Klickitat Subbasin Master Planning: Next Steps to Hatchery Reform

Klickitat and White Salmon Rivers Fisheries & Watershed Science Conference
March 16, 2010

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Yakama Nation Fisheries – YKFP

Presentation Outline:

- Policy Framework Guiding Klickitat Hatchery Reforms
- Klickitat Hatchery Program EIS
- On-the-Ground Actions
- Next Steps

Policy Framework Guiding Klickitat Hatchery Reforms

US v OREGON

Grew from treaty fishing rights cases in 1960s and early 1970s.

Led to landmark Boldt and Belloni decisions.

Resulted in negotiated Columbia River Management Plans and agreements (since 1977).

Agreements contain harvest and production provisions.

Production provisions denote target release numbers by species and location.

Agreements are signed by the parties and entered as an order of the court.

Policy Framework Guiding Klickitat Hatchery Reforms (cont.)

Fish Accord Agreement (2008):

Secures long-term funding for hatchery & habitat actions

Northwest Power Act (1980):

Addresses impact of hydroelectric operations on fish & wildlife

Established a regional plan to protect/mitigate/enhance Columbia Basin Fish & Wildlife

Established 3-step process for large capital projects and the Independent Scientific Review Panel

NOAA's Mitchell Act EIS (early Summer 2010)

Hatchery operation/production effects on listed species

Scientific Framework Guiding Klickitat Hatchery Reforms

Yakima/Klickitat Fisheries Project (1982):

Cle Elum Supplementation & Research Facility scientific findings used to reform Klickitat Hatchery Production

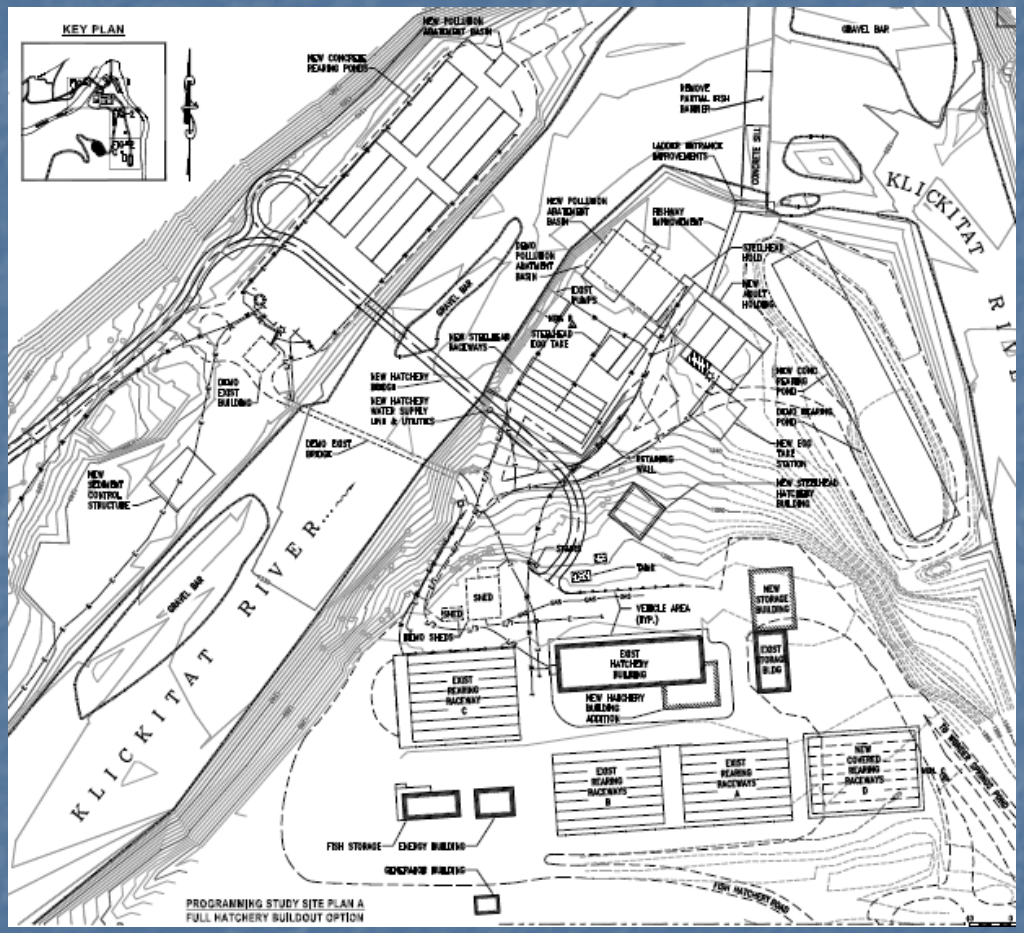
Hatchery Scientific Review Group:

- Design and operate hatchery programs in a scientifically defensible manner
- Clear, specific, quantifiable harvest and conservation goals for natural & hatchery populations
- Monitor, evaluate and adaptively manage hatchery programs

Klickitat Hatchery Program
Environmental Impact Statement

- Purpose and Need of Action
- Alternatives
  - No Action
  - Full buildout at all facilities
  - Partial buildout – upgrade/expansion Klickitat Hatchery only
- Salmon & Steelhead Production Objectives
- Socioeconomic Analysis
- Const. Phasing and Potential Environmental Impacts
- EIS Daft – August 2010
- Final EIS w/ Record of Decision - June/July 2011

Klickitat Hatchery Programming Site Plan

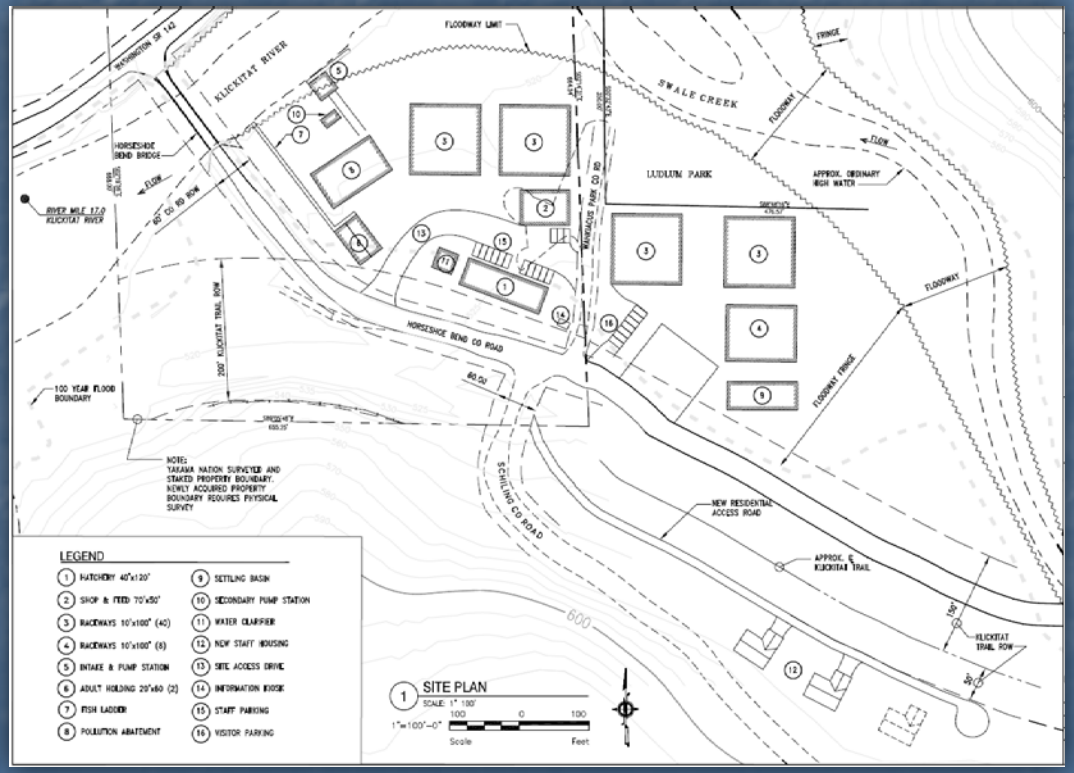


- 30% conceptual design (8/2010)
- Show full buildout alternative
- Water supply enhanced/secured
- Build steelhead hatchery
- Expanded broodstock holding
- Additional raceways
- Update facility workspace/shops
- Update existing housing
- Construct new houses (2)
- Update power supply
- Remove old hatchery weir

Wahkiacus Hatchery Programming Site Plan

Key to Hatchery Reform

"Free up" 26 Miles of high quality rearing/spawning Habitat



- 30% conceptual design (8/2010)
- Show full buildout alternative
- Develop water supply
- Broodstock collection/holding
- Hatchery incubation building
- Raceways
- Workspace/shops
- Construct new houses (2)
- Power supply
- Public information center
- Sportsmen's access

Klickitat River Anadromous Species

Native Stocks:

I. Spring Chinook

II. Steelhead

Introduced Stocks:

I. Fall Chinook

II. Coho

- All stocks have existing artificial (hatchery) production

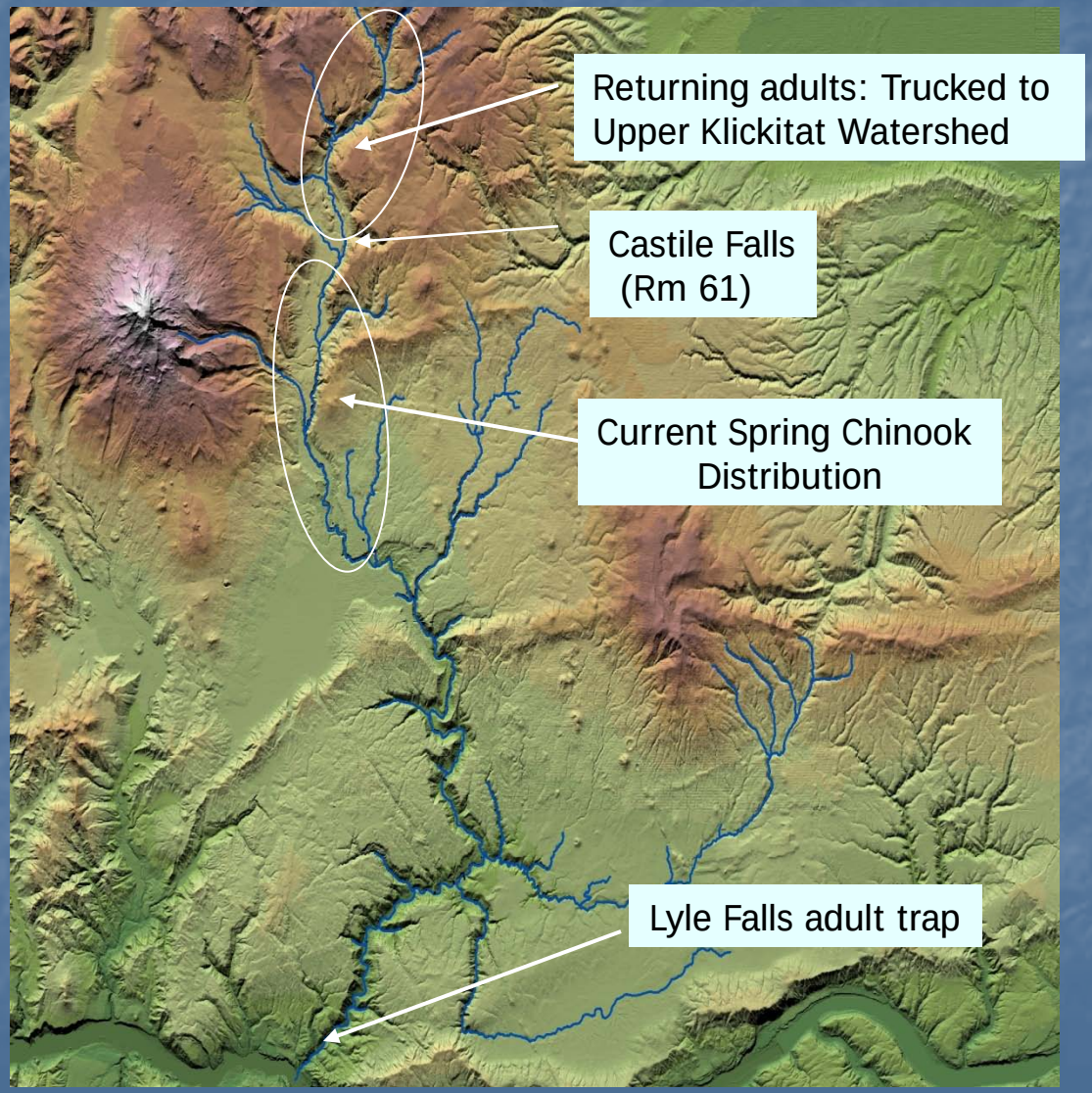
  - Programs designed for harvest augmentation

