

AND THE OUTLET OF POND 2. THE RUNOFF FROM THE END OF RUNWAY 35 CONSISTS OF OVERLAND FLOW FROM 12.2 ACRES CONVEYED INTO EXISTING WETLANDS. 0.5 ACRES OF THE 12.2 ACRES WILL BE DISTURBED BY THIS PROJECT. POND 2 OUTLETS TO A CLOSED DRAINAGE SYSTEM WHICH, COMBINED WITH ADJACENT OVERLAND FLOW, IS CONVEYED THROUGH A NEW GRASS LINED SWALE TO EVENTUALLY REACH A TRIBUTARY OF THE STEVENS BRANCH. THE CONTRIBUTING DRAINAGE AREA IS 82.4 ACRES CONTAINING 8.3 ACRES OF DISTURBED AREA WHICH HAS AN AVERAGE SLOPE OF 5 TO 15 PERCENT.

EXPAND AND RECONSTRUCT TERMINAL APRON: CONSTRUCTION INCLUDES PAVEMENT REMOVAL, UNCLASSIFIED EXCAVATION, GRADING AND DRAINAGE, STORMWATER MANAGEMENT SYSTEMS, INSTALLATION OF SELECT MATERIALS, BITUMINOUS PAVING, INSTALLATION OF NEW TAXIWAY EDGE LIGHTS, PAVEMENT MARKINGS, SIGNAGE, AND TEMPORARY AND PERMANENT EROSION CONTROL MEASURES.

THE DISCHARGE LOCATION ASSOCIATED WITH THESE EFFORTS IS THE OUTLET OF POND 1 WHICH DISCHARGES INTO AN EXISTING SWALE EVENTUALLY FLOWING TO A TRIBUTARY OF THE STEVENS BRANCH. THE CONTRIBUTING DRAINAGE AREA OF 36.6 ACRES CONTAINS 16.3 ACRES OF DISTURBED EARTH.

RECONSTRUCT RUNWAY 5-23: RECONSTRUCTION CONSISTS OF SHORTENING AND NARROWING THE RUNWAY VIA PAVEMENT REMOVAL, FINE GRADING EXISTING SELECT MATERIAL, BITUMINOUS PAVING, AND INSTALLATION OF NEW RUNWAY EDGE LIGHTS, SIGNAGE, AND PAVEMENT MARKINGS. THERE IS NO CHANGE IN DISCHARGE ASSOCIATED WITH THIS WORK, AS THE UNDERLYING SELECT MATERIAL IS NEARLY LEVEL HARD PACKED GRAVEL WITH A LOW ERODIBILITY INDEX AND STORMWATER WILL CONTINUE TO SHEET FLOW OFF IT IN THE SAME MANNER AS IT DOES IN THE EXISTING CONDITION.

TOTAL AREA OF DISTURBANCE FOR THE PROJECT IS 25.1 ACRES.

1.2 SITE INVENTORY

1.2.1 ON AND OFF SITE DRAINAGE, WATERWAYS, BODIES OF WATER AND PROXIMITY TO NATURAL OR MAN-MADE WATER FEATURES

THE AIRPORT'S STORMWATER DRAINAGE SYSTEM CONSISTS OF GRASS OVERLAND FLOW, DROP INLETS, CATCH BASINS, CLOSED DRAINAGE PIPES AND OPEN DITCHES AND VEGETATED SWALES.

RUNOFF FROM RUNWAY 5-23 AND ADJACENT LAND ENTERS CLOSED DRAINAGE SYSTEMS THAT PARALLEL EACH SIDE OF THE RUNWAY. WATER COLLECTED IN THESE CATCH BASINS FLOWS THROUGH PIPES TOWARDS THE NORTHEAST. THESE PIPES IN TURN DRAIN INTO A PIPE SYSTEM WHICH IS PERPENDICULAR TO THE RUNWAY NEAR THE END OF THE RUNWAY, AND WHICH SUBSEQUENTLY CONVEY FLOW EASTERLY TO A WETLAND. THE DRAINAGE IS THEN CARRIED UNDER AIRPORT ROAD VIA A CULVERT AT THE NORTH END OF THE WETLAND, AND DISCHARGED ACROSS THE ROAD INTO AN OPEN FIELD, WHERE THERE IS NO DEFINED CHANNEL. THIS PORTION OF THE AIRFIELD IS WITHIN THE WATERSHED OF THE STEVENS BRANCH.

