	Air Line	Communication Line
Runway 08 Clear Zone (north)	1	1	1	--	--
Runway 08 Clear Zone (north)	--	--	1	--	--
Runway 26 Clear Zone (south)	1	1	6	1	3
Runway 26 Clear Zone (north)	--	1	5	1	3

1328 Construction personnel might utilize potable water while onsite. However with average current
1329 summer usage of less than one percent of total capacity, there would be an ample amount
1330 remaining. There would be no significant impacts to usage or capacity of utilities as a result of
1331 the proposed project.

1332 No Action Alternative

1333 Implementation of the No Action Alternative would have no significant impacts on utilities as
1334 the usage or capacity of utilities would not change from current levels.

1335 4.3.2 Environmental Consequences – Parking Lot near Hospital, F. 257

1336 Proposed Action

1337 The Proposed Action would have long-term, negligible, adverse impacts to power and no
1338 impacts to potable water and wastewater. It is anticipated that the proposed project would have
1339 outdoor lighting which would contribute a very small amount of additional usage to the power
1340 grid. The power company would be able to provide the added electricity needed. Construction
1341 personnel might utilize potable water while onsite. However with average current summer usage
1342 of less than one percent of total capacity, there would be an ample amount remaining. There
1343 would be no significant impacts to usage or capacity of utilities as a result of the proposed
1344 project.

1345 No Action Alternative

1346 Implementation of the No Action Alternative would have no significant impact to utilities as the
1347 usage or capacity of utilities would not change from current levels.

1348 4.3.3 Environmental Consequences – 363d ISR Wing HQ Facility

1349 Alternative 1 or 2 (Preferred Alternative)

1350 Selection of either Alternative 1 or 2 would have long-term, minor, adverse impacts to utilities as
1351 a result of construction. Operation of the new facility would create the need for new utilities and
1352 add additional usage to the installation. Buildings would be constructed using efficient materials
1353 and technologies, such as low-flow faucets and motion sensor lights, resulting in a reduced level
1354 of impact. It is estimated, based on similar sized and designed structures, that the proposed

1355 building would have two 1 MMBTU boilers and three 1750 kW generators. During cold
1356 weather, the building would be expected to use approximately 1% of the total gas consumed on
1357 JBLE-Langley. Expected electrical usage would be approximately 1000 to 1500 kW. The utility
1358 companies would be able to provide the increased capacity needed for the proposed project.
1359 Long-term, minor, beneficial impacts to utilities would occur with the proposed building
1360 demolition as it would eliminate excess utility usage. There would be no significant impacts to
1361 usage or capacity of utilities as a result of the proposed project.

1362 No Action Alternative

1363 Implementation of the No Action Alternative would have no significant impacts to utilities as the
1364 usage or capacity of utilities would not change from current levels.

1365 **4.4 GEOLOGY AND SOILS**

1366 The following thresholds were used in this document to determine if an impact to geology and
1367 soil would be significant:

- 1368 • Impacts to geology, topography, or soils would be readily apparent and result in a change
1369 to the character of the resources over a relatively wide area; or,
- 1370 • Mitigation measures necessary to offset adverse impacts are not successful.

1371 4.4.1 Environmental Consequences – Clear Zone Project

1372 Proposed Action

1373 Implementation of the Proposed Action would have no impacts to geology and short-term,
1374 negligible, adverse impacts to soils. Approximately 100 acres of soil could be disturbed during
1375 the stormwater pipe replacement and regrading effort for the Clear Zones. The disturbed soil
1376 would be reused and augmented, if necessary, to develop the ridge and swale system and regrade
1377 to the adjacent land. Any additional soil would be a fill type similar to the existing soil.

1378 Soil impacts could include disturbance, erosion, and compaction. Soil productivity could decline
1379 in disturbed areas, but overtime would recover. An Erosion and Sediment Control (ESC) Plan
1380 would be prepared as the proposed project would disturb more than one acre of land.

1381 Subsequent best management practices (BMPs) would be implemented to reduce or eliminate
1382 impacts from soil erosion. Soil compaction could reduce soil productivity and modify soil
1383 structure resulting in altered drainage capacity and patterns. However, this project in and of
1384 itself would mitigate any change in drainage as a result of compaction. Overall, there would be
1385 no significant impacts to geology or soils.

1386 No Action Alternative

1387 Implementation of the No Action Alternative would have no significant impacts to geology or
1388 soils as the area would remain undisturbed.

1389 4.4.2 Environmental Consequences – Parking Lot near Hospital, F. 257

1390 Proposed Action

1391 The Proposed Action would have no impacts to geology but long-term, moderate, adverse
1392 impacts to approximately three acres of soils. Impacts as a result of the parking lot construction

1393 could include soil disturbance, erosion, and compaction. Soil productivity could decline in
1394 disturbed areas, but overtime would recover. However, those areas which would be paved would
1395 result in a loss of soil productivity. An ESC Plan would be prepared as the proposed project
1396 would disturb more than one acre of land. Subsequent BMPs would be implemented to reduce
1397 or eliminate impacts from soil erosion. Soil compaction could reduce soil productivity and
1398 modify soil structure resulting in altered drainage capacity and patterns. However, this could be
1399 mitigated by soil decompaction methods on unpaved areas adjacent to the parking lot. Overall,
1400 there would be no significant impacts to geology or soils.

1401 No Action Alternative

1402 Implementation of the No Action Alternative would have no significant impact to geology or
1403 soils as the area would remain undisturbed.

1404 4.4.3 Environmental Consequences – 363d ISR Wing HQ Facility

1405 Alternative 1 or 2 (Preferred Alternative)

1406 Selection of either Alternative 1 or 2 would have no impacts to geology but long-term, moderate,
1407 adverse impacts to approximately six acres of soils. Impacts as a result of the building and
1408 parking lot construction and building demolition could include soil disturbance, erosion, and
1409 compaction. Soil productivity could decline in disturbed areas, but overtime would recover.
1410 However, those areas which would have the building footprint or be paved would result in a loss
1411 of soil productivity. An ESC Plan would be prepared as the proposed project would disturb
1412 more than one acre of land. Subsequent BMPs would be implemented to reduce or eliminate
1413 impacts from soil erosion. Soil compaction could reduce soil productivity and modify soil
1414 structure resulting in altered drainage capacity and patterns. However, this could be mitigated by
1415 soil decompaction methods on unpaved areas adjacent to the proposed building and parking lot.
1416 Overall, there would be no significant impacts to geology or soils.

1417 No Action Alternative

1418 Implementation of the No Action Alternative would have no change to existing impacts to
1419 geology and soils since the area would remain in its current state.

1420 **4.5 WATER RESOURCES**

1421 The following thresholds were used in this document to determine if an impact to water
1422 resources would be significant:

- 1423 • USACE has authority for delineating jurisdictional wetlands and evaluating wetland
1424 impacts not avoidable under Section 404 of the CWA. Impacts would be significant if
1425 they violate Federal or state surface water protection laws;
- 1426 • Impacts constitute a substantial risk to aquatic animals and/or humans or contamination
1427 poses secondary health risks during the project life;
- 1428 • Impacts would eliminate or sharply curtail existing aquatic life or human uses dependent
1429 on in-stream flows or water withdrawals during the project life;
- 1430 • Impacts would place structures within a 100-year flood hazard area which violate
1431 Federal, state, or local floodplain regulations; or,

- 1432 • Impacts would expose people or structures to a substantial risk of loss, injury, or death
1433 involving flooding, including flooding as a result of the failure of a levee or dam.

1434 4.5.1 Environmental Consequences – Clear Zone Project

1435 Proposed Action

1436 Implementation of the Proposed Action could have long-term, minor, beneficial impact to
1437 stormwater. The stormwater drainage system would be replaced which would reduce ponding
1438 and more efficiently capture and transport stormwater. The stormwater would be directed
1439 overland by a series of ridges and swales which would allow for sedimentation to occur prior to
1440 entering the drainage system. A General VPDES Permit for Discharges of Stormwater from
1441 Construction Activities (General Permit) would be obtained prior to any land-disturbing
1442 activities. To comply with the General Permit a site-specific Stormwater Pollution Prevention
1443 Plan (SWPPP) and ESC Plan would be developed and BMPs implemented. With the use of
1444 appropriate erosion and sedimentation controls during the construction phase of the proposed
1445 project impacts to surface water, such as turbidity, sediment loading, and potential
1446 contamination, would be negligible. Upon project completion, areas of disturbed ground would
1447 be seeded with native grasses and returned to green space, further limiting potential for erosion
1448 and sedimentation impacts. There are no anticipated impacts to groundwater as a result of the
1449 proposed project.

1450 Implementation of the Proposed Action could have long-term, moderate, adverse impacts to
1451 approximately twenty acres of wetlands located within the Clear Zones. The proposed project
1452 would regrade the Clear Zones to eliminate wetlands as a safety concern. This area of the
1453 installation has been previously disturbed and filled, including the installation of the current
1454 stormwater drainage system. There is no practicable alternative for the Clear Zone
1455 improvements. It would not be practicable to relocate the runway to resolve the airfield drainage
1456 issues and the wetlands in this location present a safety hazard. All required permits would be
1457 acquired and any mitigation would be conducted as a result of the loss of wetlands. JBLE-
1458 Langley has initiated consultation of the proposed project with the USACE.

1459 Implementation of the Proposed Action could have long-term, very minor, beneficial impacts to
1460 the floodplain. The Clear Zones are areas that currently accumulate excess water. With the
1461 improvement to the stormwater drainage system, water received in the area due to thunderstorms
1462 or hurricanes could be more efficiently discharged to waterbodies.

1463 No adverse impacts to the coastal zone would be expected from the Proposed Action, with the
1464 exception of wetlands. The proposed project could result in the loss of approximately twenty
1465 acres of non-tidal wetlands. Impacts from soil disturbance could create nonpoint source water
1466 pollution, however JBLE-Langley would utilize BMPs to reduce the chance of impacts. With
1467 coordination and proper permitting, the Proposed Action would be consistent with the CZMA.

1468 Overall, significant impacts to water resources are not anticipated as a result of the Proposed
1469 Action.

1470 No Action Alternative

1471 Implementation of the No Action Alternative would have no significant impacts to water
1472 resources. However, under the No Action Alternative stormwater would continue to pond within
1473 the Clear Zones, indirectly creating a danger to aircraft and personnel.

1474 4.5.2 Environmental Consequences – Parking Lot near Hospital, F. 257

1475 Proposed Action

1476 The Proposed Action would have long-term, minor, adverse impacts to stormwater. The
1477 proposed project would increase the amount of impervious surface on the installation.
1478 Stormwater from the parking lot would be directed via drainage ditch to Brown's Creek which is
1479 located adjacent to the proposed project site. With the use of BMPs during the construction
1480 phase impacts to surface water, such as turbidity, sediment loading, and potential contamination,
1481 would be minimal. Prior to any land-disturbing activities, JBLE-Langley would acquire a
1482 General Permit and develop a site-specific SWMPP and ESC Plan. There are no anticipated
1483 impacts to groundwater as a result of the proposed project.

1484 The Proposed Action would have no impacts to wetlands as there are no wetlands within the
1485 proposed project location.

1486 The Proposed Action would result in negligible impacts to the floodplain. Due to the elevation
1487 of JBLE-Langley, the majority of the Base lies within the 100-year floodplain; all proposed
1488 development would occur within the 100-year floodplain. In order to comply with EO
1489 11988, *Floodplain Management* and EO 13690, *Establishing a Federal Flood Risk Standard and*
1490 *Process for Further Solicitation and Considering Stakeholder Input*, structures would be
1491 designed to reduce the risk of severe damage from flooding. The parking lot would be graded
1492 to match road level. The roads at JBLE-Langley do experience some flooding during high
1493 rainfall events, but have not been damaged. The heavily developed nature of JBLE-Langley
1494 prevents it from providing much in the way of flood control for areas down river. The planned
1495 development would lessen any flood capacity available to the land area, but given the generally
1496 flat topography, it is unlikely that the proposed projects would contribute to any measurable
1497 loss with regard to capacity to help downstream flood control.

1498 No adverse impacts to the coastal zone would be expected from the Proposed Action. Impacts
1499 from soil disturbance could create nonpoint source water pollution, however JBLE-Langley
1500 would utilize BMPs to reduce the chance of impacts. With coordination and proper permitting,
1501 the Proposed Action would be consistent with the CZMA.

1502 Overall, significant impacts to water resources are not anticipated as a result of the Proposed
1503 Action.

1504 No Action Alternative

1505 Implementation of the No Action Alternative would have no significant impacts to water
1506 resources as the area would remain undisturbed and undeveloped.

1507 4.5.3 Environmental Consequences – 363d ISR Wing HQ Facility

1508 Alternative 1 or 2 (Preferred Alternative)

1509 Selection of either Alternative 1 or 2 could result in long-term, minor, adverse impacts to water
1510 resources. The proposed construction project would increase the amount of impervious surface
1511 on the installation by either three or six acres, respectively. The proposed demolition project
1512 would reduce the amount of impervious surface on the installation by approximately one acre.
1513 With the use of appropriate BMPs during the construction/demolition phase of the proposed
1514 project impacts to surface water, such as turbidity, sediment loading, and potential
1515 contamination, would be negligible. Prior to any land-disturbing activities, JBLE-Langley would
1516 acquire a General Permit and develop a site-specific SWPPP and ESC Plan. There are no
1517 anticipated impacts to groundwater as a result of the proposed project.

1518 Selection of either Alternative 1 or 2 would have no direct impacts to wetlands as there are no
1519 wetlands within either project location. Alternative 1 is approximately 200 feet north of a
1520 wetland. Alternative 1 parking lot is approximately 200 feet west of a wetland. Alternative 2 is
1521 approximately 500 feet north of a wetland. Alternative 2 parking lot is approximately 50 feet
1522 north of a wetland. Buildings 326, 333, and 337 are 300-500 feet southeast of a wetland.
1523 Indirect impacts could include increased stormwater runoff which could transport sediment and
1524 contaminated materials to wetlands.

1525 Selection of either Alternative 1 or 2 would result in negligible impacts to the floodplain. Due to
1526 the elevation of JBLE-Langley, the majority of the Base lies within the 100-year floodplain;
1527 all proposed development would occur within the 100-year floodplain. In order to comply
1528 with EO 11988, *Floodplain Management* and EO 13690, *Establishing a Federal Flood Risk
1529 Standard and Process for Further Solicitation and Considering Stakeholder Input*, structures
1530 would be designed to reduce the risk of severe damage from flooding. The building
1531 foundation would be constructed at least two feet above the 100-year floodplain to prevent
1532 damage during a high water event. The area surrounding the building, including any parking,
1533 would be graded down to road level. The heavily developed nature of JBLE-Langley prevents
1534 it from providing much in the way of flood control for areas down river. The proposed
1535 demolition would reduce the developed areas of JBLE-Langley by approximately one acre.
1536 Overall, the planned development would lessen any flood capacity available to the land area, but
1537 given the generally flat topography, it is unlikely that the proposed projects would contribute to
1538 any measurable loss with regard to capacity to help downstream flood control.

1539 No adverse impacts to the coastal zone would be expected from Selection of either Alternative 1
1540 or 2. Impacts from soil disturbance could create nonpoint source water pollution, however
1541 JBLE-Langley would utilize BMPs to reduce the chance of impacts. With coordination and
1542 proper permitting, the Proposed Action would be consistent with the CZMA.

1543 Overall, significant impacts to water resources are not anticipated as a result of the Proposed
1544 Action.

1545 No Action Alternative

1546 Implementation of the No Action Alternative would have no change in impacts to water
1547 resources as the area would remain a mix of developed and undeveloped land.

1549 4.6 BIOLOGICAL RESOURCES

1550 The following thresholds were used to determine if an impact to biological resources would be
1551 significant:

- 1552 • Impacts to native communities would be detectable, and species would be expected to be
1553 outside the natural range of variability for long periods of time or in perpetuity;
- 1554 • Population numbers or structure, genetic variability, and other demographic factors for
1555 species might have large, short-term declines, with long-term population numbers
1556 significantly depressed;
- 1557 • Frequent responses to disturbance by some individuals would be expected, with negative
1558 impacts to feeding, reproduction, or other factors resulting in a long-term decrease in
1559 population levels;
- 1560 • Loss of habitat might affect the viability of at least some native species; or
- 1561 • Actions could jeopardize the continued existence of a federally listed species within
1562 and/or outside JBLE-Langley boundaries.

1563 4.6.1 Environmental Consequences – Clear Zone Project

1564 Proposed Action

1565 The Proposed Action would result in short-term, minor, adverse impacts to approximately 100
1566 acres of vegetation. The Clear Zones are currently maintained grassy areas with no trees. Where
1567 water collects, wetland plants occur. The entire area has been previously disturbed, meaning the
1568 natural vegetative community was altered or eliminated. Disturbed areas commonly revegetate
1569 with non-native or exotic species which are harmful for the natural ecosystem (JBLE-Langley,
1570 2014a). Therefore, the project would not impact natural vegetative communities on the
1571 installation. At each of the four Clear Zones, vegetation would be removed during the removal
1572 and replacement of the existing drainage systems and regrading operation. Upon completion of
1573 the project activities, the disturbed areas would be reseeded with native vegetation (JBLE-
1574 Langley, 2014a). While the area will be regraded to eliminate ponding, swales will conduct
1575 water and are likely to retain wetland type plants.

1576 Implementation of the Proposed Action would result in long-term, minor, adverse impacts to
1577 wildlife, especially bird species, through loss of habitat. The Clear Zones currently attract birds
1578 with the open grassland and wetland habitats. The proposed project would reduce the
1579 attractiveness to bird and other wildlife species thereby lessening the chance of wildlife/aircraft
1580 strike (JBLE-Langley, 2014a). Wildlife that currently utilize habitat within the Clear Zones
1581 would be able to move to other similar areas on and off the installation. This loss of habitat
1582 would not affect the viability of any native species. While wildlife that occurs on JBLE-Langley
1583 are accustomed to human activity such as aircraft noise, vehicular traffic, and human presence,
1584 construction noise doesn't occur regularly and therefore has a possibility to impact wildlife
1585 (JBLE-Langley, 2014a). The animals would likely vacate the area during construction events;
1586 however, once construction has ceased they should return. As construction activity would be
1587 temporary, no decrease in population levels would occur based on disturbance. The proposed
1588 project would not result in impacts to fish or marine mammal species.

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1589 Implementation of the Proposed Action would have no direct impacts on threatened and
1590 endangered species as none occur on the installation. If any protected species was documented,
1591 coordination with the appropriate federal and state agencies would occur. Indirect impacts to
1592 protected species could include loss or decline in foraging/hunting habitat for transient species
1593 such as birds. However, this potential loss or decline in habitat would be minute compared to
1594 similar existing habitat located within and outside the installation.

1595 Overall, there would be no significant impacts to biological resources as a result of the Proposed
1596 Action.

1597 No Action Alternative

1598 Implementation of the No Action Alternative would have no direct impacts on biological
1599 resources. The No Action Alternative would maintain the current habitat within the Clear Zones
1600 to potential protected species. This could result in indirect impacts, such as aircraft strike events,
1601 to protected bird species which utilize the Clear Zones. Overall, there would be no significant
1602 impacts to biological resources as a result of the No Action Alternative.

1603 4.6.2 Environmental Consequences – Parking Lot near Hospital, F. 257

1604 Proposed Action

1605 Implementation of the Proposed Action would result in long-term, moderate, adverse impacts to
1606 approximately three acres of vegetation. The proposed project location is a previously disturbed
1607 site that is currently a maintained grassy area with scattered trees and shrubs. Therefore, the
1608 project would not impact natural vegetative communities on the installation. However, existing
1609 vegetation would be removed for the construction of the parking lot. Upon completion of the
1610 construction phase, any remaining disturbed areas would be reseeded with native vegetation
1611 (JBLE-Langley, 2014a).

1612 Implementation of the Proposed Action would result in long-term, minor, adverse impacts to
1613 wildlife, especially bird species, through loss of three acres of habitat. While small, the proposed
1614 project location has several large trees and various shrubs which could provide habitat for
1615 wildlife. Wildlife that currently utilize this small parcel of land are probably transient
1616 individuals and would be able to move to other similar areas on and off the installation. This
1617 loss of habitat would not affect the viability of any native species. While wildlife that occurs on
1618 JBLE-Langley are accustomed to human activity such as aircraft noise, vehicular traffic, and
1619 human presence, construction noise doesn't occur regularly and therefore short-term, minor,
1620 adverse impacts wildlife could be expected (JBLE-Langley, 2014a). The animals would likely
1621 vacate the area during construction events; however, once construction has ceased they should
1622 return. As construction activity would be temporary, no decrease in population levels would
1623 occur based on disturbance. The proposed project would not result in impacts to fish or marine
1624 mammal species.

1625 Implementation of the Proposed Action would have no impacts to threatened and endangered
1626 species as none occur on the installation. If any protected species was documented, coordination
1627 with the appropriate federal and state agencies would occur. Indirect impacts to protected
1628 species could include loss of foraging/hunting habitat for transient species such as birds.

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1629 However, this potential loss of habitat would be very small compared to similar existing habitat
1630 located within and outside the installation.

1631 Overall, there would be no significant impacts to biological resources as a result of the Proposed
1632 Action.

1633 No Action Alternative

1634 Implementation of the No Action Alternative would have no significant impacts to biological
1635 resources as no disturbance or loss of habitat would occur.

1636 4.6.3 Environmental Consequences – 363d ISR Wing HQ Facility

1637 Alternative 1

1638 Selection of Alternative 1 would result in long-term, moderate, adverse impacts to approximately
1639 six acres of vegetation. The proposed construction project location is a maintained open, grassy
1640 softball field with sparse shrubs and trees along the edge of the roads and field. The proposed
1641 parking lot is currently a maintained open, grassy area with a softball field and ornamental
1642 shrubs and trees along the edge of the existing parking lot on South Roma Road. The proposed
1643 project would occur in a previously disturbed site and not impact natural vegetative communities
1644 on the installation. However, existing vegetation would be removed for the construction of the
1645 building. Upon completion of the construction phase, any remaining disturbed areas would be
1646 reseeded with native vegetation (JBLE-2014a). Proposed demolition would have minor,
1647 beneficial impact to approximately one acre of vegetation. The previous building footprints
1648 would be reseeded with native vegetation.