Spring Chinook

Current program

I. Harvest augmentation
- ~550 adults
- 95-100% hatchery broodstock
- ~800k on-station release
- PHOS ~ 10-20%
  - PNI= 0.25
- Standards:
  - Does not meet HSRG criteria

Spring Chinook

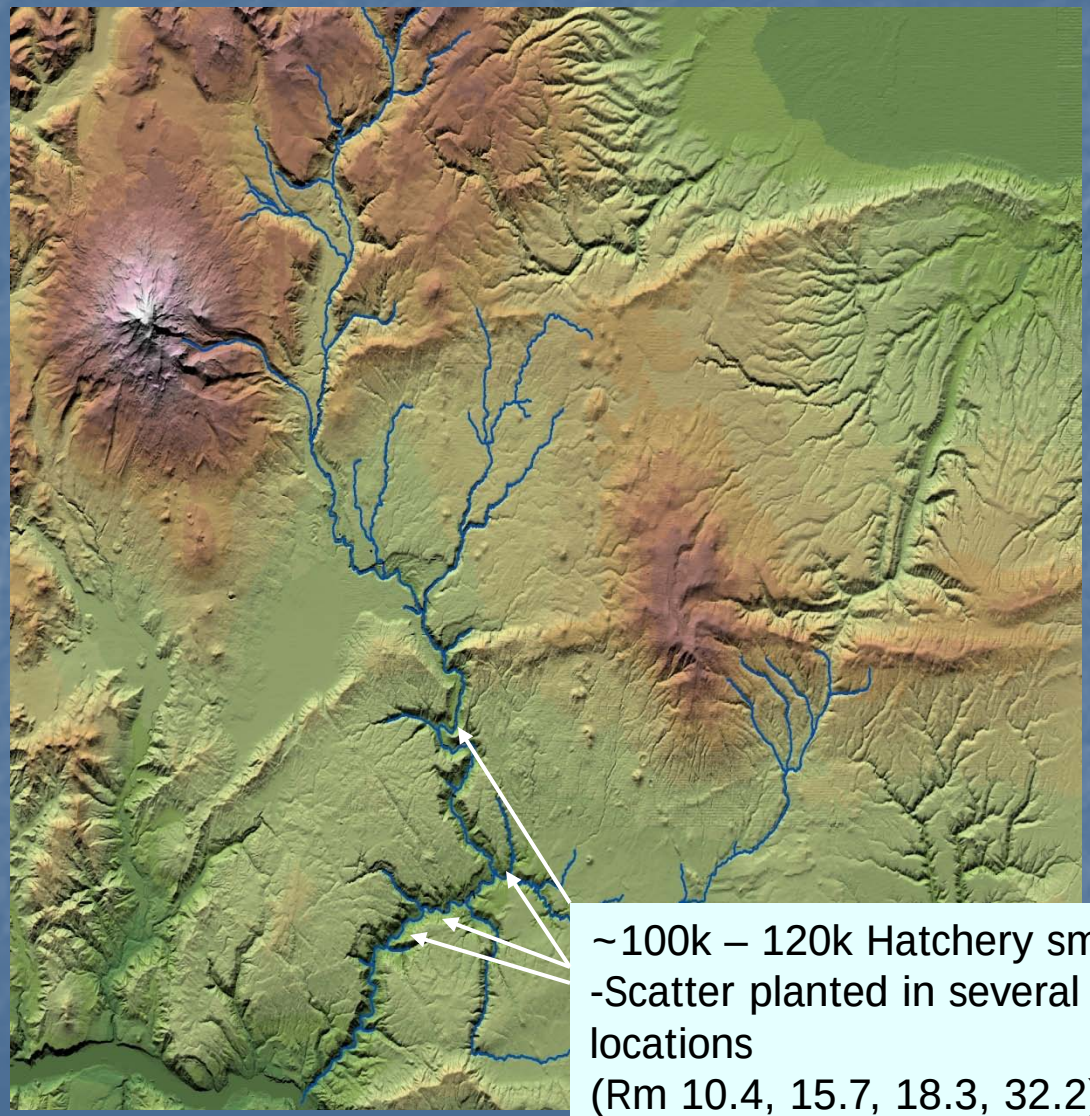


Future program

I. Conservation & Harvest
- Integrated program
  - Incorporate greater proportion natural origin fish
- Broodstock collection
  - Lyle Falls Trap
- ~550 Adults
  - 800k on-station release

Conservation benefits
- Increase spawning & rearing distribution
  - Increase abundance
- Increase PNI

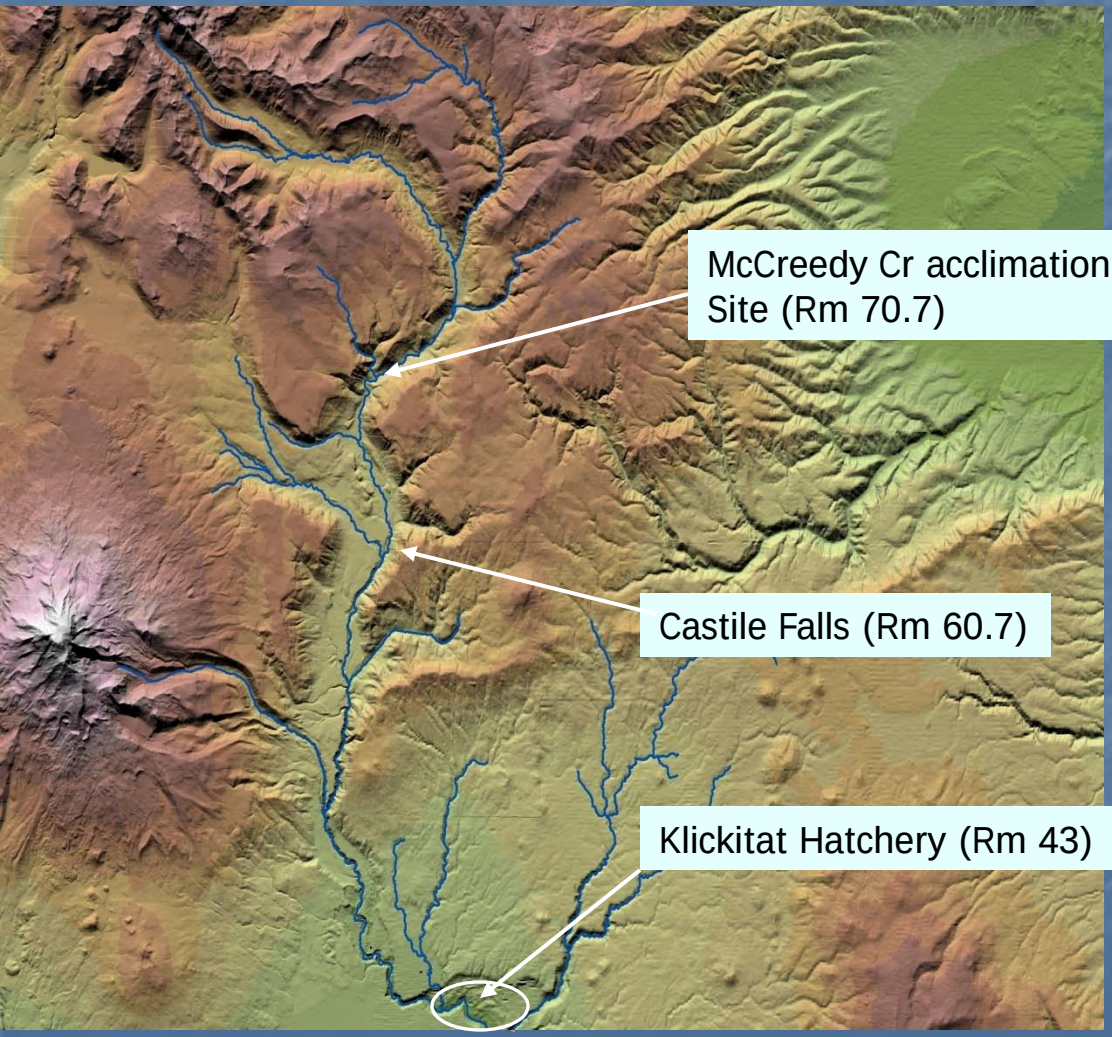
Steelhead



Current program

I. Harvest augmentation
- Smolts imported from Washougal hatchery
- 105k release
- 100% adipose clipped
- Successful program
  - Tribal & non-tribal fisheries
- Hatchery Steelhead escaping fisheries:
  - Spawn in wild
  - Inability to remove
  - Introgression has occurred between hatchery and natural origin fish

Steelhead



Future program

I. Segregated harvest & conservation component

Segregated Harvest Program

- 100% HOR broodstock from local returns
- Convert to NOR broodstock if needed for ESA Recovery.

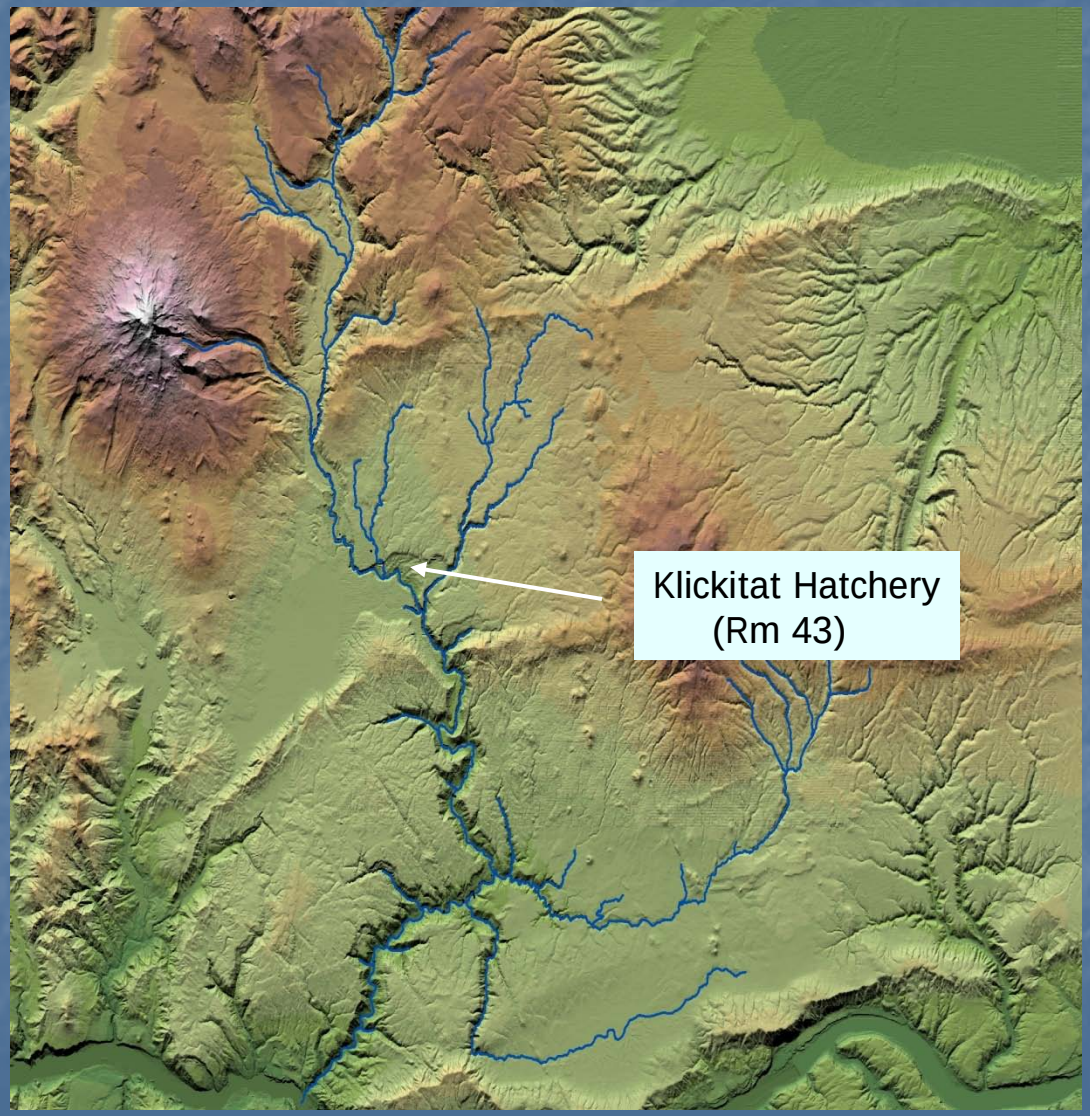
Conservation Program

- Potentially use both anadromous and resident life history forms
- ~30-40 adults needed
- ~65k smolts acclimated at McCreedy Cr facility
- Seed upper Klickitat watershed

