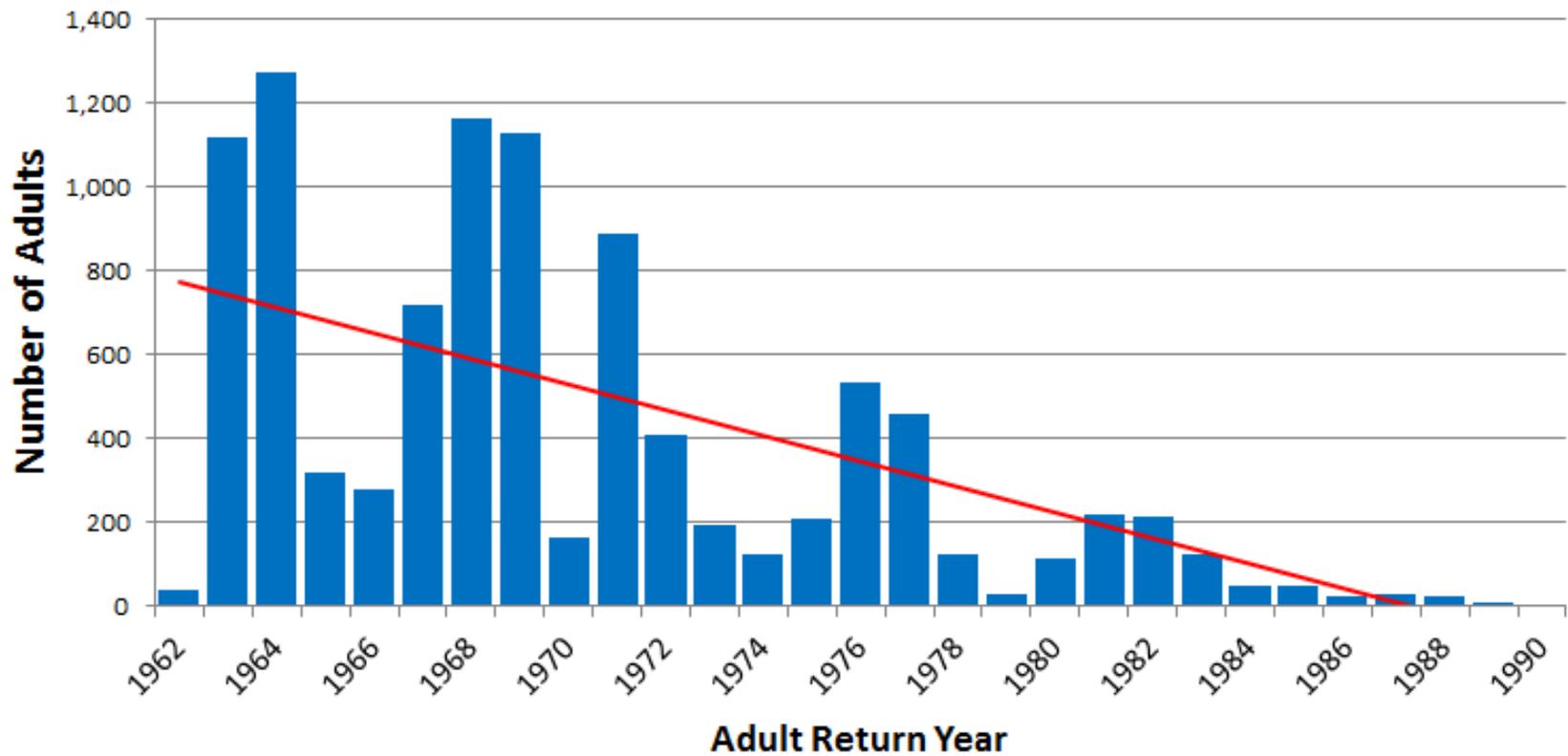




# “The Road to Springfield”

Doug Engemann – Fish Hatchery Manager II  
Springfield Fish Hatchery – IDFG

## Adult sockeye salmon returning to Idaho 1962 - 1990 (Snake River dam counts)



# Conservation Goals:

Near-term program goals –

- avoid population extinction
- conserve population genetic diversity
- *begin increasing numbers in the wild*



# Facilities and Locations

## Facilities and Locations:

- Broodstock Rearing (dedicated) –
  - IDFG Eagle Fish Hatchery
  - NOAA Manchester Research Station
  - NOAA Burley Creek Hatchery
- Juvenile Rearing (borrowed) –
  - IDFG Sawtooth Fish Hatchery
  - ODFW Oxbow Fish Hatchery