1649 Selection of Alternative 1 would likely result in negligible impacts to fish and wildlife. Both the
1650 proposed construction and demolition project site provides little habitat value. Any species that
1651 frequent the manicured lawns, maintained grassy areas, and trees would be able to move to other
1652 areas of the installation. The loss of habitat would not affect the viability of any native species.
1653 While wildlife that occurs on JBLE-Langley are accustomed to human activity such as aircraft
1654 noise, vehicular traffic, and human presence, construction/demolition noise does not occur
1655 regularly and therefore has a possibility to impact wildlife. The animals would likely vacate the
1656 area during construction/demolition events; however, once construction/demolition has ceased
1657 they should return (JBLE-Langley, 2014a). As construction activity would be temporary, no
1658 decrease in population levels would occur based on disturbance. The proposed project would not
1659 result in impacts to fish or marine mammal species.

1660 Selection of Alternative 1 would have no impacts to threatened and endangered species as none
1661 occur on the installation. If any protected species was documented, coordination with the
1662 appropriate federal and state agencies would occur. Indirect impacts to protected species could
1663 include loss of foraging/hunting habitat for transient species such as birds. However, this
1664 potential loss of habitat would be very small compared to similar existing habitat located within
1665 and outside the installation.

1666 Overall, selection of Alternative 1 would not result in significant impacts to biological resources.

1667 Alternative 2 (Preferred Alternative)

1668 Selection of Alternative 2 would result in long-term, moderate, adverse impacts to approximately
1669 six acres of vegetation. The proposed building is currently manicured lawn with scattered
1670 ornamental shrubs and trees surrounding the previous temporary living facility. The proposed
1671 parking lot is currently a maintained open, grassy area between Weyland Road and the LTA
1672 Bypass. The proposed project would occur in a previously disturbed site and not impact natural
1673 vegetative communities on the installation. However, existing vegetation would be removed for
1674 the construction of the building and parking lot. Upon completion of the construction phase, any
1675 remaining disturbed areas would be reseeded with native vegetation (JBLE-Langley, 2014a).

1676 Proposed demolition would have minor, beneficial impact to approximately one acre of
1677 vegetation. The previous building footprints would be reseeded with native vegetation.

1678 Selection of Alternative 2 would have similar impacts to fish and wildlife as those identified in
1679 Alternative 1.

1680 Selection of Alternative 2 would have similar impacts to protected species as those identified in
1681 Alternative 1.

1682 Overall, selection of Alternative 2 would not result in significant impacts to biological resources.

1683 No Action Alternative

1684 Implementation of the No Action Alternative would have no change in impacts to biological
1685 resources from construction as the area would remain a mix of developed and undeveloped land.
1686 The existing vegetation would remain in its current state and the level of human disturbance to
1687 wildlife would be the same. However, as the proposed demolition would not occur the buildings
1688 would remain intact and new vegetated space would not be created.

1689 **4.7 CULTURAL RESOURCES**

1690 36 CFR 800.16 establishes the criteria for impact as the potential to alter the character or use of a
1691 historic property. An impact is considered adverse when it diminishes the integrity of the
1692 historic property's location, design setting, materials, workmanship, feeling, or association. For
1693 the purposes of this EA, a significant impact under NEPA is defined as an unresolvable "adverse
1694 impact" under Section 106 of the NHPA.

1695 4.7.1 Environmental Consequences – Clear Zone Project

1696 Proposed Action

1697 Implementation of the Proposed Action is not anticipated to impact known cultural resources as
1698 none have been previously identified in the Clear Zones. Prior to any land-disturbing activities,
1699 a Phase I survey would occur. If any unknown cultural resources are discovered during the
1700 survey or proposed project implementation, work would cease and Langley would coordinate
1701 with the State Historic Preservation Office (SHPO) and appropriate Native American tribes to
1702 avoid or mitigate potential impacts. As a result, no significant impacts to cultural resources are
1703 anticipated from the Proposed Action.

1703 No Action Alternative

1704 Implementation of the No Action Alternative would have no significant impacts on cultural
1705 resources as the area would remain in its current state.

1706 4.7.2 Environmental Consequences – Parking Lot near Hospital, F. 257

1707 Proposed Action

1708 Implementation of the Proposed Action would have no impacts to cultural resources. A Phase I
1709 survey of the proposed project area yielded no cultural resources. If any unknown cultural
1710 resources are discovered during the proposed project implementation, work would cease and
1711 Langley would coordinate with the SHPO and appropriate Native American tribes to avoid or
1712 mitigate potential impacts. As a result, no significant impacts to cultural resources are
1713 anticipated from the Proposed Action.

1714 No Action Alternative

1715 Implementation of the No Action Alternative would have no significant impacts to cultural
1716 resources as the area would remain undeveloped.

1717 4.7.3 Environmental Consequences – 363d ISR Wing HQ Facility

1718 Alternative 1 or 2 (Preferred Alternative)

1719 Selection of either Alternative 1 or 2 would have no impacts to archaeological resources. A
1720 Phase I survey of the proposed project areas yielded no cultural resources. Historic site 44HT14
1721 abuts the Alternative 2 proposed parking area and is approximately 20 meters from the
1722 Alternative 1 proposed location, but has been evaluated as not eligible for listing and no further
1723 work was recommended. Proposed demolition would not impact architectural resources as the
1724 buildings are not considered historic. If any unknown archaeological resources or traditional
1725 cultural properties are discovered during the proposed project implementation, work would cease
1726 and Langley would coordinate with the SHPO and appropriate Native American tribes to avoid
1727 or mitigate potential impacts.

1728 No Action Alternative

1729 Implementation of the No Action Alternative would have no significant impacts to cultural
1730 resources as the areas would remain in its current state.

1731 4.8 VISUAL RESOURCES

1732 Potential impacts to visual resources are considered significant in the Proposed Action would:

- 1733 • Have a substantial adverse impact on a scenic vista or viewshed;
- 1734 • Substantially damage scenic resources, including, but not limited to, primary/secondary
1735 ridgelines, trees, rock outcroppings, and historic buildings;
- 1736 • Substantially degrade the existing visual character or quality of the site and its
1737 surroundings; or,
- 1738 • Create a new source of substantial light or glare that would adversely impact day or
1739 nighttime views in the area.

1740 4.8.1 Environmental Consequences – Clear Zone Project

1741 Proposed Action

1742 Implementation of the Proposed Action would have no significant impacts to visual resources.
1743 The project would not change the general appearance of the Clear Zones. They would remain
1744 open and grassy.

1745 No Action Alternative

1746 Implementation of the No Action Alternative would have no significant impacts to visual effects
1747 as the Clear Zones would be unaltered.

1748 4.8.2 Environmental Consequences – Parking Lot near Hospital, F. 257

1749 Proposed Action

1750 The Proposed Action would result in long-term, minor, adverse impacts to visual resources. The
1751 proposed project would replace a green space with a parking lot. There are a few trees currently
1752 in the proposed project location which would be removed, however they are not considered
1753 significant trees such as those in the historic district. The proposed project location is within a
1754 heavily developed part of the installation and an additional parking lot would be consistent with
1755 the current visual character of the area. There would not be significant impacts to visual
1756 resources as a result of the Proposed Action.

1757 No Action Alternative

1758 Implementation of the No Action Alternative would result in no significant impacts to visual
1759 resources. However, the conservation of green space on the developed landscape would preserve
1760 the visual setting.

1761 4.8.3 Environmental Consequences – 363d ISR Wing HQ Facility

1762 Alternative 1

1763 Selection of Alternative 1 would result in long-term, minor, adverse impacts to visual resources.
1764 The proposed construction project would replace a green space and recreational field with a
1765 building and parking lot. This would add a structure on the landscape however, it would be
1766 designed to be consistent with the current appearance and character of the area. There are a few
1767 trees currently in the proposed project location which would be removed, however they are not
1768 considered significant trees such as those in the historic district. While the proposed demolition
1769 would remove buildings, they occur in highly developed parts of the installation and would have
1770 a negligible impact to visual resources. There would not be significant impacts to visual
1771 resources as a result of Alternative 1.

1772 Alternative 2 (Preferred Alternative)

1773 Selection of Alternative 2 would result in long-term, minor, adverse impacts to visual resources.
1774 The proposed project would replace a green space with a parking lot. The proposed building
1775 would occur on an existing parking lot. This would add a structure on the landscape however, it
1776 would be designed to be consistent with the current appearance and character of the area. There
1777 are a few trees currently in the proposed project location which would be removed, however they

1778 are not considered significant trees such as those in the historic district. While the proposed
1779 demolition would remove buildings, they occur in highly developed parts of the installation and
1780 would have a negligible impact to visual resources. There would not be significant impacts to
1781 visual resources as a result of Alternative 2.

1782 No Action Alternative

1783 Implementation of the No Action Alternative would result in no significant impacts to visual
1784 resources. However, without new buildings and parking lots the conservation of green space on
1785 the developed landscape would preserve the visual setting.

1786 **4.9 SOCIOECONOMICS**

1787 The following thresholds were used to determine if an impact to socioeconomics would be
1788 significant:

- 1789 • Impacts cause substantial gains or losses in population or the composition of the
1790 populations;
- 1791 • Impacts cause extensive relocation or disruption of community businesses creating an
1792 economic hardship for surrounding communities;
- 1793 • Impacts cause disequilibrium in the housing market, such as severe housing shortages or
1794 surpluses, resulting in substantial property value changes; or,
- 1795 • Impacts cause changes to accessibility of community services or change demands in such
1796 a way that the current system cannot accommodate the change.

1797 4.9.1 Environmental Consequences – Clear Zone Project

1798 Proposed Action

1799 Implementation of the Proposed Action would have short-term, very minor, beneficial impacts to
1800 socioeconomics. The construction materials and labor would likely be supplied locally.
1801 Construction workers would travel from the surrounding area onto JBLE-Langley which could
1802 have a positive impact to local businesses such as restaurants or gas stations. However, the short
1803 term nature of the work would only provide a slight positive effect. The Proposed Action would
1804 not result in additional personnel at JBLE-Langley; therefore, no change of population,
1805 employment, housing or social services would occur. Overall, there would be no significant
1806 impacts to socioeconomics as a result of the Proposed Action.

1807 No Action Alternative

1808 Implementation of the No Action Alternative would result in no change of impacts to
1809 socioeconomics as the existing economic environment would remain in its current state.

1810 4.9.2 Environmental Consequences – Parking Lot near Hospital, F. 257

1811 Proposed Action

1812 Implementation of the Proposed Action would have short-term, very minor, beneficial impacts to
1813 socioeconomics. The construction materials and labor would likely be supplied locally.
1814 Construction workers would travel from the surrounding area onto JBLE-Langley which could
1815 have a positive impact to local businesses such as restaurants or gas stations. However, the short

1816 term nature of the work would only provide a slight positive effect. The Proposed Action would
1817 not result in additional personnel at JBLE-Langley; therefore, no change of demographics or
1818 social services would occur. However, long-term, negligible, beneficial impacts to social
1819 services would occur with implementation of the Proposed Action. The new parking lot would
1820 enable patients to park closer to the hospital and get medical care more quickly. This could
1821 provide an increase in quality of life patients and their families. Overall, there would be no
1822 significant impacts to socioeconomics as a result of the Proposed Action.

1823 No Action Alternative

1824 Implementation of the No Action Alternative would result in no change of impacts to
1825 socioeconomics with the exception of social services. Long-term, minor, adverse impacts could
1826 be expected as patient trips to the hospital increase. With a deficiency in parking, access to the
1827 hospital for medical care could eventually become restrictive creating a decrease in quality of life
1828 for patients and their families.

1829 4.9.3 Environmental Consequences – 363d ISR Wing HQ Facility

1830 Alternative 1 or 2 (Preferred Alternative)

1831 Selection of either Alternative 1 or 2 would have minor, beneficial impacts to socioeconomics.
1832 Short-term, minor, beneficial impacts would occur during the construction phase of the proposed
1833 project. The construction materials and labor would likely be supplied locally. Construction
1834 workers would travel from the surrounding area onto JBLE-Langley which could have a positive
1835 impact to local businesses such as restaurants or gas stations. However, the short term nature of
1836 the work would only provide a slight positive effect.

1837 The Proposed Action would bring approximately 200 additional personnel to JBLE-Langley
1838 which would likely have long-term, minor, beneficial impacts to the area. Impacts would likely
1839 be realized through the positive impact to local businesses. Adverse impacts to housing and
1840 public services are not expected to occur as the additional personnel would not offset ACC
1841 drawdown.

1842 No Action Alternative

1843 Implementation of the No Action Alternative would result in no change of impacts to
1844 socioeconomics.

1845 **4.10 SOLID AND HAZARDOUS WASTE**

1846 The following thresholds were used in this document to determine if an impact to solid and
1847 hazardous waste would be significant:

- 1848
- 1849 • Impacts constitute a substantial risk to human health or an environmental exposure;
 - 1850 • Impacts would substantially increase solid waste or increase the quantity or toxicity of
hazardous substances used or generated; or,
 - 1851 • Impacts would change the quantity or types of hazardous substances or solid waste in
1852 such a way that current management systems cannot accommodate the change.

1854 4.10.1 Environmental Consequences – Clear Zone Project

1855 Proposed Action

1856 Implementation of the Proposed Action would have negligible impacts as a result of solid and
1857 hazardous waste. Solid waste generated during the drainage system installation would be
1858 disposed of at the City of Hampton’s Bethel Sanitary Landfill. The amount of debris generated
1859 would not be significant in relation to the remaining capacity at the landfill. Hazardous materials
1860 may be used during the proposed project such as gasoline, diesel, oil, and lubricants. All
1861 hazardous materials and construction debris would be handled, stored, and disposed of in
1862 accordance with federal, state, and local regulations and laws. In addition, the contractor would
1863 provide copies of Safety Data Sheets to the base and maintain copies on the proposed project
1864 location. No hazardous waste or toxic substances would be generated as part of the proposed
1865 project.

1866 The Proposed Action would have beneficial impacts to abandoned landfill, LF-01, by eliminating
1867 ponding. Water that collects and percolates through the soil to the landfill is detrimental to the
1868 landfill cap. Therefore, by enabling water to more efficiently enter the stormwater system the
1869 integrity of the landfill cap is maintained.

1870 Overall, there would be no significant impacts as a result of solid and hazardous waste with
1871 implementation of the Proposed Action.

1872 No Action Alternative

1873 Implementation of the No Action Alternative would have no significant impacts as a result of
1874 solid and hazardous waste. Solid and hazardous waste levels at JBLE-Langley would remain the
1875 same. Under the No Action Alternative, stormwater would continue to collect in the area of LF-
1876 01 and could potentially cause adverse impacts, such as leaching of waste materials currently
1877 contained within the landfill cap.

1878 4.10.2 Environmental Consequences – Parking Lot near Hospital, F. 257

1879 Proposed Action

1880 Implementation of the Proposed Action would have negligible impacts as a result of solid and
1881 hazardous waste. For the purposes of determining the amount of debris generated during
1882 nonresidential construction activities, an average rate of 4.34 lbs/sf was used (USEPA, 2003).
1883 In 2005, the USEPA estimated approximately 25 percent to 35 percent of construction was
1884 recycled in 2003. As part of the Proposed Action, in order to comply with EO 13693 it is
1885 assumed materials would be recycled to the maximum extent practicable; however, as a
1886 conservative approach, it is assumed only 25 percent of the construction debris would be recycled
1887 instead of the 50 percent as required by EO 13693. As shown in the table below, approximately
1888 212 tons of construction debris would be generated as a result of the activities associated with the
1889 parking lot project.

1890 **Table 10 – Parking Lot near Hospital, F. 257, Construction Debris**

Proposed Project	Total Square Footage	Debris Generated (lbs)	After 25% Recycling Rate (lbs)	Debris Generated (tons)
Parking Lot	130,000	564,200	423,150	212

1891 Solid waste generated during the construction of the parking lot would be disposed of at the City
 1892 of Hampton’s Bethel Sanitary Landfill. The amount of debris generated would not be significant
 1893 in relation to the remaining capacity at the landfill. As stated previously, at the end of calendar
 1894 year 2014, Bethel Landfill had a total remaining capacity of about 23,301,051 tons. The debris
 1895 disposed of as part of the demolition and construction activities under the 363d ISR Wing
 1896 HQ Project would total 0.0009 percent of Bethel Landfill’s remaining capacity. It is not
 1897 expected the amount of debris disposed of would appreciably alter the anticipated landfill
 1898 life of 91 years.

1899 Hazardous materials may be used during the proposed project such as gasoline, diesel, oil, and
 1900 lubricants. All hazardous materials and construction debris would be handled, stored, and
 1901 disposed of in accordance with federal, state, and local regulations and laws. In addition, the
 1902 contractor would provide copies of Safety Data Sheets to the base and maintain copies on the
 1903 proposed project location. No hazardous waste or toxic substances would be generated as part of
 1904 the proposed project. ST-28 is located within the proposed project area, however no impacts are
 1905 anticipated as the site is closed. There would be no significant impacts as a result of solid and
 1906 hazardous waste with implementation of the Proposed Action.

1907 No Action Alternative

1908 Implementation of the No Action Alternative would have no significant impacts as a result of
 1909 solid and hazardous waste because waste levels at JBLE-Langley would remain the same.

1910 4.10.3 Environmental Consequences – 363d ISR Group HQ Facility

1911 Alternative 1 or 2 (Preferred Alternative)

1912 Selection of either Alternative 1 or 2 would result in negligible impacts as a result of solid and
 1913 hazardous waste. For the purposes of determining the amount of debris generated during
 1914 nonresidential construction and demolition activities, an average rate of 4.34 lbs/sf and 158
 1915 lbs/sf, respectively, was used (USEPA, 2003). In 2005, the USEPA estimated approximately 25
 1916 percent to 35 percent of construction was recycled in 2003. As part of the Proposed Action, in
 1917 order to comply with EO 13693 it is assumed materials would be recycled to the maximum extent
 1918 practicable; however, as a conservative approach, it is assumed only 25 percent of the
 1919 construction debris would be recycled instead of the 50 percent as required by EO 13693. As
 1920 shown in the table below, approximately 277 tons of construction debris and 1,721 tons of
 1921 demolition debris would be generated as a result of the activities associated with the 363d ISR
 1922 Wing HQ Project.

1920 **Table 11 – 363d ISR Wing HQ Alternative 1 Project Debris Estimates**

Proposed Project	Total Square Footage	Debris Generated (lbs)	After 25% Recycling Rate (lbs)	Debris Generated (tons)
363d ISR Wing HQ	94,800	411,432	308,574	155
Parking Lot	75,000	325,500	244,125	122
Demolition	29,041	4,588,478	3,441,359	1,721
Total	198,841	5,325,410	3,994,058	1,998

1921 Solid waste generated during the construction of the facilities would be disposed of at the City
 1922 of Hampton’s Bethel Sanitary Landfill. The amount of debris generated would not be
 1923 significant in relation to the remaining capacity at the landfill. As stated previously, at the end of
 1924 calendar year 2014, Bethel Landfill had a total remaining capacity of about 23,301,051 tons.
 1925 The debris disposed of as part of the demolition and construction activities under the 363d
 1926 ISR Wing HQ Project would total 0.009 percent of Bethel Landfill’s remaining capacity. It is
 1927 not expected the amount of debris disposed of would appreciably alter the anticipated
 1928 landfill life of 91 years.

1929 Hazardous materials may be used during the proposed project such as paint, paint thinners,
 1930 gasoline, diesel, oil, and lubricants. All hazardous materials and construction debris would be
 1931 handled, stored, and disposed of in accordance with federal, state, and local regulations and laws.
 1932 In addition, the contractor would provide copies of Safety Data Sheets to the base and maintain
 1933 copies on the proposed project location (JBLE-Langley, 2013b). No hazardous waste is
 1934 anticipated as part of the proposed project. However, should hazardous waste be generated, the
 1935 contractor would be required to follow existing procedures for hazardous waste management at
 1936 JBLE-Langley. In addition, during operational activities, JBLE-Langley would continue to
 1937 employ best management practices to minimize potential for environmental impacts. Therefore,
 1938 no adverse environmental consequences related to hazardous materials or wastes would be
 1939 expected from implementation of the 363d ISR Wing HQ Project.

1940 Short-term, minor, adverse impacts associated with ACMs would be expected with
 1941 implementation of Alternative 1. All three buildings proposed for demolition were built prior to
 1942 1980 and therefore are assumed to contain ACMs. Buildings would be surveyed for asbestos by
 1943 a certified contractor prior to any demolition activity. A demolition plan would be developed
 1944 then reviewed by 633 CES personnel to reduce potential release of and exposure to asbestos.
 1945 Any ACM would be removed and disposed of at a USEPA-approved landfill. Contractors would
 1946 be required to adhere to all federal, state, and local regulations in addition to JBLE-Langley
 1947 management plans. Long-term, negligible, beneficial impacts would be expected by the
 1948 elimination of any ACMs in the demolition of the three buildings.

1949 Short-term, minor, adverse impacts associated with LBP would be expected with implementation
 1950 of Alternative 1. All three buildings scheduled for demolition were built prior to 1978 and
 1951 therefore are assumed to contain LBP. Buildings would be surveyed for LBP by a certified
 1952 contractor prior to any demolition activity. All demolition debris containing LBP would be

1953 disposed of at a USEPA-approved landfill. Contractors would be required to adhere to all
1954 federal, state, and local regulations in addition to JBLE-Langley management plans. Long-term,
1955 negligible, beneficial impacts would be expected by the elimination of any LBP in the
1956 demolition of the three buildings.

1957 Overall, there would be no significant impacts as a result of solid and hazardous waste with
1958 implementation of Alternative 1 or 2.

1959 No Action Alternative

1960 Implementation of the No Action Alternative would have no significant impacts as a result of
1961 solid and hazardous waste because waste levels at JBLE-Langley would remain the same.

1962 **4.11 AIR QUALITY**

1963 The following thresholds were used in this document to determine if an impact to air quality and
1964 GHG emissions would be significant:

- 1965 • Increase ambient air pollution above any NAAQS;
- 1966 • Contribute to an existing violation of any NAAQS;
- 1967 • Interfere with or delay timely attainment of NAAQS;
- 1968 • Expose people to contaminated HAPs in large quantities; or,
- 1969 • Increases direct GHG emissions of at least 25,000 metric tons or more.