Conservation benefits

- Increase spawning & rearing distribution

Fall Chinook

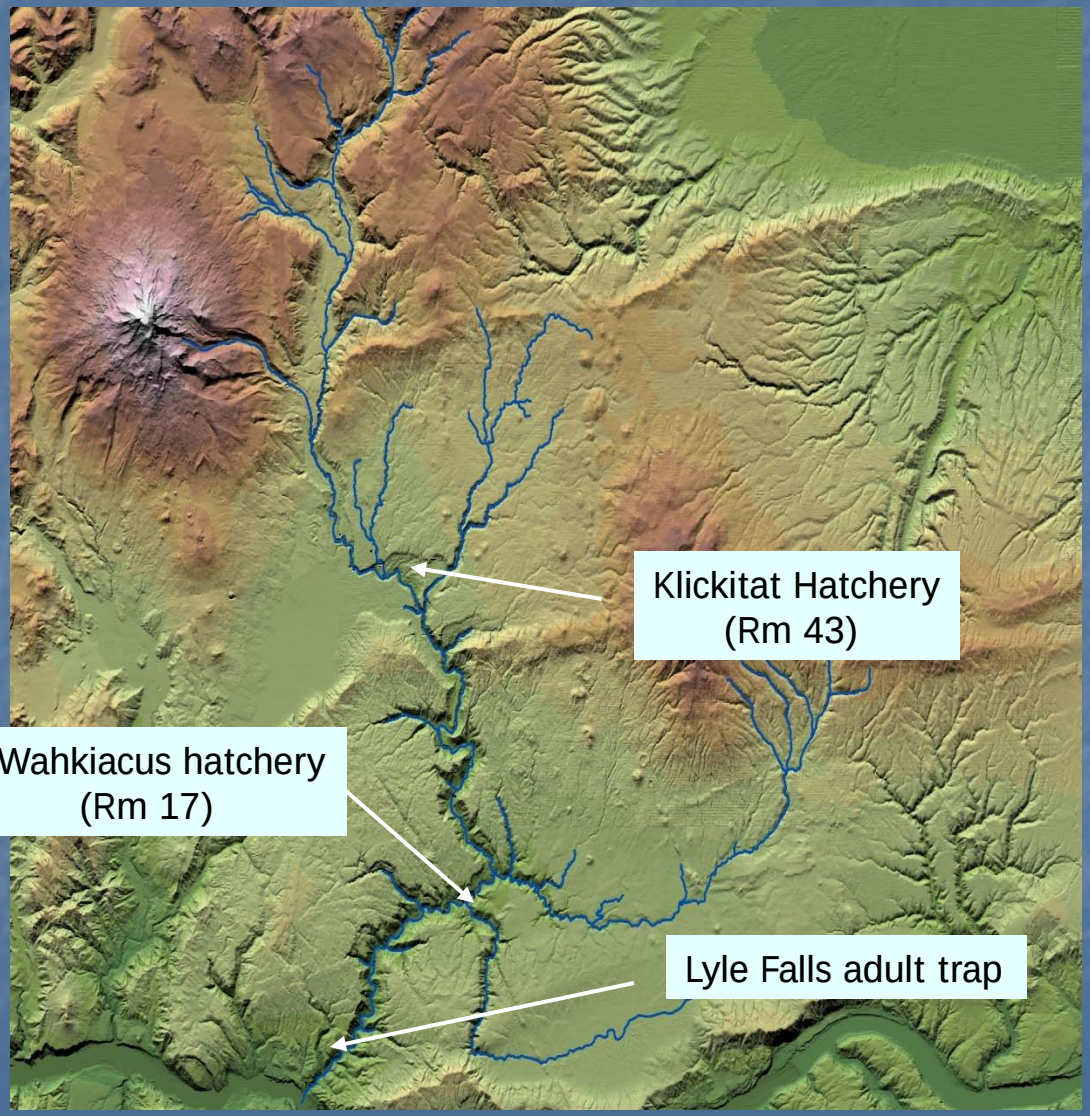


Current program

I. Harvest augmentation
- Imports 4.5 million eyed eggs
- 4.3 M sub-yearlings
  - Released from Klickitat hatchery
- 17% marked

✸ Contributes substantially to combined fisheries

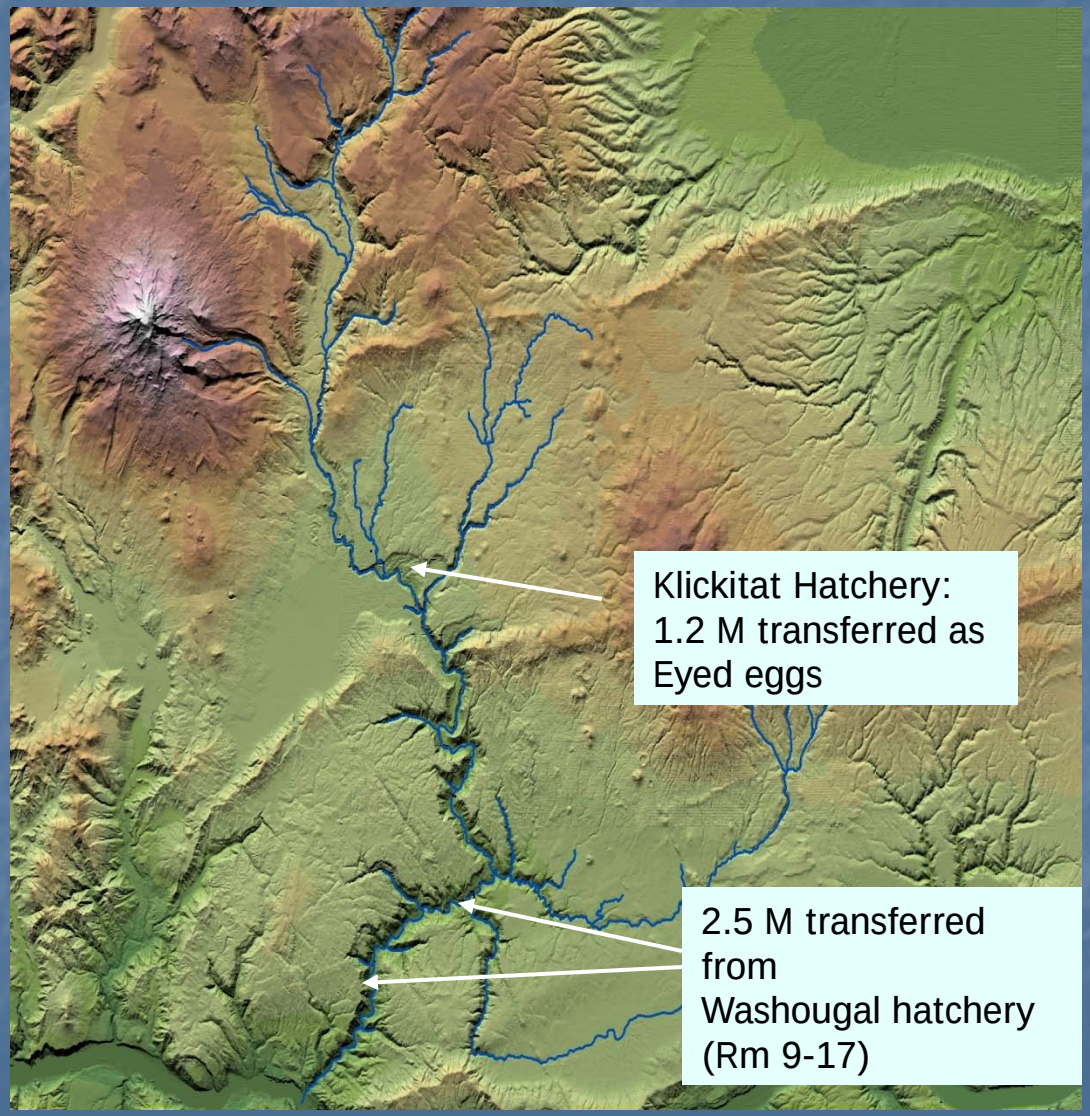
Fall Chinook



Future program

I. Harvest augmentation
- Segregated program
  - Develop local broodstock
  - Eliminate out-of-basin transfers
    - Reduce risk of disease transfers
  - Broodstock collection:
    - Lyle Falls, Wahkiacus
    - 2500 adults
  - 4 M sub-yearlings
  - Move 50% of juveniles downstream
    - Reduce competition with spring chinook

Coho

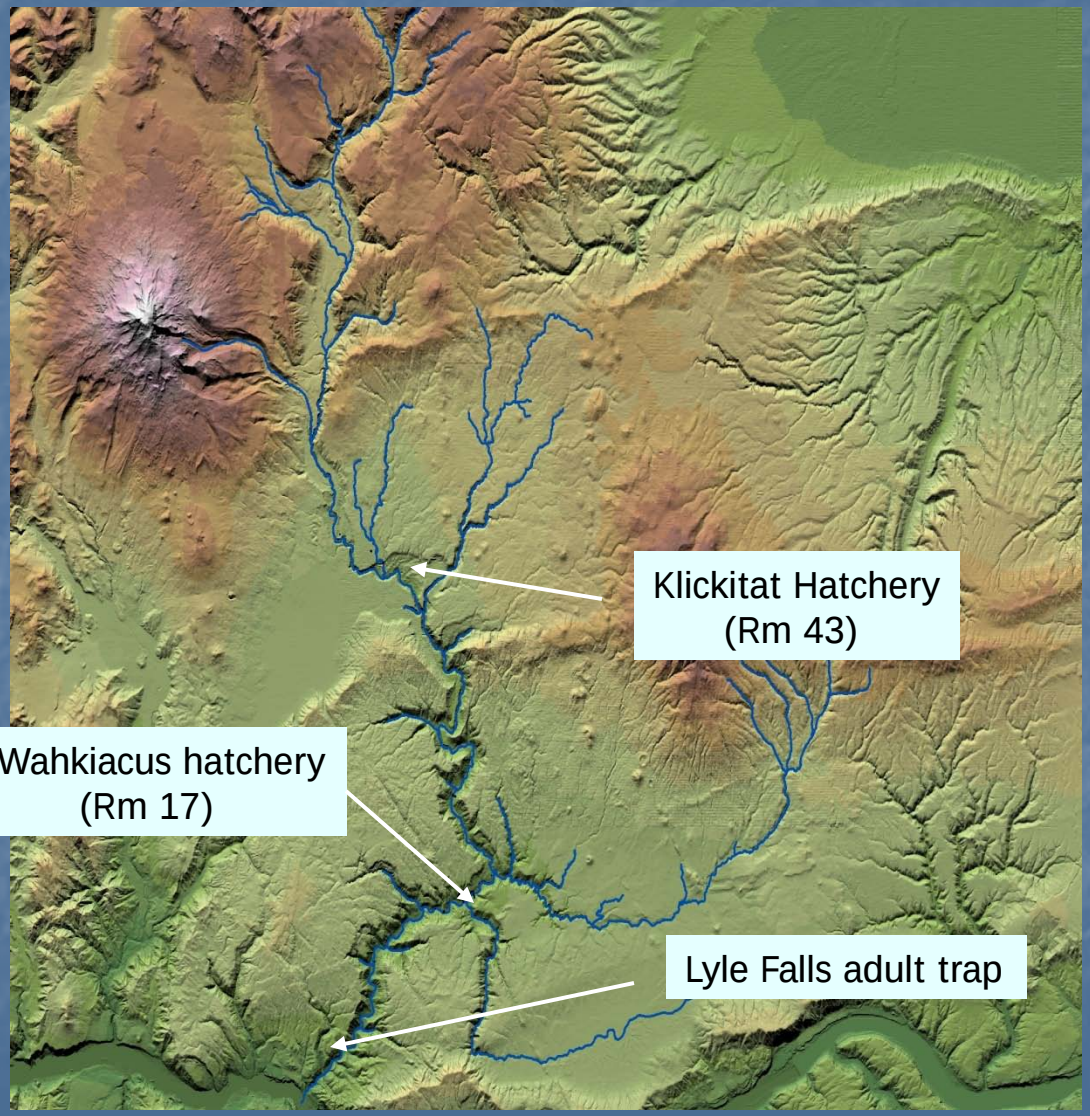


Current program

I. Harvest augmentation
- Imports 3.7 million juveniles
- Klickitat hatchery release group
  - Survival rate 3 times greater than 2.5 M release group
  - Chronic disease problems
  - Reduced imprintment

