SEPA ENVIRONMENTAL CHECKLIST

Purpose of checklist:

Governmental agencies use this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

***Instructions for applicants*:**

This environmental checklist asks you to describe some basic information about your proposal. Please answer each question accurately and carefully, to the best of your knowledge. You may need to consult with an agency specialist or private consultant for some questions. You may use "not applicable" or "does not apply" only when you can explain why it does not apply and not when the answer is unknown. You may also attach or incorporate by reference additional studies reports. Complete and accurate answers to these questions often avoid delays with the SEPA process as well as later in the decision-making process.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Instructions for Lead Agencies:

Please adjust the format of this template as needed. Additional information may be necessary to evaluate the existing environment, all interrelated aspects of the proposal and an analysis of adverse impacts. The checklist is considered the first but not necessarily the only source of information needed to make an adequate threshold determination. Once a threshold determination is made, the lead agency is responsible for the completeness and accuracy of the checklist and other supporting documents.

Use of checklist for nonproject proposals:

For nonproject proposals (such as ordinances, regulations, plans and programs), complete the applicable parts of sections A and B plus the SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS (part D). Please completely answer all questions that apply and note that the words "project," "applicant," and "property or site" should be read as "proposal," "proponent," and "affected geographic area," respectively. The lead agency may exclude (for non-projects) questions in Part B - Environmental Elements –that do not contribute meaningfully to the analysis of the proposal.

A. background

1. Name of proposed project, if applicable: Switzler Reservoir Water Storage Project

2. Name of applicant: Klickitat County and Benton County

3. Address and phone number of applicant and contact person:

Klickitat County: 127 West Court Street, Goldendale, WA. 98620, (509) 773-2410, Dave McClure

Benton County: 7122 West Okanogan Place, Kennewick, WA 99336, (509) 736-3053, Adam J. Fyall

4. Date checklist prepared: August 2018

5. Agency requesting checklist: Department of Ecology, Office of Columbia River

6. Proposed timing or schedule (including phasing, if applicable):
The following schedule is anticipated:
Submit SEPA checklist and issue threshold determination of significance: August 2018
Begin SEPA Scoping: August 22,2018
SEPA Scoping Public Meeting: Sept. 19 and Sept. 20, 2018
End of 60-day SEPA Scoping Period: October 22, 2018
EIS Preparation: 2018-2020
Publish Draft EIS: August 2020
Publish Final EIS: December 2020
Feasibility Study/Pre-Design: 2020-2021
Design: 2021
Construction: 2022-2026

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain. No.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

(The electronic versions of these documents and reports are available as PDFs on the project website: http://www.klickitatcounty.org/1045/Switzler-Reservoir-Water-Storage-Project .)

Aspect, 2010, Detailed Implementation Plan Rock-Glade Watershed (WRIA 31), Prepared for WRIA 31 Planning and Advisory Committee, June 30, 2010. *This document provides the framework for scheduling and executing specific actions to achieve the objectives of the Phase 4 Watershed Management Plan for WRIA 31.*

Aspect and Anchor QEA, 2010, Water Storage Pre-Feasibility Assessment Report Horse Heaven Area, WRIA 31, 2010. *This report summarizes prior water storage evaluations for the region, estimates WRIA 31 water demands within four primary categories of use; identifies and summarizes 13 surface reservoir options (including estimated storage capacity, impounded water surface elevation, and capital costs per acre-foot of storage) and general concepts for subsurface storage (aquifer storage and recovery [ASR]); discusses nine initial storage alternatives evaluated with the Water Resource Policy and Advisory Committee (WRPAC); identifies the preferred water storage alternative that includes a combination of Switzler Reservoir (44,000 acre-feet), Alder Reservoir (56,000 to 300,000 acre-feet), and 10,000 acre-feet of storage via ASR; and, for the preferred alternative, describes the expected benefits, a cursory analysis of fatal flaws, a planning-level cost estimate, and recommendations for an appraisal-level study.*

Aspect and Anchor QEA, 2012a, Phase 1 Report: Horse Heaven Water Storage Appraisal Assessment, WRIA 31, August 15, 2012. *This report presents information generated from technical studies to*

identify potential fatal flaws of Alder Reservoir and Switzler Reservoir. ASR was not evaluated in this study. This report concluded that the Alder Reservoir is fatally flawed due to geologic instability of the slopes within the proposed reservoir footprint. This report identified no fatal flaws for Switzler Reservoir, and recommended that Phase 2 of the appraisal assessment proceed for it.

Aspect and Anchor QEA, 2012b, Phase 2 Report: Horse Heaven Water Storage Appraisal Assessment, WRIA 31, December 26, 2012. *This report includes an operational evaluation and water balance, refined engineering evaluation, refined cost estimate, and discussion of permitting strategy for Switzler Reservoir.*

Aspect Consulting, LLC (Aspect) and Watershed Professionals, 2004, Level 1 Watershed Assessment WRIA 31 (Rock-Glade Watershed), N, Ecology Grant No. G020010, Prepared for WIRA 31 Planning Unit, November 12, 2004. *This document provides an assessment of existing water quantity, water quality, and habitat elements as part of watershed planning for WRIA 31.*

Bauer, H.H. and Vaccaro, J.J., 1990, Estimates of Ground-Water Recharge to the Columbia Plateau Regional Aquifer System, Washington, Oregon, and Idaho, for Predevelopment and Current Land-Use Conditions, USGS Water-Resources Investigations Report 88-4108, 1990. *This publication provides information on the geohydrology and geochemistry of the regional aquifer system of the Columbia Plateau to support effective management of the nation's groundwater resource.*

Benton County Planning Commission, 2014, Benton County Shoreline Master Program Update, Benton County, Washington, June 2014. *This document was prepared under the requirements of the Shoreline Management Act (SMA) and describes goals, policies, and regulations required under the SMA as it applies to management of Benton County shorelines.*

Brown, J.C., 1979, Geology and Water Resources of Klickitat County, Water Supply Bulletin No, 50, p. 1 – 413, https://fortress.wa.gov/ecy/publications/publications/wsb50.pdf, 1979. *This study was part of an effort to inventory the state's water resources on a regional basis, and provides information on the geohydrology and geochemistry of groundwater resources through Klickitat County.*

Ecology, 2011, 2011 Technical Report for the Columbia River Basin Long-Term Water Supply and Demand Forecast. Prepared by Washington State University. Ecology Publication No. 12-12-001, 2011. *This report, updated every five years, provides a generalized, system-wide assessment of how future environmental and economic conditions are likely to change water supply and demand by 2030.*

Franklin, Jerry F. and C.T. Dyrness, 1973, Natural Vegetation of Oregon and Washington, USDA Forest Service General Technical Report PNW-8, Washington, D.C, 1973. *This document includes an outline of major phytogeographic units in Oregon and Washington.*

Glass, D., 2009, WRIA 31 Instream Habitat Assessment, prepared for Klickitat County and Washington Department of Ecology Shorelines and Environmental Assistance Program, Funded by Ecology Grant Number G0900072, 2009. *This document provides information on fish habitat across WRIA 31, focusing on spawning and rearing habitat for steelhead. Switzler Canyon was not evaluated in the study.*

GSI Water Solutions (GSI), 2011, Evidence for Hydrogelogic Compartmentalization in the Columbia River Basalt Aquifer System, Columbia Basin Groundwater Management Area of Adam, Franklin, Grant, and Lincoln Counties, Washington, prepared for Columbia Basin Ground water management Area of Adams, Franklin, Grant and Lincoln Counties, June 2011. *This report characterizes groundwater recharge, movement, and discharge in the Columbia River Basalt Group aquifer system.*

