

# WEST TERRACE

## Stormwater Management Study

### Background

Spokane County is working to facilitate stormwater improvements in the West Terrace area, which has experienced various drainage problems. A study was started in fall 2019 to investigate drainage problems and develop proposed solutions. Steps completed at this time include facilitating a public open house (November 2019), reviewing data and drainage complaints, and evaluating proposed solutions. Next steps will include the selection and prioritization of solutions and development of a Capital Improvement Plan (CIP).

### Location

The West Terrace area is located southeast of I-90 near Exit 272. The area is roughly bounded by S Thomas Mallen Road to the east, I-90 to the northwest, and West Melville Road to the south. Land use includes residential, industrial, and light commercial, with The Fairways Golf Course central in the area.

The study area is shown in Figure 1. Please note that the study area boundary was modified based on public input and data collected.

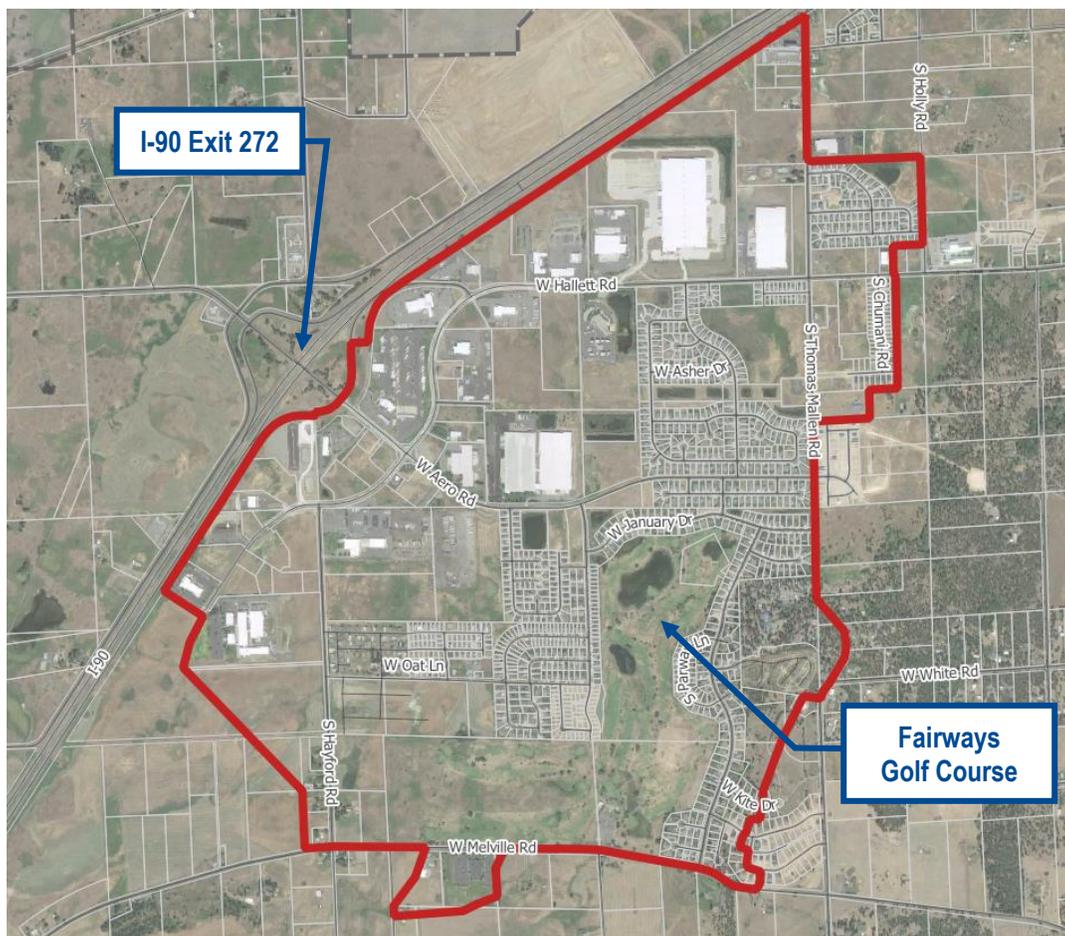


Figure 1: Study Area Map

## Study Timeline

- Fall 2019 – Collect data and identify areas of concern (Complete)
- Winter 2020 – Identify solutions (Complete)
- Spring/Summer 2020 – Evaluate solutions (Complete)
- Next steps (Fall 2020):
  - Select and prioritize stormwater solutions
  - Develop Capital Improvement Plan and final report

## Project Team

- Spokane County Stormwater Utility and Public Works Department
- Osborn Consulting, Inc.