1970 4.11.1 Environmental Consequences – Clear Zone Project

1971 Proposed Action

1972 Implementation of the Proposed Action would have short-term, negligible, adverse impacts to air
1973 quality primarily from grading activity. Air emissions from grading would be temporary and
1974 brief in duration. Criteria pollutant air emissions would be produced from the combustion of
1975 fuels in heavy equipment. Particulate matter air emissions, such as fugitive dust, would be
1976 produced from ground-disturbing activities and from the combustion of fuels in heavy
1977 equipment. Fugitive dust air emissions would be greatest during the initial site preparation and
1978 would vary from day to day depending on the work phase, level of activity, and prevailing
1979 weather conditions. The quantity of uncontrolled fugitive dust emissions from a construction site
1980 is proportional to the area of land being worked and the level of activity. Construction would
1981 incorporate BMPs and environmental control measures to minimize fugitive particulate matter
1982 air emissions. Additionally, the work vehicles are assumed to be well maintained and should use
1983 diesel particulate filters to reduce particulate matter air emissions. Construction workers
1984 commuting daily to and from the job sites in their personal vehicles would also result in criteria
1985 pollutant air emissions.

1986 **Table 12 – Summary of Potential Air Emissions for the Clear Zone Project**

	NO_x tpy	VOC tpy	CO tpy	SO₂ tpy	PM₁₀ tpy	PM_{2.5} tpy	CO_{2e} tpy
Construction	1.162	0.3	2.6	0.003	182.2	18.3	260.2
General Conformity <i>de minimis</i> thresholds	100	100	NA	NA	NA	NA	NA

1987 Notes: NA=not applicable; tpy=tons per year; CO_{2e}=carbon dioxide equivalent

1988 As stated previously, the installation is in an area that has been designated as
1989 unclassified/attainment for all criteria pollutants. As the table above indicates, estimated annual
1990 air emissions from the Proposed Action during the Proposed Action would be well below *de*
1991 *minimis* threshold limits; therefore, a General Conformity determination would not be required.

1992 The Proposed Action would emit GHGs from the combustion of fossil fuels. Construction
1993 would generate approximately 260 tons (235 metric tons) of CO_{2e} during the project. This GHG
1994 emission is approximately 0.9 percent of the CEQ reference point of 25,000 metric tpy, below
1995 which a quantitative analysis of GHGs is not necessary. These limited annual emissions of
1996 GHGs would not likely contribute to global warming to any discernible extent. Potential
1997 changes to local temperature and precipitation patterns as a result of ongoing global climate
1998 change would not affect the ability to implement the Proposed Action.

1999 No Action Alternative

2000 Implementation of the No Action Alternative would have no significant impacts to regional or
2001 local air quality as existing conditions would remain the same.

2002 4.11.2 Environmental Consequences – Parking Lot near Hospital, F. 257

2003 Proposed Action

2004 Implementation of the Proposed Action would have short-term, negligible, adverse impacts to air
2005 quality primarily from grading activity. Air emissions from grading would be temporary and
2006 brief in duration. Criteria pollutant air emissions would be produced from the combustion of
2007 fuels in heavy equipment. Particulate matter air emissions, such as fugitive dust, would be
2008 produced from ground-disturbing activities and from the combustion of fuels in heavy
2009 equipment. Fugitive dust air emissions would be greatest during the initial site preparation and
2010 would vary from day to day depending on the work phase, level of activity, and prevailing
2011 weather conditions. The quantity of uncontrolled fugitive dust emissions from a construction site
2012 is proportional to the area of land being worked and the level of activity. Construction would
2013 incorporate BMPs and environmental control measures to minimize fugitive particulate matter
2014 air emissions. Additionally, the work vehicles are assumed to be well maintained and should use
2015 diesel particulate filters to reduce particulate matter air emissions. Construction workers
2016 commuting daily to and from the job sites in their personal vehicles would also result in criteria
2017 pollutant air emissions.

2018 **Table 13 – Summary of Potential Air Emissions for the Proposed Parking Lot Project**

	NO_x tpy	VOC tpy	CO tpy	SO₂ tpy	PM₁₀ tpy	PM_{2.5} tpy	CO_{2e} tpy
Construction	0.3	0.1	1.1	0.001	2.6	0.3	99.4
General Conformity <i>de minimis</i> thresholds	100	100	NA	NA	NA	NA	NA

2019 Notes: NA=not applicable; tpy=tons per year; CO_{2e}=carbon dioxide equivalent

2020 As stated previously, the installation is in an area that has been designated as
2021 unclassified/attainment for all criteria pollutants. As the table above indicates, estimated annual
2022 air emissions from the Proposed Action during the Proposed Action would be well below *de*
2023 *minimis* threshold limits; therefore, a General Conformity determination would not be required.

2024 The Proposed Action would emit GHGs from the combustion of fossil fuels. Construction
2025 would generate approximately 99 tons (90 metric tons) of CO_{2e} during the project. This GHG
2026 emission is approximately 0.4 percent of the CEQ reference point of 25,000 metric tpy, below
2027 which a quantitative analysis of GHGs is not necessary. These limited annual emissions of
2028 GHGs would not likely contribute to global warming to any discernible extent. Potential
2029 changes to local temperature and precipitation patterns as a result of ongoing global climate
2030 change would not affect the ability to implement the Proposed Action.

2031 No Action Alternative

2032 Implementation of the No Action Alternative would have no significant impact to regional or
2033 local air quality as existing conditions would remain the same.

2034 4.11.3 Environmental Consequences – 363d ISR Wing HQ Facility

2035 Alternative 1 or 2 (Preferred Alternative)

2036 Short-term, negligible, adverse effects on air quality would occur from grading, demolition, and
2037 construction; however, these effects would not be significant. Air emissions from construction
2038 would be temporary and brief in duration (e.g., conservatively assumed to occur during 2016 and
2039 2017). Criteria pollutant air emissions would be produced from the combustion of fuels in heavy
2040 equipment. Particulate matter air emissions, such as fugitive dust, would be produced from
2041 ground-disturbing activities and from the combustion of fuels in heavy equipment. Fugitive dust
2042 air emissions would be greatest during the initial site preparation and would vary from day to day
2043 depending on the work phase, level of activity, and prevailing weather conditions. The quantity
2044 of uncontrolled fugitive dust emissions from a construction site is proportional to the area of land
2045 being worked and the level of activity. Construction would incorporate BMPs and
2046 environmental control measures to minimize fugitive particulate matter air emissions.
2047 Additionally, the work vehicles are assumed to be well maintained and should use diesel
2048 particulate filters to reduce particulate matter air emissions. Construction workers commuting
2049 daily to and from the job sites in their personal vehicles and heavy duty diesel vehicles hauling
2050 construction materials and debris to and from the job sites would also result in criteria pollutant
2051 air emissions.

2052 **Table 14 – Summary of Potential Air Emissions for the 363d ISR Wing HQ Project**

	NO_x tpy	VOC tpy	CO tpy	SO₂ tpy	PM₁₀ tpy	PM_{2.5} tpy	CO_{2e} tpy
Construction	7.1	1.5	8.2	0.02	16.3	1.9	1,330.4
Operations	0.6	0.8	14.8	0.01	0.04	0.02	642.5
General Conformity <i>de minimis</i> thresholds	100	100	NA	NA	NA	NA	NA

2053 Notes: NA=not applicable; tpy=tons per year; CO_{2e}=carbon dioxide equivalent

2054 Long-term, negligible, adverse effects on air quality would occur from operational activities;
2055 however, these effects would not be significant. Air emissions from operational activities would
2056 be produced from the combustion of fuels in the personal vehicles of the estimated 200 new
2057 personnel commuting daily to the installation. Air emissions from commuting activities would
2058 be permanent and assumed to occur annually in the years following construction (e.g., 2017 and
2059 later). Operation calculations only account for mobile emissions and exclude stationary
2060 emissions sources such as boiler and generator equipment as this data was not available during
2061 the time of the analysis.

2062 As stated previously, the installation is in an area that has been designated as
2063 unclassified/attainment for all criteria pollutants. As the table above indicates, estimated annual
2064 air emissions from the Proposed Action during the Proposed Action would be well below *de*
2065 *minimis* threshold limits; therefore, a General Conformity determination would not be required.

2066 The Proposed Action would emit GHGs from the combustion of fossil fuels. Construction
2067 would generate approximately 1,330 tons (1,207 metric tons) of CO_{2e} during the project. The
2068 additional 200 employees commuting daily would generate approximately 643 tons (583 metric
2069 tons) of CO_{2e} in 2017 and beyond. These GHG emissions are approximately 4.8 and 2.3
2070 percent, respectively, of the CEQ reference point of 25,000 metric tpy, below which a
2071 quantitative analysis of GHGs is not necessary. These limited annual emissions of GHGs would
2072 not likely contribute to global warming to any discernible extent. Potential changes to local
2073 temperature and precipitation patterns as a result of ongoing global climate change would not
2074 affect the ability to implement the Proposed Action. The Proposed Action would only result in a
2075 minimal increase in the emissions generated during grading and construction activities associated
2076 with the addition of a 75,000 sf parking lot.

2077 No Action Alternative

2078 Implementation of the No Action Alternative would have no significant impacts on regional or
2079 local air quality as existing conditions would remain the same.

2080 **4.12 NOISE**

2081 Impacts to the noise environment are considered significant if the Proposed Action would:

- 2082 • Conflict with applicable federal, state, interstate, or local noise control regulations; or,

- 2083 • Result in continuous and long-term noise levels at 85 dB and above, which is the
2084 threshold of hearing damage with prolonged exposure.

2085 4.12.1 Environmental Consequences – Clear Zone Project

2086 Proposed Action

2087 Implementation of the Proposed Action would result in no change of impacts to current noise
2088 levels in the Clear Zones. The Clear Zones are located within the 80 dB noise contour, the
2089 highest on the installation. The proposed project would have short-term noise generated from
2090 vehicles and equipment used during the construction phase of the project. All construction
2091 would occur during daytime hours. While construction noise is different in character and
2092 therefore noticeable, it would not contribute significantly to the overall DNL values.
2093 Additionally, all construction equipment will utilize mufflers to reduce the operational noise and
2094 be properly maintained. Therefore, the addition of construction noise on the landscape would
2095 not result in significant impacts.

2096 No Action Alternative

2097 Implementation of the No Action Alternative would have no significant impacts to noise levels
2098 as the noise environment would remain at current levels.

2099 4.12.2 Environmental Consequences – Parking Lot near Hospital, F. 257

2100 Proposed Action

2101 Implementation of the Proposed Action would likely result in no change of impacts to current
2102 noise levels in the area. The proposed project location is approximately 300 feet east of the
2103 hospital and while hospitals are traditionally sensitive noise receptors, the hospital is located
2104 within the 75 dB noise contour, the second highest on the installation. Buildings on the
2105 installation have engineering designs which buffer and reduce inside noise levels. The proposed
2106 project would have short-term noise generated from vehicles and equipment used during the
2107 construction phase of the project. Some of the noise could reach levels higher than 75 dB, but
2108 the instances would be temporary and limited. All construction would occur during daytime
2109 hours. While construction noise is different in character and therefore noticeable, it would not
2110 contribute significantly to the overall DNL values. Additionally, all construction equipment will
2111 utilize mufflers to reduce the operational noise and be properly maintained. Therefore, the
2112 addition of construction noise on the landscape would not result in significant impacts.

2113 No Action Alternative

2114 Implementation of the No Action Alternative would have no significant impacts to noise levels
2115 as the noise environment would remain at current levels.

2116 4.12.3 Environmental Consequences – 363d ISR Wing HQ Facility

2117 Alternative 1 or 2 (Preferred Alternative)

2118 Selection of either Alternative 1 or 2 would likely result in no change of impacts to current noise
2119 levels in the area. There is some housing in the general vicinity of the two alternatives and while
2120 residences are traditionally sensitive noise receptors, the housing is located within the 75 dB
2121 noise contour, the second highest on the installation. Buildings on the installation have

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2122 engineering designs which buffer and reduce inside noise levels. The proposed project would
2123 have short-term noise generated from vehicles and equipment used during the construction phase
2124 of the project. Some of the noise could reach levels higher than 75 dB, but the instances would
2125 be temporary and limited. All construction would occur during daytime hours. While
2126 construction noise is different in character and therefore noticeable, it would not it would not
2127 contribute significantly to the overall DNL values. Additionally, all construction equipment will
2128 utilize mufflers to reduce the operational noise and be properly maintained. Therefore, the
2129 addition of construction noise on the landscape would not result in significant impacts.

2130 No Action Alternative

2131 Implementation of the No Action Alternative would have no significant impacts to noise levels
2132 as the noise environment would remain at current levels.

2133 **5.0 Cumulative Effects, Best Management Practices, and Adverse Effects**

2134 **5.1 CUMULATIVE IMPACTS**

2135 CEQ regulations stipulate that the cumulative effects analysis within an EA should consider the
2136 potential environmental impacts resulting from “the incremental impacts of the action when
2137 added to other past, present, and reasonably foreseeable future actions regardless of what agency
2138 or person undertakes such other actions” (40 CFR Part 1508.7). Assessing cumulative effects
2139 involves defining the scope of the other actions and their interrelationship with the Proposed
2140 Action and alternatives, if they overlap in space and time.

2141 To identify cumulative effects, three fundamental questions need to be addressed:

- 2142 1. Does a relationship exist such that affected resource areas of the Proposed Action might
2143 interact with the affected resource areas of past, present, or reasonably foreseeable
2144 actions?
- 2145 2. If one or more of the affected resource areas of the Proposed Action and another action
2146 could be expected to interact, would the Proposed Action affect or be affected by impacts
2147 of the other action?
- 2148 3. If such a relationship exists, then does an assessment reveal any potentially significant
2149 impacts not identified when the Proposed Action is considered alone?

2150 **5.1.1 Projects Identified with the Potential for Cumulative Effects**

2151 The scope of the cumulative effects analysis involves both temporal and geographic extent in
2152 which effects could be expected to occur, as well as a description of the resource which
2153 potentially could be cumulatively affected. For the analysis within this EA, the time span of the
2154 Proposed Action is 5 years (i.e., 2016-2021). For most resources, the spatial area considered for
2155 cumulative effects is JBLE-Langley. However for some resources, analysis included parts of the
2156 surrounding area. Projects within JBLE-Langley as well as in the neighboring communities were
2157 identified for cumulative effect evaluation.

2158 **5.1.2 Past Actions at JBLE-Langley**

2159 In 2011, the Air Force increased the number of F-22 aircraft assigned to JBLE-Langley by
2160 adding three additional aircraft to both the 27th Fighter Squadron and 94th Fighter Squadron.
2161 Additionally, a detachment of 14 T-38 training aircraft was stood up within the JBLE-Langley
2162 1st Fighter Wing. The additional F-22 and T-38 aircraft began arriving in FY12; the full
2163 complement was completed in FY13. No additional facilities or infrastructure were required for
2164 the force structure change.

2165 In 2013, JBLE-Langley prepared an EA for a Demolition/Consolidation Plan and General Plan
2166 Update Projects. The D/C Plan Proposed Action included interior modification to twelve
2167 buildings, consolidation of personnel in 19 buildings, and demolition of 22 buildings. The
2168 General Plan Update Proposed Action included eight construction projects (one of the eight is a
2169 present action). Minor, long-term impacts to water resources, from construction of new facilities
2170 within the 100-year floodplain and wetlands, and noise, from the loss of trees that provide
2171 aircraft taxiway noise buffer. Minor, short-term impacts to transportation were expected from

2172 the construction of new facilities and demolition of existing facilities. Negligible impacts to land
2173 use, biological resources, cultural resources, visual resources, hazardous materials, hazardous
2174 waste, solid waste management, socioeconomics, utilities, and air quality.

2175 5.1.3 Present and Reasonably Foreseeable Future Actions at JBLE-Langley

2176 According to the 633 CES, there is one project currently occurring and two projects scheduled
2177 for later this year. In progress is the replacement of the Four-Bay Munitions Inspection Facility
2178 which includes the demolition of a 358 square foot building. The Hospital addition/CUP
2179 replacement and the Fuel Pier/Government Vehicle Fueling Station replacement will begin this
2180 year. The table below summarizes the areas of disturbance and changes in impervious surfaces
2181 from the Proposed Action as well as present and reasonably foreseeable future actions.

2182 **Table 15 – Project Area and Change in Impervious Surfaces**

Project Type	Total Project Area (acres)	Change in Impervious Surfaces (acres)
Proposed Action	109	+8
Four-Bay Munitions Inspection Facility	0.20	+0.19
Hospital Addition/CUP Replacement	1.2	+0.3
Fuel Pier/Government Vehicle Fueling Station Replacement	6.1	0
Total All Projects	116.5	+8.39

2183 5.1.4 Actions Outside JBLE-Langley

2184 JBLE-Langley occurs in a heavily developed area within Hampton. Land uses surrounding
2185 JBLE-Langley are primarily residential and commercial. The City of Hampton has developed
2186 several master plans for strategic investment areas. These are planning documents which have a
2187 10-20 year lifespan. Two master plans, Coliseum Central and North King Street, cover areas at a
2188 distance of or within one mile from the installation. The Coliseum Central Master Plan identifies
2189 seven priority public projects: improve sidewalk and crosswalks; development of public
2190 attractions such as an event park or aquatics center; create at least 300 new quality hotel rooms;
2191 assist and improve the Boo Williams Sportsplex; develop Armistead Point Park; implement
2192 “Central Park” connecting Air Power Park to Bass Pro Lake; Amend zoning ordinance and
2193 implement design standards. Seven priority private projects were also identified: implement the
2194 second phase of Peninsula Town Center; redevelop Riverdale Plaza; redevelop the Langley
2195 Federal Credit Union property; continue development of hotel, residential, and office space
2196 visible from I-64; reinvest in key, successful strip commercial centers (Hampton, 2015). The
2197 North King Street Master Plan identifies eight key strategies for the area: street improvements to
2198 North King Street and major intersections; design the corridor to support adjacent land use;
2199 encourage land use for reinvestment and future growth; introduce new residential development

2200 around Selden Farm and John Tyler Elementary School; develop multi-use trail/lane along North
2201 King Street; celebrate North King Street's historic significance; enhance access and amenities to
2202 Newmarket Creek; encourage infill development in Old North Hampton (Hampton, 2007).

2203 The following projects are under construction or about to begin construction:

- 2204 • Armistead Avenue/LaSalle Avenue/Thomas Street Pedestrian Improvements
- 2205 • Andrews Boulevard at Woodland Road Intersection Improvements
- 2206 • Circuit Court
- 2207 • King Street at Little Black River Intersection Improvements (Phase 2)
- 2208 • LaSalle Avenue at Queen Street Intersection Improvements
- 2209 • Magruder Boulevard at Butler Farm Road Improvements
- 2210 • Mallory Street Streetscape
- 2211 • Pembroke Avenue at Grimes Road/Shelton Road Intersection Improvements
- 2212 • Saunders Road Widening
- 2213 • Todds Lane and Whealton Road Traffic Signal Upgrade
- 2214 • Todds Lane at Winchester Drive.

2215 The following projects are still in design stage:

- 2216 • Bridge Street Bridge Replacements over Salters Creek
- 2217 • Buckroe Avenue Streetscape (Phase 1)
- 2218 • Coliseum Central Transit Shelters
- 2219 • Franklin Street Extension
- 2220 • Freeman Drive Realignment
- 2221 • King Street Streetscape (Phase 3)
- 2222 • Mercury Boulevard Sidewalks
- 2223 • Mercury Boulevard Streetscape
- 2224 • Newmarket Creek Trail
- 2225 • Pembroke Avenue Streetscape (Phase 3)
- 2226 • Pine Chapel Road Trail Multi-Use Trail
- 2227 • Todds Lane at Big Bethel Road Intersection Improvements
- 2228 • Wythe Creek Road Widening

2229 While most of these projects are within close proximity to the installation, none of these projects
2230 occur immediately adjacent to JBLE-Langley therefore are not anticipated to cause a cumulative
2231 effect.

2232 5.1.5 Cumulative Effects Analysis

2233 As part of this EA, a cumulative effects analysis was conducted within the context of the
2234 environmental resources evaluated. The magnitude and context of the effect on a resource area
2235 depends on whether the cumulative effects exceed the capacity of a resource to sustain itself and
2236 remain productive (CEQ, 1997). This section discusses potential cumulative effects that could
2237 occur as a result implementing of these three proposed projects combined with past, present, and
2238 reasonably foreseeable future actions. No significant adverse cumulative effects were identified
2239 as part of this analysis.

2240 **Land Use**

2241 The General Plan and associated Area Development Plans guide development activities and
2242 overall land use at JBLE-Langley. All proposed actions would be compatible with existing and
2243 future land uses. The Proposed Hospital Parking Lot Project and 363d ISR Wing HQ Project
2244 would require land use changes, however as noted, these changes would be consistent with the
2245 General Plan for the installation. Demolition projects would eliminate outdated facilities and
2246 create opportunities for available land in a heavily developed landscape. The planned
2247 Government Vehicle Fueling Station Replacement and the new Fuel Pier would remove that
2248 facility from within the Clear Zone resulting in long-term, moderate, beneficial cumulative
2249 effects to land use. Cumulatively, implementation of installation development projects improve
2250 the overall function of JBLE-Langley thereby resulting in long-term, beneficial impacts on land
2251 use.

2252 **Transportation**

2253 The proposed and scheduled projects would have short- and long-term, minor, adverse impacts
2254 to transportation. No proposed or scheduled projects would alter the road system at JBLE-
2255 Langley. All construction and demolition projects would result in additional vehicular traffic to
2256 the area. These vehicles would utilize Armistead Avenue and West Gate. Traffic congestion
2257 could increase at the West Gate and main thoroughfares on the installation, but these impacts
2258 would be temporary. The 363d ISR Wing HQ project would result in 200 additional staff. The
2259 Hospital Parking Lot project would accommodate the increased patient visits to the hospital.
2260 Cumulatively, the additional vehicles would add to current traffic levels but the impacts would
2261 not be significant.