RUNOFF FROM THE LAND AROUND THE END OF RUNWAY 35 DRAINS INTO WETLANDS BEFORE BEING CARRIED UNDER AIRPORT ROAD VIA A CULVERT AND THEN INTO AN UNNAMED INTERMITTENT STREAM, AND EVENTUALLY INTO STEVENS BRANCH.

RUNOFF FROM THE SOUTHERN PORTION OF RUNWAY 17-35 DRAINS VIA OVERLAND AND CLOSED DRAINAGE INTO WETLANDS AND THEN INTO AN UNNAMED BROOK. THE WESTERN SIDE OF THE RUNWAY AND ADJACENT LAND DRAINS OVERLAND INTO A CLOSED DRAINAGE SYSTEM THAT PARALLELS THE RUNWAY DISCHARGING INTO ADJACENT WETLANDS NEAR THE 5-23 RUNWAY INTERSECTION. THE EASTERN SIDE OF THE RUNWAY AND ADJACENT MOWED AREAS, TAXIWAYS, APRONS AND BUILDINGS (BETWEEN AIRPORT ROAD AND THE RUNWAY) DRAIN VIA DITCHES (INCLUDING PORTIONS OF WETLANDS) AND CATCH BASINS INTO PIPES THAT RUN UNDER RUNWAY 17-35 SOUTH OF THE 5-23 RUNWAY INTERSECTION COMBINING WITH THE WESTERN RUNOFF BEFORE OUTLETTING THROUGH A CULVERT INTO THE UNNAMED BROOK.

THE EASTERN SIDE OF RUNWAY 17-35 NORTH OF THE 5-23 RUNWAY INTERSECTION DRAINS VIA OVERLAND FLOW INTO WETLANDS. A PORTION OF THIS RUNOFF ENTERS THE STONE-LINED SWALE WEST OF COMSTOCK ROAD BEFORE DISCHARGING INTO THE UNNAMED BROOK. THE STONE-LINED SWALE ALSO RECEIVES RUNOFF FROM ADJACENT ROADS AND PORTIONS OF THE INDUSTRIAL PARK EAST OF COMSTOCK ROAD VIA DITCHES ALONG COMSTOCK AND GRANGER ROADS. THE UNNAMED BROOK DRAINS UNDER COMSTOCK ROAD AND ULTIMATELY INTO POND BROOK. POND BROOK DRAINS INTO STEVENS BRANCH.

BOTH POND BROOK AND THE STEVENS BRANCH ARE WITHIN THE WINOOSKI RIVER WATERSHED.

1.2.2 TOPOGRAPHY, EXISTING ROADS, BUILDINGS, UTILITIES

THE AIRPORT IS GENERALLY FLAT WITH A SLIGHT GRADIENT FROM SOUTH TO NORTH ALONG RUNWAY 17-35 AND WEST TO EAST ALONG RUNWAY 5-23. AIRFIELD PAVEMENTS MAKE UP 24 OF THE 25 ACRES OF IMPERVIOUS SURFACES. THE REMAINING ACRE OF IMPERVIOUS IS FROM HANGARS, THE TERMINAL BUILDING AND OTHER MISCELLANEOUS STRUCTURES.

1.2.3 VEGETATION

THICKNESS FROM 2 TO 10 FEET.