## Drainage Problems and Proposed Solutions

Drainage problem areas have been identified in the West Terrace area (See Figure 1 and Maps 1 through 8 at the end of this document). Drainage problems and proposed solutions include:

### **West Terrace Heights (Map 2):**

- **Drainage Problems:**
  - Standing water reported from overflow of neighborhood stormwater pond.
  - Groundwater intrusion into home basements has been reported; sump pumps reported to send water to street and cause standing water. Ice buildup has been observed in winter.
- **Proposed Solution:**
  - Install new overflow structure in existing pond, with overflow routed through new storm drain on W Richland Road or north of Hayford Village.
  - Install small-diameter force main to alleviate water in roadway.

### **W Richland Road Storm Drain and S Hayford Road Ditch (Map 3):**

- **Drainage Problems:**
  - No formal conveyance exists for flow from the golf course that is conveyed north through Hayford Village; ponded water observed north of Hayford Village.
  - Ponded water and flooding reported near the intersection of W Richland Road and S Hayford Road.
  - Standing water and blocked culverts have been observed in the existing Hayford Road ditch and on adjacent private property. Additionally, evidence of overflow prevention such as sandbags have been observed that appear to have been installed to prevent ditch overflows.

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- **Proposed Solutions:**
  - Install new storm conveyance to intercept flow from the south (golf course areas). New conveyance could be installed along either:
    - W Richland Road **OR**
    - North of Hayford Village,
  - Install new overflow structure in W Richland Road.
  - Improve the existing ditch along South Hayford Road to more efficiently convey flow.

### **Fairways Plaza Regional Storm Pond (Map 4):**

- **Drainage Problems:**
  - Increased peak flows from upstream improvements (West Terrace Heights and W Richland Road/S Hayford Road areas) will increase peak flows to the basin outfall.
- **Proposed Solutions:**
  - Increase flow control capacity in Hayford Rd Basin by modifying existing pond or adding new facility.

### **Regional Improvements for Fairways Golf Course Redevelopment (Map 5)**

- **Drainage Problems:**
  - Golf course water reuse system and offsite pump systems (including ponds near W January Drive) are not operational and cause localized flooding of golf course and adjacent areas.
  - Groundwater intrusion into home basements (southeast side of golf course).
  - Offsite flows cause standing water on golf course
- **Future Development Opportunity:**
  - A developer is planning residential development of the golf course, requiring stormwater management planning.
- **Proposed Solutions:**
  - Coordinate with developer for redevelopment design parameters that will meet County requirements for managing stormwater. This may affect stormwater facilities in Crystal Meadows, West Terrace Place, West Terrace Third Addition, the Fairways Golf Course, and Jensen Distribution.
  - Prevent seepage, if needed, in southeast golf course during redevelopment.

### **W Hallett Road Drainage System (Map 6)**

- **Drainage Problems:**
  - Ponded water observed on undeveloped parcel northeast of S Thomas Mallen Road and W Hallett Road.
  - No downstream conveyance for stormwater near W Winona Road and S Thomas Mallen Road intersection (runoff from S Thomas Mallen Road and Big Sky neighborhood overflow).
- **Proposed Solutions:**
  - Install formal ditch or storm drain along W Hallett Road to convey flow downstream. Discharge to existing conveyance system on south side of W Hallett Road near S Chumani Road.
  - Install stormwater conveyance near the intersection of W Winona Road and S Thomas Mallen Road. Convey through existing system in Takoda Park development.

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## Stormwater Management Study