✸ Contributes substantially to combined fisheries

Coho



Future program

I. Harvest augmentation
- Segregated program
  - Develop local broodstock
  - Eliminate out-of-basin transfers
    - Reduce risk of disease transfers
  - Broodstock collection:
    - Lyle Falls
    - 750 adults
  - 1 M smolt release
  - Juveniles released from Wahkiacus
    - Reduce interactions with native stocks

Hatchery Reform Basics:

Proper Broodstock Collection

Optimal Rearing Densities

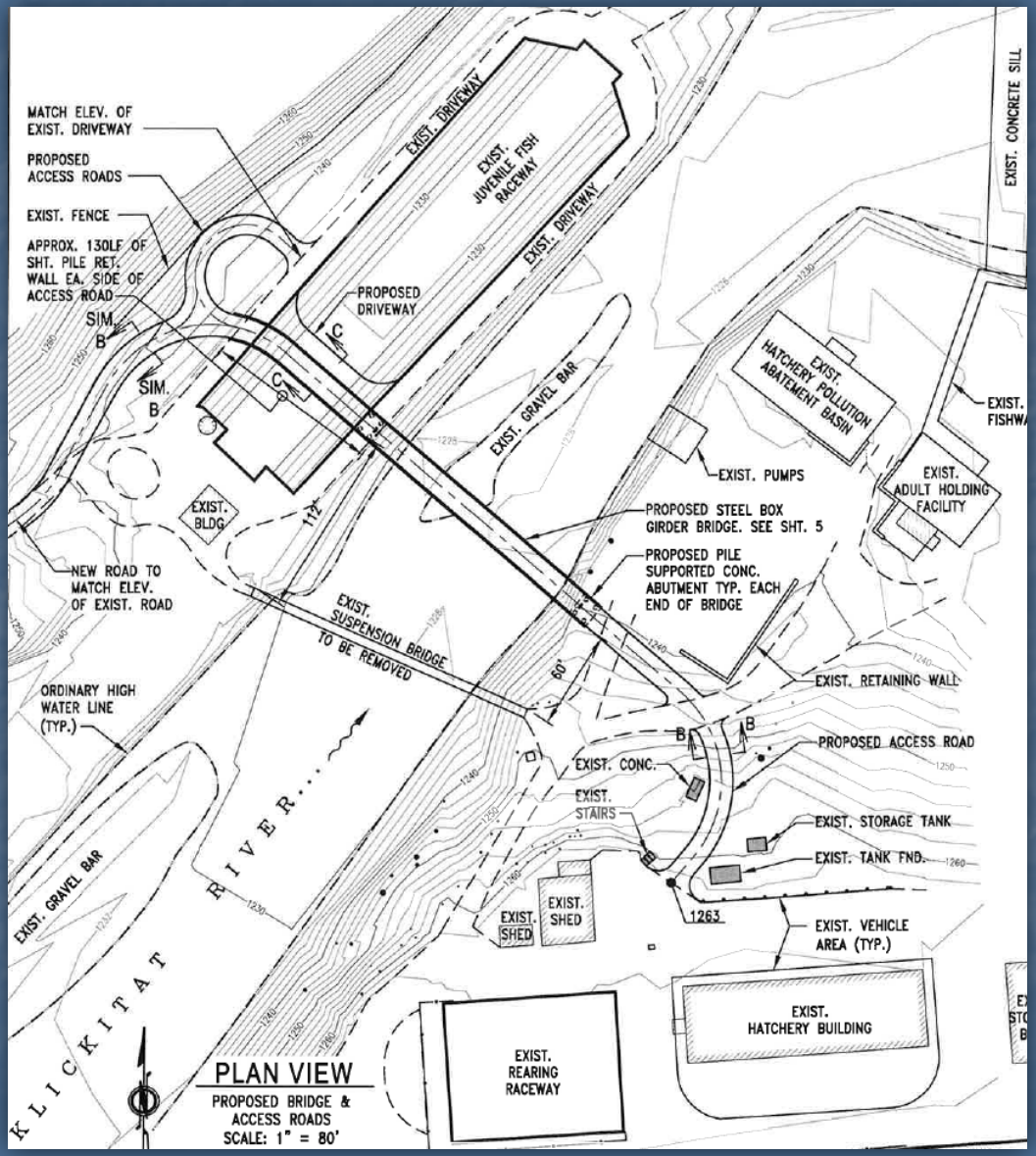
Natural Rearing Techniques

Volitional Release

Accord Projects Underway

- Klickitat Hatchery road/bridge
- Castile Falls Monitoring Facility
- Lyle Falls Passage & Monitoring Facility

Klickitat Hatchery Road/Bridge Project



- 165 ft.-long single lane box girder bridge
- Improved and rerouted ~1 mile of access road
- 2 ft. diameter water pipe

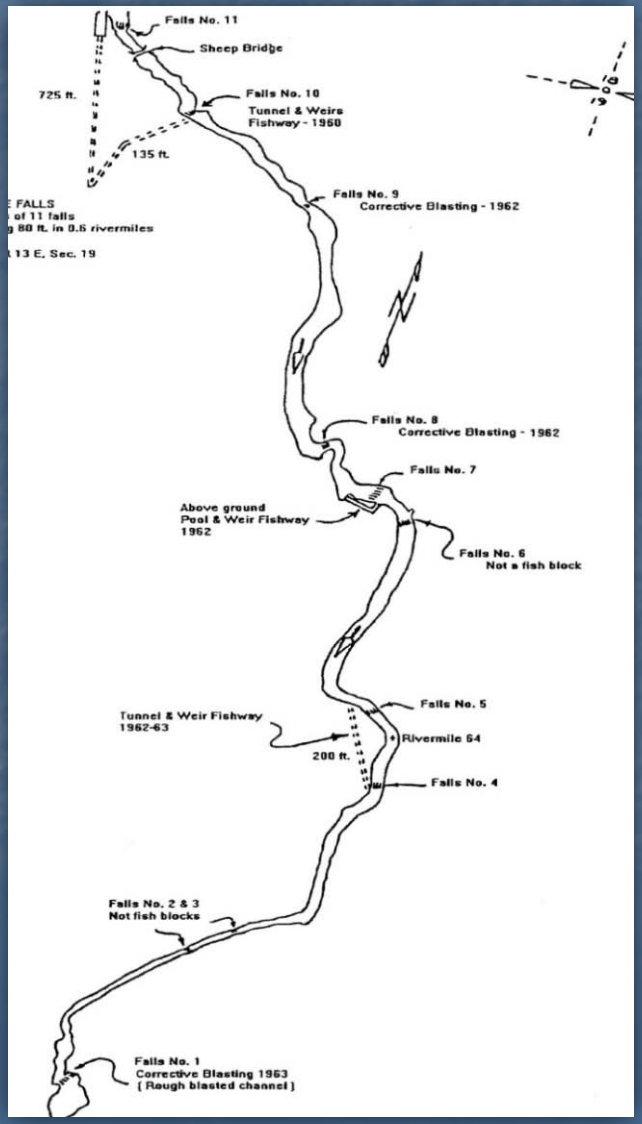
Castile Falls Monitoring Facility

Passage Improvements Completed

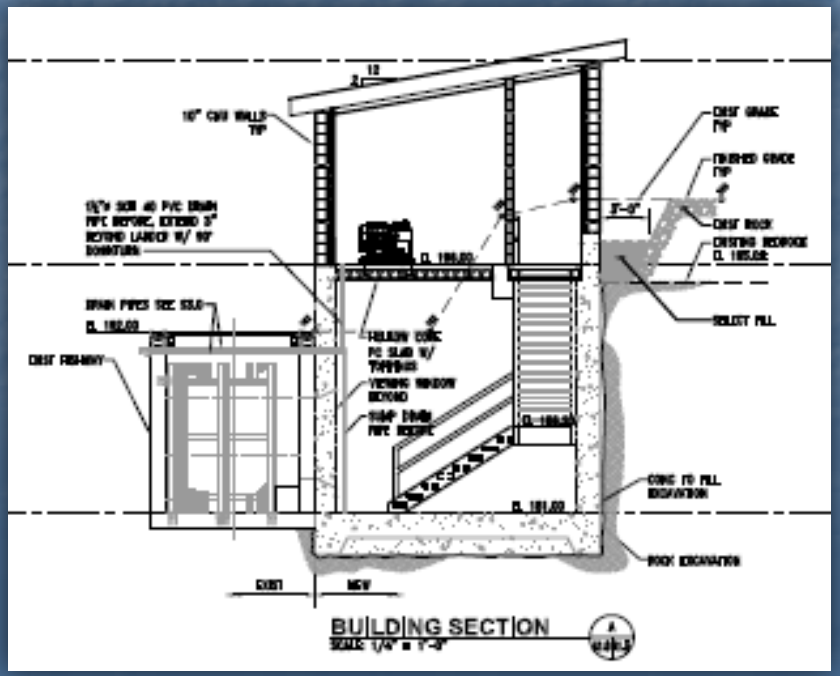
- 2004 - 2005
- Over 55 miles of habitat accessible
- Reduced fishway O&M

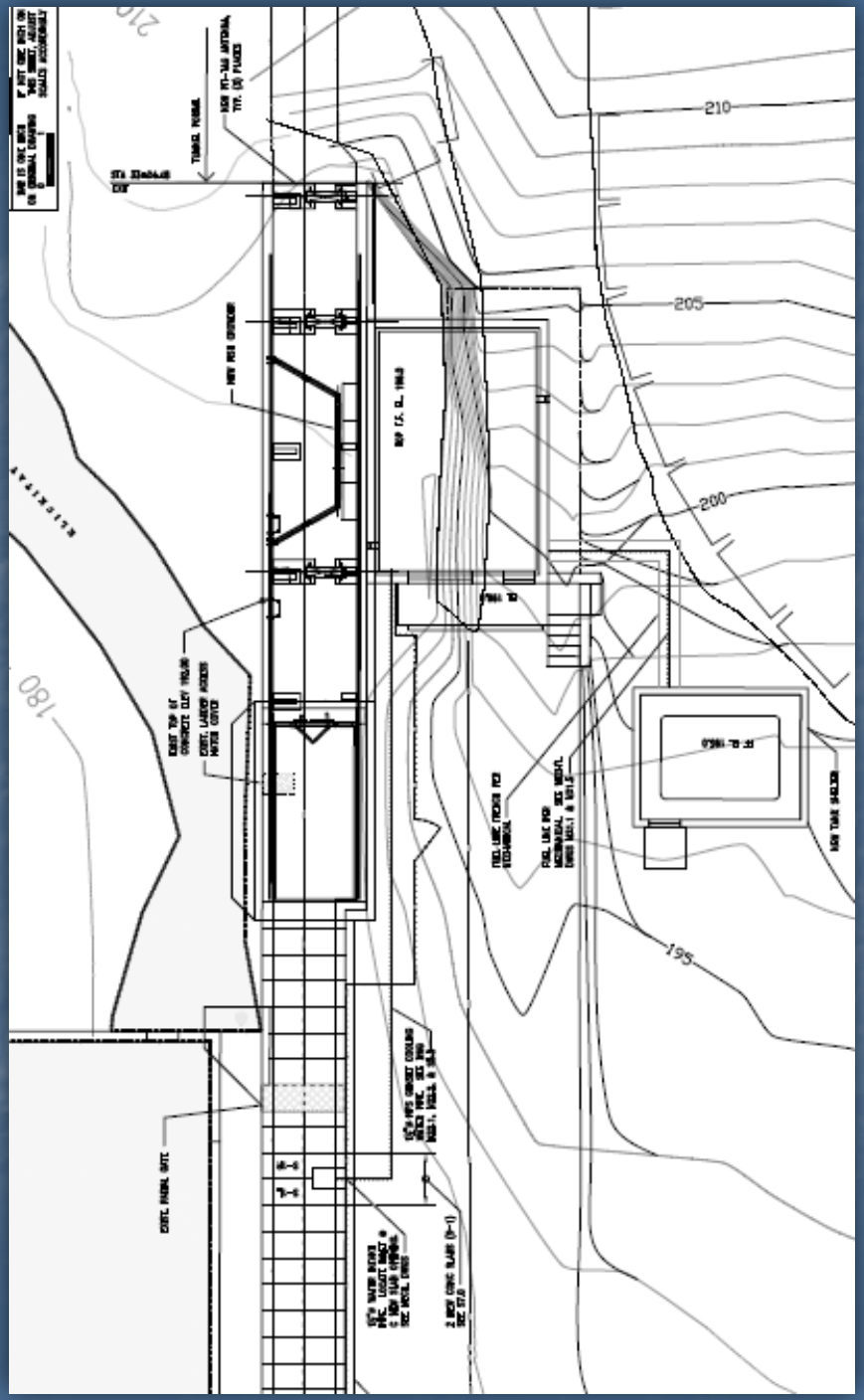
Monitoring Facility

- Construction contracting soon
- 2010 completion
- Remote sensing
- Digital imagery
- PIT-tag detection