GLACIAL TILL: A LAYER OF TYPICALLY DENSE SOIL WITH VARYING AMOUNTS OF SAND AND GRAVEL. THE TILL IS SIMILAR TO THE SANDY SILT LAYER, EXCEPT THE GLACIAL TILL HAS SLIGHTLY MORE GRAVEL AND IS DENSER.

BEDROCK: SOME BORINGS ENCOUNTERED WEATHERED ROCK (POSSIBLY BEDROCK) AT DEPTHS OF 4 FEET.

GROUNDWATER: NOT ENCOUNTERED IN MOST BORINGS. TWO BORINGS NOTED WET SOIL SAMPLES AT 4 TO 8 FEET DEEP.

PERMEABILITY: BETWEEN 10-6 TO 10-4 CM/SEC.

ERODIBILITY (K FACTOR): UNKNOWN. (FOR ALL OTHER SOIL TYPES REFER TO THE EPSC EXISTING CONDITIONS SITE PLAN.)

1.2.5 SENSITIVE RESOURCE AREAS

WETLANDS: AN ARMY CORP OF ENGINEERS SECTION 404 PERMIT IS BEING OBTAINED FOR THE PROJECT DUE TO A NUMBER OF WETLAND IMPACTS, AS FOLLOWS;

Wetland #	Description	Direct (SF)	Temporary (SF)
4	Wet meadows, mixed grasses and sedges. There is no principle function associated with these wetlands.	9,449	1,122
5	Wet meadows, mixed grasses and sedges. There is no principle function associated with these wetlands.	4,879	
8	Temporarily flooded, Palustrine Emergent wetlands. There most important function relates to maintaining water quality by detaining and potentially purifying stormwater runoff through nutrient and toxicant removal.	3,024	0
9	Temporarily flooded, Palustrine Emergent wetlands. There most important function relates to maintaining water quality by detaining and potentially purifying stormwater runoff through nutrient and toxicant removal.	3,955	0
10	Temporarily flooded, Palustrine Emergent wetlands. There most important function relates to maintaining water quality by detaining and potentially purifying stormwater runoff through nutrient and toxicant removal.	3,672	0
11	Temporarily flooded, Palustrine Emergent wetlands. There most important function relates to maintaining water quality by detaining and potentially purifying stormwater runoff through nutrient and toxicant removal.	3,407	258
12	Temporarily flooded, Palustrine Emergent wetlands. There most important function relates to maintaining water quality by detaining and potentially purifying stormwater runoff through nutrient and toxicant removal.	5,648	0
Total Wetland Impact (SF):		34,033	1,380

A VERMONT CONDITIONAL USE DETERMINATION (CUD) PERMIT WAS APPROVED FOR THE PROJECT ON MAY 4, 2009.

ENDANGERED SPECIES: THE UPLAND SANDPIPER, A STATE ENDANGERED SPECIES, IS THE ONLY KNOWN FEDERAL OR STATE THREATENED OR ENDANGERED SPECIES FOUND AT THE AIRPORT. THE CONTRACTOR SHALL PROVIDE ACCESS FOR THE OWNER TO MOW AND MAINTAIN ANY GRASSED AREAS WITHIN THE PROJECT AREA OF DISTURBANCE.

ARCHAEOLOGICAL AND HISTORICAL: THERE ARE NO KNOWN AREAS OF ARCHAEOLOGICAL SENSITIVITY OR HISTORIC FEATURES AT THE AIRPORT.

1.3 RISK EVALUATION

THIS PROJECT FALLS UNDER THE JURISDICTION OF CONSTRUCTION GENERAL PERMIT 3-9020 BASED ON THE AREA OF DISTURBANCE BEING 25.1 ACRES. THIS IS A MODERATE RISK PROJECT.