### **Planning for Storm Drains to Serve New Developments (Map 7)**

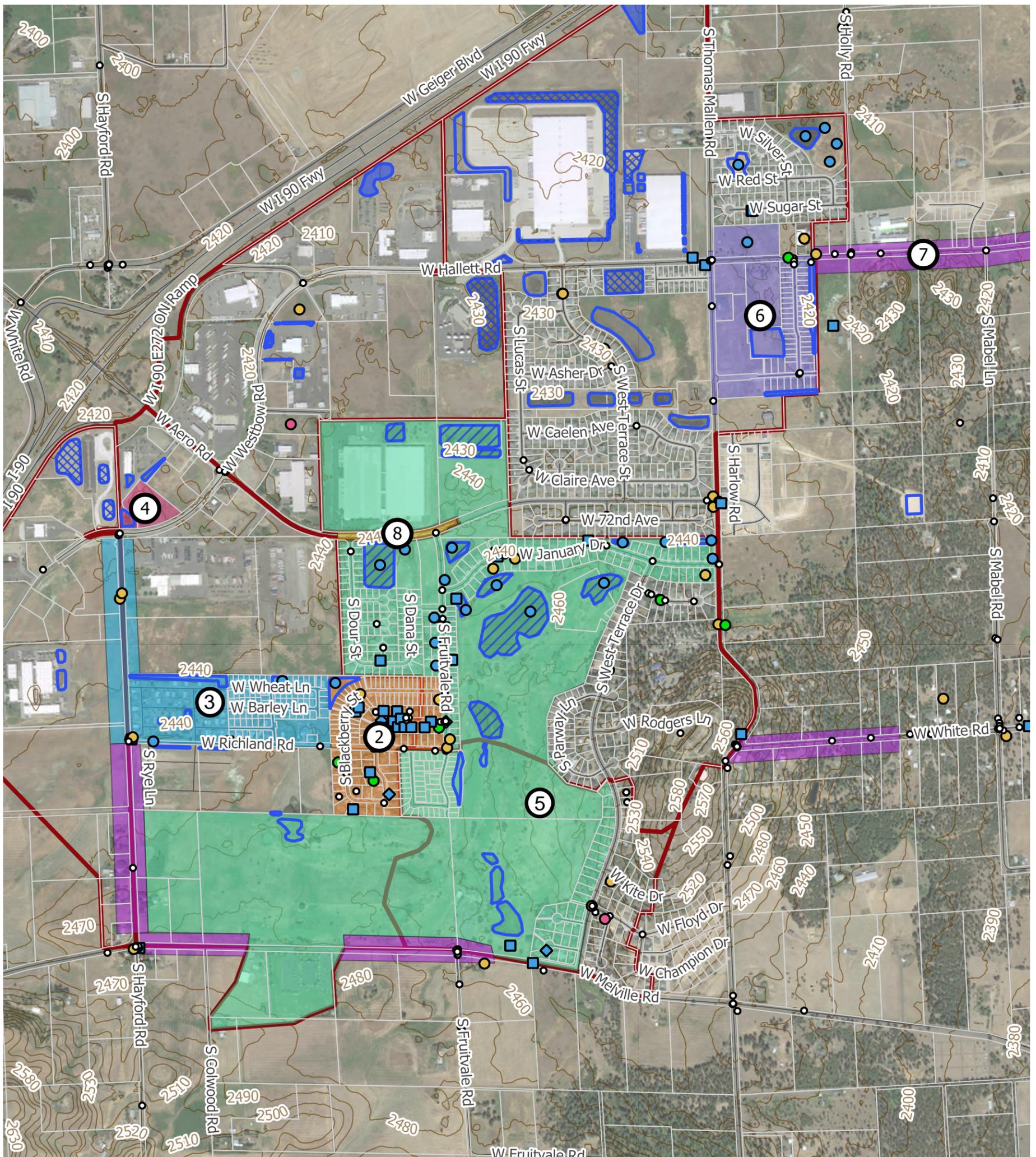
- **Drainage Problems:**
  - New conveyance routes will be needed as development increases in West Terrace area.
- **Proposed Solutions:**
  - Develop plan for installation of new storm drain systems based on where development occurs. Anticipated locations include: W Melville Road, S Hayford Road, W Hallett Road, W White Road, and others.

### **Aero Road Conveyance (Map 8)**

- **Drainage Problems:**
  - Flooding of roadway, swales, and sidewalk observed along W Aero Road near Jenson Distribution.
- **Proposed Solutions:**
  - There are two potential solutions for this location:
    - Install new storm drain to relieve flooding on W Aero Road, conveying overflow to Big Sky drainage system.
    - Install overflow structure to convey flow from flooding area to Crystal Meadows drainage pond. Convert pond to a detention pond with an overflow structure and restore pump system to pump to golf course and ultimately discharge at Melville Road.

### **Outreach Plan for Homeowners and Homeowners' Associations (Not shown on map)**

- **Drainage Problems:**
  - Conveyance systems at various locations in the study area observed to have a lack of maintenance and/or have been modified by private property owners.
- **Proposed Solutions:**
  - Develop outreach plan for ongoing communication with homeowners and homeowners' associations.