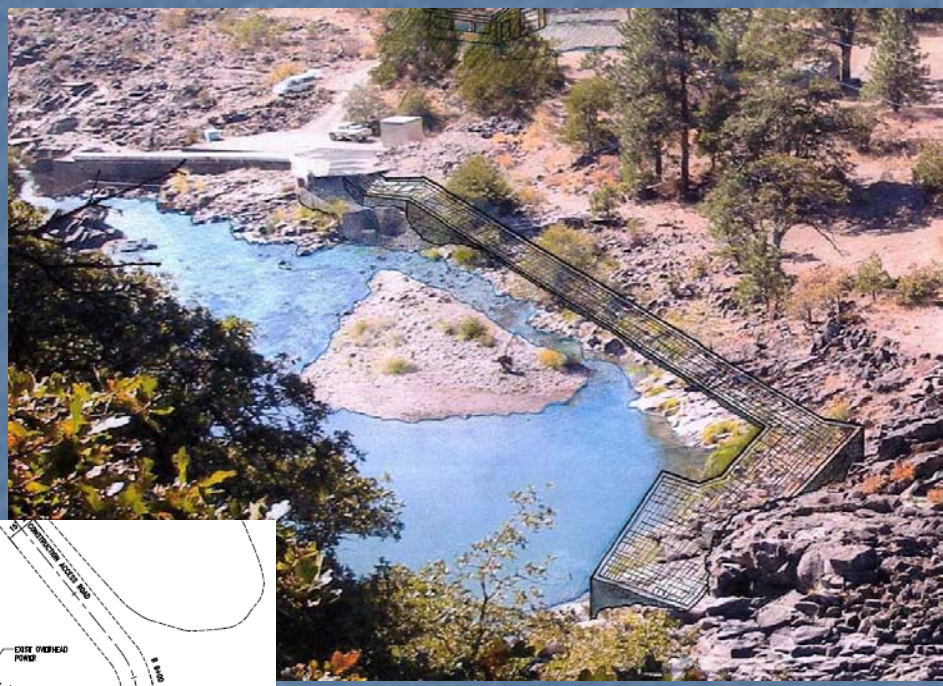
Castile Falls Monitoring Facility

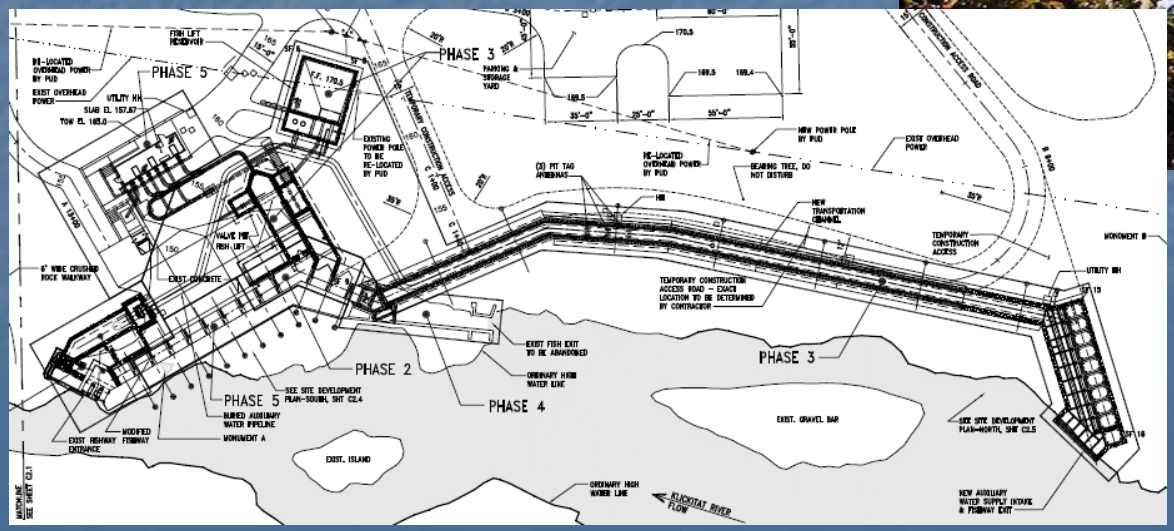


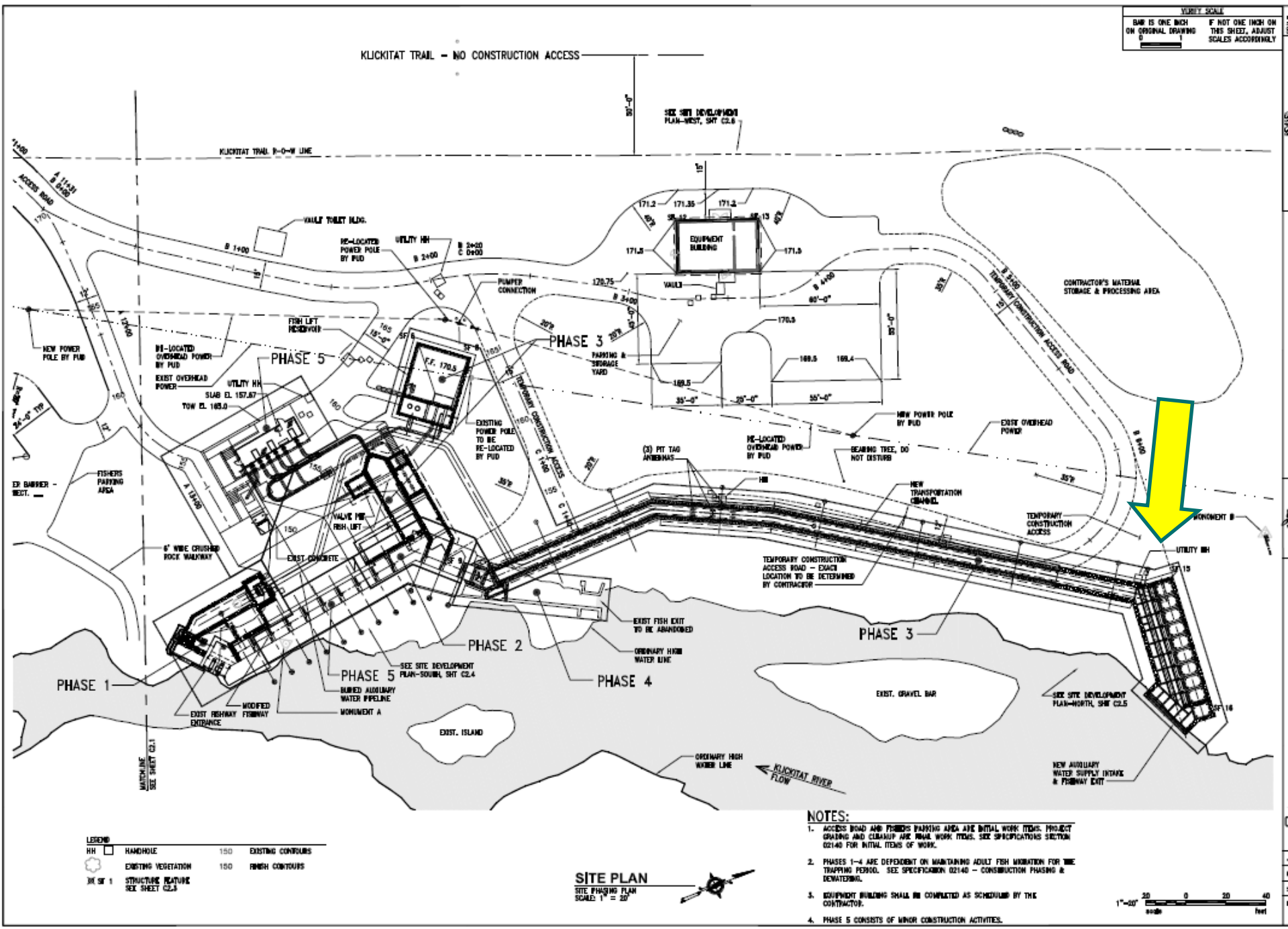


Lyle Falls Fishway #5 Passage & Monitoring Facility

- Construction contracting soon
- Incorporate USFWS lamprey passage design elements
- R,M&E facility
- Construction ‘10/‘11






