

APPENDIX A
SUMMARY OF DATA SOURCES
FOR ST VRAIN AND LEFT HAND CREEK STREAM MANAGEMENT PLAN

Name	Category	Data Source	Note & Uncertainty/Gaps
FLOW & WATER MANAGEMENT			
HUC-12 Watersheds	Watershed Framework	USDA Geospatial Data is called the Watershed Boundary Dataset (WBD).	This dataset at 1:24,000 scale.
Ecoregional Zones (aka SMP Zones)	Watershed Framework	US Environmental Protection Agency , U.S. EPA Ecoregions_IV, US_L4NAME	National dataset scale, so exact boundaries may vary. SMP combined some zones: Alpine with Subalpine, and Foothill Shrubland with Crystalline Mid-Elevation Forest.
Streams	Hydrology	CO DWR Source Water Route Framework https://dnrweb.state.co.us/DWR/DwrApiService/Help/WaterSourceRouteFrameworkGenerator	State dataset is based on National Hydrography Dataset (NHD), reportedly from 2014. Selected main creeks and tributaries. Due to 2013 flood and restoration projects aerial imagery shows some of the alignments (primarily in transition zone) are inaccurate. Groundtruthing the layer will need to occur during projects. SWRF lines are also simplified, so stream miles on the ground are likely longer in places.
Gages	Hydrology	Div1 Flowstations Gages	USGS and state gages
Diversions	Water Use	CDSS Div1_Diversions	
Nodes	Flow Analysis	CDSS Div1_Diversions & USGS gages	Modified based on StateMod node locations and input from Dinatale Water. "SWRF_Nodes_Revised20190116"
SWRF Reaches	Flow Analysis	Divided CO DWR Streams using Nodes as endpoints	Also used for COSHAF
Ditches	Water Use	CDSS Div1_Ditches	
Reservoirs	Water Use	CDSS Div1_Reservoirs	
Lakes	Hydrology	National Hydrography Dataset (NHD) Waterbodies features	Includes some but not all reservoirs and some gravel ponds.
Alluvial aquifer	Hydrology	South Platte Alluvial Aquifer from Colorado Decision Support (CDSS data)	High level, may provide opportunities for consideration in future analysis.
Flood zones	Hydrology	Federal Emergency Management Agency (FEMA) FEMA_NFHL	National Flood Hazard Layer (NFHL) dataset represents the current effective flood data: compilation of effective Flood Insurance Rate Map (FIRM) databases and Letters of Map Change (LOMCs). Note also reviewed The Nature Conservancy's extent of potential floodplain(based on FEMA and topography).
Flood Hazard	Hydrology	CWCB Colorado Hazard Mapping Program, Boulder and Weld County	Reviewed preliminary data but need to incorporate final in Phase 2.
Instream Flows	Water Use	CDSS ISF Stream Reach 171026	Also looked at Instream Flow Endpoints
Gravel Pits	Water Use	*SVLHWCD (Deere and Ault)	
Irrigated Lands (2018)	Water Use	CDSS Div1_Irrigated Lands	Also reviewed 2015 data set
Dry up points	Water Use	Div 1 District 5 Water Commissioner, with input from LHWC	Uncertain extent in reaches, as return flows help mitigate extent in some reaches
HABITAT			

Name	Category	Data Source	Note & Uncertainty/Gaps
Aquatic Life Use Zone	Aquatic Biota	CDPHE Water Quality, based on temperature tiers, (ie Class 1, 2 Warm and Cold water fisheries) Modified to add Coldwater/Transition zone in places.	"Transition" zone for small native fish in St Vrain is modification (subset) of coldwater zone based on input from CPW. A similar zone likely exists for LHC, but additional data review is needed to estimate its extent
Native fish	Aquatic Biota (Habitat ranges of conservation species)	CPW point data for the most recent observation by station of all Tier 1 and 2 SWAP species.	Uncertain extent along reach in vicinity of point. In watershed scale analysis, converted point data to polygons to allow intersection (using 50 ft buffer) More detailed species diversity data available to review during site specific assessment in opportunity areas.
Amphibian and Reptiles	Habitat ranges of conservation species	CPW point data for the most recent observation by station of all Tier 1 and 2 SWAP species.	Uncertain extent along reach in vicinity of point. For river health analysis, applied a 50- ft buffer around each point for river health analysis.
Aquatic habitat	Aquatic Biota	CPW Priority Tier 1 Aquatic habitat from State Wildlife Action Plan.	Coarse resolution mapping, reviewed for overall background information.
Riparian areas	Riparian Vegetation	CPW -- data for counties-- BLDR,WELD,LAR http://www.arcgis.com/home/group.html?id=9fd822fdacb54e529b511d51fae0a1e3&start=1&view=list#content Includes riparian polygons and lines.	Uncertain accuracy, especially post flood. For eco model, Biohabitats converted single line to polygon using conservative estimate of 20ft on either side. Only included riparian areas along SWRF Mainstems and selected tributaries (ie excluded riparian vegetation mapped along ditches.)
Wetlands	Riparian Vegetation	BOCO wetland data source & CO Wetlands (NWI) combined	Uncertain accuracy post flood: stakeholders noted many wetlands wiped out.
Vegetation cover/Ecological systems	Watershed characterization, Habitat	Nature Serve native plant communities http://www.natureserve.org/conservation-tools/terrestrial-ecological-systems-united-states	Coarse resolution data included in watershed scale analysis.
Riparian Buffer	Riparian	Created from ¼-mile buffer on either side of SWRF streams	
Hydrogeomorphic Valley	Riparian	USFS Region 2 Hydrogeomorphic Valley Types (HGVS Reg Pro)	Covers USFS lands. 'Considers both the hydrologically defined valley bottom (as determined by the height of a 100 year flood estimate being routed through a 10 meter DEM) plus the geomorphically defined valley bottom (as determined by the slope inflection points in the DEM). It does not cover first order streams where the valleys are ill defined'
Riparian Land Cover	Riparian	Land cover created using ArcGIS Pro Image Classification of aerial imagery	Categories include tree cover, non-tree vegetation and developed lands.
Preble's Meadow Jumping Mouse - Species distribution	Riparian Vegetation, Wildlife habitat	CPW's PJ Mouse occupied range	For site specific opportunity analysis. Also reviewed Boulder County trapping point data
Multiple layers for significant biodiversity	Riparian Vegetation/Habitat Type	Boulder County (BOCO)	Overlap of layers creates potential to double count values. To avoid, polygon classes were dissolved into a single feature class and scored.