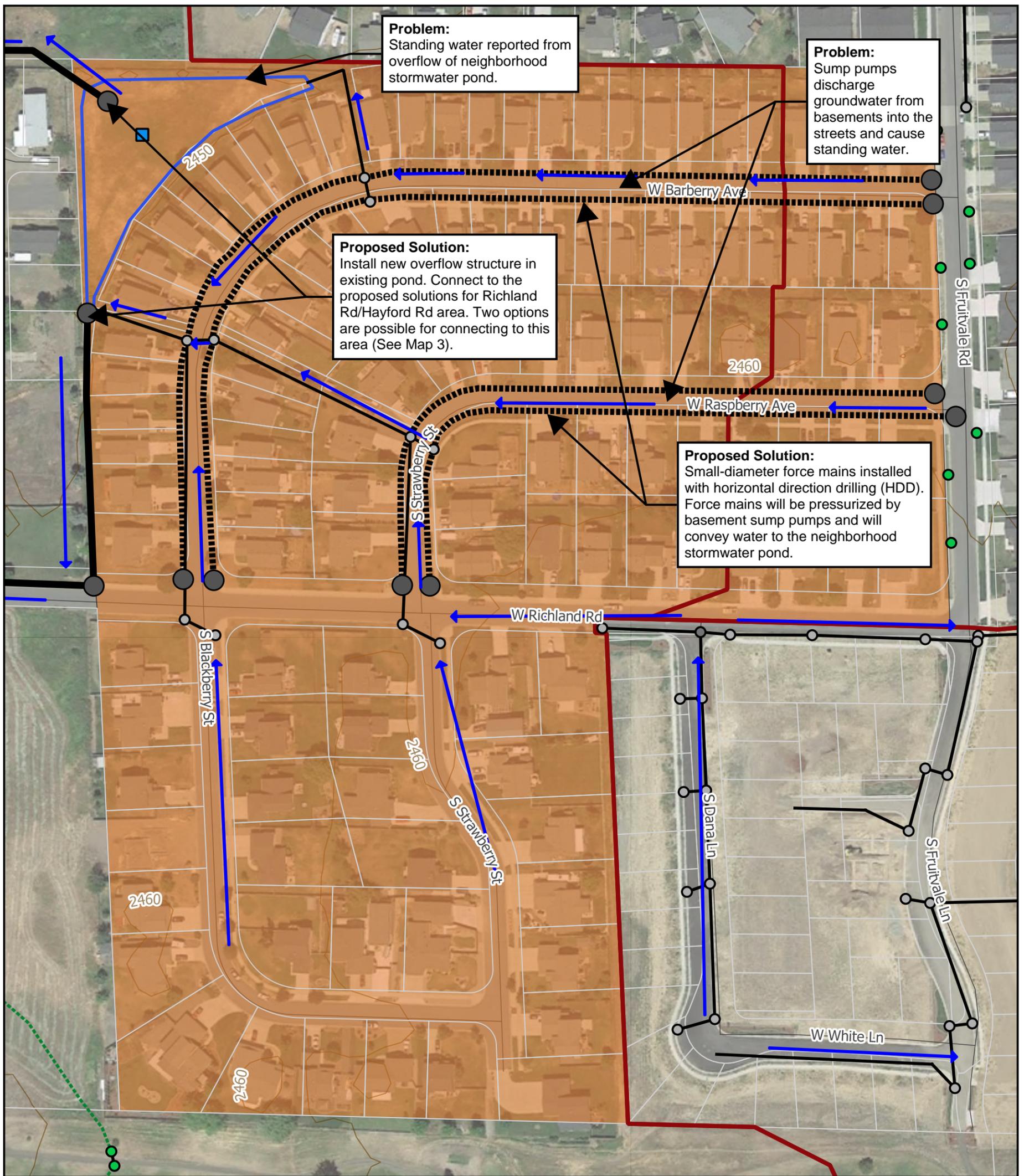
**Map 1: Drainage Areas of Concern and Proposed Solutions**

**Legend**

- |  |  |   |
|--|--|---|
| <ul style="list-style-type: none"> <li>— USGS_Contours_10-ft</li> <li>□ Parcels</li> <li>— Roads</li> <li>▨ Storage Pond for Golf Course Reuse</li> <li>▨ Evaporation Pond</li> <li>□ Detention Pond</li> <li>▨ Infiltration Pond</li> </ul> | <p><b>Citizen Drainage Complaints</b></p> <ul style="list-style-type: none"> <li>■ Flooding</li> <li>◆ Groundwater Issues</li> <li>● Drainage</li> <li>● Failing Drainage Facility</li> <li>● Ditch Swale Issues</li> <li>● Erosion</li> <li>● Potential Illicit Discharge</li> <li>● Miscellaneous</li> </ul> | <p><b>Proposed Solutions</b></p> <ul style="list-style-type: none"> <li>■ Map 2: West Terrace Heights</li> <li>■ Map 3: W Richland Road Storm Drain and S Hayford Road Ditch</li> <li>■ Map 4: Fairways Plaza Regional Storm Pond</li> <li>■ Map 5: Regional Improvements for Fairways Golf Course Redevelopment</li> <li>■ Map 6: W Hallett Road Drainage System</li> <li>■ Map 7: Planning for Storm Drains to Serve New Developments</li> <li>■ Map 8: W Aero Road Conveyance</li> <li>■ Outreach Plan for Homeowners and Homeowners' Associations (Not Shown on Map)</li> </ul> |
|--|--|---|