KLICKITAT TRAIL – NO CONSTRUCTION ACCESS
KLICKITAT TRAIL R-O-W LINE
SEE SITE DEVELOPMENT PLAN–WEST, SHT C2.6
VAULT TOILET BLDG.
RE-LOCATED POWER POLE BY PUD
UTILITY HH
PUMPER CONNECTION
EQUIPMENT BUILDING
VAULT
FISH LIFT RESERVOIR
F.F. 170.5
PHASE 5
PHASE 3
PARKING & STORAGE YARD
CONTRACTOR'S MATERIAL STORAGE & PROCESSING AREA
TEMPORARY CONSTRUCTION ACCESS ROAD
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BEARING TREE, DO NOT DISTURB
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FISHERS PARKING AREA
6" WIDE CRUSHED ROCK WALKWAY
VALVE PIT, FISH LIFT
EXIST CONCRETE
EXIST FISH EXIT TO BE ABANDONED
ORDINARY HIGH WATER LINE
PHASE 1
PHASE 2
PHASE 5
PHASE 4
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SEE SITE DEVELOPMENT PLAN–SOUTH, SHT C2.4
BURIED AUXILIARY WATER PIPELINE
MODIFIED FISHWAY ENTRANCE
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MATCH LINE SEE SHEET C2.1
VISIBILITY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY
LEGEND
HH HANDHOLE
EXISTING VEGETATION
STRUCTURE FEATURE SEE SHEET C2.5
150 EXISTING CONTOURS
150 FINISH CONTOURS
SITE PLAN
SITE PHASING PLAN
SCALE: 1" = 20'
NOTES:
1. ACCESS ROAD AND FISHERS PARKING AREA ARE INITIAL WORK ITEMS. PROJECT GRADING AND CLEANUP ARE FINAL WORK ITEMS. SEE SPECIFICATIONS SECTION 02140 FOR INITIAL ITEMS OF WORK.
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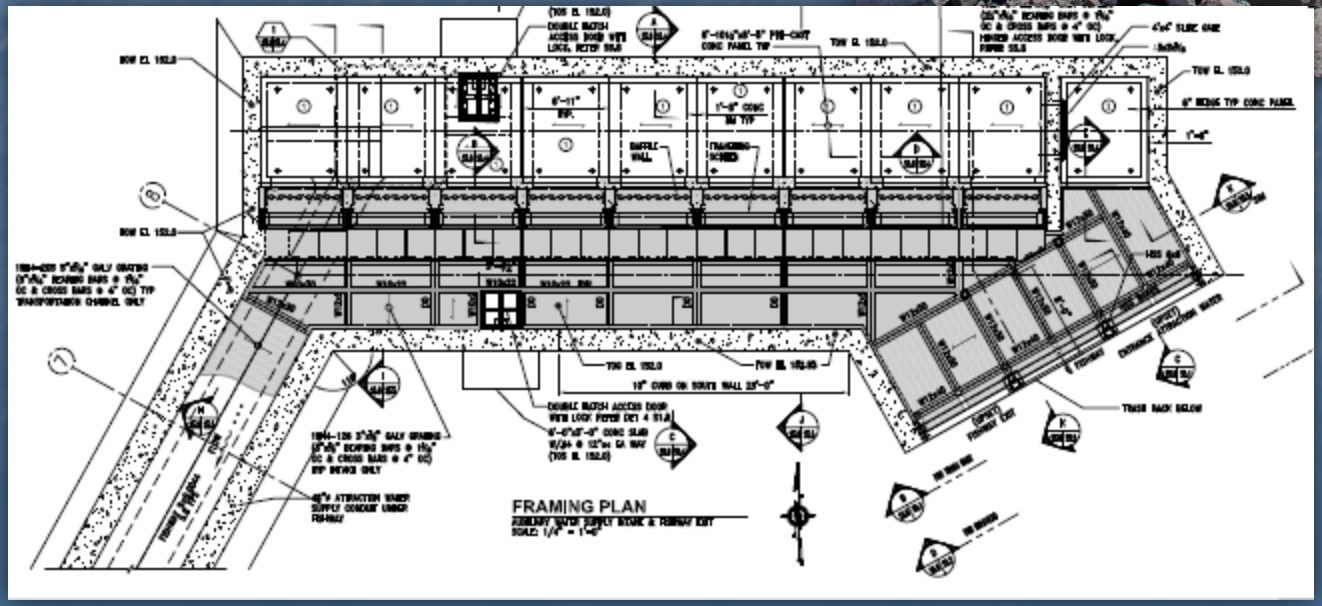
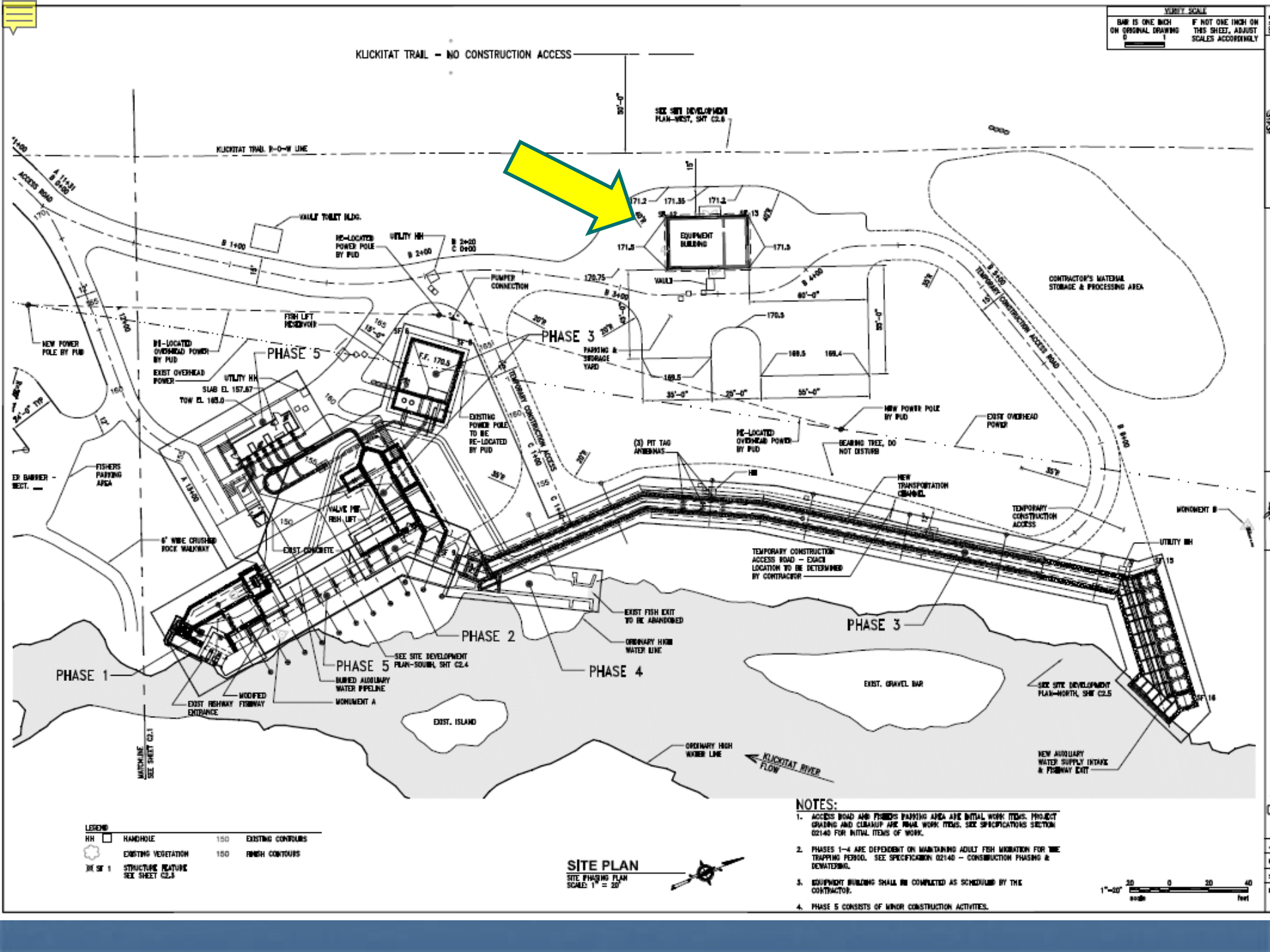
4. PHASE 5 CONSISTS OF MINOR CONSTRUCTION ACTIVITIES.
1"=20' 20 0 20 40 scale feet

Fishway Exit & Water Intake





LEGEND

HH	HANDHOLE	150	EXISTING CONTOURS
	EXISTING VEGETATION	150	FINISH CONTOURS
SF 1	STRUCTURE FEATURE SEE SHEET C2.5		

SITE PLAN

SITE PHASING PLAN
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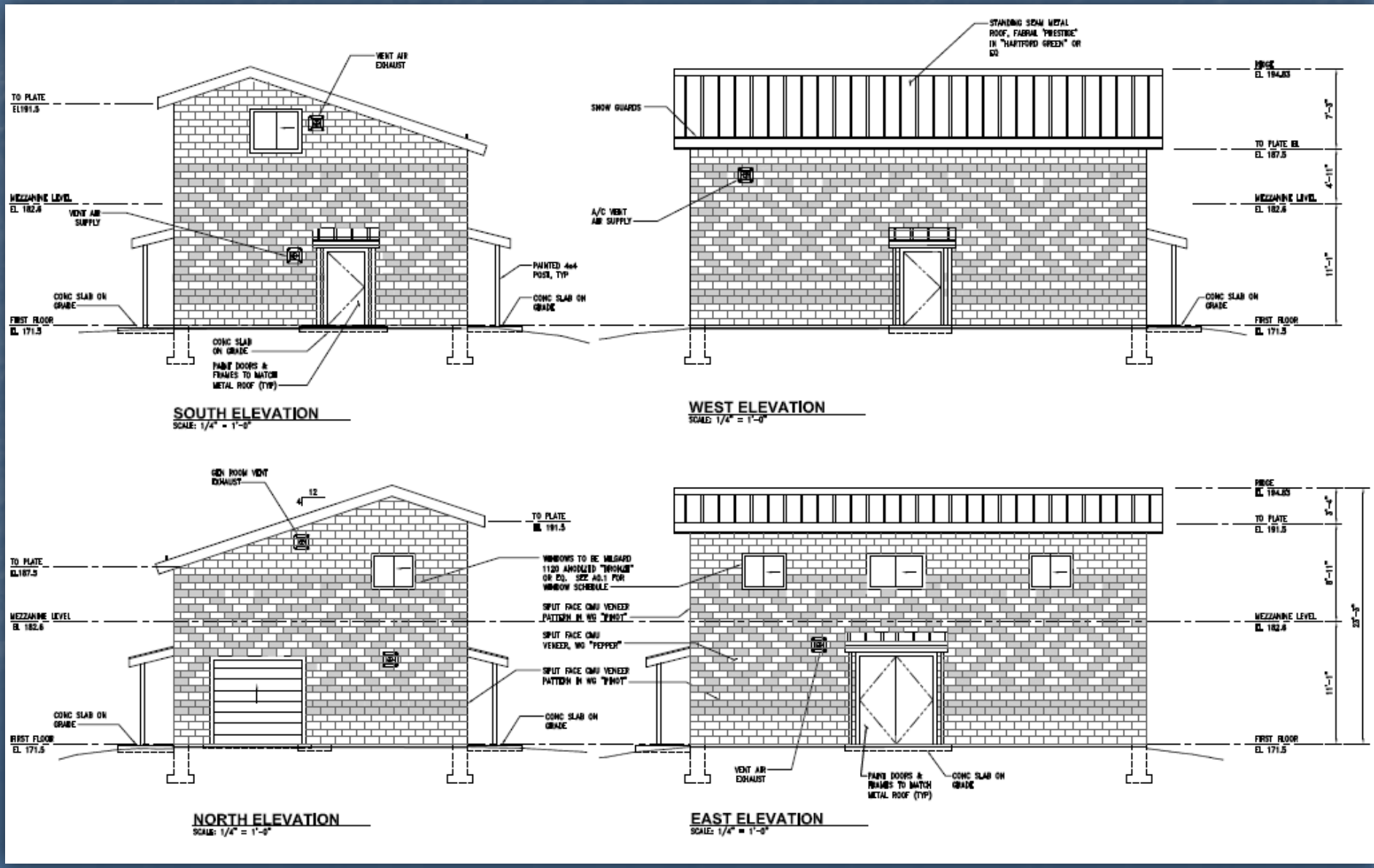
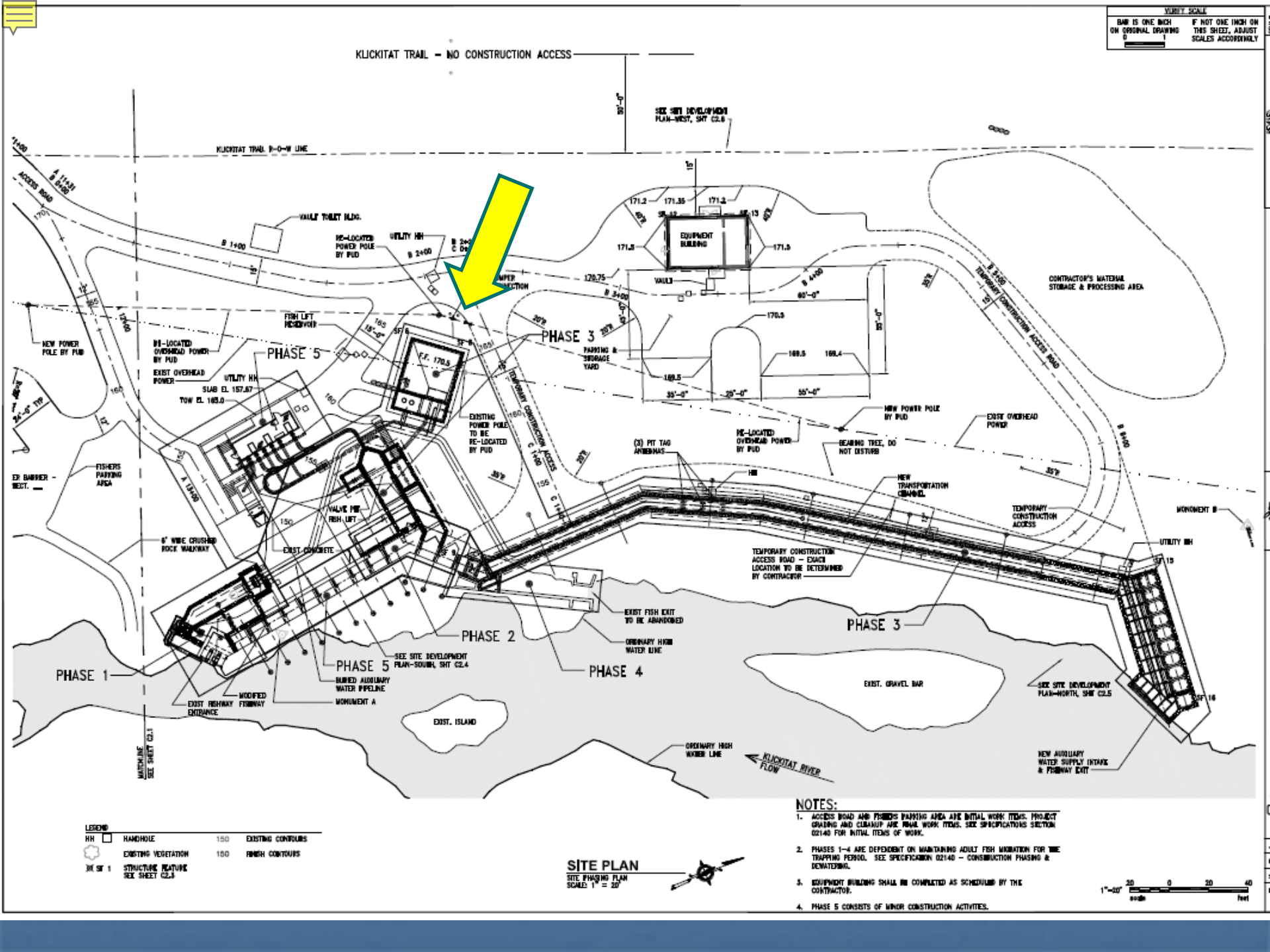
Equipment Control Building