2262 **Utilities**

2263 The proposed and scheduled projects would have long-term, minor, adverse impacts to utilities.
2264 Construction of additional buildings and parking lots would be expected to increase the utility
2265 usage from current levels. While demolition of older, less efficient buildings would help offset
2266 the additional usage, new facilities would be designed with energy efficient technologies to
2267 ensure effective use of utilities. Area utilities have ample capacity and infrastructure to support
2268 the proposed and schedule projects. Therefore, cumulative effects would not be significant.

2269 **Geology and Soils**

2270 Approximately 117 acres of soils could be disturbed during construction of proposed and
2271 scheduled projects at JBLE-Langley. Cumulatively, the proposed projects are likely to have
2272 long-term, moderate, adverse impacts to soils with the addition of development footprints of
2273 approximately eight acres. Implementation of ESC BMPs are likely to limit adverse cumulative
2274 effects. The combined projects would have no impacts to geology, so no cumulative effects
2275 would be expected.

2276 **Water Resources**

2277 Construction and demolition activities that occur in the same vicinity and over the same time
2278 frame could have short-term, minor, adverse cumulative effects on water resources. Individual
2279 projects would require General Permits and associated SWPPPs and ESC Plans. The use of

2280 BMPs would help control erosion and sedimentation. The construction projects would increase
2281 the level of impervious surface, however proper stormwater management designs would reduce
2282 the potential for adverse cumulative effects. The Clear Zone project would have long-term,
2283 moderate, adverse impact approximately twenty acres of wetlands. This project has no
2284 practicable alternative. No other proposed or scheduled project would directly impact wetlands.
2285 Correspondence with all regulatory agencies prior to project implementation would occur and
2286 any permits obtained. All projects would occur within the 100-year floodplain. However, as
2287 most of the installation lies within the floodplain there is no practicable alternative. All projects
2288 would occur within the coastal zone. With proper coordination, all activities would be consistent
2289 with coastal zone management. The combined projects would have no impacts to groundwater,
2290 so no cumulative effects would be expected.

2291 **Biological Resources**

2292 Cumulative effects to biological resources are likely to occur, however impacts would not be
2293 significant. Proposed and scheduled projects would have the potential for short-term, minor and
2294 long-term, moderate, adverse impacts to vegetation. The Clear Zone project would remove
2295 vegetation during the project, but the area would be revegetated. The remaining construction
2296 projects would have long-term, moderate, adverse impacts with the loss of vegetation. Overall,
2297 the proposed locations for the projects are all previously disturbed, maintained sites that have no
2298 natural vegetative communities. Cumulatively, all construction and demolition activities have
2299 the potential for short-term, minor, adverse impacts to wildlife. Human activity and noise would
2300 be generated in the proposed project locations. The proposed and scheduled projects would not
2301 eliminate any native habitat. Wildlife that would be disturbed by the projects, would move to
2302 other locations within the area and potentially return once the disturbance was over. No
2303 threatened or endangered species are known to occur within the installation and therefore would
2304 not result in impacts from proposed or scheduled projects. Transient listed species could
2305 occasionally occur on the installation. All native birds are protected by the MBTA and project
2306 disturbance would be minimized through BMPs. Overall, cumulative effects on threatened and
2307 endangered species are not expected.

2308 **Cultural Resources**

2309 Numerous cultural resource surveys have been conducted at JBLE-Langley identifying both
2310 archaeological and architectural resources of prehistoric and historic interest. No Traditional
2311 Cultural Properties have been identified at JBLE-Langley. No archaeological resources have
2312 been identified within the proposed or scheduled project areas. All, except the Clear Zone
2313 project, have had Phase I surveys which yielded no sites identified. A Phase I survey of the
2314 Clear Zones would be conducted prior to any land-disturbing activities. Demolition as part of
2315 the 363d ISR Wing HQ project would not impact architectural resources as the three buildings
2316 are not historic. Cumulatively, the proposed and scheduled projects would not be expected to
2317 have a significant impact to cultural resources.

2318 **Visual Resources**

2319 The proposed and scheduled projects at JBLE-Langley would have long-term, minor, adverse
2320 impacts to visual resources. With the exception of the Clear Zone project, all would add a structure

2321 or parking lot to the landscape. Green space and trees would be removed in most areas. The new
2322 facilities would be built to match the visual character of each individual area on the installation.
2323 While demolition would remove buildings from the landscape, the area would remain heavily
2324 developed and result in negligible changes to visual resources. Overall, impacts to visual resources
2325 would not result in significant cumulative effects.

2326 **Socioeconomics**

2327 The proposed and scheduled projects would have short- and long-term, minor, beneficial impacts
2328 on the local community. Construction and demolition would create business for the local
2329 economy though employment and purchase of materials. However, the beneficial impacts would
2330 be temporary for the duration of the projects. The 363d ISR Wing HQ project would create
2331 long-term impacts with the addition of 200 staff to the installation. Cumulatively, the beneficial
2332 impacts would not be significant.

2333 **Solid and Hazardous Waste**

2334 The proposed and scheduled projects would result in short- and long-term, minor, negligible,
2335 adverse impacts from the generation of solid waste. Approximately 5,346 tons of construction
2336 and demolition debris would be temporarily generated during the construction and demolition
2337 phases of the proposed and scheduled projects.

2338 **Table 16 – Estimated Solid Waste Generation**

Project Type	Total Square Footage	Debris Generated (lbs)	After 25% Recycling Rate (lbs)	Debris Generated (tons)
Proposed Action	328,841	5,889,610	4,417,207	2,209
All Other Demolition Projects	43,959	6,945,522	5,209,141	2,605
All Other Construction Projects	326,700	1,417,878	1,063,409	532
Total				5,346

2339 Construction and demolition debris would be disposed at Hampton’s Bethel Sanitary Landfill.
2340 The landfill has a remaining life of 23,301,051 tons. Proposed and scheduled projects would
2341 utilize approximately 0.02% of the remaining landfill tons causing a long-term, negligible,
2342 adverse impact.

2343 Proposed and scheduled projects could utilize small quantities of hazardous materials and
2344 generate small quantities of hazardous wastes resulting in short-term, negligible, adverse
2345 impacts. Adherence to project and installation management plans would limit potential impacts.
2346 Proposed demolition projects could result in short-term, minor, adverse impacts as a result of
2347 ACMs and LBP. Exposure impacts would be managed by current plans and regulations. ACMs
2348 and LBP would be disposed of at an approved facility. Long-term, beneficial impacts would be
2349 expected from the removal of ACMs and LBP from the installation landscape.

2350 Overall, cumulative impacts as a result of solid and hazardous waste would not be significant.

2351 **Air Quality**

2352 The Air Quality Control Region which encompasses JBLE-Langley has been designated as
2353 unclassified/attainment for all criteria pollutants. Construction and demolition activities that
2354 occur in the same vicinity and over the same time frame could have short-term, minor adverse
2355 cumulative effects on air quality. The table below provides an estimate of emissions for
2356 implementation of all planned projects.

2357 **Table 17 – Estimated Construction and Operation Air Emissions**

	NO_x tpy	VOC tpy	CO tpy	SO₂ tpy	PM₁₀ tpy	PM_{2.5} tpy	CO_{2e} tpy
Clear Zone	1.162	0.3	2.6	0.003	182.2	18.3	260.2
Hospital Parking Lot	0.3	0.1	1.1	0.001	2.6	0.3	99.4
363d ISR Wing HQ	7.7	2.3	23.0	0.03	16.34	1.92	1,972.9
Other Scheduled Projects	24.16	6.22	70.0	0.2	37.5	5.4	6,029.8
Total	33.3	8.92	96.7	0.23	238.6	25.92	8,362.3
General Conformity Rule <i>de minimis</i> Limits	100	100	N/A	N/A	N/A	N/A	N/A

2358 Emissions from construction and demolition activities would only occur during those activities
2359 and cumulatively would not be significant. While operational emissions would occur long-term,
2360 they would only occur for some of the proposed projects and cumulatively would not be
2361 significant. Due to the current stage of the projects, stationary source emissions have not been
2362 quantitatively estimated within this analysis. New facilities would have sources of air emissions
2363 such as boilers and generators, however these are anticipated to be cleaner and more efficient
2364 equipment. The demolition of old, less efficient buildings would remove older stationary
2365 sources and could result in long-term, minor, beneficial cumulative effects on air quality. All
2366 required permits would be would be obtained prior to project implementation.

2367 The combined proposed development activities at JBLE-Langley would cumulatively produce
2368 GHG emissions during construction activities of approximately 3,925.4 tpy/3,561.1 metric tpy of
2369 CO₂ in 2017, the highest anticipated year. According to the US Energy Information
2370 Administration, the CO₂ emissions for Virginia in 2013 was 103 million metric tons (EIA, 2015).
2371 Cumulative emissions from implementation of the construction activities at JBLE-Langley
2372 would be approximately 0.004 percent of the 2013 emissions. The approximate total tpy of CO₂
2373 emissions for the region are not anticipated to be significant.

2374 **Noise**

2375 Aircraft activities are the main source of noise at JBLE-Langley. Construction and demolition
2376 activities that occur would result in no change of impacts to current noise levels. Construction
2377 and demolition activities would result in short-term, localized increased noise levels of a

2378 different character than that of aircraft activities. Cumulatively, the dominant source of noise at
2379 JBLE-Langley would remain from operation of aircraft. Cumulative effects on noise would not
2380 be significant.

2381 5.2 REASONABLE AND PRUDENT MEASURES AND BMPs

2382 The Proposed Action would not result in significant adverse effects. However, BMPs and other
2383 measures would be implemented to eliminate or reduce impacts of non-significant adverse
2384 effects. General BMPs that would be implemented, as applicable, for the proposed projects are
2385 summarized below.

- 2386 • Clearing and grubbing activities would be timed with construction to minimize exposure
2387 of cleared land. These activities would not be conducted during periods of wet weather.
2388 Construction activities would be staged to allow for the stabilization of disturbed soils.
2389 These BMPs would minimize adverse impacts associated with soil and water resources.
- 2390 • Fugitive dust control techniques, such as watering and stockpiling, would be
2391 implemented to minimize adverse impacts. Fugitive dust controls would comply with
2392 applicable regulations. These BMPs would minimize adverse impacts associated with air
2393 quality, soil, and water resources.
- 2394 • Erosion control measures, such as soil erosion control mats, silt fences, straw bales,
2395 diversion ditches, riprap channels, and vegetative buffer strips, would be used as
2396 appropriate. These BMPs would minimize adverse impacts associated with soil and
2397 water resources.
- 2398 • Stormwater management would be used as appropriate during construction to minimize
2399 off-site runoff. Following construction, stormwater management systems would ensure
2400 that predevelopment site hydrology is maintained or restored to the maximum extent
2401 technically feasible. These BMPs would minimize adverse impacts with water resources.
- 2402 • Any clearing and grubbing activities should be performed before breeding season begins
2403 to reduce impacts to bird species protected by the MBTA. A site-specific survey for
2404 nesting activity should be performed immediately prior to activities. If nesting birds are
2405 found, a buffer should be established around nests. Construction should be deferred in
2406 the buffer until birds have left the nest. Confirmation that all young have fledged should
2407 be made by a qualified biologist.
- 2408 • Provisions would be taken to prevent pollutants from reaching the soil, groundwater, or
2409 surface water. During project activities, contractors would be required to perform daily
2410 inspections of equipment, maintain appropriate spill-containment materials on site, and
2411 store all fuels and other materials in appropriate containers. Equipment maintenance
2412 activities would not be conducted on-site. These BMPs would minimize adverse impacts
2413 associated with soil, water resources, and hazardous waste.
- 2414 • Construction equipment would only be used during the daylight hours and would be
2415 maintained to the manufacturer's specification to minimize noise impacts.

2416 5.3 UNAVOIDABLE ADVERSE EFFECTS

2417 Unavoidable adverse effects would result from implementation of the Proposed Action. As
2418 discussed in Section 4, the Proposed Action would result in short-term, adverse effects

2419 associated with construction and demolition activities, including increased noise and air
2420 emissions, minor increases in traffic, use and generation of hazardous materials and wastes, and
2421 generation of construction and generation waste. None of these effects would be significant.

2422 All projects of the Proposed Action would occur within the 100-year floodplain. As most of
2423 JBLE-Langley occurs within the floodplain, there would be no practicable alternative.
2424 Construction projects would have long-term, negligible, impacts to the floodplain. All building
2425 foundations would be elevated to two feet above the 100-year floodplain. Demolition of
2426 buildings at JBLE-Langley would have a long-term, negligible, beneficial impact to the
2427 floodplain.

2428 The Clear Zone project could have unavoidable adverse impacts to twenty acres of wetlands.
2429 There is no practicable alternative for this project. Approximately twenty acres of wetlands
2430 would be removed to improve the surface for aircraft landing and reduce the chance of
2431 Bird/Aircraft Strike Events.

2432 5.4 RELATIONSHIP OF SHORT-TERM USES AND LONG-TERM 2433 PRODUCTIVITY

2434 Short-term uses of the biophysical components of human environment include direct
2435 construction-related disturbances and direct effects associated with an increase activity that
2436 occurs over a period of less than 5 years. Long-term uses of human environment are those
2437 effects occurring over a period of more than 5 years, including permanent resource loss.

2438 The Proposed Action would not result in an intensification of land use in the surrounding area.
2439 Development of the Proposed Action would not represent a significant loss of open space. The
2440 long-term beneficial effects of implementing the Proposed Action and other planned installation
2441 development activities would support the ongoing and future training missions and other
2442 readiness training and operational assignments.

2443 The planned demolition activities at JBLE-Langley would contribute to USAF's goal of
2444 removing excess, obsolete, and underused infrastructure capacity and focusing time and funding
2445 on maintaining only infrastructure that is needed.

2446 5.5 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF 2447 RESOURCES

2448 The irreversible environmental changes that would result from implementation of the Proposed
2449 Action involve the consumption of material resources, energy resources, and human resources.
2450 The use of these resources is considered to be permanent. Irreversible and irretrievable resource
2451 commitments are related to the use of nonrenewable resources and the effects that use of these
2452 resources will have on future generations. Irreversible effects primarily result from use or
2453 destruction of a specific resource that cannot be replaced within a reasonable timeframe (e.g.,
2454 energy and minerals).

2455 ***Floodplains.*** The Proposed Action would occur in the 100-year floodplain. As JBLE-Langley is
2456 almost entirely within the 100-year floodplain, there is no practicable alternative. Although the
2457 Proposed Action would have an irreversible and irretrievable impact on floodplains, the
2458 Proposed Action would only impact a small portion of the 100-year floodplain area.

**Draft Environmental Assessment for
Installation Development at JBLE-Langley, Virginia**

2459 Additionally, the demolition of buildings within the 100-year floodplain would represent a long-
2460 term, minor, beneficial effect. The Proposed Action would not have significant impacts
2461 associated with floodplains.

2462 **Wetlands.** The Clear Zone project would affect wetlands. To eliminate ponding within the
2463 Clear Zone, there is no practicable alternative. Although the Proposed Action would have an
2464 irreversible and irretrievable impact on wetlands, the Proposed Action would only impact a small
2465 portion of wetlands in the area. The Proposed Action would not have significant effects on
2466 wetlands.

2467 **Biological Habitat.** The Proposed Action would result in the minimal loss of vegetation and
2468 wildlife habitat. This loss would not be significant.

2469 **Material Resources.** Material resources used for the Proposed Action include building materials
2470 (for construction of facilities), concrete and asphalt (for parking lots), and various material
2471 supplies (for infrastructure) and would be irreversibly lost. Most of the materials that would be
2472 consumed are not in short supply, would not limit other unrelated construction activities, and
2473 would not be considered significant.

2474 **Energy Resources.** No significant effects would be expected on energy resources used as a
2475 result of the Proposed Action, though any energy resources consumed would be irretrievably
2476 lost. These include petroleum-based products (e.g., gasoline and diesel fuel) and electricity.
2477 During construction, gasoline and diesel fuel would be used for the operation of construction
2478 vehicles. During operation, gasoline or diesel fuel would be used for the operation of privately
2479 owned and government-owned vehicles. Electricity would be used by operational activities.
2480 Consumption of these energy resources would not place a significant demand on their
2481 availability in the region.

2482 **Human Resources.** The use of human resources for construction and operation is considered an
2483 irretrievable loss, only in that it would preclude such personnel from engaging in other work
2484 activities. However, the use of human resources for the Proposed Action and alternatives
2485 represent employment opportunities, and is considered beneficial.

2486 **6.0 List of Preparers**

2487 This IDEA has been prepared by Environmental Research Group, LLC under the direction of the
2488 633 CES and JBLE-Langley. The individuals who contributed to the preparation of this
2489 document are as follows.

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2474 **APPENDIX A**

2475 **Intergovernmental Coordination, Public and Agency Review Correspondence, and Media**
2476 **Release Information**

2477

COMMONWEALTH OF VIRGINIA
CITY OF NEWPORT NEWS

4024869

This day, personally appeared before me, George Hunt, and made oath as follows:

1. He/She is employed in the Office Services Department of the Daily Press, LLC., a newspaper publishing company in the City of Newport News, Virginia.
2. The annexed advertisement of Order No. 4024869 was published for 4 insertion(s) in the Daily Press on the following dates:

Mar 09, 2016; Mar 10, 2016; Mar 11, 2016; Mar 13, 2016

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Environmental Research Group, LLC - CU00524545
1006 Culbreth St
Bainbridge,GA 39819-8726

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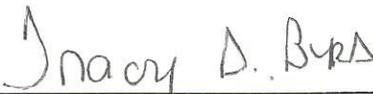
George Hunt

3/13/2016
Date

Subscribed and sworn to before me:

This 13 day of March 2016,

My commission expires: September 30, 2017



Signature of Notary Public

Registration Number: 305169



TRACY D. BYRD
NOTARY PUBLIC
Commonwealth of Virginia
Reg. #305169
My Commission Expires
September 30, 2017

**PUBLIC NOTICE
POTENTIAL TO IMPACT
FLOODPLAINS
JOINT BASE LANGLEY-EUSTIS,
LANGLEY AIR FORCE BASE,
VIRGINIA**

The Air Force is preparing an Environmental Assessment (EA) for a project to implement a range of selected installation development projects at Langley Air Force Base. Projects identified in the EA are subject to Executive Order (EO) 11988, Floodplain Management requirements and objectives. This notice complies with Section 2(a)(4) of EO 11988.

The Proposed Action is to replace the drainage system and regrade the runway Clear Zones, areas 1,000 ft. long and 2,000 ft. wide at each end of the runway; to construct an addition to the hospital which would include demolition of select adjacent buildings; to construct a parking lot to service the hospital; and to construct a headquarters building and associated parking for the 363d Intelligence, Surveillance and Reconnaissance (ISR) Wing. The Clear Zone project is necessary to reduce the risk of damage to aircraft that may land in the area and to reduce ponding that contributes to bird aircraft strike hazard; the hospital projects are required to provide efficient medical care, and develop new parking and building structures; and the 363 ISR Wing headquarters project is required to support the expanded ISR mission. Most of Langley Air Force Base lies within the 100-year floodplain due to its location and elevation. In order to comply with EO 11988, Langley Air Force Base would design structures to reduce the risk of severe damage from flooding. Additionally, as Langley Air Force Base is heavily developed, it provides minimal flood control for downriver areas. Therefore, the proposed projects would not contribute to any measurable loss with regard to flood control capacity.

The Air Force requests advance public comment to determine if there are any public concerns regarding the project's potential to impact floodplains. The proposed projects will be analyzed in a forthcoming EA and the public will have the opportunity to comment on the draft EA when it is released.

Please submit comments or requests for further information to David Jennings by email at david.jennings.4@us.af.mil or by mail at 633d Civil Engineer Squadron, 37 Sweeney Blvd, Langley AFB, VA 23665.

363d ISR Wing
363d Intelligence, Surveillance and Reconnaissance Wing
363d Civil Engineer Squadron
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Langley AFB, VA 23665



2478 **APPENDIX B**

2479 **Summary of Air Emission Calculations**

2480

Air Emissions from the Clear Zone Area Re-grading Activity at Langley

Construction Year (2016)	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO₂ (tpy)	PM₁₀ (tpy)	PM_{2.5} (tpy)	CO_{2e} (tpy)
Combustion	1.034	0.135	0.517	0.001	0.042	0.042	151.956
Fugitive Dust	NA	NA	NA	NA	182.160	18.216	NA
Construction Commuter	0.128	0.157	2.072	0.002	0.005	0.002	108.232
Total	1.162	0.291	2.589	0.003	182.207	18.260	260.188

Percent of 27,563 tpy (25,000 metric tpy) reference point = **0.9%**

Joint Base Langley-Eustis Clear Zone Re-grading Activity

Combustion Emissions

Combustion Emissions of VOC, NO_x, SO₂, CO, PM_{2.5}, PM₁₀, and CO₂ due to Grading

Grading Activities

1.) Grade existing clear zone areas (A, B, C, D)

Area Disturbed

4,007,520

Source and Assumptions

Section 3.1 of DOPAA

Total Disturbed Area:

4,007,520 ft²
92.000 acres

Construction Duration:
Annual Construction Activity:

9 months
198 days

Assumes 22 days per month.

Joint Base Langley-Eustis Clear Zone Re-grading Activity

Emission Factors Used for Construction Equipment

All emission factors are from the Air Emissions Guide for Air Force Transitory Sources, October 2014, Table 4-4. These are valid for Calendar Year 2016. Assumptions regarding the type and number of equipment are from Guide to Air Quality Assessment, SMAQMD, 2004 Table 3-1 unless otherwise noted.

Grading

Equipment	No. Req ^d . ^a per 10 acres	NO _x (lb/hr)	VOC (lb/hr)	CO (lb/hr)	SO _x (lb/hr)	PM ₁₀ (lb/hr)	PM _{2.5} (lb/hr)	CO _{2e} (lb/hr)
Bulldozer	1	2.089	0.259	0.983	0.002	0.086	0.086	239.675
Motor Grader	1	0.887	0.120	0.588	0.001	0.044	0.044	133.013
Water Truck	1	1.332	0.182	0.583	0.003	0.046	0.046	260.461
Total per 10 acres of activity per 8-hour day	3	34.464	4.488	17.232	0.048	1.408	1.408	5,065.192

a) The SMAQMD 2004 guidance suggests a default equipment fleet for each activity, assuming 10 acres of that activity, (e.g., 10 acres of grading, 10 acres of paving, etc.). The default equipment fleet is increased for each 10 acre increment in the size of the construction project. That is, a 26 acre project would round to 30 acres and the fleet size would be three times the default fleet for a 10 acre project.