Hamlet, A.F., P. Carrasco, J. Deems, M.M. Elsner, T. Kamstra, C. Lee, S-Y Lee, G. Mauger, E. P. Salathe, I. Tohver, L. Whitely Binder, 2010, Final Project Report for the Columbia Basin Climate Change Scenarios Project, "A Comprehensive Hydrologic Data Base Incorporating IPCC Climate Change

Scenarios to Support Long-Range Water Planning in the Columbia River Basin," 2010. *A detailed outline on methods to produces a comprehensive hydrologic data base for the Columbia River basin in an effort to provide climate change planning scenarios.*

Hansen, Jr. A.J., Vaccaro J.J., and Bauer, H.H., 1994, Ground-Water Flow Simulation of the Columbia Plateau Regional Aquifer System, Washington, Oregon, and Idaho, U.S. Geological Survey Water-Resources Investigations Report 91-4187, 1994. *This document provides information on the geohydrology and geochemistry of the regional aquifer system of the Columbia Plateau to support effective management of the nation's groundwater resource.*

National Marine Fisheries Service (NMFS), 2009, Recovery Plan for the Rock Creek Population of the Middle Columbia River Steelhead Distinct Population Segment, Portland, OR, 2009. *This plan identifies actions needed to restore threatened and endangered species to the point that they no longer need the protections of the Endangered Species Act of 1973.*

National Marine Fisheries Service (NMFS), 2010. Endangered Species Act Section 7(a)(2) Consultation Supplemental Biological Opinion. Supplemental Consultation on Remand for Operation of the Federal Columbia River Power System, 11 Bureau of Reclamation Projects in the Columbia Basin and ESA Section 10(a)(I)(A) Permit for Juvenile Fish Transportation Program, 2010. *This document describes NOAA Fisheries opinion on how the Federal Columbia River Power System, through 2018, complies with the Endangered Species Act.*

Newcomb, R.C., 1961, Storage of Ground Water Behind Subsurface Dams in the Columbia River basalt in Washington, Oregon, and Idaho: USGS Professional Paper 383-A, 15 p, 1961. *This paper looks at structural barriers that impede the movement of groundwater creating a groundwater reservoir, their occurrence, and possible methods to determine if any of these groundwater reservoirs are replenishable.*

Newcomb, R.C., 1969, Effect of Tectonic Structure on the Occurrence of Ground Water in the Basalt of the Columbia River Group of the Dalles Area Oregon and Washington, USGS Professional Paper 383-C, 1969. *Information on geology and hydrology to determine the water-storage situations created in this area by tectonic structures.*

Newcomb, R.C., 1971, Geologic Map of the Proposed Paterson Ridge Pumped Storage Reservoir, South-Central Washington: USGS Misc. Geologic Inves. Map I-653, 1971. *This report looks at water tightness requirements for a pumped-storage operation versus an on-stream reservoir and provides geologic information for the subject area.*

Vaccaro, J.J., 1999, Summary of the Columbia Plateau Regional Aquifer-System Analysis, Washington, Oregon, and Idaho, U.S. Geological Survey Professional Paper 1413-A, 1999. *This report provides a summary of the geologic framework, hydraulic characteristics of the aquifer system, groundwater movement, groundwater recharge estimates, quality and geochemistry of the groundwater.*

Washington State Conservation Commission (WCC), 2000, Salmon and Steelhead Habitat Limiting Factors, Washington Resource Inventory Area 31, Olympia, Washington, 2000. *This document describes the analysis conducted to determine the conditions that limit the ability of habitat to sustain populations of salmon.*

Water Resource Inventory Area (WRIA) 31 Planning Unit, 2008, Watershed Management Plan, Rock-Glade Watershed (WRIA 31), Ecology Watershed Planning Grant No. G0200109, Prepared with assistance of Aspect Consulting, LLC and Watershed Professionals Network, 2008. *This watershed plan describes a plan for water resource management to restore and/or maintain water resources, habitat, and economic growth.*

WAC Chapter 173-563, 1980, Instream Resources Protection Program for the Mainstem Columbia River in Washington State, 1980, https://fortress.wa.gov/ecy/publications/SummaryPages/173563.html. *A rule adopted under Washington State legislation to protect instream flows of the main stem of the Columbia River.*

Whiteman, K.J., Vaccaro, J.J., Gonthier, J.B., and Bauer, H.H., 1994, The Hydrogeologic Framework and Geochemistry of the Columbia Plateau Aquifer System, Washington, Oregon, and Idaho, U.S. Geological Survey Professional Paper 1413-B, 1994. *The purpose of this study is to describe the hydrologic characteristics, hydrogeologic units, the area's water budget, groundwater-surface water interaction, and the water quality characteristics and water-rock interactions that occur in the study area.*

Northwest Council, 2014, Columbia River Treaty Water Storage, https://www.nwcouncil.org/history/ColumbiaRiverTreaty. *Informational website on the Columbia River Treaty mandating the construction and operation of three water-storage dams.*

Washington State Division of Geology and Earth Resources (WDGER), 2012, Washington Interactive Geologic Map, https://fortress.wa.gov/dnr/geology/?Site=wigm. *This website is provided by the Washington State Department of Natural Resources and allows the user to search and review geologic features in specific geographic areas.*

Washington State Department of Ecology, 2014, WRIA 31 Project information website, Department of Ecology, http://www.ecy.wa.gov/programs/wr/cwp/HorseHeavenHills.html. *This website provides information on the investigation process by the Office of Columbia River and Klickitat County for potential storage sites in the Horse Heaven Hills area.*

United States Geological Survey (USGS), 2012, USGS Web-based Integrated GIS Application for Streamflow Statistics, 2012, http://water.usgs.gov/osw/streamstats/. *StreamStats is a web-based system that provides information on streamflow statistics, drainage-basin characteristic, and other information for user-selected sites on streams.*

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.
No.

10. List any government approvals or permits that will be needed for your proposal, if known.

Potential permits required:

- ESA Section 7 Consultation
- Clean Water Act (Section 404)
- Water Quality Certification (Section 401)
- National Pollutant Discharge Elimination System (NPDES) Permit
- Hydraulic Project Approval/Joint Aquatic Resource Permit Application
- Reservoir Permit
- Dam Construction Permit
- Water Right/Permit
- Washington State Executive Order 05-05 Consultation
- County Shorelines Management Act Permit (Shoreline Substantial Development or Conditional Use Permit)

- Critical Areas Review
- Building, Fill and Grading Permits
- Construction Stormwater General Permit
- Stormwater Pollution Prevention Plan

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)

Construction of a new Columbia River off-channel surface water storage reservoir in Switzler Canyon, located within the Wood-Glade planning area of the Rock-Glade Watershed (WRIA 31) about 16 miles south of Kennewick, and 11 miles east of Plymouth, WA. The proposed reservoir will have an estimated peak storage capacity of approximately 44,000 acre-feet, through construction of a concrete-faced rockfill dam approximately 325 feet in height. Surface water would be diverted from the Columbia River during periods when water is available (Chapter 173-563 WAC regulatory instream flow minimums are met), which is limited during dry water years and some months of average years. Water would be released from the reservoir to the McNary Pool of the Columbia River as mitigated supply for new water diversions from the Columbia River (McNary Pool and downstream), or wells hydraulically connected thereto, when water is not available in the Columbia River to meet the demand.