Name	Category	Data Source	Note & Uncertainty/Gaps
1. Significant Natural Communities 2. High Biodiversity 3. Critical Wildlife Habitats			
Raptor nests (Bald eagle)	Habitat ranges of conservation species	CPW species ranges	Included in watershed scale analysis. Accuracy not confirmed or cross checked with City of Longmont raptor nest data (confidential). Could review during site specific assessments.
Critical Habitat	Riparian Vegetation/Habitat	CPW (terrestrial habitat)	Uncertain if duplication with BOCO significant habitats. Included in watershed scale review..
Invasive species-riparian/wetlands	Riparian Vegetation	Weld County, Boulder County,	Invasive riparian tree species
Invasive species-aquatic nuisance species	Aquatic biota	City of Longmont	Detailed data not included in GIS analyses at this time. Review/incorporate data during site specific assessments
WATER QUALITY			
Water Quality Parameters: Temperature, Inorganics; Organics E Coli Nutrient data	Water Quality	CDPHE Water Quality data, 2018 spatial representation of stream segmentation for TMDL and 303(d) impacted water quality reaches https://www.colorado.gov/pacific/cdphe/clean-water-gis-maps .	Water quality segments from CDPHE are general indicators. Certain parameters and standards have uncertainty statewide, such as arsenic which may be naturally occurring. Need to check if temporary modifications have been designated for some parameters, such as temperature, when doing site-specific evaluations. Aquatic Life- Use Not supported Water Supply-- Not Supported Uses Recreation-- Not Supported Uses E Coli and nutrient data for select sampling locations: included in river health assessment but not comprehensive coverage. Interpretations of elevated levels based on Keep it Clean 2017 summary report.
Outstanding waters	Water Quality	DWR straight line diagram	Based on water quality designation. Need to check with CPW about potential to use as surrogate for native coldwater fish in basin.
Benthic Macroinvertebrate Index (BMI)	Water Quality	LHWC and Keep it Clean reporting	Limited number of sampling points. Not included in GIS analyses, but can review historical data during site specific assessments.
Soil erodibility (hillslope erosion)	Water Quality/Sediment Regime	NRCS data interpreted in St Vrain Basin Watershed-Based Plan (from JW Associates)	Include in watershed review, but scale too general for site-specific evaluations.
Wildland Fire Potential	Multiple	LANDFIRE	National dataset, so scale may be an issue.

Name	Category	Data Source	Note & Uncertainty/Gaps
Impermeable surfaces	Water Quality	Impermeable surfaces (Land cover data) Also Human Modification Index layer (ESRI Green Infrastructure) CDOT/County roads	Does not include impermeable surfaces from overuse eg recreation pressures-social trails/undesignated camping. Human modification layer includes standard road buffer that appears overwide in certain locations.
Pollutant point sources (multiple)	Water Quality	Multiple layers from EPA including abandoned mines, Superfund sites, Major and minor wastewater treatment plants	Distance from point source to impaired reach can be far. Using water quality data as surrogate in river health assessment and incorporate this data when evaluating site specific reaches.
RECREATION MANAGEMENT			
Boating Reaches	Water Use	American Whitewater created for SMP	
Campsites	Recreation	USFS	
Forest Service Roads	Recreation	USFS	
OTHER			
Numerous other data sets were reviewed for relevance including state geology, topography, TNC's healthy watershed assessment, past restoration project locations & master plan reaches, ESRI core habitat and corridors. Below is an example of additional data set for climate that was reviewed.			
Habitat climate vulnerability	Multiple (general)	CPW Climate Change Vulnerability Assessment rankings, Biohabitats linked to ecological communities	Watershed scale based on habitat type.