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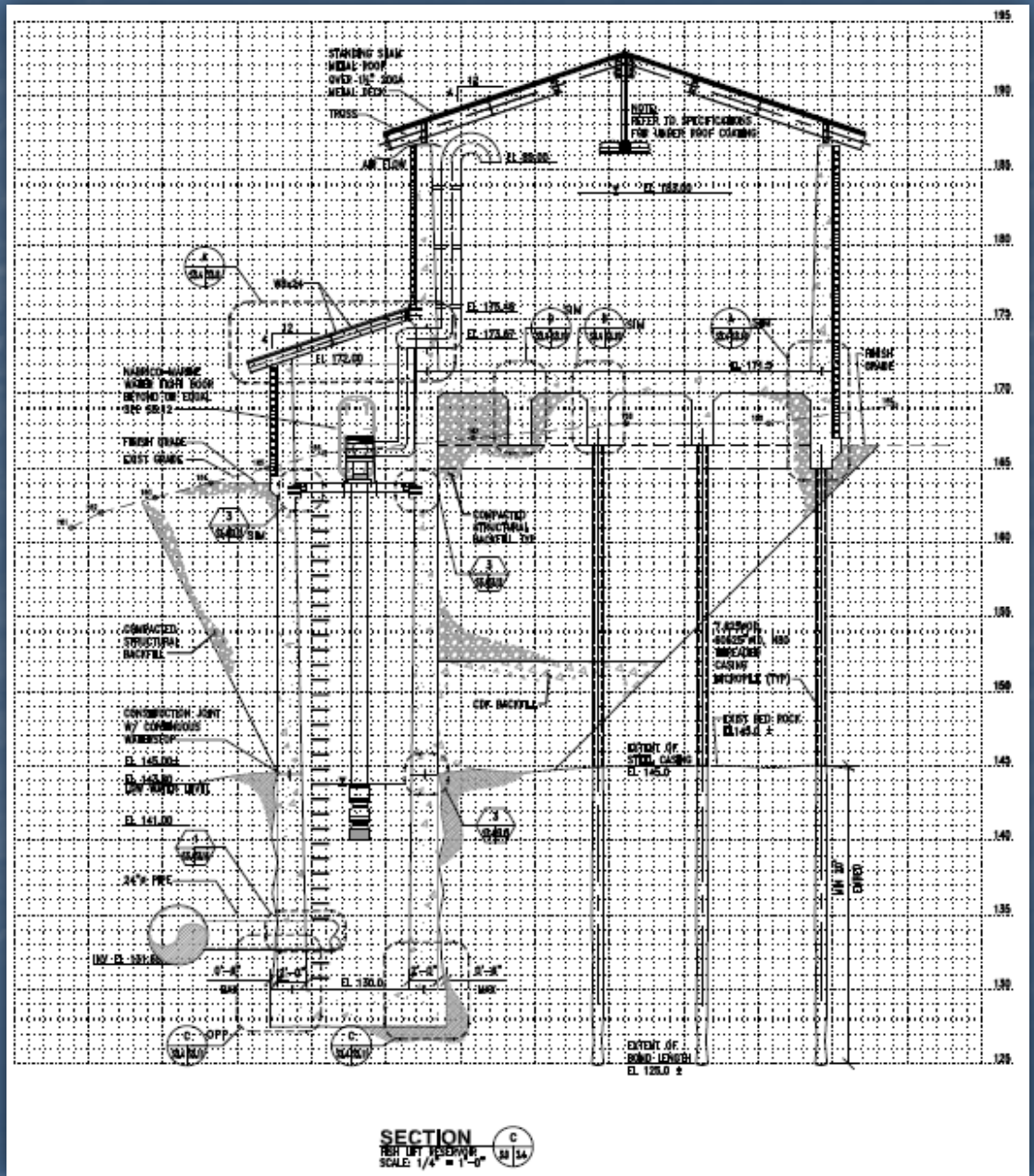
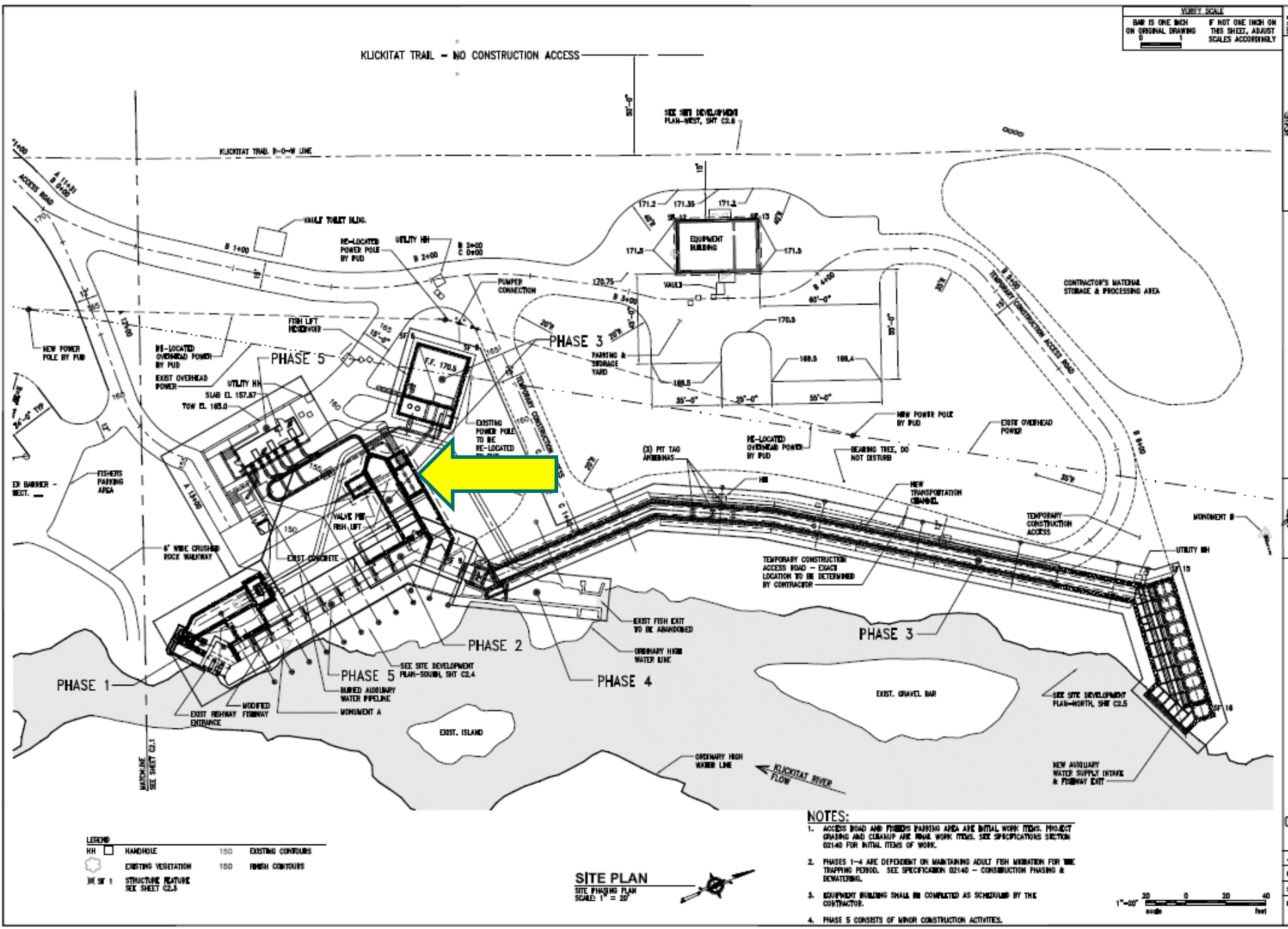
Fish Lift Reservoir