Selection of Switzler Reservoir as Preferred Storage Alternative for WRIA 31
Switzler Canyon was selected as a preferred reservoir site at the conclusion of a multi-year process involving the multiple stakeholders comprising of the Water Resource Inventory Area (WRIA) 31 Water Resource Planning and Advisory Committee (WRPAC) and the Horse Heaven community, in coordination with Department of Ecology. That process included completion of a Pre-Feasibility Study (Aspect and Anchor QEA, 2010) assessing water demands (four primary categories of use) that could potentially be met via storage and identification, and initial analysis of 13 prospective surface reservoir sites across the Horse Heaven and surrounding areas (including estimated storage capacity, impounded water surface elevation, and capital costs per acre-foot of storage) as well as options for integrating subsurface storage (ASR). Nine initial storage alternatives were formulated and assessed, including discussion at numerous WRPAC meetings, from which a short list of storage alternatives was developed and evaluated: Switzler Canyon at 44,000 acre-feet of storage, Alder Creek at 56,000 to 300,000 acre-feet of storage, and 10,000 acre-feet of storage via ASR. In further discussions with Ecology, it was decided to complete an appraisal assessment for the two surface reservoirs, and defer consideration of ASR.

The subsequent appraisal assessment included two phases. Phase 1 was a refined fatal flaw assessment including analysis of geologic hazards/slope stability, channel geomorphology, in-stream aquatic habitat, out-of-stream terrestrial habitat, cultural resources, and, for Switzler Reservoir, a predictive water quality (temperature) analysis. A cursory analysis for integration of pumped storage for power production was also conducted, with the conclusion that it was not feasible for either reservoir site. From the Phase 1 analysis, Alder Reservoir was concluded to be fatally flawed due to landslide hazards if the canyon slopes were to become saturated (Aspect and Anchor QEA, 2012a). Phase 2 of the appraisal assessment, conducted solely for Switzler Reservoir, included an operational evaluation and water balance, refined engineering evaluation, refined opinion of probable cost, and discussion of permitting strategy for Switzler Reservoir. It also included as an appendix an initial benefit-cost analysis for a range of project water allocation scenarios. That analysis concluded that the project's economic benefits

sufficiently approach or exceed the estimated project costs, such that project economics was not identified as a fatal flaw (Aspect and Anchor QEA, 2012b).

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.

The proposed Switzler Canyon reservoir is near the confluence of the Switzler Canyon drainage with the Columbia River at approximately Columbia River Mile 302 within the McNary Dam Pool (Lake Wallula) in Benton County, generally located within Sections 17, 20, 29, 30, and 31 of Township 6 North, Range 30 East Willamette Meridian (EWM). This site is situated approximately 16 miles south of Kennewick and 11 miles east of Plymouth, Washington. The area of inundation created by the proposed reservoir would occupy approximately 415 acres and will include an earth fill dam located about a mile upstream of the confluence of Switzler Canyon and Lake Wallula. The base of the dam would lie at about elevation 450 feet, and crest at about elevation 790 feet, creating a reservoir about 330 feet deep at the dam. About ¾ mile upstream of the dam, the reservoir would fork and extend about a mile into an un-named tributary herein called the "west fork" of Switzler Canyon. The longer "east fork" would extend about 2¼ miles farther up the main drainage of Switzler Canyon for a total reservoir length of about 3 miles (Figure 1). Operational water levels would vary annually from about elevation 780 feet to 450 feet, resulting in reservoir drawdowns up to about 330 feet.

B. ENVIRONMENTAL ELEMENTS

1. Earth

a. General description of the site
(circle one): Flat, rolling, hilly, steep slopes, mountainous,
other

The Switzler Canyon reservoir site is a drainage that is about 300 to 500 feet deep and 2,000 feet wide within the proposed reservoir area, and is generally steep and narrow. The surrounding area is primarily cultivated cropland and shrubs.

b. What is the steepest slope on the site (approximate percent slope)?

The canyon walls range from cliffy and benched, to uniform steep surfaces that dip up to about 28 degrees or 55 percent. See topography on Figure 2.

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils.

Geology at the Switzler Reservoir site is dominated by Quaternary soil units that lie above Tertiary basaltic bedrock. Sediments present between basalt flows typically consist of clay, silt, and sand and gravel and regionally range from absent to up to several hundred feet thick

The area surrounding the proposed reservoir is primarily improved irrigated agriculture lands (both perennial and seasonal crops), which encroach upon the canyon rim to the north, east, and west (Figure 2).

Geologic Unit	Age	Lithology	Named Unit	Acres
Mv(su)	Miocene, middle	basalt flows (Umatilla Member [CRB, SMB])	Umatilla Member, Saddle Mountains Basalt	628.2
Mv(wfs)	Miocene, middle	basalt flows (Frenchman Springs Member [CRB, WB])	Frenchman Springs Member, Wanapum Basalt	127.1
Qd	Quaternary	dune sand	---	5.7
Ql	Quaternary	loess	Palouse Formation	1200.7
Qls	Quaternary	mass-wasting deposits, mostly landslides	---	44.7

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

A review of geologic maps and field reconnaissance was conducted and indicate no known fault rupture hazards or other seismic hazards that lie within the dam or reservoir footprint that cannot be mitigated during design and construction.

However, slope morphology indicative of landslide was identified during the geologic reconnaissance at six locations within the reservoir area, although only one area of landslide debris is indicated within the reservoir footprint on the regional geologic map. Two deep seated old landslides have been identified at the site. In addition, there are two areas where erosional undercutting of steep sand and silt loess and colluvium-covered canyon slopes have triggered shallow slope failures.

Deep-Seated Landslides
Topography indicative of deep-seated rotational landslides was observed at several locations. One near the upper end of the east fork of the reservoir may be relatively recent judging by the more prominent shape of an apparent toe bulge. Other possible deep-seated landslides, including one near the proposed right dam abutment, appeared to be much older and inactive, if actually landslides. The one landslide indicated on the Figure 2 geologic map (on the left bank of the east fork, about ¼ mile upstream of the fork) could not be confirmed as a slide during the site reconnaissance. If it is a slide, it appears to be old and may be inactive.

The majority of the canyon slopes do not appear to have experienced deep-seated slope movement. The degree of weathering and rounding of the remaining suspect deep-seated landslides suggests great age and inactivity for those slides.

Shallow Landslides
Several active and recent surficial translational landslides were observed above the creek bed on the right bank of the west fork of the canyon. These shallow slides were occurring where the meandering creek had eroded the toe of an angle-of-repose fine sand and silt loess and/or colluvium deposit, causing loss of support at the toe. The angle of failure on these deposits was observed to be about 36 degrees.

During reservoir operations, there is a high risk of activation of shallow surficial landslides within the reservoir area and slopes that could extend above the area reservoir. Where agricultural plots

extend to within several tens of feet of the rim of the canyon, there is some risk of adverse impacts on the operations. In our opinion, there is small likelihood that these shallow landsides would impact land and agricultural operations more than several tens of feet from the canyon rim.

If they were found to be unstable, design and construction would need to accommodate the risk of reactivation and movement of the deep-seated landslides within the reservoir area. At this time, no cost-effective technologies have been identified for reducing the probability of reactivating old deep-seated landslides or triggering new shallow landslides. Mitigation would consist of some combination of designing the reservoir facilities and operations to accommodate the hazards, establishment of high risk setback areas, or compensation for loss of use of property in the event that landslides damage occurs.