PROJECT-SPECIFIC EMISSION FACTOR SUMMARY

Source	Equipment Multiplier*	Project-Specific Emission Factors (lb/day)						CO ₂
		NO _x	VOC	CO	SO ₂ **	PM ₁₀	PM _{2.5}	
Grading Equipment	10	344.640	44.880	172.320	0.480	14.080	14.080	50,651.920

*The equipment multiplier is an integer that represents units of 10 acres for purposes of estimating the number of equipment required for the project.

Summary of Input Parameters

	Total Area (ft ²)	Total Area (acres)	Total Days
Grading:	4,007,520	92.000	6

(from "Grading" worksheet)

Total Project Emissions by Activity (lbs)

	NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO ₂
Grading Equipment	2,067.840	269.280	1,033.920	2.880	84.480	84.480	303,911.520
Total Emissions (lbs):	2,067.840	269.280	1,033.920	2.880	84.480	84.480	303,911.520

Results: Total Project Annual Emission Rates

	NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO ₂
Total Project Emissions (lbs)	2,067.840	269.280	1,033.920	2.880	84.480	84.480	303,911.520
Total Project Emissions (tons)	1.034	0.135	0.517	0.001	0.042	0.042	151.956

Joint Base Langley-Eustis Clear Zone Re-grading Activity

Grading Fugitive Dust Emissions

Grading Fugitive Dust Emission Factors

	Emission Factor	Units	Source
Grading, Excavating and Trenching.	0.220 ton PM ₁₀ /acre-month		AFCEC 2014.

PM_{2.5} Emissions

PM _{2.5} Multiplier	0.100 (10% of PM ₁₀ emissions assumed to be PM _{2.5})		USEPA 2006
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Grading, Excavating and Trenching (0.22 ton PM₁₀/acre-month)

Duration of Project	9 months
Area	92.000 acres

	Project Emissions (tons/year)	
	PM₁₀	PM_{2.5}
Grading, Excavating and Trenching	182.160	18.216
Total	182.160	18.216

Joint Base Langley-Eustis Clear Zone Re-grading Activity

Construction Fugitive Dust Emission Factors

Grading, Excavating and Trenching Emission Factor

0.220 ton PM₁₀/acre-month Source: AFCEC 2014

This emission factor is from Emission factors from the Air Emissions Guide for Air Force Transitory Sources, October 2014, Section 4.3.1.2 and Equation 4-4. It is based on information and equations developed by the SCAQMD's CEQA Air Quality Handbook and from information developed by the Midwest Research Institute.

PM_{2.5} Multiplier

0.100

PM_{2.5} emissions are estimated by applying a particle size multiplier of 0.10 to PM₁₀ emissions. This methodology is consistent with the procedures documents for the National Emission Inventory (EPA 2006).

References:

USEPA 2006. *Documentation for the Final 2002 Nonpoint Sector (Feb 06 version) National Emission Inventory for Criteria and Hazardous Air Pollutants*. Prepared for: Emissions Inventory and Analysis Group (C339-02) Air Quality Assessment Division Office of Air Quality Planning and Standards, United States Environmental Protection Agency. July 2006.

Air Force Civil Engineering Center (AFCEC). 2014. Emission factors from the Air Emissions Guide for Air Force Transitory Sources, October 2014.

Joint Base Langley-Eustis Clear Zone Re-grading Activity

Grading Schedule

Estimate of time required to grade a specified area.

Input Parameters

Construction area: 92.000 acres/yr (from Combustion Worksheet)
 Qty Equipment: 28.000 (calculated based on 3 pieces of equipment for every 10 acres)

Assumptions.

Terrain is mostly flat.
 An average of 6" soil is excavated from one half of the site and backfilled to the other half of the site; no soil is hauled off-site or borrowed.
 200 hp bulldozers are used for site clearing.
 300 hp bulldozers are used for stripping, excavation, and backfill.
 Vibratory drum rollers are used for compacting.
 Stripping, Excavation, Backfill and Compaction require an average of two passes each.
 Excavation and Backfill are assumed to involve only half of the site.

Calculation of days required for one piece of equipment to grade the specified area.

Reference: Means Heavy Construction Cost Data, 19th Ed., R. S. Means, 2005.

Means Line No.	Operation	Description	Output	Units	Acres per equip-day)	equip-days per acre	Acres/yr (project- specific)	Equip-days per year
2230 200 0550	Site Clearing	Dozer & rake, medium brush	8,000	acre/day	8.000	0.125	92.000	11.500
2230 500 0300	Stripping	Topsoil & stockpiling, adverse soil	1,650	cu. yd/day	2.045	0.489	92.000	44.978
2315 432 5220	Excavation	Bulk, open site, common earth, 150' haul	800	cu. yd/day	0.992	1.008	46.000	46.383
2315 120 5220	Backfill	Structural, common earth, 150' haul	1,950	cu. yd/day	2.417	0.414	46.000	19.029
2315 310 5020	Compaction	Vibrating roller, 6 " lifts, 3 passes	2,300	cu. yd/day	2.851	0.351	92.000	32.267
TOTAL								154.157

Calculation of days required for the indicated pieces of equipment to grade the designated acreage.

(Equip)(day)/yr: 154.157
 Qty Equipment: 28.000
 Grading days/yr: 5.506

Joint Base Langley-Eustis Clear Zone Re-grading Activity

Construction Commuter Emissions

Emissions from construction workers commuting to the job site are estimated in this spreadsheet.

Emission Estimation Method: Emission factors from the Air Emissions Guide for Air Force Mobile Sources. Methods for Estimating Emissions of Air Pollutants For Mobile Sources at U.S. Air Force Installations. October 2014.

Assumptions:

The average round-trip commute for a construction worker = 30 miles
 Number of construction days = 198 days
 Number of construction workers (daily) = 30 people

Light-Duty Trucks (Gasoline Powered) Emission Factors for Year 2016 (grams/mile)

NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO _{2e}
0.651	0.798	10.550	0.010	0.025	0.011	551.000

Source: Emission factors from the Air Emissions Guide for Air Force Mobile Sources. Methods for Estimating Emissions of Air Pollutants For Mobile Sources at U.S. Air Force Installations. October 2014. Table 5-28 On-Road Vehicle Emission Factors - POV 2016; Virginia, low altitude, Light-Duty Gasoline Trucks (LDGT).

Construction Commuter Emissions

	NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO _{2e}
lbs	255.750	313.500	4,144.643	3.929	9.821	4.321	216,464.286
tons	0.128	0.157	2.072	0.002	0.005	0.002	108.232

Example Calculation: NO_x emissions (lbs) = miles/day * NO_x emission factor (grams/mile) * number of construction days * number of workers ÷ 453.56 grams/lb

Air Emissions from the Hospital Addition and CUP Construction Activity at Joint Base Langley-Eustis, Hampton Roads, Virginia

Construction Year (2016)	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO₂ (tpy)	PM₁₀ (tpy)	PM_{2.5} (tpy)	CO_{2e} (tpy)
Combustion	4.572	0.857	2.712	0.008	0.228	0.228	715.095
Fugitive Dust	NA	NA	NA	NA	6.284	0.628	NA
Haul Truck On-Road	0.040	0.007	0.013	0.000	0.002	0.001	36.022
Construction Commuter	0.171	0.209	2.763	0.003	0.007	0.003	144.310
Total	4.783	1.073	5.488	0.011	6.521	0.861	895.426

Percent of 27,563 tpy (25,000 metric tpy) reference point = **3.2%**

Operational Years (2017 and later)	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO₂ (tpy)	PM₁₀ (tpy)	PM_{2.5} (tpy)	CO_{2e} (tpy)
New Personnel Commuter	1.809	2.510	45.221	0.037	0.134	0.059	1,969.384
Total	1.809	2.510	45.221	0.037	0.134	0.059	1,969.384

Percent of 27,563 tpy (25,000 metric tpy) reference point = **7.1%**

Joint Base Langley-Eustis Hospital Addition/CUP Demolition and Construction Activity

Combustion Emissions

Combustion Emissions of VOC, NO_x, SO₂, CO, PM_{2.5}, PM₁₀, and CO₂ due to Construction and Demolition

Construction and Demolition Activities	Area Disturbed (ft²)	Building(ft²)	Source and Assumptions
1.) Hospital Addition	33,000	50,000	Section 3.2 of DOPAA, Assumes area disturbed is 110% of the structure footprint
2.) Maple Sreet Extension	50,000		Section 3.2 of DOPAA
3.) CUP Construction	15,400	14,000	Section 3.2 of DOPAA, Assumes area disturbed is 110% of the structure footprint
4.) Existing Admin, CUP, modular facility demo (BLDGs 254, 265, 266, 267, 271, 261, 262, 11)	33,630	30,570	Section 3.2 of DOPAA, Assumes area disturbed is 110% of the structure footprint
Total Building Construction Area:	64,000 ft ²		
	1.469 acres		
Total Building Demolition Area:	30,570 ft ²		
	0.702 acres		
Total Pavement Demolition Area:	0 ft ²		
	0.000 acres		
New Roadway Construction Area	50,000 ft ²		
	1.148 acres		
Total Disturbed Area:	132,030 ft ²		
	3.031 acres		
Construction Duration:	12 months		
Annual Construction Activity:	264 days		Assumes 22 days per month.

Emission Factors Used for Construction Equipment

All emission factors are from the Air Emissions Guide for Air Force Transitory Sources, October 2014, Table 4-4. These are valid for Calendar Year 2016. Assumptions regarding the type and number of equipment are from Guide to Air Quality Assessment, SMAQMD, 2004 Table 3-1 unless otherwise noted.

Grading

Equipment	No. Req ^d . ^a per 10 acres	NO _x (lb/hr)	VOC (lb/hr)	CO (lb/hr)	SO _x (lb/hr)	PM ₁₀ (lb/hr)	PM _{2.5} (lb/hr)	CO _{2e} (lb/hr)
Bulldozer	1	2.089	0.259	0.983	0.002	0.086	0.086	239.675
Motor Grader	1	0.887	0.120	0.588	0.001	0.044	0.044	133.013
Water Truck	1	1.332	0.182	0.583	0.003	0.046	0.046	260.461
Total per 10 acres of activity per 8-hour day	3	34.464	4.488	17.232	0.048	1.408	1.408	5,065.192

Paving

Equipment	No. Req ^d . ^a per 10 acres	NO _x (lb/hr)	VOC (lb/hr)	CO (lb/hr)	SO _x (lb/hr)	PM ₁₀ (lb/hr)	PM _{2.5} (lb/hr)	CO _{2e} (lb/hr)
Paver	1	0.713	0.127	0.513	0.001	0.049	0.049	78.220
Roller	1	0.527	0.079	0.394	0.001	0.035	0.035	67.227
Truck	2	1.332	0.182	0.583	0.003	0.046	0.046	260.461
Total per 10 acres of activity per 8-hour day	4	31.232	4.560	16.584	0.064	1.408	1.408	5,330.952

Demolition

Equipment	No. Req ^d . ^a per 10 acres	NO _x (lb/hr)	VOC (lb/hr)	CO (lb/hr)	SO _x (lb/hr)	PM ₁₀ (lb/hr)	PM _{2.5} (lb/hr)	CO _{2e} (lb/hr)
Loader	1	0.711	0.098	0.456	0.001	0.037	0.037	108.833
Haul Truck	1	1.332	0.182	0.583	0.003	0.046	0.046	260.461
Total per 10 acres of activity per 8-hour day	2	16.344	2.240	8.312	0.032	0.664	0.664	2,954.352

Building Construction

Equipment ^b	No. Req ^d . ^a per 10 acres	NO _x (lb/hr)	VOC (lb/hr)	CO (lb/hr)	SO _x (lb/hr)	PM ₁₀ (lb/hr)	PM _{2.5} (lb/hr)	CO _{2e} (lb/hr)
Stationary								
Generator Set	1	0.437	0.058	0.286	0.001	0.024	0.024	61.124
Industrial Saw	1	0.459	0.076	0.394	0.001	0.034	0.034	58.634
Welder	1	0.217	0.048	0.195	0.000	0.017	0.017	25.711
Mobile (non-road)								
Truck	1	1.332	0.182	0.583	0.003	0.046	0.046	260.461
Forklift	1	0.510	0.078	0.455	0.001	0.037	0.037	67.227
Crane	1	0.939	0.114	0.426	0.001	0.039	0.039	128.886
Total per 10 acres of activity per 8-hour day	6	31.152	4.448	18.712	0.056	1.576	1.576	4,816.344

Note: Footnotes for tables are on following page

Joint Base Langley-Eustis Hospital Addition/CUP Demolition and Construction Activity

Architectural Coatings

Equipment	No. Reqd. ^a per 10 acres	NO _x (lb/hr)	VOC (lb/hr)	CO (lb/hr)	SO _x (lb/hr)	PM ₁₀ (lb/hr)	PM _{2.5} (lb/hr)	CO ₂ e (lb/hr)
Air Compressor	1	0.473	0.070	0.321	0.001	0.032	0.032	63.766
Total per 10 acres of activity per 8-hour day	1	3.784	0.560	2.568	0.008	0.256	0.256	510.128

- a) The SMAQMD 2004 guidance suggests a default equipment fleet for each activity, assuming 10 acres of that activity, (e.g., 10 acres of grading, 10 acres of paving, etc.). The default equipment fleet is increased for each 10 acre increment in the size of the construction project. That is, a 26 acre project would round to 30 acres and the fleet size would be three times the default fleet for a 10 acre project.
- b) Typical equipment fleet for building construction was not itemized in SMAQMD 2004 guidance. The equipment list above was assumed based on SMAQMD 1994 guidance.

PROJECT-SPECIFIC EMISSION FACTOR SUMMARY

Source	Equipment Multiplier*	Project-Specific Emission Factors (lb/day)						
		NO _x	VOC	CO	SO ₂ **	PM ₁₀	PM _{2.5}	CO ₂
Grading Equipment	1	34.464	4.488	17.232	0.048	1.408	1.408	5,065.192
Paving Equipment	1	31.232	4.560	16.584	0.064	1.408	1.408	5,330.952
Demolition Equipment	1	16.344	2.240	8.312	0.032	0.664	0.664	2,954.352
Building Construction	1	31.152	4.448	18.712	0.056	1.576	1.576	4,816.344
Air Compressor for Architectural Coating	1	3.784	0.560	2.568	0.008	0.256	0.256	510.128
Architectural Coating**			20.618					

*The equipment multiplier is an integer that represents units of 10 acres for purposes of estimating the number of equipment required for the project.

**Emission factor is from the evaporation of solvents during painting, per "Air Quality Thresholds of Significance", SMAQMD, 1994

Summary of Input Parameters

	Total Area (ft ²)	Total Area (acres)	Total Days	
Grading:	132,030	3.031	2	(from "Grading" worksheet)
Paving:	50,000	1.148	6	
Demolition:	30,570	0.702	36	
Building Construction:	64,000	1.469	264	
Architectural Coating	64,000	1.469	20	(per SMAQMD "Air Quality of Thresholds of Significance", 1994)

Total Project Emissions by Activity (lbs)

	NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO ₂
Grading Equipment	68.928	8.976	34.464	0.096	2.816	2.816	10,130.384
Paving	187.392	27.360	99.504	0.384	8.448	8.448	31,985.712
Demolition	588.384	80.640	299.232	1.152	23.904	23.904	106,356.672
Building Construction	8,224.128	1,174.272	4,939.968	14.784	416.064	416.064	1,271,514.816
Architectural Coatings	75.680	423.561	51.360	0.160	5.120	5.120	10,202.560
Total Emissions (lbs):	9,144.512	1,714.809	5,424.528	16.576	456.352	456.352	1,430,190.144

Results: Total Project Annual Emission Rates

	NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO ₂
Total Project Emissions (lbs)	9,144.512	1,714.809	5,424.528	16.576	456.352	456.352	1,430,190.144
Total Project Emissions (tons)	4.572	0.857	2.712	0.008	0.228	0.228	715.095

Joint Base Langley-Eustis Hospital Addition/CUP Demolition and Construction Activity

Construction Fugitive Dust Emissions

Construction Fugitive Dust Emission Factors

	Emission Factor	Units	Source
Demolition Activities	0.00042 lb PM ₁₀ /cubic foot		AFCEC 2014.
Grading, Excavating and Trenching.	0.220 ton PM ₁₀ /acre-month		AFCEC 2014.
PM_{2.5} Emissions			
PM _{2.5} Multiplier	0.100 (10% of PM ₁₀ emissions assumed to be PM _{2.5})		USEPA 2006

Demolition (0.00042 lb PM₁₀/cubic foot)

Area of Buildings	30,570 square feet
Average Height of Buildings	21 feet

Grading, Excavating and Trenching (0.22 ton PM₁₀/acre-month)

Duration of Project	12 months
Area	2.329 acres

	Project Emissions (tons/year)	
	PM₁₀	PM_{2.5}
Demolition	0.135	0.013
Grading, Excavating and Trenching	6.149	0.615
Total	6.284	0.628

Construction Fugitive Dust Emission Factors

Demolition Emission Factor

0.00042 lb PM₁₀/cubic foot Source: AFCEC 2014

This emission factor is from Emission factors from the Air Emissions Guide for Air Force Transitory Sources, October 2014, Section 4.3.1.1 and Equation 4-3. It is based on information and equations developed by the South Coast Air Quality Management District's (SCAQMD's) California Environmental Quality Act (CEQA) Air Quality Handbook.

Grading, Excavating and Trenching Emission Factor

0.220 ton PM₁₀/acre-month Source: AFCEC 2014

This emission factor is from Emission factors from the Air Emissions Guide for Air Force Transitory Sources, October 2014, Section 4.3.1.2 and Equation 4-4. It is based on information and equations developed by the SCAQMD's CEQA Air Quality Handbook and from information developed by the Midwest Research Institute.

PM_{2.5} Multiplier

0.100

PM_{2.5} emissions are estimated by applying a particle size multiplier of 0.10 to PM₁₀ emissions. This methodology is consistent with the procedures documents for the National Emission Inventory (EPA 2006).

References:

USEPA 2006. *Documentation for the Final 2002 Nonpoint Sector (Feb 06 version) National Emission Inventory for Criteria and Hazardous Air Pollutants*. Prepared for: Emissions Inventory and Analysis Group (C339-02) Air Quality Assessment Division Office of Air Quality Planning and Standards, United States Environmental Protection Agency. July 2006.

Air Force Civil Engineering Center (AFCEC). 2014. Emission factors from the Air Emissions Guide for Air Force Transitory Sources, October 2014.

Joint Base Langley-Eustis Hospital Addition/CUP Demolition and Construction Activity

Grading Schedule

Estimate of time required to grade a specified area.

Input Parameters

Construction area: 3.031 acres/yr (from Combustion Worksheet)
 Qty Equipment: 3.000 (calculated based on 3 pieces of equipment for every 10 acres)

Assumptions.

Terrain is mostly flat.
 An average of 6" soil is excavated from one half of the site and backfilled to the other half of the site; no soil is hauled off-site or borrowed.
 200 hp bulldozers are used for site clearing.
 300 hp bulldozers are used for stripping, excavation, and backfill.
 Vibratory drum rollers are used for compacting.
 Stripping, Excavation, Backfill and Compaction require an average of two passes each.
 Excavation and Backfill are assumed to involve only half of the site.

Calculation of days required for one piece of equipment to grade the specified area.

Reference: Means Heavy Construction Cost Data, 19th Ed., R. S. Means, 2005.

Means Line No.	Operation	Description	Output	Units	Acres per equip-day)	equip-days per acre	Acres/yr (project- specific)	Equip-days per year
2230 200 0550	Site Clearing	Dozer & rake, medium brush	8,000	acre/day	8.000	0.125	3.031	0.379
2230 500 0300	Stripping	Topsoil & stockpiling, adverse soil	1,650	cu. yd/day	2.045	0.489	3.031	1.482
2315 432 5220	Excavation	Bulk, open site, common earth, 150' haul	800	cu. yd/day	0.992	1.008	1.515	1.528
2315 120 5220	Backfill	Structural, common earth, 150' haul	1,950	cu. yd/day	2.417	0.414	1.515	0.627
2315 310 5020	Compaction	Vibrating roller, 6 " lifts, 3 passes	2,300	cu. yd/day	2.851	0.351	3.031	1.063
TOTAL								5.079

Calculation of days required for the indicated pieces of equipment to grade the designated acreage.

(Equip)(day)/yr: 5.079
 Qty Equipment: 3.000
 Grading days/yr: 1.693

Haul Truck Emissions

Emissions from hauling excavation material, demolition materials, and construction supplies are estimated in this spreadsheet.

Emission Estimation Method:

Air Force Civil Engineering Center (AFCEC) 2014. *Air Emissions Guide for Air Force Mobile Sources. Methods for Estimating Emissions of Air Pollutants For Mobile Sources at U.S. Air Force Installations.* October 2014.

Assumptions:

Haul trucks carry 20 cubic yards of material per trip.

The average distance from the project site to the materials source is 15 miles; therefore, a haul truck will travel 30 miles round trip.

Estimated number of trips required by haul trucks = total amount of material/20 cubic yards per truck

Assumes existing soil berms would not need to be hauled from the site.

Amount of Building Materials = 21,333 cubic yards

Assumes a total of 9 cubic feet of building material/debris are needed/generated per square foot of building space to be renovated.

Amount of Paving and Gravel Material = 1,852 cubic yards

Assumes 1 cubic foot of pavement is needed per square foot of pavement construction. Additionally, 1 cubic foot of pavement debris is generated per square foot of pavement demolition.

Amount of Building Debris = 4,529 cubic yards

Assumes 4 cubic feet of demolition debris is generated per square foot of building space

Number of trucks required = 1,386 heavy duty diesel haul truck trips

Miles per trip = 30 miles

Heavy Duty Diesel Vehicle (HDDV) Average Emission Factors (grams/mile)

NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO _{2e}
0.881	0.146	0.281	0.007	0.047	0.032	786.100

Notes:

The Hampton Roads Area is located at a low altitude (<5,000 feet above sea level)

Construction assumed to occur in Calendar Year 2016.