West Terrace Stormwater Study  
 Spokane County Public Works  
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**Map 2: West Terrace Heights**

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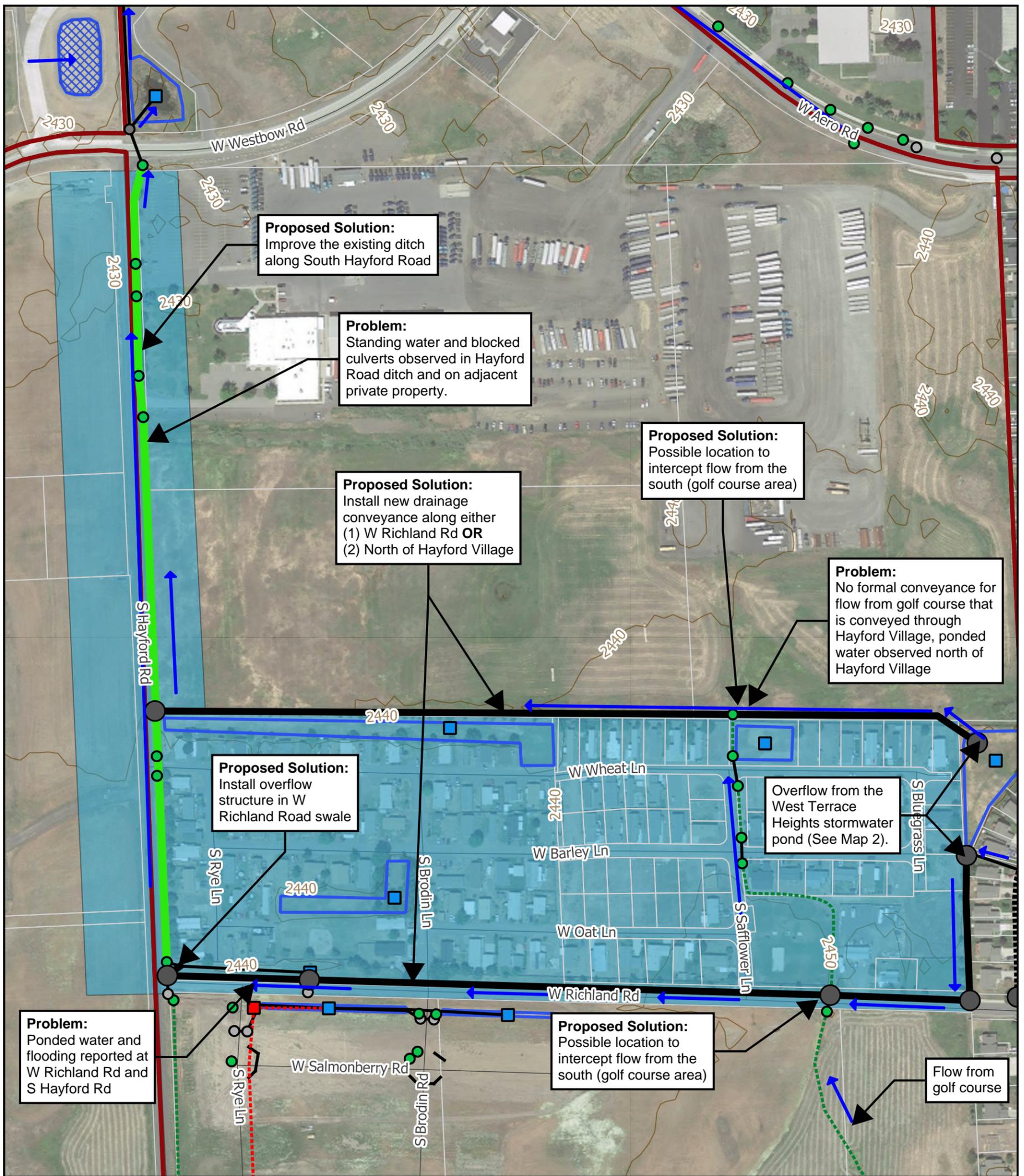
Note: See flyer for additional information on each improvement alternative

- West Terrace Basins**
- Existing Circular Pipe
  - Existing Ditch/Swale
  - Existing Force Main
  - Existing Force Main (Not Functioning)
  - Proposed Circular Pipe
  - Proposed Force Main
  - Proposed Ditch

- Legend**
- Catch Basin
  - ⊗ Drywell
  - Manhole
  - Ditch/Swale
  - Storm Pond
  - Pump Station
  - Pump Station (Not Functioning)
  - Proposed Junctions