With the caveat that more geotechnical data and analysis would be needed prior to and during detailed design, we currently judge that the landslide hazard for Switzler Reservoir could likely be mitigated.

Due to the relatively minor part of the reservoir that appears to contain old deep-seated landslide deposits, and the shallow nature of the predicted surficial slides, slope stability was not considered to be a fatal flaw for the Switzler Reservoir site. Slope hazards can likely be mitigated during design, construction, and reservoir operations. It could require extensive excavation and ground improvements to provide adequate foundation support and cutoff from seepage.

Any reactivation of landslides in and around the reservoir during filling and operation would be mitigated by requiring planning for long-term decreases in reservoir depth or capacity, turbidity that could impact water quality, and potential impacts on operation of the reservoir. Impacts from propagation of landslides above the reservoir could be mitigated by either establishing an increased hazard area setback or buffer zone around the reservoir, or by compensating landowners for damage or loss of use caused by landslide activity.

e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill.

The embankment itself is estimated to require approximately 4 million cubic yards of material. Due to the magnitude of material volume necessary, locally available materials will be considered. Very minimal grading is expected on the site slopes and at the dam site.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

The completed project is not anticipated to result in erosion of soils. Measures to prevent erosion are discussed below.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

Approximately 5%, the embankment height will be approximately 325 feet, while the crest length of the proposed embankment dam will be approximately 2,000 linear feet and a crest width of an assumed 25 feet. Refer to the conceptual plan and section of embankment dam shown on Figure 3.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

The project will seek coverage under Ecology's Construction Stormwater General Permit. Compliance with permit requirements will include development and implementation of a Stormwater Pollution Prevention Plan, water quality monitoring as applicable, and use of established Best Management Practices (BMPs) to implement temporary erosion and sedimentation control (TESC) measures for construction activities. Final site stabilization will be achieved to fulfill the permit.

2. Air

a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known.

Temporary dust emissions would occur during construction. Depending on power source for the pump stations, some long term emissions from operation of the pump station may occur.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

None known.

c. Proposed measures to reduce or control emissions or other impacts to air, if any:

Dust abatement during construction is expected.

3. **Water**

a. Surface Water:

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

The proposed reservoir will be an in-channel reservoir in the lower reaches of Switzler Canyon; a drainage that flows southwest from the upland of the Horse Heaven Hills and discharges to Lake Wallula, the reservoir (pool) of McNary Dam on the Columbia River. The reservoir would be constructed approximately near RM 1.1. Switzler Canyon branches into two main forks at approximately RM1.85; an east fork, referred to as the mainstem, and a west fork (Figure 4), extending to the confluence with the Columbia River.

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

A 200 cfs pump station on the Columbia River adjacent to an existing agricultural pump station at the mouth of Switzler Canyon will be constructed.

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

Approximately 10 acres of potentially jurisdictional wetlands and 20 acres of wetland buffer are located within the footprint of the proposed dam location and the associated reservoir. The wetlands are concentrated within the canyon valleys and are primarily emergent riparian and depression wetlands which receive agricultural run-off during the growing season and into the early winter. The wetlands are largely dominated by non-native species such as thistle. The largest wetland area is just downstream of the confluence of the west and east branches.

The project will require significant earthwork operations within the canyon itself, which will involve the transport of millions of cubic yards of material from quarry/source locations to various places of use. It is estimated that the project will require approximately 4 miles of 30-foot-wide, temporary access roadway. This temporary access roadway will require an average of approximately 10 cubic yards of grading (per foot), and 1 cubic yard of aggregate material per foot.

Mitigation for permanent impacts to jurisdictional wetlands is regulated by the US Army Corps of Engineers (USACE) and Washington State Department of Ecology (Ecology). Mitigation for impacts to wetland buffers is regulated by Ecology. Mitigation ratios for wetland creation, restoration, or preservation vary based on several factors, such as existing wetland functions, intensity of proposed land use, and type of impact(s). For purposes of estimating potential mitigation requirements, a conservative 2:1 replacement ratio has been assumed here. A lower replacement may be applicable based upon the quality of the wetlands constructed when compared to the limited functions of the existing wetlands. Mitigation ratios for wetland buffers also vary greatly based on the resources impacted. For this analysis these are assumed to be 1.5:1, which again is a conservative estimate. Using these ratios, wetland mitigation would be 20 acres of replacement wetland with 30 acres of replacement wetland buffer, for a total of 50 acres.

Wetlands and associated buffers could be located at the upper extents of the east and west branch areas of the reservoir, assuming an adequate water supply would be available in these areas from upland drainage and/or extension of the agricultural irrigation system to these areas. Additional wetlands could be established, or enhancement of existing wetlands could also occur, along the stream channel downstream of the dam and in the area next to the existing pump station.

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.
The Project would supply an estimated 44,000 acre-feet of new mitigation water that could be used to appropriate new water rights for multi-purpose uses by offsetting releases in supply. The project involves storing Columbia River surface water in the reservoir, for later release , as mitigation for new water supply demand when water is not available in the Columbia River to meet the demand (indirectly). Distribution and use of most of the stored water (i.e., exercising the mitigation water rights) will likely be directly from the Columbia River (McNary pool and downstream) rather than directly from the Switzler Reservoir. The stored water provides a new seasonal water supply that could:

- Mitigate for interruptible water rights during drought years (sustaining current agriculture, and providing mitigation water for exercise of the Quad Cities municipal water right).
- Mitigate for new water rights (expanding the agricultural economy or benefiting new municipal growth).
- Improve instream flows and habitat in Switzler Canyon downstream of the reservoir and in the mainstem Columbia River.

Water stored in the Switzler Reservoir would be released back to the Columbia River or directly pumped from the reservoir by nearby irrigators using their systems. Water released from the Switzler Reservoir back to the Columbia River could mitigate for diversions from McNary Pool, John Day Pool, or any downstream reach of the mainstem Columbia River.

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.
Yes, see attached Figure 4.

6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.
None.

b. Ground Water:

1) Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known.
There would be no groundwater withdrawals to supply Switzler Reservoir.

As described above in Section 3.a.4, Switzler Reservoir would make additional water available for out of stream uses, including groundwater withdrawals from wells in hydraulic continuity with the McNary Pool, John Day Pool, or any downstream reach of the mainstem Columbia River. At this point, specific end uses have not been identified, but they could include agriculture, industrial, municipal, and domestic groundwater use.

2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals. . . ; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.
None.

c. Water runoff (including stormwater):

1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.
The Switzler Reservoir project will result in a minimal increase in impervious surfaces (pump station roof and concrete pad).

2) Could waste materials enter ground or surface waters? If so, generally describe.
No waste materials will enter ground or surface waters.

3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.
Some re-grading of slopes may occur during construction.

d. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any:
Natural runoff likely occurs intermittently as a result of precipitation events; however, field observations indicate that the existing hydrology is likely influenced by irrigation return flows from adjacent agriculture activities upslope of Switzler Canyon.