Emission factors for all pollutants are from AFCEC 2014, Table 5-28, On-Road Vehicle Emissions Factors - 2016 POV for HDDV in Virginia, low altitude, 2016.

HDDV Haul Truck Emissions

	NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO _{2e}
lbs	80.741	13.380	25.753	0.642	4.307	2.933	72,043.762
tons	0.040	0.007	0.013	0.000	0.002	0.001	36.022

Example Calculation: NO_x emissions (lbs) = miles per trip * number of trips * NO_x emission factor (g/mile) * lb/453.6 g

Joint Base Langley-Eustis Hospital Addition/CUP Demolition and Construction Activity

Construction Commuter Emissions

Emissions from construction workers commuting to the job site are estimated in this spreadsheet.

Emission Estimation Method: Emission factors from the Air Emissions Guide for Air Force Mobile Sources. Methods for Estimating Emissions of Air Pollutants For Mobile Sources at U.S. Air Force Installations. October 2014.

Assumptions:

The average round-trip commute for a construction worker = 30 miles
 Number of construction days = 264 days
 Number of construction workers (daily) = 30 people

Light-Duty Trucks (Gasoline Powered) Emission Factors for Year 2016 (grams/mile)

NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO _{2e}
0.651	0.798	10.550	0.010	0.025	0.011	551.000

Source: Emission factors from the Air Emissions Guide for Air Force Mobile Sources. Methods for Estimating Emissions of Air Pollutants For Mobile Sources at U.S. Air Force Installations. October 2014. Table 5-28 On-Road Vehicle Emission Factors - POV 2016; Virginia, low altitude, Light-Duty Gasoline Trucks (LDGT).

Construction Commuter Emissions

	NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO _{2e}
lbs	341.000	418.000	5,526.190	5.238	13.095	5.762	288,619.048
tons	0.171	0.209	2.763	0.003	0.007	0.003	144.310

Example Calculation: NO_x emissions (lbs) = miles/day * NO_x emission factor (grams/mile) * number of construction days * number of workers ÷ 453.56 grams/lb

Joint Base Langley-Eustis Hospital Addition/CUP Demolition and Construction Activity

New Personnel Commuter Emissions

Emissions from new personnel commuting to the installation are estimated in this spreadsheet.

Emission Estimation Method: Emission factors from the Air Emissions Guide for Air Force Mobile Sources. Methods for Estimating Emissions of Air Pollutants For Mobile Sources at U.S. Air Force Installations. October 2014.

Assumptions:

The average round-trip commute for new personnel = 30 miles
 Number of work days per year= 264 days
 Number of new personnel (daily) = 613 people
 Assumes 22 days per month.

Light-Duty Vehicles (Passenger Cars, Gasoline Powered) Emission Factors for Year 2016 (grams/mile)

NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO _{2e}
0.338	0.469	8.450	0.007	0.025	0.011	368.000

Source: Emission factors from the Air Emissions Guide for Air Force Mobile Sources. Methods for Estimating Emissions of Air Pollutants For Mobile Sources at U.S. Air Force Installations. October 2014. Table 5-28 On-Road Vehicle Emission Factors - POV 2016; Virginia, low altitude, Light-Duty Vehicles (LDGV).

Construction Commuter Emissions

	NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO _{2e}
lbs	3,617.673	5,019.789	90,441.825	74.922	267.579	117.735	3,938,768.254
tons	1.809	2.510	45.221	0.037	0.134	0.059	1,969.384

Example Calculation: NO_x emissions (lbs) = miles/day * NO_x emission factor (grams/mile) * number of construction days * number of workers ÷ 453.56 grams/lb

Air Emissions from the New Parking Lot Construction Activity at Joint Base Langley-Eustis, Hampton Roads, Virginia

Construction Year (2016)	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO₂ (tpy)	PM₁₀ (tpy)	PM_{2.5} (tpy)	CO_{2e} (tpy)
Combustion	0.269	0.039	0.142	0.001	0.012	0.012	45.047
Fugitive Dust	NA	NA	NA	NA	2.626	0.263	NA
Haul Truck On-Road	0.007	0.001	0.002	0.000	0.000	0.000	6.258
Construction Commuter	0.057	0.070	0.921	0.001	0.002	0.001	48.103
Total	0.333	0.110	1.065	0.001	2.641	0.276	99.409

Percent of 27,563 tpy (25,000 metric tpy) reference point = **0.4%**

Joint Base Langley-Eustis New Parking Lot Construction Activity

Combustion Emissions

Combustion Emissions of VOC, NO_x, SO₂, CO, PM_{2.5}, PM₁₀, and CO₂ due to Construction

Construction Activities	Area Disturbed (ft²)	Source and Assumptions
1.) New Parking Lot	130,000	Section 3.3 of DOPAA
New Roadway Construction Area	130,000 ft ² 2.984 acres	
Total Disturbed Area:	130,000 ft ² 2.984 acres	
Construction Duration:	4 months	
Annual Construction Activity:	88 days	Assumes 22 days per month.

Emission Factors Used for Construction Equipment

All emission factors are from the Air Emissions Guide for Air Force Transitory Sources, October 2014, Table 4-4. These are valid for Calendar Year 2016. Assumptions regarding the type and number of equipment are from Guide to Air Quality Assessment, SMAQMD, 2004 Table 3-1 unless otherwise noted.

Grading

Equipment	No. Req ^d . ^a per 10 acres	NO _x (lb/hr)	VOC (lb/hr)	CO (lb/hr)	SO _x (lb/hr)	PM ₁₀ (lb/hr)	PM _{2.5} (lb/hr)	CO _{2e} (lb/hr)
Bulldozer	1	2.089	0.259	0.983	0.002	0.086	0.086	239.675
Motor Grader	1	0.887	0.120	0.588	0.001	0.044	0.044	133.013
Water Truck	1	1.332	0.182	0.583	0.003	0.046	0.046	260.461
Total per 10 acres of activity per 8-hour day	3	34.464	4.488	17.232	0.048	1.408	1.408	5,065.192

Paving

Equipment	No. Req ^d . ^a per 10 acres	NO _x (lb/hr)	VOC (lb/hr)	CO (lb/hr)	SO _x (lb/hr)	PM ₁₀ (lb/hr)	PM _{2.5} (lb/hr)	CO _{2e} (lb/hr)
Paver	1	0.713	0.127	0.513	0.001	0.049	0.049	78.220
Roller	1	0.527	0.079	0.394	0.001	0.035	0.035	67.227
Truck	2	1.332	0.182	0.583	0.003	0.046	0.046	260.461
Total per 10 acres of activity per 8-hour day	4	31.232	4.560	16.584	0.064	1.408	1.408	5,330.952

- a) The SMAQMD 2004 guidance suggests a default equipment fleet for each activity, assuming 10 acres of that activity, (e.g., 10 acres of grading, 10 acres of paving, etc.). The default equipment fleet is increased for each 10 acre increment in the size of the construction project. That is, a 26 acre project would round to 30 acres and the fleet size would be three times the default fleet for a 10 acre project.

Joint Base Langley-Eustis New Parking Lot Construction Activity

PROJECT-SPECIFIC EMISSION FACTOR SUMMARY

Source	Equipment Multiplier*	Project-Specific Emission Factors (lb/day)						CO ₂
		NO _x	VOC	CO	SO ₂ **	PM ₁₀	PM _{2.5}	
Grading Equipment	1	34.464	4.488	17.232	0.048	1.408	1.408	5,065.192
Paving Equipment	1	31.232	4.560	16.584	0.064	1.408	1.408	5,330.952

*The equipment multiplier is an integer that represents units of 10 acres for purposes of estimating the number of equipment required for the project.

**Emission factor is from the evaporation of solvents during painting, per "Air Quality Thresholds of Significance", SMAQMD, 1994

Summary of Input Parameters

	Total Area (ft ²)	Total Area (acres)	Total Days	
Grading:	130,000	2.984	2	(from "Grading" worksheet)
Paving:	130,000	2.984	15	

Total Project Emissions by Activity (lbs)

	NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO ₂
Grading Equipment	68.928	8.976	34.464	0.096	2.816	2.816	10,130.384
Paving	468.480	68.400	248.760	0.960	21.120	21.120	79,964.280
Total Emissions (lbs):	537.408	77.376	283.224	1.056	23.936	23.936	90,094.664

Results: Total Project Annual Emission Rates

	NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO ₂
Total Project Emissions (lbs)	537.408	77.376	283.224	1.056	23.936	23.936	90,094.664
Total Project Emissions (tons)	0.269	0.039	0.142	0.001	0.012	0.012	45.047

Joint Base Langley-Eustis Hospital New Parking Lot Construction Activity

Construction Fugitive Dust Emissions

Construction Fugitive Dust Emission Factors

	Emission Factor	Units	Source
Demolition Activities	0.00042	lb PM ₁₀ /cubic foot	AFCEC 2014.
Grading, Excavating and Trenching.	0.220	ton PM ₁₀ /acre-month	AFCEC 2014.
PM_{2.5} Emissions			
PM _{2.5} Multiplier	0.100	(10% of PM ₁₀ emissions assumed to be PM _{2.5})	USEPA 2006

Grading, Excavating and Trenching (0.22 ton PM₁₀/acre-month)

Duration of Project	4 months
Area	2.984 acres

	Project Emissions (tons/year)	
	PM₁₀	PM_{2.5}
Grading, Excavating and Trenching	2.626	0.263
Total	2.626	0.263

Joint Base Langley-Eustis Hospital New Parking Lot Construction Activity

Construction Fugitive Dust Emission Factors

Grading, Excavating and Trenching Emission Factor

0.220 ton PM₁₀/acre-month Source: AFCEC 2014

This emission factor is from Emission factors from the Air Emissions Guide for Air Force Transitory Sources, October 2014, Section 4.3.1.2 and Equation 4-4. It is based on information and equations developed by the SCAQMD's CEQA Air Quality Handbook and from information developed by the Midwest Research Institute.

PM_{2.5} Multiplier

0.100

PM_{2.5} emissions are estimated by applying a particle size multiplier of 0.10 to PM₁₀ emissions. This methodology is consistent with the procedures documents for the National Emission Inventory (EPA 2006).

References:

USEPA 2006. *Documentation for the Final 2002 Nonpoint Sector (Feb 06 version) National Emission Inventory for Criteria and Hazardous Air Pollutants*. Prepared for: Emissions Inventory and Analysis Group (C339-02) Air Quality Assessment Division Office of Air Quality Planning and Standards, United States Environmental Protection Agency. July 2006.

Air Force Civil Engineering Center (AFCEC). 2014. Emission factors from the Air Emissions Guide for Air Force Transitory Sources, October 2014.

Joint Base Langley-Eustis New Parking Lot Construction Activity

Grading Schedule

Estimate of time required to grade a specified area.

Input Parameters

Construction area: 2.984 acres/yr (from Combustion Worksheet)
 Qty Equipment: 3.000 (calculated based on 3 pieces of equipment for every 10 acres)

Assumptions.

Terrain is mostly flat.
 An average of 6" soil is excavated from one half of the site and backfilled to the other half of the site; no soil is hauled off-site or borrowed.
 200 hp bulldozers are used for site clearing.
 300 hp bulldozers are used for stripping, excavation, and backfill.
 Vibratory drum rollers are used for compacting.
 Stripping, Excavation, Backfill and Compaction require an average of two passes each.
 Excavation and Backfill are assumed to involve only half of the site.

Calculation of days required for one piece of equipment to grade the specified area.

Reference: Means Heavy Construction Cost Data, 19th Ed., R. S. Means, 2005.

Means Line No.	Operation	Description	Output	Units	Acres per equip-day)	equip-days per acre	Acres/yr (project- specific)	Equip-days per year
2230 200 0550	Site Clearing	Dozer & rake, medium brush	8,000	acre/day	8.000	0.125	2.984	0.373
2230 500 0300	Stripping	Topsoil & stockpiling, adverse soil	1,650	cu. yd/day	2.045	0.489	2.984	1.459
2315 432 5220	Excavation	Bulk, open site, common earth, 150' haul	800	cu. yd/day	0.992	1.008	1.492	1.505
2315 120 5220	Backfill	Structural, common earth, 150' haul	1,950	cu. yd/day	2.417	0.414	1.492	0.617
2315 310 5020	Compaction	Vibrating roller, 6 " lifts, 3 passes	2,300	cu. yd/day	2.851	0.351	2.984	1.047
TOTAL								5.001

Calculation of days required for the indicated pieces of equipment to grade the designated acreage.

(Equip)(day)/yr: 5.001
 Qty Equipment: 3.000
 Grading days/yr: 1.667

Haul Truck Emissions

Emissions from hauling excavation material, demolition materials, and construction supplies are estimated in this spreadsheet.

Emission Estimation Method:

Air Force Civil Engineering Center (AFCEC) 2014. *Air Emissions Guide for Air Force Mobile Sources. Methods for Estimating Emissions of Air Pollutants For Mobile Sources at U.S. Air Force Installations.* October 2014.

Assumptions:

Haul trucks carry 20 cubic yards of material per trip.

The average distance from the project site to the materials source is 15 miles; therefore, a haul truck will travel 30 miles round trip.

Estimated number of trips required by haul trucks = total amount of material/20 cubic yards per truck

Assumes existing soil berms would not need to be hauled from the site.

Amount of Paving and Gravel Material = 4,815 cubic yards

Assumes 1 cubic foot of pavement is needed per square foot of pavement construction. Additionally, 1 cubic foot of pavement debris is generated per square foot of pavement demolition.

Number of trucks required = 241 heavy duty diesel haul truck trips
Miles per trip = 30 miles

Heavy Duty Diesel Vehicle (HDDV) Average Emission Factors (grams/mile)

NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO _{2e}
0.881	0.146	0.281	0.007	0.047	0.032	786.100

Notes:

The Hampton Roads Area is located at a low altitude (<5,000 feet above sea level)

Construction assumed to occur in Calendar Year 2016.

Emission factors for all pollutants are from AFCEC 2014, Table 5-28, On-Road Vehicle Emissions Factors - 2016 POV for HDDV in Virginia, low altitude, 2016.

HDDV Haul Truck Emissions

	NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO _{2e}
lbs	14.027	2.325	4.474	0.111	0.748	0.510	12,516.289
tons	0.007	0.001	0.002	0.000	0.000	0.000	6.258

Example Calculation: NO_x emissions (lbs) = miles per trip * number of trips * NO_x emission factor (g/mile) * lb/453.6 g

Joint Base Langley-Eustis New Parking Lot Construction Activity

Construction Commuter Emissions

Emissions from construction workers commuting to the job site are estimated in this spreadsheet.

Emission Estimation Method: Emission factors from the Air Emissions Guide for Air Force Mobile Sources. Methods for Estimating Emissions of Air Pollutants For Mobile Sources at U.S. Air Force Installations. October 2014.

Assumptions:

The average round-trip commute for a construction worker = 30 miles
 Number of construction days = 88 days
 Number of construction workers (daily) = 30 people

Light-Duty Trucks (Gasoline Powered) Emission Factors for Year 2016 (grams/mile)

NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO _{2e}
0.651	0.798	10.550	0.010	0.025	0.011	551.000

Source: Emission factors from the Air Emissions Guide for Air Force Mobile Sources. Methods for Estimating Emissions of Air Pollutants For Mobile Sources at U.S. Air Force Installations. October 2014. Table 5-28 On-Road Vehicle Emission Factors - POV 2016; Virginia, low altitude, Light-Duty Gasoline Trucks (LDGT).

Construction Commuter Emissions

	NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO _{2e}
lbs	113.667	139.333	1,842.063	1.746	4.365	1.921	96,206.349
tons	0.057	0.070	0.921	0.001	0.002	0.001	48.103

Example Calculation: NO_x emissions (lbs) = miles/day * NO_x emission factor (grams/mile) * number of construction days * number of workers ÷ 453.56 grams/lb

Air Emissions from the ISR Group HQ (Alternative #1) Construction Activity at Joint Base Langley-Eustis, Hampton Roads, Virginia:

Construction Year (2016)	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO₂ (tpy)	PM₁₀ (tpy)	PM_{2.5} (tpy)	CO_{2e} (tpy)
Combustion	6.633	1.196	3.947	0.012	0.332	0.332	1,034.707
Fugitive Dust	NA	NA	NA	NA	9.078	0.908	NA
Haul Truck On-Road	0.055	0.009	0.018	0.000	0.003	0.002	49.094
Construction Commuter	0.256	0.314	4.145	0.004	0.010	0.004	216.464
Total	6.943	1.518	8.110	0.016	9.423	1.246	1300.265

Percent of 27,563 tpy (25,000 metric tpy) reference point = **4.7%**

Operational Years (2017 and later)	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO₂ (tpy)	PM₁₀ (tpy)	PM_{2.5} (tpy)	CO_{2e} (tpy)
New Personnel Commuter	0.590	0.819	14.754	0.012	0.044	0.019	642.540
Total	0.590	0.819	14.754	0.012	0.044	0.019	642.540

Percent of 27,563 tpy (25,000 metric tpy) reference point = **2.3%**

Joint Base Langley-Eustis ISR Group HQ (Alternative #1) Demolition and Construction Activity

Combustion Emissions

Combustion Emissions of VOC, NO_x, SO₂, CO, PM_{2.5}, PM₁₀, and CO₂ due to Construction and Demolition

Construction and Demolition Activities	Area Disturbed (ft²)	Building (ft²)	Source and Assumptions
1.) Demolition of current ISR (BLDGs 326, 333, 337, 617)	45,325	41,205	Section 3.4 of DOPAA, Assumes area disturbed is 110% of the structure footprint
2.) 363d ISR Group HQ Construction (Alternative #2)	52,250	95,000	Section 3.4 of DOPAA, Assumes area disturbed is 110% of the structure footprint
Total Building Construction Area:	95,000 ft ²		
	2.181 acres		
Total Building Demolition Area:	41,205 ft ²		
	0.946 acres		
Total Pavement Demolition Area:	0 ft ²		
	0.000 acres		
New Roadway Construction Area	0 ft ²		
	0.000 acres		
Total Disturbed Area:	97,575 ft ²		
	2.240 acres		
Construction Duration:	18 months		
Annual Construction Activity:	396 days		Assumes 22 days per month.

Emission Factors Used for Construction Equipment

All emission factors are from the Air Emissions Guide for Air Force Transitory Sources, October 2014, Table 4-4. These are valid for Calendar Year 2016. Assumptions regarding the type and number of equipment are from Guide to Air Quality Assessment, SMAQMD, 2004 Table 3-1 unless otherwise noted.

Grading

Equipment	No. Req ^d per 10 acres	NO _x (lb/hr)	VOC (lb/hr)	CO (lb/hr)	SO _x (lb/hr)	PM ₁₀ (lb/hr)	PM _{2.5} (lb/hr)	CO ₂ e (lb/hr)
Bulldozer	1	2.089	0.259	0.983	0.002	0.086	0.086	239.675
Motor Grader	1	0.887	0.120	0.588	0.001	0.044	0.044	133.013
Water Truck	1	1.332	0.182	0.583	0.003	0.046	0.046	260.461
Total per 10 acres of activity per 8-hour day	3	34.464	4.488	17.232	0.048	1.408	1.408	5,065.192

Paving

Equipment	No. Req ^d per 10 acres	NO _x (lb/hr)	VOC (lb/hr)	CO (lb/hr)	SO _x (lb/hr)	PM ₁₀ (lb/hr)	PM _{2.5} (lb/hr)	CO ₂ e (lb/hr)
Paver	1	0.713	0.127	0.513	0.001	0.049	0.049	78.220
Roller	1	0.527	0.079	0.394	0.001	0.035	0.035	67.227
Truck	2	1.332	0.182	0.583	0.003	0.046	0.046	260.461
Total per 10 acres of activity per 8-hour day	4	31.232	4.560	16.584	0.064	1.408	1.408	5,330.952

Demolition

Equipment	No. Req ^d per 10 acres	NO _x (lb/hr)	VOC (lb/hr)	CO (lb/hr)	SO _x (lb/hr)	PM ₁₀ (lb/hr)	PM _{2.5} (lb/hr)	CO ₂ e (lb/hr)
Loader	1	0.711	0.098	0.456	0.001	0.037	0.037	108.833
Haul Truck	1	1.332	0.182	0.583	0.003	0.046	0.046	260.461
Total per 10 acres of activity per 8-hour day	2	16.344	2.240	8.312	0.032	0.664	0.664	2,954.352

Building Construction

Equipment ^b	No. Req ^d per 10 acres	NO _x (lb/hr)	VOC (lb/hr)	CO (lb/hr)	SO _x (lb/hr)	PM ₁₀ (lb/hr)	PM _{2.5} (lb/hr)	CO ₂ e (lb/hr)
Stationary								
Generator Set	1	0.437	0.058	0.286	0.001	0.024	0.024	61.124
Industrial Saw	1	0.459	0.076	0.394	0.001	0.034	0.034	58.634
Welder	1	0.217	0.048	0.195	0.000	0.017	0.017	25.711
Mobile (non-road)								
Truck	1	1.332	0.182	0.583	0.003	0.046	0.046	260.461
Forklift	1	0.510	0.078	0.455	0.001	0.037	0.037	67.227
Crane	1	0.939	0.114	0.426	0.001	0.039	0.039	128.886
Total per 10 acres of activity per 8-hour day	6	31.152	4.448	18.712	0.056	1.576	1.576	4,816.344

Note: Footnotes for tables are on following page

Joint Base Langley-Eustis ISR Group HQ (Alternative #1) Demolition and Construction Activity

Architectural Coatings

Equipment	No. Reqd. ^a per 10 acres	NO _x (lb/hr)	VOC (lb/hr)	CO (lb/hr)	SO _x (lb/hr)	PM ₁₀ (lb/hr)	PM _{2.5} (lb/hr)	CO ₂ e (lb/hr)
Air Compressor	1	0.473	0.070	0.321	0.001	0.032	0.032	63.766
Total per 10 acres of activity per 8-hour day	1	3.784	0.560	2.568	0.008	0.256	0.256	510.128

- a) The SMAQMD 2004 guidance suggests a default equipment fleet for each activity, assuming 10 acres of that activity, (e.g., 10 acres of grading, 10 acres of paving, etc.). The default equipment fleet is increased for each 10 acre increment in the size of the construction project. That is, a 26 acre project would round to 30 acres and the fleet size would be three times the default fleet for a 10 acre project.
- b) Typical equipment fleet for building construction was not itemized in SMAQMD 2004 guidance. The equipment list above was assumed based on SMAQMD 1994 guidance.