# Springfield Hatchery Construction Work Elements

- Complete Planning and Development Phase
- Demolition of Existing Facility
- Drill 3 New Production Wells and Fit With New Pumps
- Retrofit 3 Existing Wells with New Pumps
- Drill new Domestic Well and Fit with Pump
- Construct Main Hatchery Building and Administration Wing
  - Production Area Supplied with Incubation Room with Vertical Flow Incubators (Marisource)\*
  - Linear Early Rearing Vats\*
- Construct Outdoor Raceways\*
- Construct Pumped Water and Artesian Headboxes with Electric Blowers

# Construction Work Elements Continued

- Install backup generators on slabs adjacent to load centers.
- Add 3 new manufactured residences on foundations
- Add 3 new garages and storage sheds
- Construct New Shop and Vehicle Storage Building
- Owner Provided Construction Oversight Throughout Construction Phase

# Construction Work Elements Continued

- Existing shop building re-sided with new metal and new metal roof panels
- Construct Single Cell Clarifier

# Traditional Technology Used at Springfield:

- Vertical Flow Incubators (Marisource)\*
- Linear (Single Pass)Early Rearing Vats\*
- Linear (Single Pass)Outdoor Raceways\*
- **Question:** \* Traditional Equipment---Why?
- **Answer(s):** Springfield is part of a phased recovery action for ESA listed Sockeye salmon
- Above rearing technologies are tried and proven, and are currently in use for Sockeye smolt production at SFH, OFH
- Single-Pass linears more safely and effectively treated in case of disease
- Design lends itself to very effective segregation/isolation of small numbers eggs/fish (ie pathogen containment) if needed