1.4 EROSION PREVENTION AND SEDIMENT CONTROL

THE EROSION CONTROL PLANS ARE MEANT AS A GUIDELINE FOR PREVENTING EROSION AND CONTROLLING SEDIMENT TRANSPORT. THE WORK OUTLINED IN THIS NARRATIVE CONSISTS OF APPLYING MEASURES THROUGHOUT THE LIFE OF THE PROJECT MINIMIZING SEDIMENT TRANSPORT TO THE RECEIVING WATERS. THE MEASURES INCLUDE STABILIZATION AND STRUCTURAL PRACTICES, STORM WATER CONTROLS AND OTHER POLLUTION PREVENTION CONTROLS.

PREVENTING INITIAL SOIL EROSION IS MUCH MORE EFFECTIVE THAN TREATING ERODED SEDIMENT. MAINTAINING VEGETATED BUFFERS ALONG STREAM BANKS, WETLANDS OR OTHER SENSITIVE AREAS IS A CRUCIAL EROSION AND SEDIMENT CONTROL MEASURE THAT SHOULD BE ESTABLISHED WHEREVER POSSIBLE.

ALL MEASURES SHALL BE REGULARLY MAINTAINED AND SHALL BE CHECKED FOR SEDIMENT BUILD-UP. SEDIMENT SHALL BE DISPOSED AT AN APPROVED SITE WHERE IT WILL NOT BE SUBJECT TO EROSION.

1.4.1 MARK SITE BOUNDARIES

PROJECT DEMARCATION FENCING IS NOT ALLOWED ON THE AIRPORT DUE TO THE RISK OF FOREIGN OBJECT DAMAGE TO AIRCRAFT. BARRIER FENCE (CONSTRUCTION FENCE) SHALL BE USED FOR DELINEATING THE LIMITS OF WORK BASED ON THE CONTRACT DRAWINGS, MINIMIZING THE AREA THAT MUST BE DISTURBED AND EXPOSED TO EROSION.

ON EPSC DETAILS SHT 2.

1.4.4 INSTALL SEDIMENT BARRIER

SILT FENCE SHALL BE INSTALLED PRIOR TO ANY UP SLOPE WORK NECESSARY. SILT FENCE INSTALLED WITHIN 100 FEET OF WATERSHED, RIVERS, ETC...) SHALL BE WIRE REINFORCED. EROSION LOGS SHALL BE INSTALLED PRIOR TO ANY UP SLOPE WORK AS SHOWN ON THE PLANS OR

1.4.5 STOCKPILING AND OFF SITE DISPOSAL

STOCKPILE LOCATIONS TO BE DETERMINED BY THE CONTRACTOR. STOCKPILES ARE CONSIDERED TO BE LOCATED TOWARDS THE FIVE (5) ACRE MAXIMUM IF NOT STABILIZED.

THE PROJECT WILL HAVE APPROXIMATELY 125,000 CY OF WASTE TO BE DISPOSED AT AN OFF-SITE DISPOSAL SITE. THE CONTRACTOR SHALL OBTAIN A SEPARATE CONSTRUCTION GENERAL PERMIT FOR THE DISPOSAL SITE.

1.4.6 SLOW DOWN CHANNELIZED RUNOFF

CHECK DAMS SHALL BE UTILIZED AS SHOWN ON THE PLANS OR AS NECESSARY.

1.4.7 CONSTRUCT PERMANENT CONTROLS

THE PROJECT INCLUDES CONSTRUCTION OF TWO DETENTION BASINS WHICH SHALL BE COMPLETED AND STABILIZED PRIOR TO CONVEYING RUNOFF TO THEM. DETENTION BASINS ARE TO BE USED AS TEMPORARY SEDIMENTATION BASINS DURING CONSTRUCTION. CONTRACTOR SHALL INSPECT SEDIMENTATION SYSTEM IN ACCORDANCE WITH EPSC NARRATIVE SECTION 1.4.12 (BELOW) AND BASINS AND SYSTEM SHALL BE CLEANED AFTER FINAL STABILIZATION OF THE ENTIRE PROJECT AND PRIOR TO FILING NOTICE OF TERMINATION. ADDITIONAL PERMANENT CONTROLS INCLUDE, SEED AND MULCH, STONE SLOPES (1:3 OR GREATER) AND STONE OUTLET PROTECTION.