- ▨ Reuse Pond
- ▨ Evaporation Pond
- ▭ Detention Pond
- ▭ Infiltration Pond
- 10-ft USGS Contours
- Roads
- ▭ Parcels
- Flow Direction





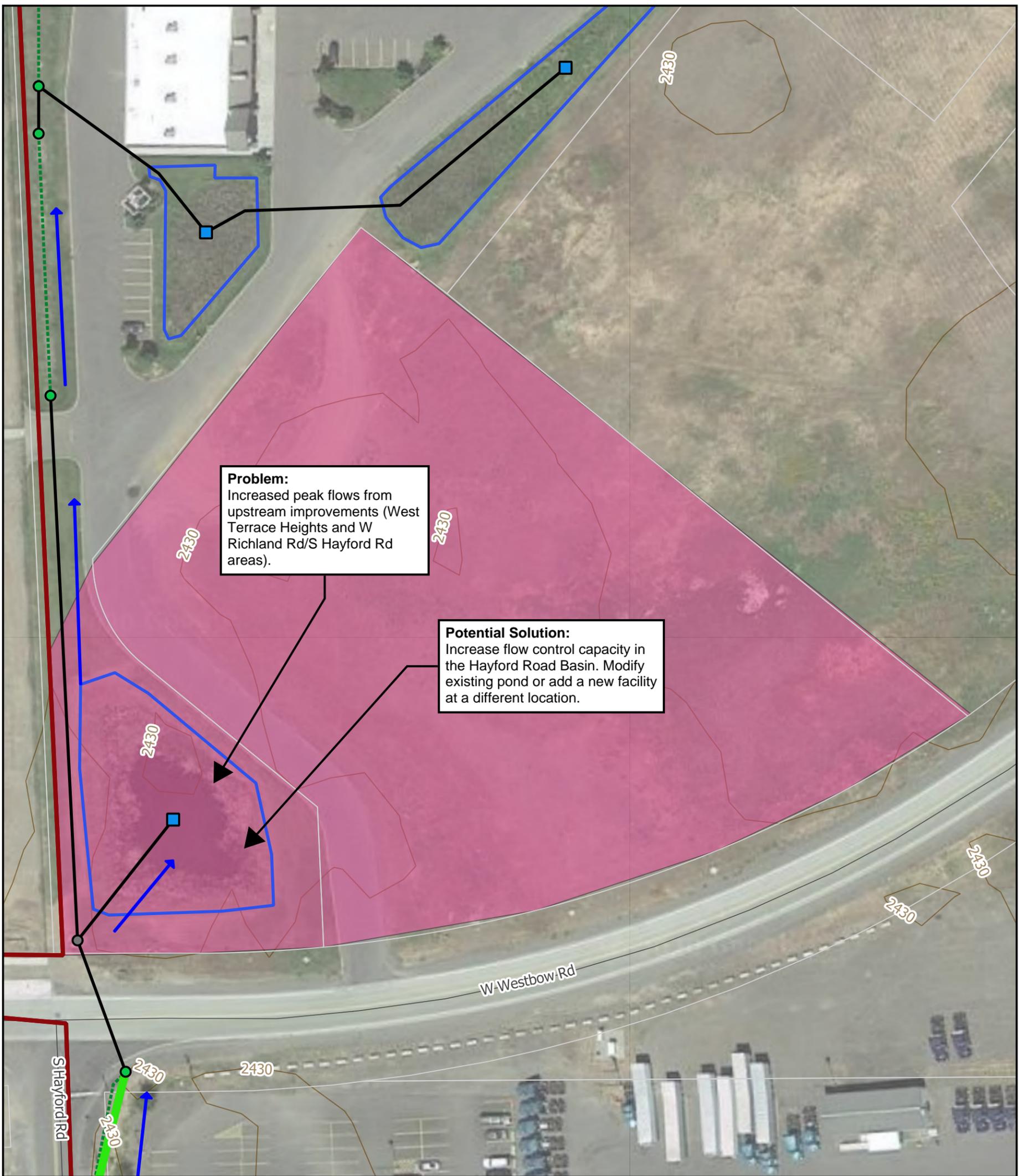
**Map 3: W Richland Road Storm Drain and S Hayford Road Ditch**

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Note: See flyer for additional information on each improvement alternative

Legend		
West Terrace Basins	● Catch Basin	▨ Reuse Pond
— Existing Circular Pipe	⊗ Drywell	▩ Evaporation Pond
- - - Existing Ditch/Swale	● Manhole	□ Detention Pond
- · - · Existing Force Main	● Ditch/Swale	▭ Infiltration Pond
- · - · Existing Force Main (Not Functioning)	■ Storm Pond	— 10-ft USGS Contours
— Proposed Circular Pipe	■ Pump Station	— Roads
· · · · Proposed Force Main	■ Pump Station (Not Functioning)	□ Parcels
▬ Proposed Ditch	● Proposed Junctions	→ Flow Direction