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SITE PHASING PLAN
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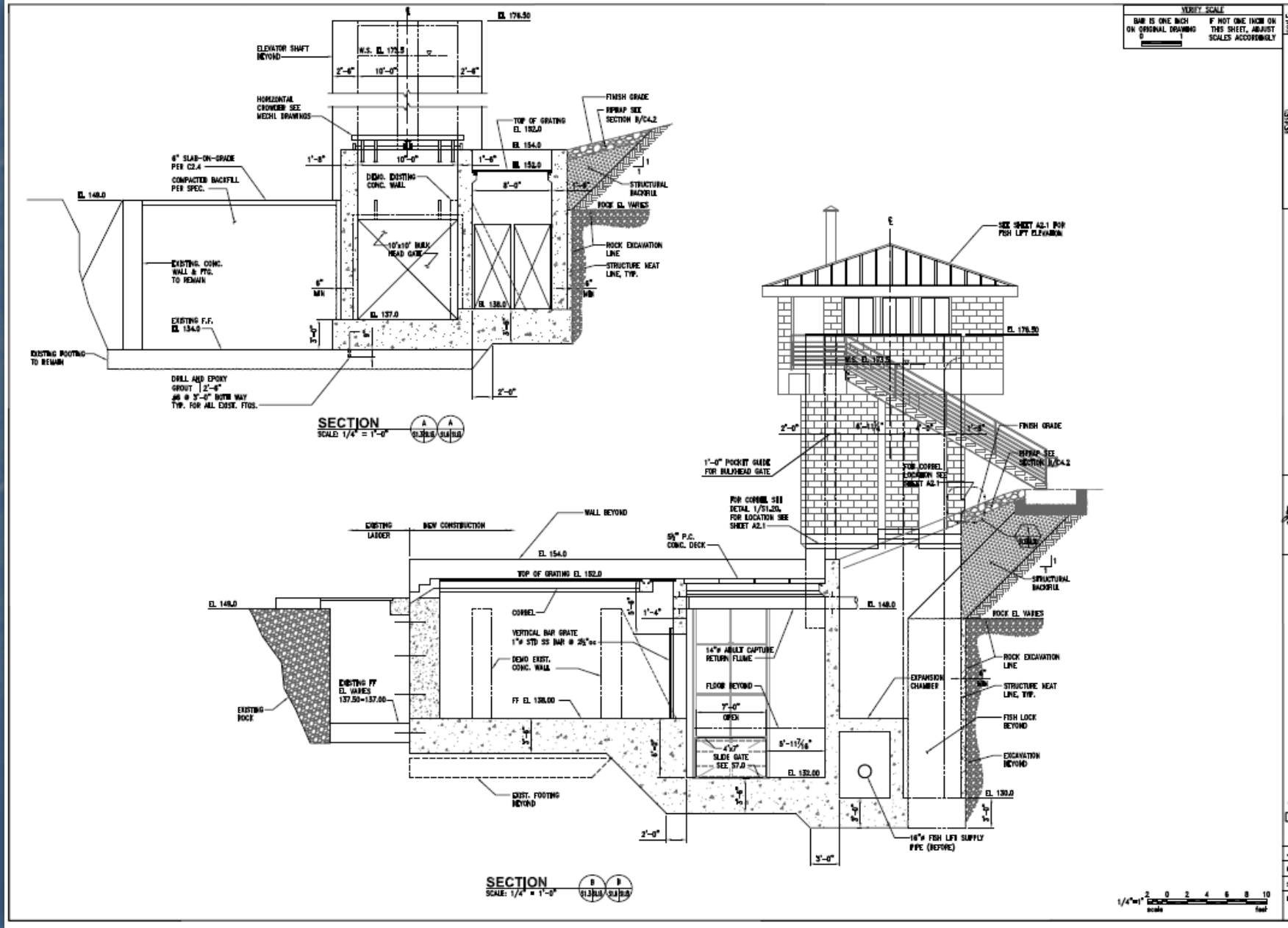
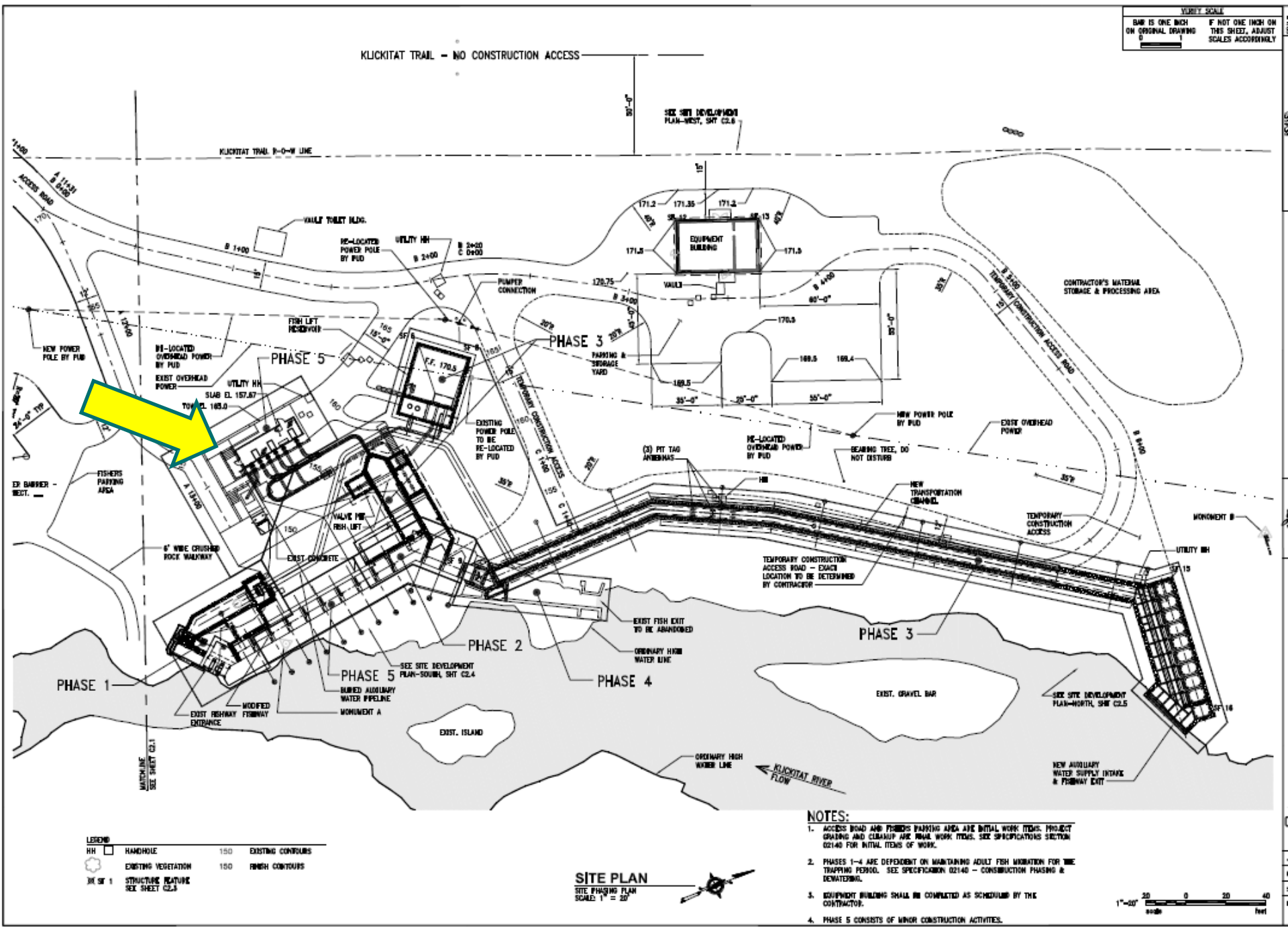
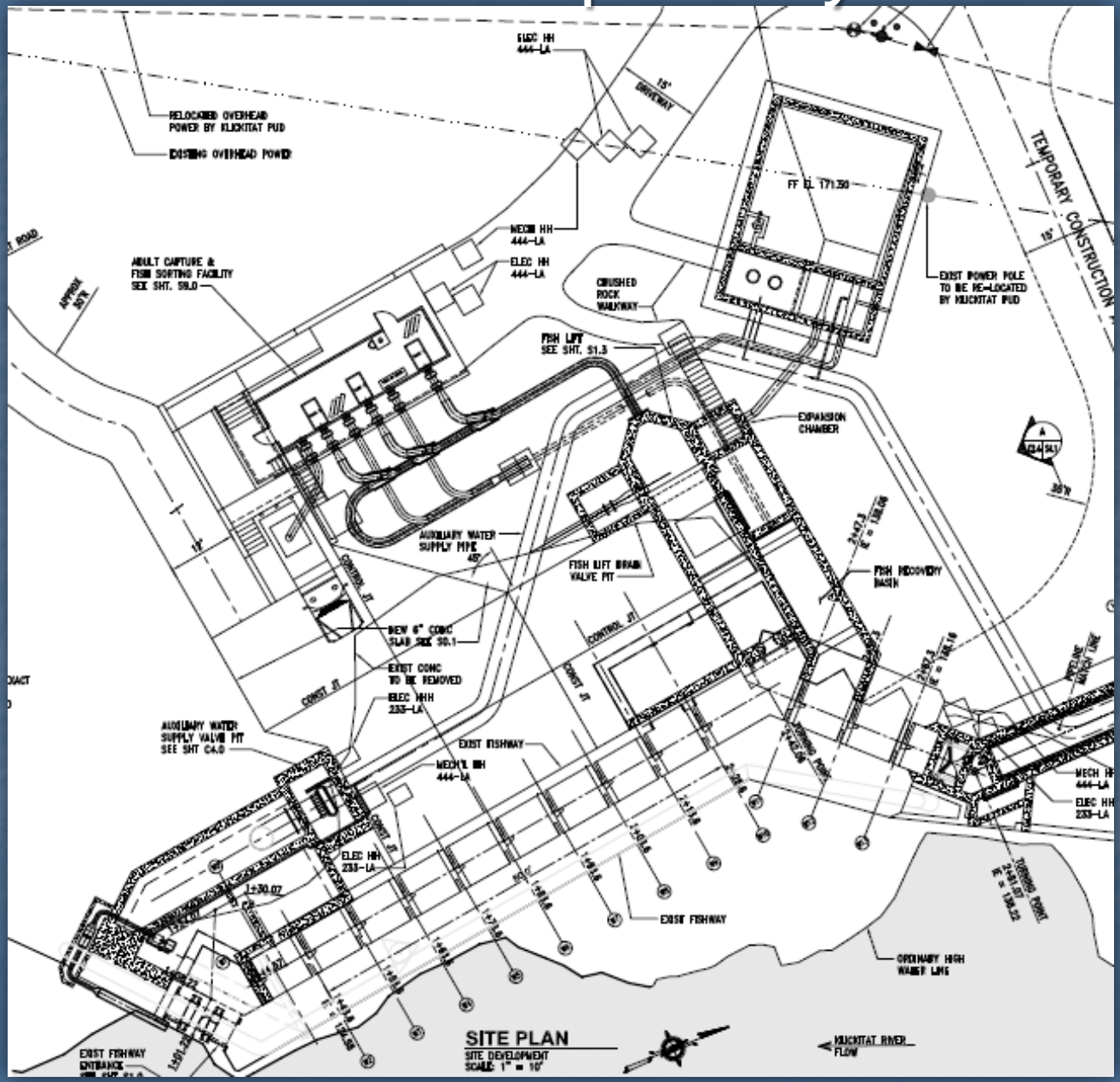
1"=20' scale
20 0 20 40 feet

Fish Lift


VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY
EL. 176.50
ELEVATOR SHAFT BEYOND
W.S. EL. 173.5
HORIZONTAL GROWDER SEE MECHL DRAWINGS
TOP OF GRATING EL. 152.0
EL. 154.0
FINISH GRADE
RIPRAP SEE SECTION B/C4.2
6" SLAB-ON-GRADE PER C2.4
COMPACTED BACKFILL PER SPEC.
DEMO. EXISTING CONC. WALL
STRUCTURAL BACKFILL
ROCK EL VARIES
EL. 149.0
10'x10' BULK HEAD GATE
ROCK EXCAVATION LINE
STRUCTURE HEAT LINE, TYP.
EXISTING CONC. WALL & FTG. TO REMAIN
EL. 138.0
EL. 137.0
EXISTING F.F. EL. 134.0
EXISTING FOOTING TO REMAIN
DRILL AND EPOXY GROUT 2'-6" #6 @ 3'-0" BOTH WAY TYP. FOR ALL EXIST. FTGS.
SECTION
SCALE: 1/4" = 1'-0"
SEE SHEET A2.1 FOR FISH LIFT ELEVATION
1'-0" POCKET GUIDE FOR BULKHEAD GATE
FOR CORBEL LOCATION SEE SHEET A2.1
FOR CORBEL SEE DETAIL 1/S1.20, FOR LOCATION SEE SHEET A2.1
EXISTING LADDER
NEW CONSTRUCTION
WALL BEYOND
5½" P.C. CONC. DECK
CORBEL
VERTICAL BAR GRATE 1"ø STD SS BAR @ 2½"oc
DEMO EXIST. CONC. WALL
EXISTING FF EL. VARIES 137.50-137.00
EXISTING ROCK
FF EL. 138.00
14"ø ADULT CAPTURE RETURN FLUME
FLOOR BEYOND
7'-0" OPEN
4'x3' SLIDE GATE SEE S7.0
8'-11 7/16"
EL. 132.00
EXIST. FOOTING BEYOND
EXPANSION CHAMBER
FISH LOCK BEYOND
EXCAVATION BEYOND
EL. 130.0
16"ø FISH LIFT SUPPLY PIPE (BEYOND)
SECTION
SCALE: 1/4" = 1'-0"


KLICKITAT TRAIL – NO CONSTRUCTION ACCESS
KLICKITAT TRAIL R-O-W LINE
SEE SITE DEVELOPMENT PLAN–WEST, SHT C2.6
EQUIPMENT BUILDING
VAULT
PUMPER CONNECTION
FISH LIFT RESERVOIR
F.F. 170.5
PHASE 5
PHASE 3
PHASE 2
PHASE 4
PHASE 1
PARKING & STORAGE YARD
CONTRACTOR'S MATERIAL STORAGE & PROCESSING AREA
TEMPORARY CONSTRUCTION ACCESS ROAD
TEMPORARY CONSTRUCTION ACCESS ROAD – EXACT LOCATION TO BE DETERMINED BY CONTRACTOR
NEW TRANSPORTATION CHANNEL
TEMPORARY CONSTRUCTION ACCESS
EXISTING POWER POLE TO BE RE-LOCATED BY PUD
RE-LOCATED POWER POLE BY PUD
RE-LOCATED OVERHEAD POWER BY PUD
NEW POWER POLE BY PUD
EXIST OVERHEAD POWER
NEW POWER POLE BY PUD
(3) PIT TAG ANTENNAS
BEARING TREE, DO NOT DISTURB
FISHERS PARKING AREA
ER BARRIER – RECT.
6' WIDE CRUSHED ROCK WALKWAY
EXIST CONCRETE
VALVE PIT, FISH LIFT
UTILITY HH
SLAB EL. 157.67
TOP EL. 165.0
VAULT TOILET BLDG.
EXIST FISH EXIT TO BE ABANDONED
ORDINARY HIGH WATER LINE
SEE SITE DEVELOPMENT PLAN–SOUTH, SHT C2.4
BURIED AUXILIARY WATER PIPELINE
MODIFIED EXIST FISHWAY ENTRANCE
MONUMENT A
MONUMENT B
EXIST. ISLAND
EXIST. GRAVEL BAR
SEE SITE DEVELOPMENT PLAN–NORTH, SHT C2.5
NEW AUXILIARY WATER SUPPLY INTAKE & FISHWAY EXIT
KLICKITAT RIVER FLOW
MATCH LINE SEE SHEET C2.1
SF 15
SF 16
SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY
LEGEND
HH HANDHOLE
EXISTING VEGETATION
STRUCTURE FEATURE SEE SHEET C2.5
150 EXISTING CONTOURS
150 FINISH CONTOURS
NOTES:
1. ACCESS ROAD AND FISHERS PARKING AREA ARE INITIAL WORK ITEMS. PROJECT GRADING AND CLEANUP ARE FINAL WORK ITEMS. SEE SPECIFICATIONS SECTION 02140 FOR INITIAL ITEMS OF WORK.
2. PHASES 1–4 ARE DEPENDENT ON MAINTAINING ADULT FISH MIGRATION FOR THE TRAPPING PERIOD. SEE SPECIFICATION 02140 – CONSTRUCTION PHASING & DEWATERING.
3. EQUIPMENT BUILDING SHALL BE COMPLETED AS SCHEDULED BY THE CONTRACTOR.
4. PHASE 5 CONSISTS OF MINOR CONSTRUCTION ACTIVITIES.
SITE PLAN
SITE PHASING PLAN
SCALE: 1" = 20'
1"=20'
20 0 20 40
scale
feet

Adult Work-up Facility



Klickitat River looking upstream
at approximately 10,000cfs

Typ. exist. weir & orifice

Summary

- Construction Projects underway:
  - Klickitat Hatchery road/bridge – fall 2010
  - Castile Falls Monitoring Station – fall 2010
  - Lyle Fishway Passage/Monitoring Project – summer 2011
- Master Plan EIS underway:
  - Public draft – August 2010
  - BPA & YN updating NPCC (Step Review)
  - Final – summer 2011
- To-Do List:
  - Secure funding for Wahkiacus Hatchery
  - Complete engineering design for remaining facilities
  - Vacation - summer 2011 (one week)

Questions?

Project Funding:

Bonneville Power Administration
NOAA-Fisheries
Yakama Nation

ykfp.org/klickitat