1.4.8 STABILIZE EXPOSED SOILS

ALL AREAS OF DISTURBANCE MUST HAVE TEMPORARY OR FINAL STABILIZATION WITHIN 14 DAYS OF THE INITIAL DISTURBANCE. AFTER THIS TIME, ANY DISTURBANCE IN THE AREA MUST BE STABILIZED AT THE END OF EACH WORK DAY. THE FOLLOWING EXCEPTIONS APPLY:

- I) STABILIZATION IS NOT REQUIRED IF WORK IS TO CONTINUE IN THE AREA WITHIN THE NEXT 24 HOURS AND THERE IS NO PRECIPITATION FORECAST FOR THE NEXT 24 HOURS.
- II) STABILIZATION IS NOT REQUIRED IF THE WORK IS OCCURRING IN A SELF-CONTAINED EXCAVATION (I.E. NO OUTLET) WITH A DEPTH OF 2 FEET OR GREATER (E.G. HOUSE FOUNDATION EXCAVATION, UTILITY TRENCHES).

SEEDING, MULCHING AND BIODEGRADABLE EROSION CONTROL MATTING, OR AN EQUIVALENT PRODUCT, WILL BE UTILIZED ON ALL SLOPES STEEPER THAN 3:1 THAT ARE NOT LINED WITH STONE FILL. SEE CROSS SECTIONS FOR SIDESLOPE GRADES. THESE SLOPES SHALL BE STABILIZED WITHIN 48 HOURS OF REACHING FINAL GRADE OR DURING INCREMENTAL STAGES OF CONSTRUCTION ACTIVITY.

TRACKING OF ALL EXPOSED SLOPES, COMBINED WITH TEMPORARY MULCHING, WILL ALSO BE UTILIZED ON A REGULAR BASIS. ANY SLOPES TO BE EXPOSED FOR SEVERAL DAYS PRIOR TO FINAL GRADING SHALL BE TRACKED AND MULCHED. THE FORECAST OF RAINFALL EVENTS SHALL ALSO TRIGGER PROTECTION OF EXPOSED SOILS.

1.4.9 WINTER STABILIZATION

WINTER CONSTRUCTION IS ANTICIPATED. FOR CONSTRUCTION ACTIVITIES INVOLVING EARTH DISTURBANCE PAST OCTOBER 15 AND/OR PRIOR TO APRIL 15 SEE EPSC WINTER CONSTRUCTION NOTES ON THE EPSC NOTES AND LEGEND SHEET.

1.4.10 STABILIZE SOIL AT FINAL GRADE

SEEDING, MULCHING AND BIODEGRADABLE EROSION CONTROL MATTING OR AN EQUIVALENT SHALL BE USED TO STABILIZE ALL SLOPES STEEPER THAN 1:3 THAT ARE NOT LINED WITH STONE FILL. THESE SLOPES SHALL BE STABILIZED WITHIN 48 HOURS OF REACHING FINAL GRADE.

1.4.12 INSPECT YOUR SITE

SITE SHALL BE INSPECTED ACCORDING TO THE REQUIREMENTS FOR A MODERATE RISK SITE LISTED IN THE PROJECT'S PERMIT AND CONSTRUCTION GENERAL PERMIT 3-9020. INSPECTION SHALL CONTINUE UNTIL THE SITE HAS ACHIEVED FINAL STABILIZATION AND A NOTICE OF TERMINATION HAS BEEN FILED.

EPSC NARRATIVE

PROJECT NAME: E. F. KNAPP STATE AIRPORT
A.I.P. 3-50-0001-011-2009
PROJECT NUMBER: BERLIN AIR 04-3216

FILE NAME: z05h378bdr_ero.dgn
PROJECT LEADER: S. FORTNEY
DESIGNED BY: S. BOUCHARD
EPSC NARRATIVE

PLOT DATE: 11/22/2011
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