PROJECT-SPECIFIC EMISSION FACTOR SUMMARY

Source	Equipment Multiplier*	Project-Specific Emission Factors (lb/day)						CO ₂
		NO _x	VOC	CO	SO ₂ **	PM ₁₀	PM _{2.5}	
Grading Equipment	1	34.464	4.488	17.232	0.048	1.408	1.408	5,065.192
Demolition Equipment	1	16.344	2.240	8.312	0.032	0.664	0.664	2,954.352
Building Construction	1	31.152	4.448	18.712	0.056	1.576	1.576	4,816.344
Air Compressor for Architectural Coating	1	3.784	0.560	2.568	0.008	0.256	0.256	510.128
Architectural Coating**			25.120					

*The equipment multiplier is an integer that represents units of 10 acres for purposes of estimating the number of equipment required for the project.

**Emission factor is from the evaporation of solvents during painting, per "Air Quality Thresholds of Significance", SMAQMD, 1994

Summary of Input Parameters

	Total Area (ft ²)	Total Area (acres)	Total Days	
Grading:	97,575	2.240	2	(from "Grading" worksheet)
Demolition:	41,205	0.946	48	
Building Construction:	95,000	2.181	396	
Architectural Coating	95,000	2.181	20	(per SMAQMD "Air Quality of Thresholds of Significance", 1994)

Total Project Emissions by Activity (lbs)

	NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO ₂
Grading Equipment	68.928	8.976	34.464	0.096	2.816	2.816	10,130.384
Demolition	784.512	107.520	398.976	1.536	31.872	31.872	141,808.896
Building Construction	12,336.192	1,761.408	7,409.952	22.176	624.096	624.096	1,907,272.224
Architectural Coatings	75.680	513.600	51.360	0.160	5.120	5.120	10,202.560
Total Emissions (lbs):	13,265.312	2,391.504	7,894.752	23.968	663.904	663.904	2,069,414.064

Results: Total Project Annual Emission Rates

	NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO ₂
Total Project Emissions (lbs)	13,265.312	2,391.504	7,894.752	23.968	663.904	663.904	2,069,414.064
Total Project Emissions (tons)	6.633	1.196	3.947	0.012	0.332	0.332	1,034.707

Joint Base Langley-Eustis ISR Group HQ (Alternative #1) Demolition and Construction Activity

Construction Fugitive Dust Emissions

Construction Fugitive Dust Emission Factors

	Emission Factor	Units	Source
Demolition Activities	0.00042 lb PM ₁₀ /cubic foot		AFCEC 2014.
Grading, Excavating and Trenching.	0.220 ton PM ₁₀ /acre-month		AFCEC 2014.
PM_{2.5} Emissions			
PM _{2.5} Multiplier	0.100 (10% of PM ₁₀ emissions assumed to be PM _{2.5})		USEPA 2006

Demolition (0.00042 lb PM₁₀/cubic foot)

Area of Buildings	41,205 square feet
Average Height of Buildings	24 feet

Grading, Excavating and Trenching (0.22 ton PM₁₀/acre-month)

Duration of Project	18 months
Area	2.240 acres

	Project Emissions (tons/year)	
	PM₁₀	PM_{2.5}
Demolition	0.208	0.021
Grading, Excavating and Trenching	8.870	0.887
Total	9.078	0.908

Construction Fugitive Dust Emission Factors

Demolition Emission Factor

0.00042 lb PM₁₀/cubic foot Source: AFCEC 2014

This emission factor is from Emission factors from the Air Emissions Guide for Air Force Transitory Sources, October 2014, Section 4.3.1.1 and Equation 4-3. It is based on information and equations developed by the South Coast Air Quality Management District's (SCAQMD's) California Environmental Quality Act (CEQA) Air Quality Handbook.

Grading, Excavating and Trenching Emission Factor

0.220 ton PM₁₀/acre-month Source: AFCEC 2014

This emission factor is from Emission factors from the Air Emissions Guide for Air Force Transitory Sources, October 2014, Section 4.3.1.2 and Equation 4-4. It is based on information and equations developed by the SCAQMD's CEQA Air Quality Handbook and from information developed by the Midwest Research Institute.

PM_{2.5} Multiplier

0.100

PM_{2.5} emissions are estimated by applying a particle size multiplier of 0.10 to PM₁₀ emissions. This methodology is consistent with the procedures documents for the National Emission Inventory (EPA 2006).

References:

USEPA 2006. *Documentation for the Final 2002 Nonpoint Sector (Feb 06 version) National Emission Inventory for Criteria and Hazardous Air Pollutants*. Prepared for: Emissions Inventory and Analysis Group (C339-02) Air Quality Assessment Division Office of Air Quality Planning and Standards, United States Environmental Protection Agency. July 2006.

Air Force Civil Engineering Center (AFCEC). 2014. Emission factors from the Air Emissions Guide for Air Force Transitory Sources, October 2014.

Joint Base Langley-Eustis ISR Group HQ (Alternative #1) Demolition and Construction Activity

Grading Schedule

Estimate of time required to grade a specified area.

Input Parameters

Construction area: 2.240 acres/yr (from Combustion Worksheet)
 Qty Equipment: 3.000 (calculated based on 3 pieces of equipment for every 10 acres)

Assumptions.

Terrain is mostly flat.
 An average of 6" soil is excavated from one half of the site and backfilled to the other half of the site; no soil is hauled off-site or borrowed.
 200 hp bulldozers are used for site clearing.
 300 hp bulldozers are used for stripping, excavation, and backfill.
 Vibratory drum rollers are used for compacting.
 Stripping, Excavation, Backfill and Compaction require an average of two passes each.
 Excavation and Backfill are assumed to involve only half of the site.

Calculation of days required for one piece of equipment to grade the specified area.

Reference: Means Heavy Construction Cost Data, 19th Ed., R. S. Means, 2005.

Means Line No.	Operation	Description	Output	Units	Acres per equip-day)	equip-days per acre	Acres/yr (project-specific)	Equip-days per year
2230 200 0550	Site Clearing	Dozer & rake, medium brush	8,000	acre/day	8.000	0.125	2.240	0.280
2230 500 0300	Stripping	Topsoil & stockpiling, adverse soil	1,650	cu. yd/day	2.045	0.489	2.240	1.095
2315 432 5220	Excavation	Bulk, open site, common earth, 150' haul	800	cu. yd/day	0.992	1.008	1.120	1.129
2315 120 5220	Backfill	Structural, common earth, 150' haul	1,950	cu. yd/day	2.417	0.414	1.120	0.463
2315 310 5020	Compaction	Vibrating roller, 6 " lifts, 3 passes	2,300	cu. yd/day	2.851	0.351	2.240	0.786
TOTAL								3.753

Calculation of days required for the indicated pieces of equipment to grade the designated acreage.

(Equip)(day)/yr: 3.753
 Qty Equipment: 3.000
 Grading days/yr: 1.251

Haul Truck Emissions

Emissions from hauling excavation material, demolition materials, and construction supplies are estimated in this spreadsheet.

Emission Estimation Method:

Air Force Civil Engineering Center (AFCEC) 2014. *Air Emissions Guide for Air Force Mobile Sources. Methods for Estimating Emissions of Air Pollutants For Mobile Sources at U.S. Air Force Installations.* October 2014.

Assumptions:

Haul trucks carry 20 cubic yards of material per trip.

The average distance from the project site to the materials source is 15 miles; therefore, a haul truck will travel 30 miles round trip.

Estimated number of trips required by haul trucks = total amount of material/20 cubic yards per truck

Assumes existing soil berms would not need to be hauled from the site.

Amount of Building Materials = 31,667 cubic yards

Assumes a total of 9 cubic feet of building material/debris are needed/generated per square foot of building space to be renovated.

Amount of Paving and Gravel Material = 0 cubic yards

Assumes 1 cubic foot of pavement is needed per square foot of pavement construction. Additionally, 1 cubic foot of pavement debris is generated per square foot of pavement demolition.

Amount of Building Debris = 6,104 cubic yards

Assumes 4 cubic feet of demolition debris is generated per square foot of building space

Number of trucks required = 1,889 heavy duty diesel haul truck trips

Miles per trip = 30 miles

Heavy Duty Diesel Vehicle (HDDV) Average Emission Factors (grams/mile)

NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO _{2e}
0.881	0.146	0.281	0.007	0.047	0.032	786.100

Notes:

The Hampton Roads Area is located at a low altitude (<5,000 feet above sea level)

Construction assumed to occur in Calendar Year 2016.

Emission factors for all pollutants are from AFCEC 2014, Table 5-28, On-Road Vehicle Emissions Factors - 2016 POV for HDDV in Virginia, low altitude, 2016.

HDDV Haul Truck Emissions

	NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO _{2e}
lbs	110.041	18.236	35.098	0.874	5.871	3.997	98,187.402
tons	0.055	0.009	0.018	0.000	0.003	0.002	49.094

Example Calculation: NO_x emissions (lbs) = miles per trip * number of trips * NO_x emission factor (g/mile) * lb/453.6 g

Joint Base Langley-Eustis ISR Group HQ (Alternative #1) Demolition and Construction Activity

Construction Commuter Emissions

Emissions from construction workers commuting to the job site are estimated in this spreadsheet.

Emission Estimation Method: Emission factors from the Air Emissions Guide for Air Force Mobile Sources. Methods for Estimating Emissions of Air Pollutants For Mobile Sources at U.S. Air Force Installations. October 2014.

Assumptions:

The average round-trip commute for a construction worker = 30 miles
 Number of construction days = 396 days
 Number of construction workers (daily) = 30 people

Light-Duty Trucks (Gasoline Powered) Emission Factors for Year 2016 (grams/mile)

NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO _{2e}
0.651	0.798	10.550	0.010	0.025	0.011	551.000

Source: Emission factors from the Air Emissions Guide for Air Force Mobile Sources. Methods for Estimating Emissions of Air Pollutants For Mobile Sources at U.S. Air Force Installations. October 2014. Table 5-28 On-Road Vehicle Emission Factors - POV 2016; Virginia, low altitude, Light-Duty Gasoline Trucks (LDGT).

Construction Commuter Emissions

	NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO _{2e}
lbs	511.500	627.000	8,289.286	7.857	19.643	8.643	432,928.571
tons	0.256	0.314	4.145	0.004	0.010	0.004	216.464

Example Calculation: NO_x emissions (lbs) = miles/day * NO_x emission factor (grams/mile) * number of construction days * number of workers ÷ 453.56 grams/lb

Joint Base Langley-Eustis ISR Group HQ (Alternative #1) Demolition and Construction Activity

New Personnel Commuter Emissions

Emissions from new personnel commuting to the installation are estimated in this spreadsheet.

Emission Estimation Method: Emission factors from the Air Emissions Guide for Air Force Mobile Sources. Methods for Estimating Emissions of Air Pollutants For Mobile Sources at U.S. Air Force Installations. October 2014.

Assumptions:

The average round-trip commute for new personnel = 30 miles
 Number of work days per year= 264 days
 Number of new personnel (daily) = 200 people
 Assumes 22 days per month.

Light-Duty Vehicles (Passenger Cars, Gasoline Powered) Emission Factors for Year 2016 (grams/mile)

NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO _{2e}
0.338	0.469	8.450	0.007	0.025	0.011	368.000

Source: Emission factors from the Air Emissions Guide for Air Force Mobile Sources. Methods for Estimating Emissions of Air Pollutants For Mobile Sources at U.S. Air Force Installations. October 2014. Table 5-28 On-Road Vehicle Emission Factors - POV 2016; Virginia, low altitude, Light-Duty Vehicles (LDGV).

Construction Commuter Emissions

	NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO _{2e}
lbs	1,180.317	1,637.778	29,507.937	24.444	87.302	38.413	1,285,079.365
tons	0.590	0.819	14.754	0.012	0.044	0.019	642.540

Example Calculation: NO_x emissions (lbs) = miles/day * NO_x emission factor (grams/mile) * number of construction days * number of workers ÷ 453.56 grams/lb

Air Emissions from the ISR Group HQ (Alternative #2) Construction Activity at Joint Base Langley-Eustis, Hampton Roads, Virginia:

Construction Year (2016)	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO₂ (tpy)	PM₁₀ (tpy)	PM_{2.5} (tpy)	CO_{2e} (tpy)
Combustion	6.790	1.219	4.031	0.012	0.339	0.339	1,061.229
Fugitive Dust	NA	NA	NA	NA	15.896	1.590	NA
Haul Truck On-Road	0.059	0.010	0.019	0.000	0.003	0.002	52.704
Construction Commuter	0.256	0.314	4.145	0.004	0.010	0.004	216.464
Total	7.105	1.542	8.194	0.017	16.248	1.935	1330.397

Percent of 27,563 tpy (25,000 metric tpy) reference point = **4.8%**

Operational Years (2017 and later)	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO₂ (tpy)	PM₁₀ (tpy)	PM_{2.5} (tpy)	CO_{2e} (tpy)
New Personnel Commuter	0.590	0.819	14.754	0.012	0.044	0.019	642.540
Total	0.590	0.819	14.754	0.012	0.044	0.019	642.540

Percent of 27,563 tpy (25,000 metric tpy) reference point = **2.3%**

Joint Base Langley-Eustis ISR Group HQ (Alternative #2) Demolition and Construction Activity

Combustion Emissions

Combustion Emissions of VOC, NO_x, SO₂, CO, PM_{2.5}, PM₁₀, and CO₂ due to Construction and Demolition

Construction and Demolition Activities	Area Disturbed (ft²)	Building (ft²)	Source and Assumptions
1.) Demolition of current ISR (BLDGs 326, 333, 337, 617)	45,325	41,205	Section 3.4 of DOPAA, Assumes area disturbed is 110% of the structure footprint
2.) 363d ISR Group HQ Construction (Alternative #2)	52,250	95,000	Section 3.4 of DOPAA, Assumes area disturbed is 110% of the structure footprint
3.) 363d ISR Group HQ Construction (Alternative #2) Parking Lot	75,000		Section 3.4 of DOPAA
Total Building Construction Area:	95,000 ft ²		
	2.181 acres		
Total Building Demolition Area:	41,205 ft ²		
	0.946 acres		
Total Pavement Demolition Area:	0 ft ²		
	0.000 acres		
New Roadway Construction Area	75,000 ft ²		
	1.722 acres		
Total Disturbed Area:	172,575 ft ²		
	3.962 acres		
Construction Duration:	18 months		
Annual Construction Activity:	396 days		Assumes 22 days per month.

Emission Factors Used for Construction Equipment

All emission factors are from the Air Emissions Guide for Air Force Transitory Sources, October 2014, Table 4-4. These are valid for Calendar Year 2016. Assumptions regarding the type and number of equipment are from Guide to Air Quality Assessment, SMAQMD, 2004 Table 3-1 unless otherwise noted.

Grading

Equipment	No. Req ^d . ^a per 10 acres	NO _x (lb/hr)	VOC (lb/hr)	CO (lb/hr)	SO _x (lb/hr)	PM ₁₀ (lb/hr)	PM _{2.5} (lb/hr)	CO _{2e} (lb/hr)
Bulldozer	1	2.089	0.259	0.983	0.002	0.086	0.086	239.675
Motor Grader	1	0.887	0.120	0.588	0.001	0.044	0.044	133.013
Water Truck	1	1.332	0.182	0.583	0.003	0.046	0.046	260.461
Total per 10 acres of activity per 8-hour day	3	34.464	4.488	17.232	0.048	1.408	1.408	5,065.192

Paving

Equipment	No. Req ^d . ^a per 10 acres	NO _x (lb/hr)	VOC (lb/hr)	CO (lb/hr)	SO _x (lb/hr)	PM ₁₀ (lb/hr)	PM _{2.5} (lb/hr)	CO _{2e} (lb/hr)
Paver	1	0.713	0.127	0.513	0.001	0.049	0.049	78.220
Roller	1	0.527	0.079	0.394	0.001	0.035	0.035	67.227
Truck	2	1.332	0.182	0.583	0.003	0.046	0.046	260.461
Total per 10 acres of activity per 8-hour day	4	31.232	4.560	16.584	0.064	1.408	1.408	5,330.952

Demolition

Equipment	No. Req ^d . ^a per 10 acres	NO _x (lb/hr)	VOC (lb/hr)	CO (lb/hr)	SO _x (lb/hr)	PM ₁₀ (lb/hr)	PM _{2.5} (lb/hr)	CO _{2e} (lb/hr)
Loader	1	0.711	0.098	0.456	0.001	0.037	0.037	108.833
Haul Truck	1	1.332	0.182	0.583	0.003	0.046	0.046	260.461
Total per 10 acres of activity per 8-hour day	2	16.344	2.240	8.312	0.032	0.664	0.664	2,954.352

Building Construction

Equipment ^b	No. Req ^d . ^a per 10 acres	NO _x (lb/hr)	VOC (lb/hr)	CO (lb/hr)	SO _x (lb/hr)	PM ₁₀ (lb/hr)	PM _{2.5} (lb/hr)	CO _{2e} (lb/hr)
Stationary								
Generator Set	1	0.437	0.058	0.286	0.001	0.024	0.024	61.124
Industrial Saw	1	0.459	0.076	0.394	0.001	0.034	0.034	58.634
Welder	1	0.217	0.048	0.195	0.000	0.017	0.017	25.711
Mobile (non-road)								
Truck	1	1.332	0.182	0.583	0.003	0.046	0.046	260.461
Forklift	1	0.510	0.078	0.455	0.001	0.037	0.037	67.227
Crane	1	0.939	0.114	0.426	0.001	0.039	0.039	128.886
Total per 10 acres of activity per 8-hour day	6	31.152	4.448	18.712	0.056	1.576	1.576	4,816.344

Note: Footnotes for tables are on following page

Joint Base Langley-Eustis ISR Group HQ (Alternative #2) Demolition and Construction Activity

Architectural Coatings

Equipment	No. Reqd. ^a per 10 acres	NO _x (lb/hr)	VOC (lb/hr)	CO (lb/hr)	SO _x (lb/hr)	PM ₁₀ (lb/hr)	PM _{2.5} (lb/hr)	CO _{2e} (lb/hr)
Air Compressor	1	0.473	0.070	0.321	0.001	0.032	0.032	63.766
Total per 10 acres of activity per 8-hour day	1	3.784	0.560	2.568	0.008	0.256	0.256	510.128

- a) The SMAQMD 2004 guidance suggests a default equipment fleet for each activity, assuming 10 acres of that activity, (e.g., 10 acres of grading, 10 acres of paving, etc.). The default equipment fleet is increased for each 10 acre increment in the size of the construction project. That is, a 26 acre project would round to 30 acres and the fleet size would be three times the default fleet for a 10 acre project.
- b) Typical equipment fleet for building construction was not itemized in SMAQMD 2004 guidance. The equipment list above was assumed based on SMAQMD 1994 guidance.

PROJECT-SPECIFIC EMISSION FACTOR SUMMARY

Source	Equipment Multiplier*	Project-Specific Emission Factors (lb/day)						
		NO _x	VOC	CO	SO ₂ **	PM ₁₀	PM _{2.5}	CO ₂
Grading Equipment	1	34.464	4.488	17.232	0.048	1.408	1.408	5,065.192
Paving Equipment	1	31.232	4.560	16.584	0.064	1.408	1.408	5,330.952
Demolition Equipment	1	16.344	2.240	8.312	0.032	0.664	0.664	2,954.352
Building Construction	1	31.152	4.448	18.712	0.056	1.576	1.576	4,816.344
Air Compressor for Architectural Coating	1	3.784	0.560	2.568	0.008	0.256	0.256	510.128
Architectural Coating**			25.120					

*The equipment multiplier is an integer that represents units of 10 acres for purposes of estimating the number of equipment required for the project.

**Emission factor is from the evaporation of solvents during painting, per "Air Quality Thresholds of Significance", SMAQMD, 1994

Summary of Input Parameters

	Total Area (ft ²)	Total Area (acres)	Total Days	
Grading:	172,575	3.962	3	(from "Grading" worksheet)
Paving:	75,000	1.722	9	
Demolition:	41,205	0.946	48	
Building Construction:	95,000	2.181	396	
Architectural Coating	95,000	2.181	20	(per SMAQMD "Air Quality of Thresholds of Significance", 1994)

Total Project Emissions by Activity (lbs)

	NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO ₂
Grading Equipment	103.392	13.464	51.696	0.144	4.224	4.224	15,195.576
Paving	281.088	41.040	149.256	0.576	12.672	12.672	47,978.568
Demolition	784.512	107.520	398.976	1.536	31.872	31.872	141,808.896
Building Construction	12,336.192	1,761.408	7,409.952	22.176	624.096	624.096	1,907,272.224
Architectural Coatings	75.680	513.600	51.360	0.160	5.120	5.120	10,202.560
Total Emissions (lbs):	13,580.864	2,437.032	8,061.240	24.592	677.984	677.984	2,122,457.824

Results: Total Project Annual Emission Rates

	NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO ₂
Total Project Emissions (lbs)	13,580.864	2,437.032	8,061.240	24.592	677.984	677.984	2,122,457.824
Total Project Emissions (tons)	6.790	1.219	4.031	0.012	0.339	0.339	1,061.229

Joint Base Langley-Eustis ISR Group HQ (Alternative #2) Demolition and Construction Activity

Construction Fugitive Dust Emissions

Construction Fugitive Dust Emission Factors

	Emission Factor	Units	Source
Demolition Activities	0.00042 lb PM ₁₀ /cubic foot		AFCEC 2014.
Grading, Excavating and Trenching.	0.220 ton PM ₁₀ /acre-month		AFCEC 2014.
PM_{2.5} Emissions			
PM _{2.5} Multiplier	0.100 (10% of PM ₁₀ emissions assumed to be PM _{2.5})		USEPA 2006

Demolition (0.00042 lb PM₁₀/cubic foot)

Area of Buildings	41,205 square feet
Average Height of Buildings	24 feet

Grading, Excavating and Trenching (0.22 ton PM₁₀/acre-month)

Duration of Project	18 months
Area	3.962 acres

	Project Emissions (tons/year)	
	PM₁₀	PM_{2.5}
Demolition	0.208	0.021
Grading, Excavating and Trenching	15.689	1.569
Total	15.896	1.590

Construction Fugitive Dust Emission Factors

Demolition Emission Factor

0.00042 lb PM₁₀/cubic foot Source: AFCEC 2014

This emission factor is from Emission factors from the Air Emissions Guide for Air Force Transitory Sources, October 2014, Section 4.3.1.1 and Equation 4-3. It is based on information and equations developed by the South Coast Air Quality Management District's (SCAQMD's) California Environmental Quality Act (CEQA) Air Quality Handbook.