0
200
400 ft



**Map 4: Fairways Plaza Regional Storm Pond**

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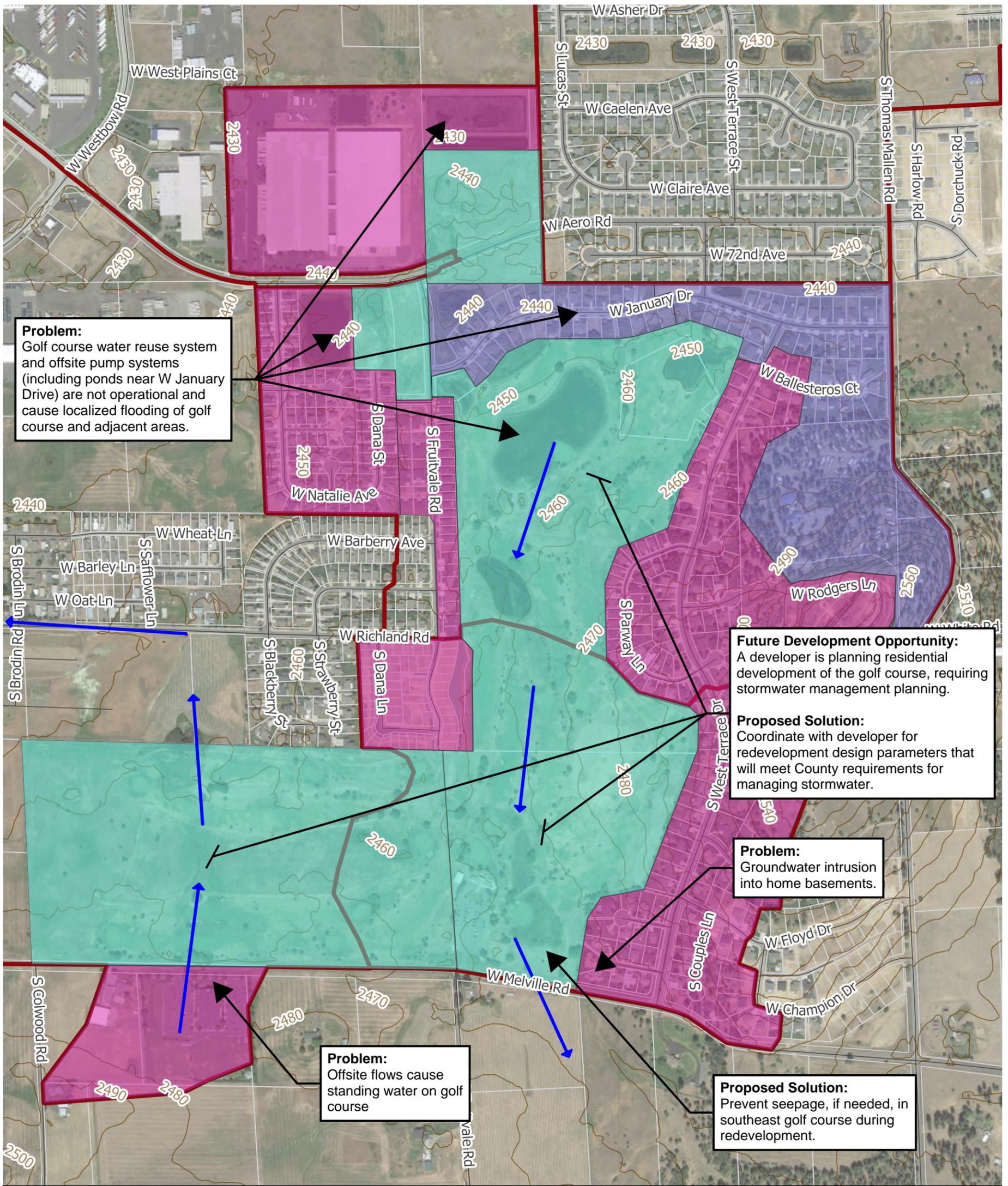
Note: See flyer for additional information on each improvement alternative

- West Terrace Basins**
- Existing Circular Pipe
  - - - Existing Ditch/Swale
  - · - · Existing Force Main
  - · · · Existing Force Main (Not Functioning)
  - Proposed Circular Pipe
  - · · · Proposed Force Main
  - Proposed Ditch

- Legend**
- Catch Basin
  - ⊗ Drywell
  - Manhole
  - Ditch/Swale
  - Storm Pond
  - Pump Station
  - Pump Station (Not Functioning)
  - Proposed Junctions