# Original Hatchery Building and Office



# Original Nursery Interior View



# Old Trout Raceways



# Raceway Demolition



# Crusher in Action



# Office Demolition



# Demolition Complete



# Preload North Site



# South View of Hatchery Building



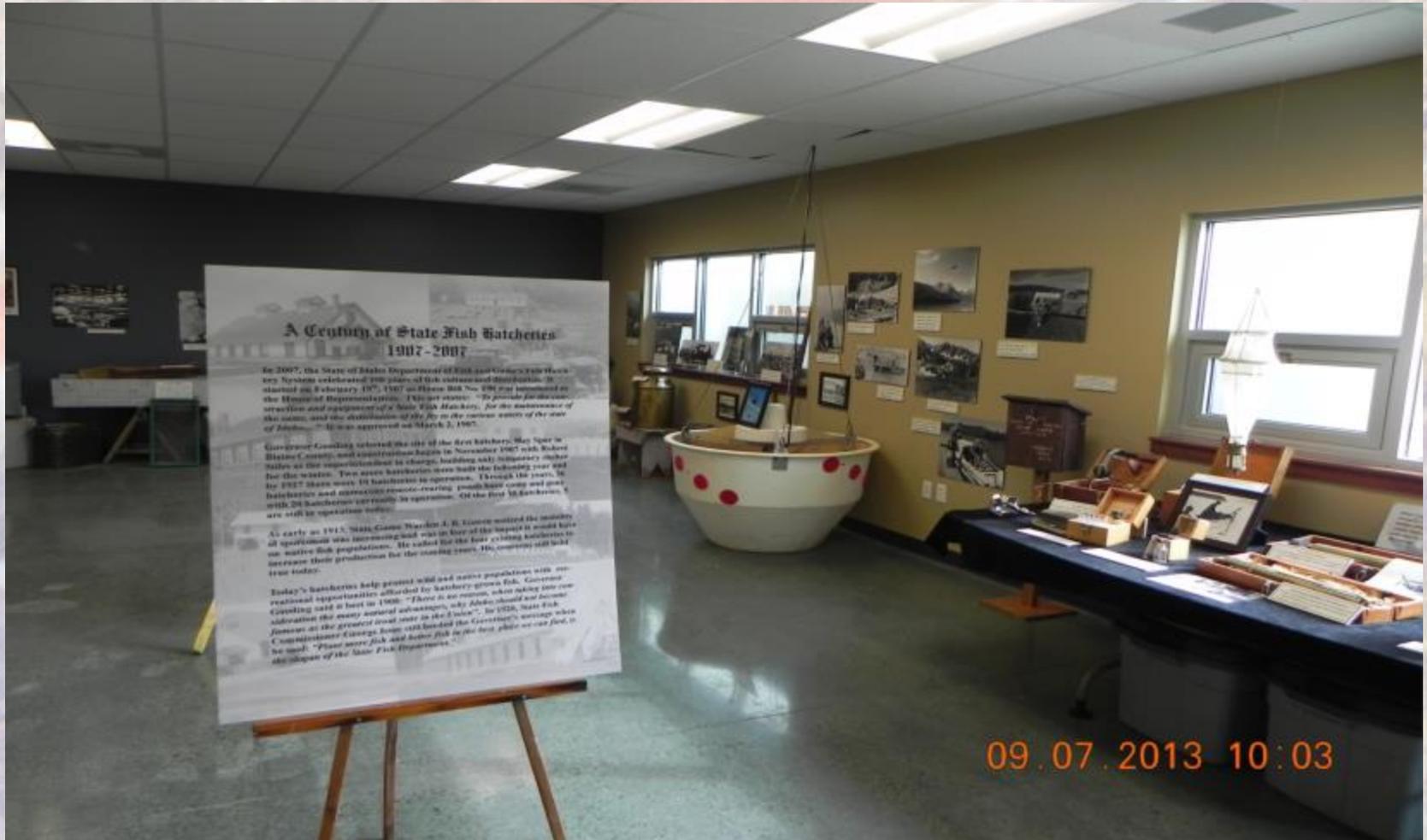
# Open Office South View



# Manager's Office



# Conference Room



# Egg Prep Room—Disinfection Area



# Incubation Room Layout



# Top View of Mixing Chambers



# Aerial View of Production Area



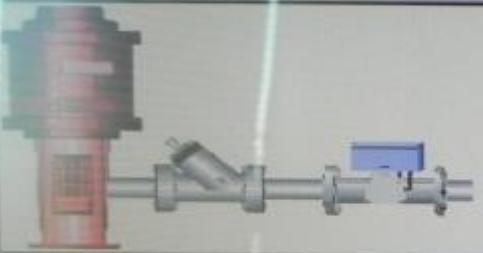
# HMI Screen Main Menu

|                              |                                  |                                |                              |                              |
|------------------------------|----------------------------------|--------------------------------|------------------------------|------------------------------|
| Home Screen                  | Flow Screen                      | Temperature Trends             | Incubation and Early Rearing | South Water Production Wells |
| North Water Production Wells | Constant Head and Aeration Tanks | Misc. Hatchery Support Systems | Utility Backup Power System  | North Wells Flow Trend       |
| South Wells Flow Trend       | Hatchery and Incub. Flow Trend   | Level Trends                   | Level 1 Alarms               | Level 2 Alarms               |

# Graphics for Hatchery Support Functions

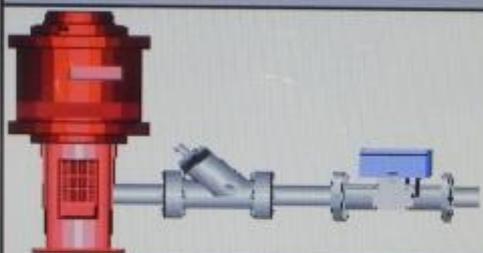
## SOUTH WATER PRODUCTION WELLS

**WELL 5**



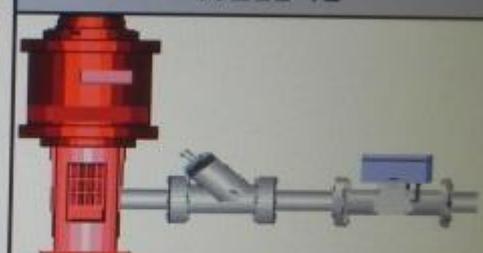
|                     |     |
|---------------------|-----|
| No Flow Alarm       | Off |
| Well Operation Mode | Off |

**WELL 11**



|                     |     |
|---------------------|-----|
| No Flow Alarm       | Off |
| Well Operation Mode | Off |

**WELL 12**



|                     |     |
|---------------------|-----|
| No Flow Alarm       | Off |
| Well Operation Mode | Off |

| Well 5 Flows    |                |
|-----------------|----------------|
| Flow            | 1.0 gpm        |
| Cumulative Vol. | 0 gal x 10,000 |

| Well 11 Flows   |                 |
|-----------------|-----------------|
| Flow            | 0.0 gpm         |
| Cumulative Vol. | 10 gal x 10,000 |

| Well 12 Flows   |                 |
|-----------------|-----------------|
| Flow            | 0.0 gpm         |
| Cumulative Vol. | 40 gal x 10,000 |

|                        |                 |         |
|------------------------|-----------------|---------|
| South Water Wells Flow | Cumulative Flow | 1.0 gpm |
|------------------------|-----------------|---------|