Grading, Excavating and Trenching Emission Factor

0.220 ton PM₁₀/acre-month Source: AFCEC 2014

This emission factor is from Emission factors from the Air Emissions Guide for Air Force Transitory Sources, October 2014, Section 4.3.1.2 and Equation 4-4. It is based on information and equations developed by the SCAQMD's CEQA Air Quality Handbook and from information developed by the Midwest Research Institute.

PM_{2.5} Multiplier

0.100

PM_{2.5} emissions are estimated by applying a particle size multiplier of 0.10 to PM₁₀ emissions. This methodology is consistent with the procedures documents for the National Emission Inventory (EPA 2006).

References:

USEPA 2006. *Documentation for the Final 2002 Nonpoint Sector (Feb 06 version) National Emission Inventory for Criteria and Hazardous Air Pollutants*. Prepared for: Emissions Inventory and Analysis Group (C339-02) Air Quality Assessment Division Office of Air Quality Planning and Standards, United States Environmental Protection Agency. July 2006.

Air Force Civil Engineering Center (AFCEC). 2014. Emission factors from the Air Emissions Guide for Air Force Transitory Sources, October 2014.

Joint Base Langley-Eustis ISR Group HQ (Alternative #2) Demolition and Construction Activity

Grading Schedule

Estimate of time required to grade a specified area.

Input Parameters

Construction area: 3.962 acres/yr (from Combustion Worksheet)
 Qty Equipment: 3.000 (calculated based on 3 pieces of equipment for every 10 acres)

Assumptions.

Terrain is mostly flat.
 An average of 6" soil is excavated from one half of the site and backfilled to the other half of the site; no soil is hauled off-site or borrowed.
 200 hp bulldozers are used for site clearing.
 300 hp bulldozers are used for stripping, excavation, and backfill.
 Vibratory drum rollers are used for compacting.
 Stripping, Excavation, Backfill and Compaction require an average of two passes each.
 Excavation and Backfill are assumed to involve only half of the site.

Calculation of days required for one piece of equipment to grade the specified area.

Reference: Means Heavy Construction Cost Data, 19th Ed., R. S. Means, 2005.

Means Line No.	Operation	Description	Output	Units	Acres per equip-day)	equip-days per acre	Acres/yr (project-specific)	Equip-days per year
2230 200 0550	Site Clearing	Dozer & rake, medium brush	8,000	acre/day	8.000	0.125	3.962	0.495
2230 500 0300	Stripping	Topsoil & stockpiling, adverse soil	1,650	cu. yd/day	2.045	0.489	3.962	1.937
2315 432 5220	Excavation	Bulk, open site, common earth, 150' haul	800	cu. yd/day	0.992	1.008	1.981	1.997
2315 120 5220	Backfill	Structural, common earth, 150' haul	1,950	cu. yd/day	2.417	0.414	1.981	0.819
2315 310 5020	Compaction	Vibrating roller, 6" lifts, 3 passes	2,300	cu. yd/day	2.851	0.351	3.962	1.389
TOTAL								6.638

Calculation of days required for the indicated pieces of equipment to grade the designated acreage.

(Equip)(day)/yr: 6.638
 Qty Equipment: 3.000
 Grading days/yr: 2.213

Haul Truck Emissions

Emissions from hauling excavation material, demolition materials, and construction supplies are estimated in this spreadsheet.

Emission Estimation Method:

Air Force Civil Engineering Center (AFCEC) 2014. *Air Emissions Guide for Air Force Mobile Sources. Methods for Estimating Emissions of Air Pollutants For Mobile Sources at U.S. Air Force Installations.* October 2014.

Assumptions:

Haul trucks carry 20 cubic yards of material per trip.

The average distance from the project site to the materials source is 15 miles; therefore, a haul truck will travel 30 miles round trip.

Estimated number of trips required by haul trucks = total amount of material/20 cubic yards per truck

Assumes existing soil berms would not need to be hauled from the site.

Amount of Building Materials = 31,667 cubic yards

Assumes a total of 9 cubic feet of building material/debris are needed/generated per square foot of building space to be renovated.

Amount of Paving and Gravel Material = 2,778 cubic yards

Assumes 1 cubic foot of pavement is needed per square foot of pavement construction. Additionally, 1 cubic foot of pavement debris is generated per square foot of pavement demolition.

Amount of Building Debris = 6,104 cubic yards

Assumes 4 cubic feet of demolition debris is generated per square foot of building space

Number of trucks required = 2,027 heavy duty diesel haul truck trips

Miles per trip = 30 miles

Heavy Duty Diesel Vehicle (HDDV) Average Emission Factors (grams/mile)

NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO _{2e}
0.881	0.146	0.281	0.007	0.047	0.032	786.100

Notes:

The Hampton Roads Area is located at a low altitude (<5,000 feet above sea level)

Construction assumed to occur in Calendar Year 2016.

Emission factors for all pollutants are from AFCEC 2014, Table 5-28, On-Road Vehicle Emissions Factors - 2016 POV for HDDV in Virginia, low altitude, 2016.

HDDV Haul Truck Emissions

	NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO _{2e}
lbs	118.134	19.577	37.679	0.939	6.302	4.291	105,408.338
tons	0.059	0.010	0.019	0.000	0.003	0.002	52.704

Example Calculation: NO_x emissions (lbs) = miles per trip * number of trips * NO_x emission factor (g/mile) * lb/453.6 g

Joint Base Langley-Eustis ISR Group HQ (Alternative #2) Demolition and Construction Activity

Construction Commuter Emissions

Emissions from construction workers commuting to the job site are estimated in this spreadsheet.

Emission Estimation Method: Emission factors from the Air Emissions Guide for Air Force Mobile Sources. Methods for Estimating Emissions of Air Pollutants For Mobile Sources at U.S. Air Force Installations. October 2014.

Assumptions:

The average round-trip commute for a construction worker = 30 miles
 Number of construction days = 396 days
 Number of construction workers (daily) = 30 people

Light-Duty Trucks (Gasoline Powered) Emission Factors for Year 2016 (grams/mile)

NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO _{2e}
0.651	0.798	10.550	0.010	0.025	0.011	551.000

Source: Emission factors from the Air Emissions Guide for Air Force Mobile Sources. Methods for Estimating Emissions of Air Pollutants For Mobile Sources at U.S. Air Force Installations. October 2014. Table 5-28 On-Road Vehicle Emission Factors - POV 2016; Virginia, low altitude, Light-Duty Gasoline Trucks (LDGT).

Construction Commuter Emissions

	NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO _{2e}
lbs	511.500	627.000	8,289.286	7.857	19.643	8.643	432,928.571
tons	0.256	0.314	4.145	0.004	0.010	0.004	216.464

Example Calculation: NO_x emissions (lbs) = miles/day * NO_x emission factor (grams/mile) * number of construction days * number of workers ÷ 453.56 grams/lb

Joint Base Langley-Eustis ISR Group HQ (Alternative #2) Demolition and Construction Activity

New Personnel Commuter Emissions

Emissions from new personnel commuting to the installation are estimated in this spreadsheet.

Emission Estimation Method: Emission factors from the Air Emissions Guide for Air Force Mobile Sources. Methods for Estimating Emissions of Air Pollutants For Mobile Sources at U.S. Air Force Installations. October 2014.

Assumptions:

The average round-trip commute for new personnel = 30 miles
 Number of work days per year= 264 days
 Number of new personnel (daily) = 200 people
 Assumes 22 days per month.

Light-Duty Vehicles (Passenger Cars, Gasoline Powered) Emission Factors for Year 2016 (grams/mile)

NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO _{2e}
0.338	0.469	8.450	0.007	0.025	0.011	368.000

Source: Emission factors from the Air Emissions Guide for Air Force Mobile Sources. Methods for Estimating Emissions of Air Pollutants For Mobile Sources at U.S. Air Force Installations. October 2014. Table 5-28 On-Road Vehicle Emission Factors - POV 2016; Virginia, low altitude, Light-Duty Vehicles (LDGV).

Construction Commuter Emissions

	NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO _{2e}
lbs	1,180.317	1,637.778	29,507.937	24.444	87.302	38.413	1,285,079.365
tons	0.590	0.819	14.754	0.012	0.044	0.019	642.540

Example Calculation: NO_x emissions (lbs) = miles/day * NO_x emission factor (grams/mile) * number of construction days * number of workers ÷ 453.56 grams/lb

2481 **APPENDIX C**

2482 **Federal Consistency Determination**

**Federal Consistency Determination
For
Installation Development Projects
Joint Base Langley-Eustis, Langley AFB, Hampton, Virginia**

Background

Joint Base Langley–Eustis, Langley Air Force Base (hereafter JBLE-Langley) is located within the city of Hampton, Virginia near the southern extremity of the lower Virginia Peninsula of the Chesapeake Bay. The installation is bound on three sides by the northwest and southwest branches of the Back River and it is occupied jointly with the National Aeronautics and Space Administration (NASA) Langley Research Center along the western portion of the base. Access onto the base is via four gate entrances: Armistead Avenue, LaSalle Avenue, King Street, and NASA’s Durand gate.

Purpose and Need for Action

Each of the three projects included in the proposed action has a specific purpose and need, which is presented below.

Clear Zone Drainage System Replacement:

The purpose is to reduce current surface irregularities which can result in damage to landing aircraft. Ponding areas within the Clear Zone can attract birds which has the potential to increase the Bird Aircraft Strike Hazard (BASH).

The need is to ensure the safety of aircraft during takeoff and landing. The action would reduce the chance of a bird collision and increase safety for personnel and aircraft.

Construct Parking Lot near Hospital, F. 257:

The purpose is to reduce a deficiency in parking spaces.

The need for the parking lot is required to accommodate the increased number of patients resulting from the trend of increased caseload seen at the hospital.

363d ISR Wing HQ Construction:

The purpose for the new building is to consolidate existing personnel into one place and allow space for additional personnel. Currently, the HQ occupies space in four separate facilities which are insufficient for new staff. The purpose of the proposed demolition is to remove the previously occupied four buildings as they would become obsolete with the new construction.

The need is to construct a new building to provide adequate work space in order to accomplish their mission. The need for demolition is to focus resources only on the infrastructure needed to perform JBLE-Langley’s mission.

Proposed Actions and Alternatives

This EA evaluates the potential environmental impacts that may arise from the implementation of the three projects which have been developed from the General Plan as and approved as installation development priorities for the next five years at JBLE-Langley. The General Plan is

**Federal Consistency Determination for
Installation Development at JBLE-Langley, Virginia**

under revision to be republished as the JBLE-Langley Installation Development Plan. This document treats each project as a discrete proposed action, and evaluates each project and its alternative separately. These projects include initiatives for facility construction, infrastructure construction, and demolition.

Clear Zone Drainage System Replacement

This project would replace the existing drainage system and regrade the Runway 08 and 26 Clear Zones. The Clear Zone comprises 1,000 feet past each end of the runway and 1,000 feet to each side of the overrun centerline, totaling approximately 92 acres of land. Under this alternative, the existing drainage ditches would be filled or enclosed. New drainage inlets, piping, and outfalls would be installed and water would be directed to the collection points by swales and ridges. Each area would be graded so that the maximum longitudinal grade does not exceed 2% and if needed, areas adjacent to the runway Clear Zones would be graded to match. The potential disturbed area would be approximately 100 acres.

Under the No Action Alternative, this project would not be implemented. The current drainage configuration would be maintained within the Clear Zones. The ditches and surface irregularities would result in damage to aircraft landing short of or overrunning the runway. The low areas within the Clear Zones would continue to collect water which creates habitat for wildlife, especially birds. Aircraft could be damaged from bird strikes with their continued presence. This outcome would increase the chance of damage to aircraft and possibly result in loss of human life. The No Action Alternative for the Clear Zone Project is considered unreasonable because it would prevent safe aircraft operation. The No-Action Alternative will be carried forward for further analysis, consistent with CEQ regulations, to provide a baseline against which the impacts of the action alternative can be assessed.

Construct Parking Lot near Hospital, F. 257

This action consists of the construction of a parking lot in the vicinity of the hospital. The 130,000 square foot parking lot would provide an additional 613 parking spaces. The proposed location would be east of the hospital on the area east of Brown's Creek, between Nealy Avenue and Sweeney Boulevard. Vehicular access would be off of Nealy Avenue and pedestrian bridges would provide access across Brown's Creek. The potential disturbed area would be approximately three acres.

Under the No Action Alternative, this project would not be implemented. This would result in continued installation-wide deficiency in parking spaces as noted in the General Plan. Staff and patients would be required to park further from the hospital. With the selection of the No Action Alternative, this project would remain as a standalone initiative. This would lengthen the timeline under which this project is to be implemented and possibly result in its non-execution. This is not supportive of the purpose and need for installation development nor the individual action. The No-Action Alternative will be carried forward for further analysis, consistent with CEQ regulations, to provide a baseline against which the impacts of the action alternative can be assessed.

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363d ISR Wing HQ Facility

The Proposed Action consists of the construction of a new two story building with collateral space for Mission Support offices in the North Base Area. The new facility would be a two-story, 94,800 sf building and would include space for 520 workstations and associated racks, as well as communications equipment. As part of the action alternatives four buildings would be demolished.

Alternative 1: Under this alternative the new building would be constructed at the southeast corner of South Roma Road and Helms Avenue. This location is mostly open land, only currently occupied by a recreational softball field. As part of this alternative, the existing parking lot west of South Roma Road would be expanded to the west and south. The proposed parking lot location is mostly open land currently occupied by a recreational softball field to the south and a small part of the existing parking for the previous temporary living facility. The potential disturbed area would be approximately six acres.

Alternative 2 (Preferred Alternative): Under this alternative the new building would be constructed directly across Weyland Road from the 497 ISRG Building, F. 1302. The proposed building location is currently the existing parking for the previous temporary living facility which have been demolished. As part of this alternative, a parking lot would be constructed south of the proposed building between Weyland Road and the LTA Bypass. The proposed parking lot location is currently open land. The potential disturbed area would be approximately six acres.

The No Action Alternative would result in 363d ISR Wing HQ without sufficient space to accommodate personnel increases or the ability to accomplish their mission.

Enforceable Policies Comprising Virginia's Coastal Zone Management Program and Proposed Action Analysis

- a) *Fisheries* – The program stresses the conservation and enhancement of finfish and shellfish resources and the promotion of commercial and recreational fisheries to maximize food production and recreational opportunities. This program is administered by the Virginia Marine Resources Commission (VMRC) (Virginia Code §28.2-200 through §28.2 - 713) and the Virginia Department of Game and Inland Fisheries (VDGIF) (Virginia Code §29.1-100 through §29.1-570).

Analysis – Neither of the three proposed projects would have any potential to impact fisheries. Each of the Proposed Actions and Alternative are located in the inland portion of JBLE-Langley.

- b) *Subaqueous Lands* – The management program for subaqueous lands establishes conditions for granting or denying permits to use state-owned bottomlands based on considerations of potential effects on marine and fisheries resources, wetlands, adjacent or nearby properties, anticipated public and private benefits, and water quality standards established by the Virginia Department of Environmental Quality (VDEQ) Water Division. The program is administered by the VMRC (Virginia Code §28.2-1200 through §28.2-1213).

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Analysis – Each of the three project could impact subaqueous lands. The Clear Zone project could impact wetlands as discussed in Enforceable Policies C. All action alternatives could impact both point and nonpoint source water pollution as discussed in Enforceable Policies F and E, respectively. Overall, JBLE-Langley would implement BMPs to minimize or eliminate adverse impacts to subaqueous lands.

- c) *Wetlands* – The purpose of the wetlands management program is to preserve tidal and non-tidal wetlands, prevent their despoliation, and accommodate economic development in a manner consistent with wetlands preservation. The tidal wetlands program is administered by the VMRC (Virginia Code §28.2-1301 through §28.2-1320). The Virginia Water Protection Permit program administered by the VDEQ includes protection of wetlands --both tidal and non-tidal. This program is authorized by Virginia Code § 62.1-44.15.5 and the Water Quality Certification requirements of §401 of the Clean Water Act of 1972.

Analysis – Of the three proposed projects, only the Clear Zone project would impact wetlands. The Proposed Action would result in the loss of approximately twenty acres of non-tidal wetlands. The Clear Zones are previously disturbed areas of land that have resulted in the creation of wetlands. The project would reduce the chance of a bird/aircraft strike as currently, birds frequent the wetland areas of the Clear Zones. Prior to any construction activity, JBLE-Langley would coordinate with the US Army Corps of Engineers (USACE) and VDEQ for any required permits. All required mitigation actions would be adhered to in order to reduce impacts to wetlands. The remaining two proposed projects have no wetlands in or adjacent to the project locations.

- d) *Dunes and Beaches* – Dune protection is carried out pursuant to the Coastal Primary Sand Dune Protection Act and is intended to prevent destruction or alteration of primary dunes. This program is administered by the VMRC (Virginia Code §28.2-1400 through §28.2-1420).

Analysis – Neither of the three proposed projects would have any potential to impact dunes or beaches. Each of the Proposed Actions and Alternative are located in the inland portion of JBLE-Langley away from any dune/beach ecosystem.

- e) *Nonpoint Source Water Pollution* – Virginia's Erosion and Sediment Control Law requires soil-disturbing projects to be designed to reduce soil erosion and to decrease inputs of chemical nutrients and sediments to the Chesapeake Bay, its tributaries, and other rivers and waters of the Commonwealth. This program is administered by VDEQ. (Virginia Code § 62.1-44.15:51 *et.seq.*).

Analysis – While any action alternative could create nonpoint source water pollution, JBLE-Langley would utilize best management practices to reduce the chance of impacts. Site specific Erosion and Sediment Control Plans would be generated for VDEQ approval. JBLE-Langley maintains a Stormwater Pollution Prevention Plan that is updated annually and addresses stormwater impacts and nonpoint source pollution. All standard operating procedures would be followed during the proposed projects.

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- f) *Point Source Water Pollution* – The point source program is administered by the State Water Control Board pursuant to Virginia Code §62.1-44.15. Point source pollution control is accomplished through the implementation of the National Pollutant Discharge Elimination System permit program established pursuant to §402 of the federal Clean Water Act and administered in Virginia as the Virginia Pollutant Discharge Elimination System permit program. The Water Quality Certification requirements of §401 of the Clean Water Act of 1972 is administered under the Virginia Water Protection Permit program.

Analysis – There are two waterbodies listed on the 2014 Impaired Waters list; Brick Kiln Creek and Northwest Branch of Back River for recreation use impairments from enterococcus and Northwest Branch of Back River for shellfish condemnation areas from fecal coliform. Total Daily Maximum Loads (TDMLs) for the Back River watershed were approved by USEPA Region III in April 2014. However, no fecal coliform reduction is required for JBLE-Langley as the major source in the area is wildlife, which does not impact downstream segments. No point source water pollution is expected with any of the proposed projects. If any occurred during or after completion of the proposed project, JBLE-Langley would coordinate activities, plans, and permits with VDEQ.

- g) *Shoreline Sanitation* – The purpose of this program is to regulate the installation of septic tanks, set standards concerning soil types suitable for septic tanks, and specifies minimum distances that tanks must be placed away from streams, rivers, and other waters of the Commonwealth. This program is administered by the Virginia Department of Health (Virginia Code §32.1-164 through §32.1-165).

Analysis – Neither of the three proposed projects would have septic tanks installed or demolished. No wastewater would be discharged to the ground as part of any proposed project.

- h) *Point Source Air Pollution* – The program implements the federal Clean Air Act to provide a legally enforceable State Implementation Plan for the attainment and maintenance of the National Ambient Air Quality Standards. This program is administered by the State Air Pollution Control Board (Virginia Code §10.1-1300 through 10.1-1320).

	NOx tpy	VOC tpy	CO tpy	SO2 tpy	PM10 tpy	PM2.5 tpy	CO2e tpy
Clear Zone Project	1.162	0.3	2.6	0.003	182.2	18.3	260.2
Parking Lot Project	0.3	0.1	1.1	0.001	2.6	0.3	99.4
363d ISR Wing HQ	7.8	2.3	23	0.03	16.34	1.92	1,972.9
Totals	9.26	2.7	26.7	0.034	201.14	20.52	2,332.5
General Conformity <i>de minimis</i> thresholds	100	100	NA	NA	NA	NA	NA

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Analysis – JBLE-Langley is in an attainment area for all criteria pollutants. At this time, specific stationary source information is not available. However, they could include boiler and generator equipment. The action alternatives would generate mobile source air emissions during construction activities.

These impacts would be controlled through the use of construction practices consistent with policies of 9 VAC 5-50-60 *et seq.* Overall, the proposed projects are not expected to adversely impact local or regional air quality.

- i) *Coastal Lands* – A state-local cooperative program administered by the VDCR's Division of Chesapeake Bay Local Assistance and 84 localities in Tidewater, Virginia established pursuant to the Chesapeake Bay Preservation Act; Virginia Code §§ 10.1-2100 through 10.1-2114 and Chesapeake Bay Preservation Area Designation and Management Regulations; 9 Virginia Administrative Code 10-20-10 *et seq.*

Analysis – Any of the action alternatives would occur in previously disturbed areas. There are no areas planned for development which are native vegetative communities. Construction activities would be conducted in a manner to minimize land disturbance and amount of impervious surface. Upon completion of any action alternative, disturbed areas would be reseeded in native vegetation.