4. **Plants**

a. Check the types of vegetation found on the site:

_x_ deciduous tree: alder, maple, aspen, other (cottonwood).
____ evergreen tree: fir, cedar, pine, other

_x__shrubs (Shrub Steppe habitat)
_x__grass
____pasture
____crop or grain
_x__ Orchards, vineyards or other permanent crops.
_x__ wet soil plants: cattail, buttercup, bulrush, skunk cabbage, other
____water plants: water lily, eelgrass, milfoil, other
_x__other types of vegetation that include grasslands, forbs.

b. What kind and amount of vegetation will be removed or altered?
Minor vegetation consisting primarily of grasses may be cleared at the pump station, conveyance pipeline, dam, and reservoir. The reservoir footprint will inundate approximately 415 acres of existing habitat and resources. Of the 415 acres approximately 400 acres are considered Shrub Steppe.

However, throughout Switzler Canyon, dense mats of non-native species dominate the riparian corridor, limiting the establishment of typical native wetland-associated species. In the valley bottom, dense mats of thistle and common reed (*Phragmites australis*) are present, along with the occasional Russian olive tree (*Elaeagnus angustifolia*) and non-native Lombardy poplar (*Populus nigra*). Native species are present in limited areas: clumps of cattails on the valley floor, an aging grove of five cottonwoods (*Populus trichocarpa*) in the west fork, and a cottonwood grove of three trees near the mouth of the canyon at the Columbia River.

Even though shrub-steppe habitat is the dominant habitat type within the canyon and adjacent to the stream and wetlands, as previously stated, the uplands surrounding Switzler Canyon have been converted to agricultural and rangeland uses. Therefore, existing shrub-steppe habitat in the canyon is mostly degraded and dominated by non-native plant species, especially where past ground disturbance has occurred. In a few instances, Lombardy poplars and cattails exist on otherwise dry hillslopes. These outcrops of riparian plants appeared to be supported by seepage of return flow from irrigation of upslope orchards to the east.

c. List threatened and endangered species known to be on or near the site.
None known.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:
Requirements for vegetation preservation or enhancement required under Benton County's Critical Area Regulations will be followed.

e. List all noxious weeds and invasive species known to be on or near the site.
As previously mentioned, dense mats of thistle and common reed (*Phragmites australis*) are present, along with the occasional Russian olive tree (*Elaeagnus angustifolia*) and non-native Lombardy poplar (*Populus nigra*).

5. **Animals**

a. List any birds and other animals which have been observed on or near the site or are known to be on or near the site. Examples include:

birds: hawk, heron, eagle, songbirds, pheasants
mammals: deer, bear, elk, beaver, coyotes, racoon

fish: bass, salmon, trout, herring, shellfish, other _____

Other documented wildlife included (non-native game species), crows and flycatcher.

The stream channel in Switzler Canyon is not currently known to contain anadromous salmonids or other fish species. Prior to agricultural development, this was an intermittent stream that did not historically support a spawning or rearing population of salmonids. The closest spawning population of salmonids are summer steelhead located in the Walla Walla River, approximately 9.5 miles northeast of the project. Additionally, Rock Creek in the Umatilla basin supports steelhead and Coho spawning. Steelhead and Coho have observed using Rock and Wood Gulch Creeks, and steelhead have been observed in Pine Creek. These subbasins are all approximately 30 to 60 miles downstream to the west of the project (WRIA 31 Storage Appraisal Assessment, Phase II, December 2012).

b. List any threatened and endangered species known to be on or near the site.
According to WDFW's website (http://wdfw.wa.gov/conservation/phs/), the following are listed as Priority Habitats and Species (PHS) within the reservoir location:

Common Name	Scientific Name	Priority Area
Ferruginous hawk	Buteo regalis	Breeding Area

The Ferruginous hawk is considered a threatened species by the State of Washington.

Additionally, the area adjacent to the proposed pump station includes habitat for ESA listed aquatic species and state priority species. The following table is from the above listed PSH database:

Common Name	Scientific Name	Priority Area
Upper Columbia Spring-Run Chinook	Oncorhynchus tshawytscha	Occurrence/Migration
Snake River Spring/Summer-Run Chinook	Oncorhynchus tshawytscha	Occurrence/Migration
Snake River Fall-Run Chinook	Oncorhynchus tshawytscha	Occurrence/Migration
Middle-Columbia River Steelhead	Oncorhychus mykiss	Occurrence/Migration
Upper-Columbia River Steelhead	Oncorhychus mykiss	Occurrence/Migration
Snake River Basin Steelhead	Oncorhychus mykiss	Occurrence/Migration
Snake River Sockeye	Oncorhychus nerka	Occurrence/Migration
Dolly Barden/Bull Trout	Salvelinus malma	Occurrence/Migration

c. Is the site part of a migration route? If so, explain.
Potentially would include deer and Ferruginous hawks through the site area.

d. Proposed measures to preserve or enhance wildlife, if any:

At this point in time, the project proponents are considering new stream outflow configuration that could be a beneficial change for fish and invertebrates, allowing access to the stream channel and upstream habitat as a result of the project.

e. List any invasive animal species known to be on or near the site.

None known.

6. **Energy and natural resources**

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

Pumps and booster pump stations will use electric power.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

No impacts on the potential use of solar power are anticipated.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:

This project is being undertaken with consideration to taking advantage of periods of excess electrical power as a conservation measure. Pumping is proposed to occur when Columbia River flows are above minimum instream flow levels. Design of the pump station will likely include the use of high efficiency pumps.

7. **Environmental health**

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.

None are anticipated.

1) Describe any known or possible contamination at the site from present or past uses.

None.

2) Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.

No environmental health hazards are anticipated.

3) Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project.

None.

4) Describe special emergency services that might be required.

None.

5) Proposed measures to reduce or control environmental health hazards, if any:
None.

b. **Noise**

1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?
Not applicable.

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.
Impacts to temporary noise related to construction activities during standard working hours (8 – 10 hours, Monday through Friday). Pumps will create minor noise upon project completion.

3) Proposed measures to reduce or control noise impacts, if any:
Temporary construction noise will be mitigated by limiting activity to standard working days and hours. Noise associated with pumps will be mitigated by placing them in a pump station structure.

8. **Land and shoreline use**

a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe.
The area surrounding the proposed reservoir is primarily improved irrigated agriculture lands (both perennial and seasonal crops), which encroach upon the canyon rim to the north, east, and west.

No, this proposal will not affect current land uses on nearby or adjacent properties.

b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use?
None.

1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how:

No.

c. Describe any structures on the site.
None.

d. Will any structures be demolished? If so, what?
No.

e. What is the current zoning classification of the site?
GMA Agriculture (According to Benton County's zoning map dated December 4, 2012).

f. What is the current comprehensive plan designation of the site?
GMA Agriculture.

g. If applicable, what is the current shoreline master program designation of the site?
Rural.

h. Has any part of the site been classified as a critical area by the city or county? If so, specify.
Based on the most recent Benton County Shoreline Master Program (SMP) Comprehensive Update approved by Ecology on February 2, 2015, this Switzler reservoir is likely located within critical area zone. This is based on the definition provided for "Critical Aquifer Recharge/Interchange Areas", which means those aquifer recharge/interchange areas that have an effect on, or are associated with, aquifers used for potable water in community water systems; and "Critical Areas" which means those specific resources which are subject to protection by regulation under Section 15.07 (e.g., wetlands, geologically hazardous areas, fish and wildlife conservation areas, frequently flooded areas, critical aquifer recharge/interchange areas).

i. Approximately how many people would reside or work in the completed project?
Not applicable.

j. Approximately how many people would the completed project displace?
Not applicable.

k. Proposed measures to avoid or reduce displacement impacts, if any:
Not applicable.

L. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:
The pump station will be located in a remote portion of a largely undeveloped parcel. The pipeline will be buried.

m. Proposed measures to ensure the proposal is compatible with nearby agricultural and forest lands of long-term commercial significance, if any:
The pump station will be located in a remote portion of a largely undeveloped parcel. The pipeline will be buried.

9. **Housing**

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.
No housing would be provided with this project.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.
No housing units will be affected.

c. Proposed measures to reduce or control housing impacts, if any:

Not applicable.

10. **Aesthetics**

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

The pump station will be constructed to a height not to exceed 12 feet, while the dam embankment will be at a height of 325 feet.

b. What views in the immediate vicinity would be altered or obstructed?

Views of the Columbia River in the immediate vicinity of the dam would be obstructed.

c. Proposed measures to reduce or control aesthetic impacts, if any:

The majority of the project infrastructure will be buried. Discharge structures will be constructed to provide a natural appearance.

11. **Light and glare**

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

There may be some lighting associated with the pump station at night.

b. Could light or glare from the finished project be a safety hazard or interfere with views?

No.

c. What existing off-site sources of light or glare may affect your proposal?

Not applicable.

d. Proposed measures to reduce or control light and glare impacts, if any:

None proposed.

12. **Recreation**

a. What designated and informal recreational opportunities are in the immediate vicinity?

Birding and fishing are likely recreational opportunities in the immediate vicinity.

b. Would the proposed project displace any existing recreational uses? If so, describe.

No.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

Not applicable.

13. **Historic and cultural preservation**

a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers located on or near the site? If so, specifically describe.

There are no national registered historical sites in the project area.

b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources.

There are no recorded archaeological sites in the footprint of the proposed Switzler Canyon Reservoir (Figure 3-7). Within a mile of the proposed Switzler Reservoir, one site has been recorded. Site 45BN007 was described in 1947 as a small campsite on the north bank of the Columbia River, where a canyon entering the river formed a small beach (NPS, 1947). Archaeologists with the Confederated Tribes of the Umatilla Indian Reservation could not relocate the site in 1998, and suggested that it has either been destroyed or inundated by Lake Wallula (Dickson, 1999). The site has not been evaluated for NRHP eligibility.

Although there are no recorded sites within the reservoir footprint, almost none of the area has been surveyed. Archaeological research in the area has focused on the banks of the Columbia River, but upland areas in Klickitat, Yakima, and Benton counties also host a variety of precontact and historic site types, including:

- Historic structures, equipment, homesteads, and refuse deposits related to early ranching and agriculture;
- Precontact and historic cairns (including burial cairns);
- Lithic scatters, isolates, and quarries;
- Processing sites; and
- Cave sites.

Similar sites are likely to be present within the project area as well.

c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc.

While there are no known cultural or historic resources within the project site, additional research will be conducted to assess resources and potential impacts. This will include completion of a cultural resource assessment (CRA) comprised of a desktop study, use of the Statewide Predictive Model for archaeological sites, and consultation with DAHP.

d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required.

Following the CRA, avoidance and mitigation measures will be determined.

14. **Transportation**

a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any.

The project is situated within 9 miles of Interstate 82 along improved roads; approximately 7 miles of the 9 miles are paved and 2 miles are gravel. There is also a rail line directly downstream of the proposed dam site, and adjacent to the proposed pump station. Direct access into Switzler Canyon and the project site is available by a gravel road which enters the canyon from the northwest.

b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop?

Not applicable.

c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate?

None.

d. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private).

It is estimated that the project will require approximately 4 miles of 30-foot-wide, temporary access roadway.

e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

No.

f. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates?

Occasional operational vehicular trips to project infrastructure and monitoring locations will occur but not on a daily basis.

g. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe.

No.

h. Proposed measures to reduce or control transportation impacts, if any:

Best Management Practices will be used and in accordance with County permitting during the construction of the anticipated temporary access roadway.

15. **Public services**

a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe.

No.

b. Proposed measures to reduce or control direct impacts on public services, if any.

None are anticipated.

16. **Utilities**

a. Circle utilities currently available at the site: Electricity, natural gas, water, refuse service, telephone, sanitary service, septic system, other _____

Electricity.

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

Power will be required for the pump station.

C. Signatures

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: _____

Name of signee Dave McClure

Position and Agency/Organization Director, Klickitat County Department of Natural Resources