11.12.2013 13:25

# Nursery Tank Area



11.01.2013 12:50

# Boot Room



# Laboratory



# Well Head Piping



# Head Tank Complete



# Raceways Covered and Fenced



10.21.2013 15:10

# Raceway Night View



# North Well Field



# 50 Ton Chiller



# New Shop and Storage Building



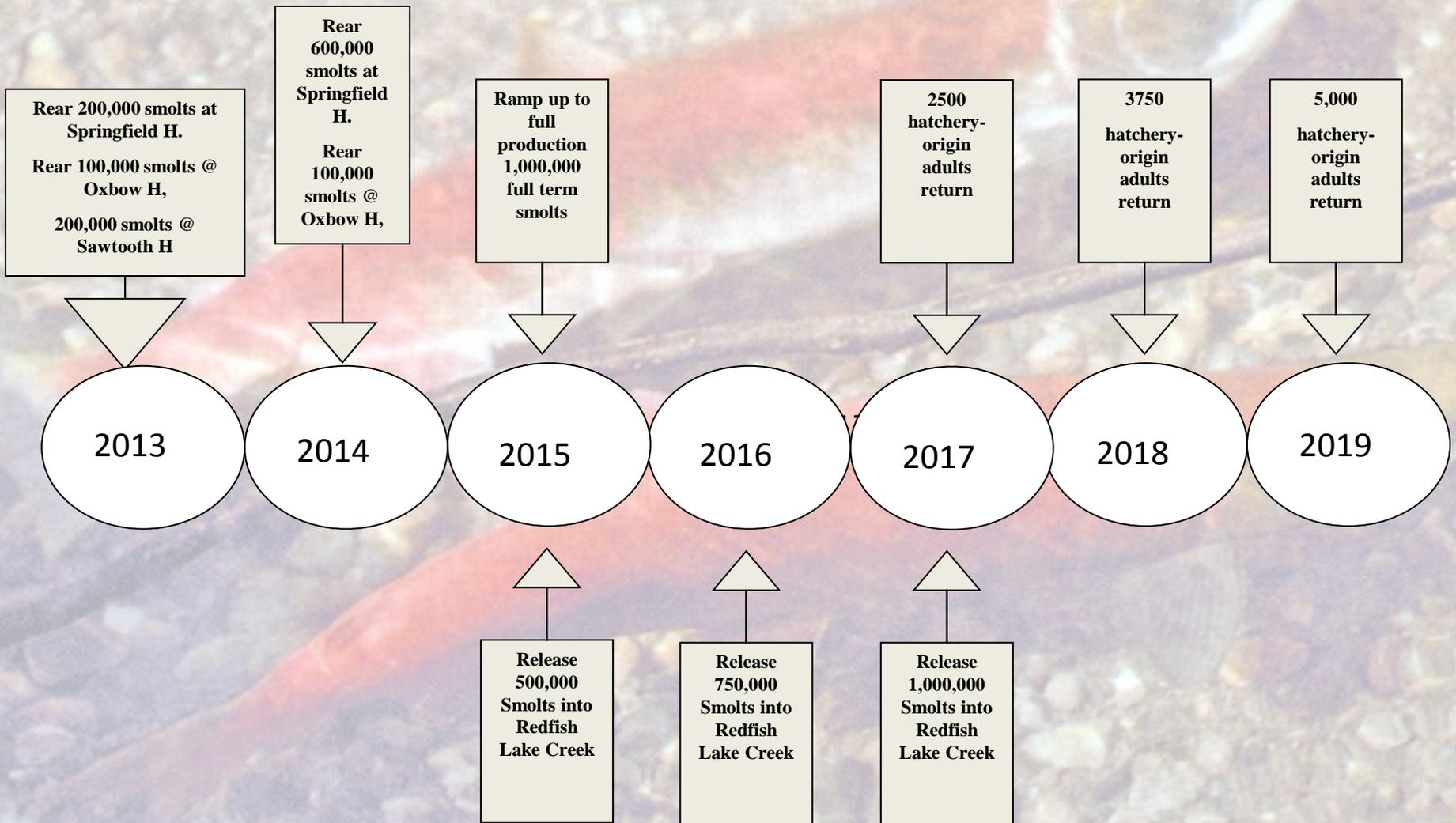
# North Aerial View Zoom



# Facility North Side Aerial View



# Springfield Timeline



# Phase 2/3 Triggers

- Phase 3 will begin when:
  - 5-yr geometric mean return = 1,000 anadromous adults - ramp down NMFS
  - 5-yr geometric mean return = 2,150 anadromous adults - ramp down IDFG
  - 5-yr geometric mean return of natural-origin anadromous adults = 750
  - Earliest this could happen is 2021

# Phase 3: Local Adaptation

- Objective to develop an integrated program that follows HSRG guidance for all variables: pHOS, pNOB, and PNI
- Smolt production reduced to 400,000 to 600,000
- Test assumptions that local adaptation and integrated broodstock management can effectively grow the natural population to sustainable levels that effectively address recovery objectives