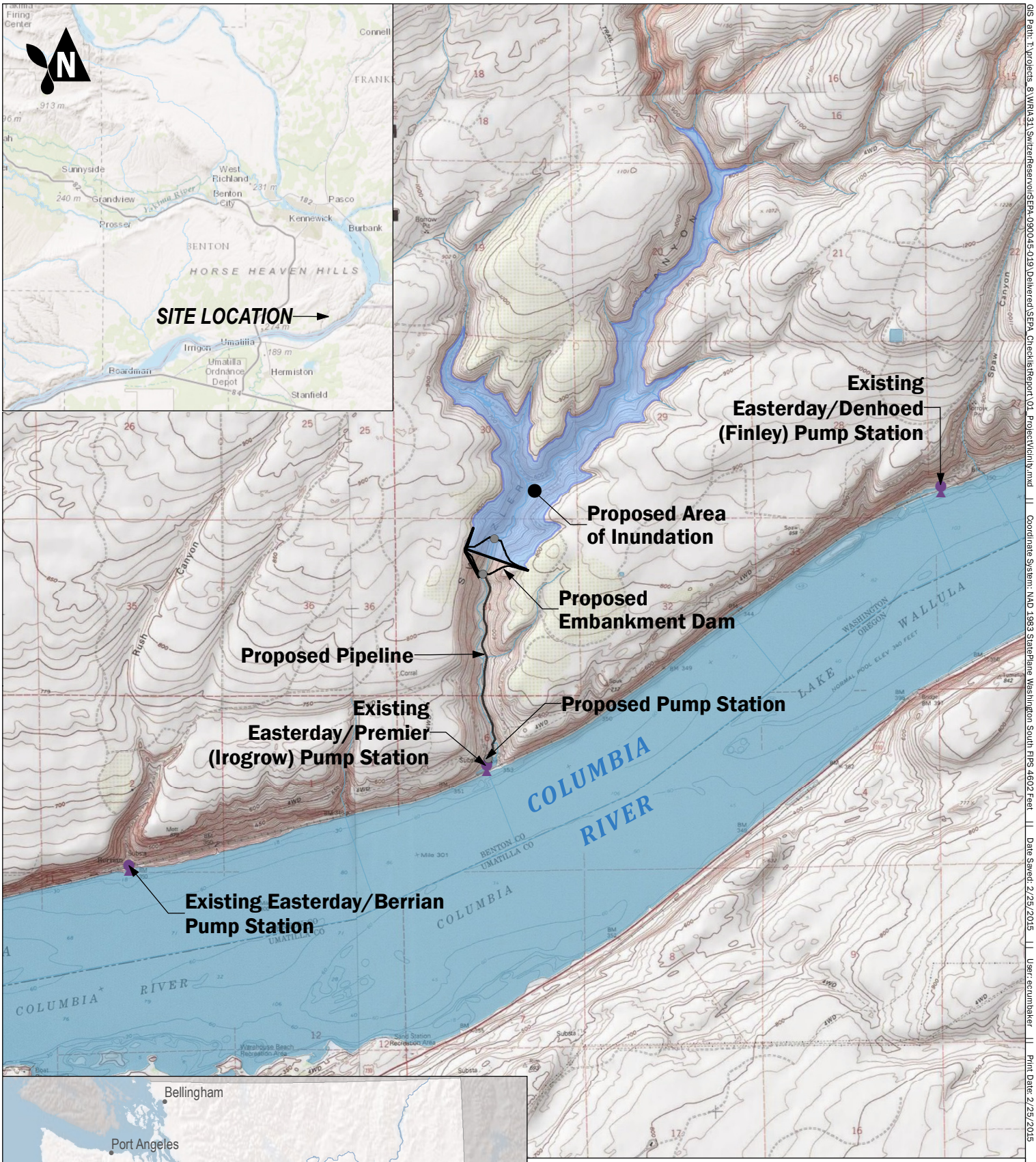
Date Submitted: August 14, 2018

Signature: _____

Name of signee Adam Fyall

Position and Agency/Organization: Benton County Sustainable Development Manager

Date Submitted: August 13, 2018

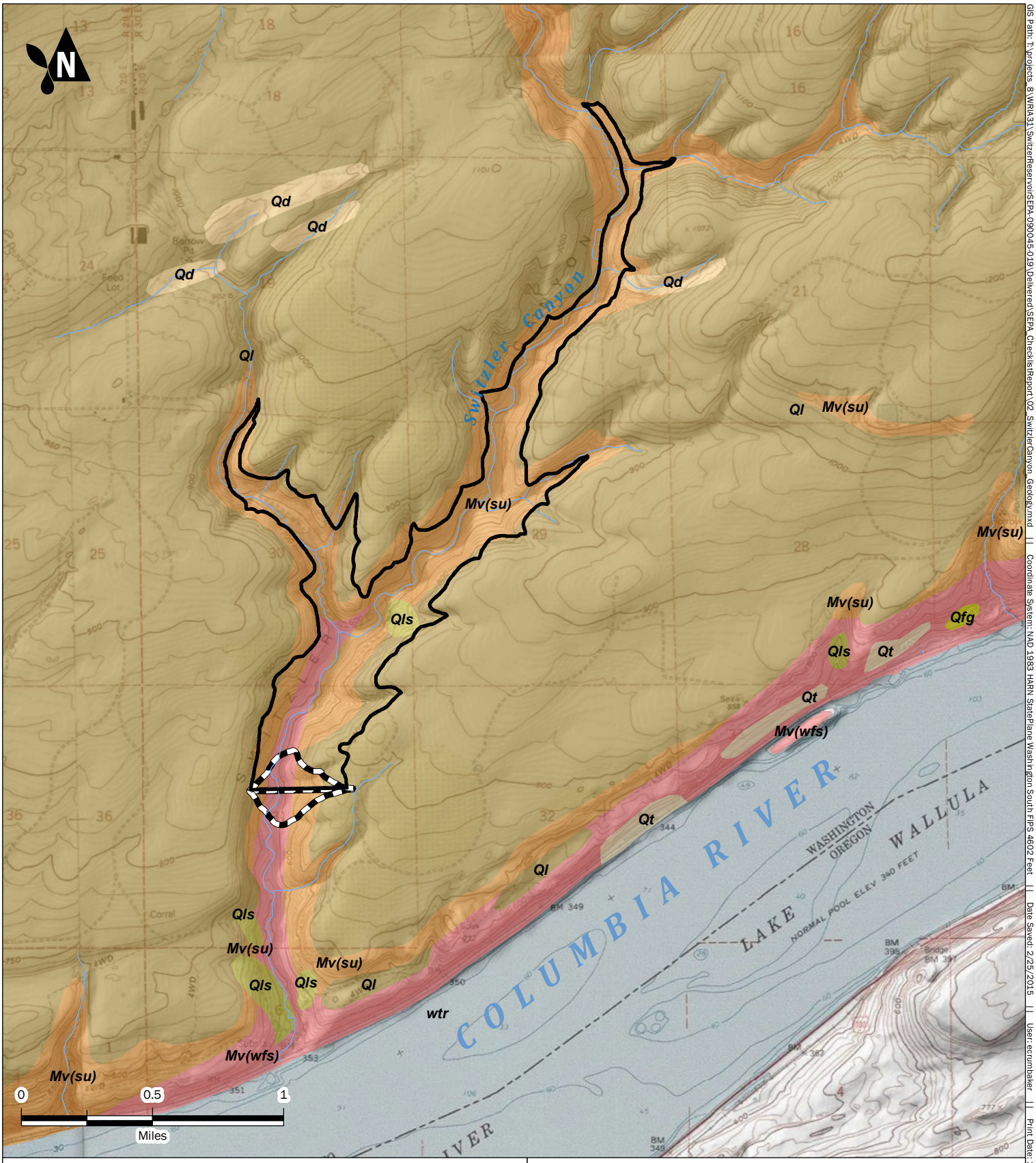


Switzler Reservoir Project Vicinity

SEPA Checklist Report
WRIA 31, Washington

Aspect CONSULTING	FEB-2015	BY: BZ / EAH	FIGURE NO. 1
	PROJECT NO. 090045 - 019	REVISED BY: ---	

GIS Path: T:\projects_8\WRIA31\SwitzerReservoir\SEPA-090045-019\Delivered\SEPA_ChecklistReport\01_ProjectVicinity.mxd || Coordinate System: NAD 1983 StatePlane Washington South FIPS 4602 Feet || Date Saved: 2/25/2015 || User: ecrumbaker || Print Date: 2/25/2015



Reservoir
Watercourse
Reservoir Embankment

Surficial Geologic Units (WA DNR 1:100K)

Mv(su) - Umatilla Basalt
Mv(wfs) - Frenchmen Springs Basalt
Qd - Sand dune
Qfg - Outburst Flood Deposts - Gravelly
Ql - Loess
Qls - Landslide Deposits
Qt - Terraced Deposits

Switzler Canyon Reservoir Surface Geology

SEPA Checklist Report
WRIA 31, Washington

Aspect CONSULTING	FEB-2015	BY: BZ / EAC	FIGURE NO. 2
	PROJECT NO. 090045 - 019	REVISED BY: ---	

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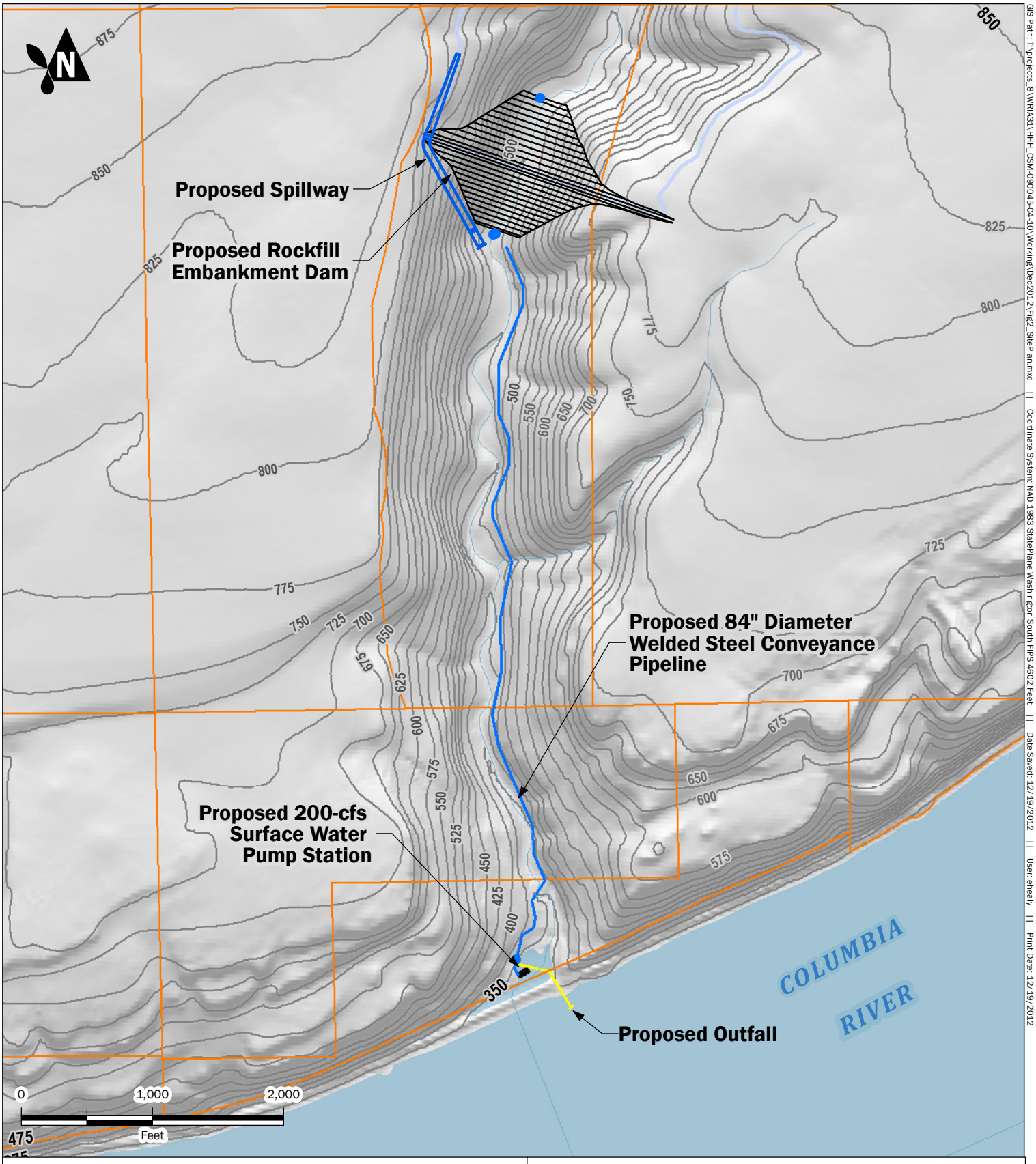
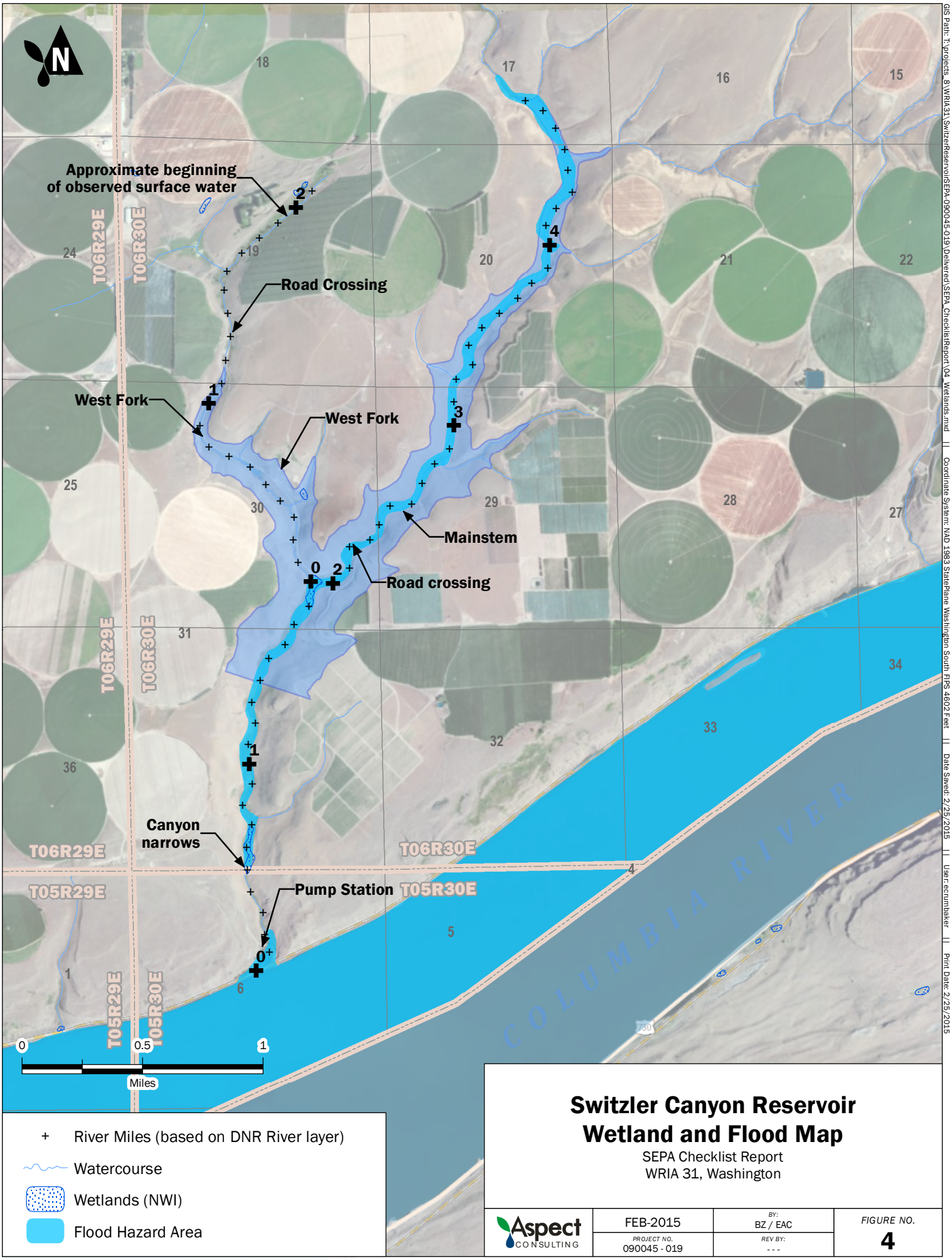


Proposed Pipeline
25-foot Contour
Feature
Parcel
Reservoir
Proposed Spillway
Proposed Rockfill Embankment
Proposed Outfall
Watercourse
Waterbody

Site Plan

Horse Heaven Water Storage Appraisal Assessment
Refined Engineering and Cost Estimate
WRIA 31, Washington

Aspect CONSULTING | ANCHOR QEA | BY: JRB / EAH | DEC-2012 | PROJECT NO. 090045 | FIGURE NO. 3



Switzler Canyon Reservoir Wetland and Flood Map

SEPA Checklist Report
WRIA 31, Washington

Aspect CONSULTING	FEB-2015	BY: BZ / EAC	FIGURE NO. 4
	PROJECT NO. 090045 - 019	REV BY: ---	

GIS Path: T:\projects_8\WRIA31\SwitzerReservoirSEPA-090045-019\Delivered\SEPA_ChecklistReport\04_Wetlands.mxd || Coordinate System: NAD 1983 StatePlane Washington South FIPS 4602 Feet || Date Saved: 2/25/2015 || User: ecrumbaker || Print Date: 2/25/2015