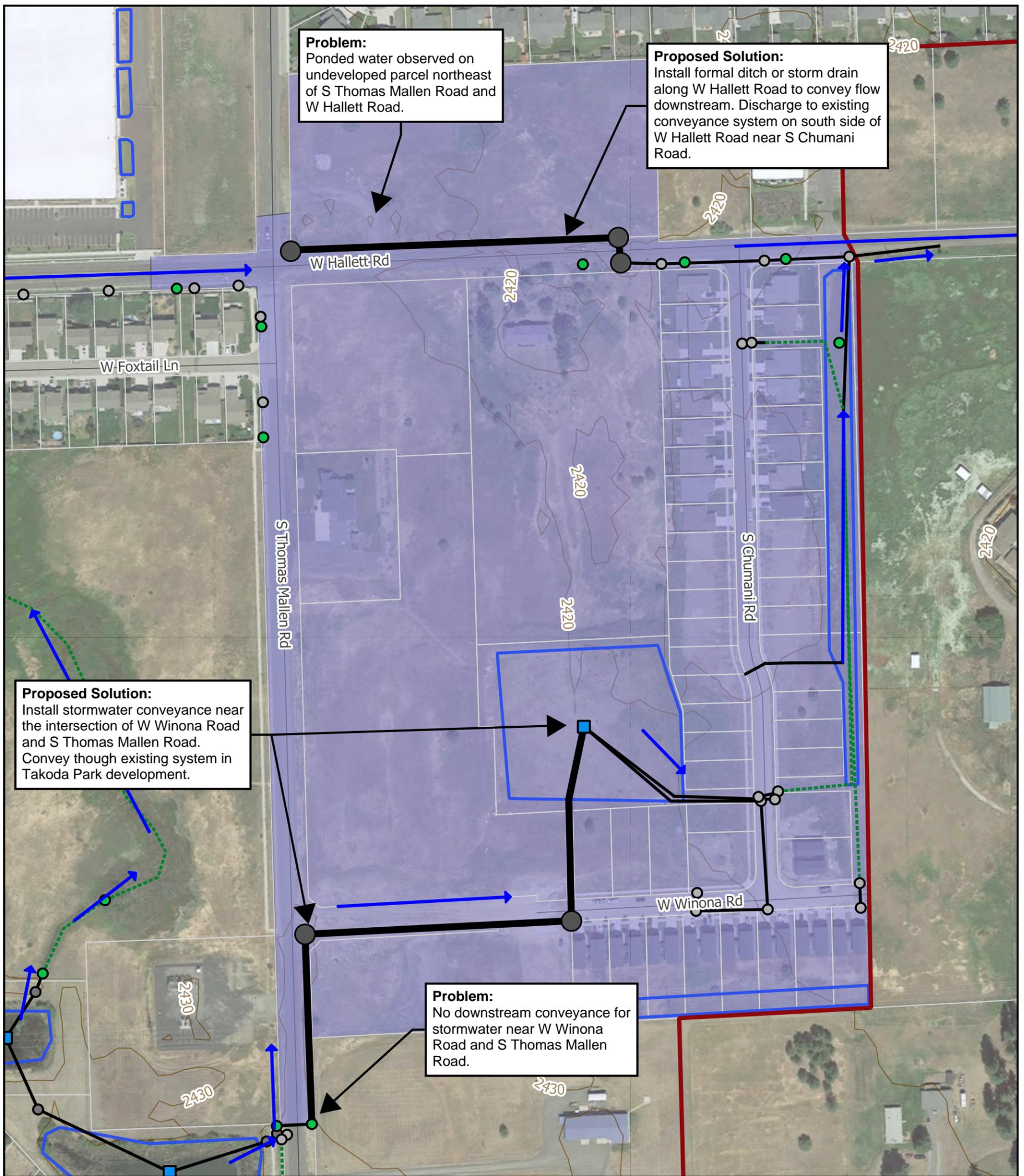
- ▨ Reuse Pond
- ▩ Evaporation Pond
- Detention Pond
- Infiltration Pond
- 10-ft USGS Contours
- Roads
- Parcels
- Flow Direction





**Map 5: Regional Improvements for Fairways Golf Course Redevelopment**

<p>West Terrace Stormwater Study Spokane County Public Works Prepared By: Osborn, Consulting, Inc.</p>	<p><b>West Terrace Basins</b></p> <ul style="list-style-type: none"> <li>— USGS_Contours_10-ft</li> <li>□ Parcels</li> <li>— Roads</li> <li>→ Flow Direction</li> </ul>	<p><b>Legend</b></p> <p>Golf Course Development Areas</p> <ul style="list-style-type: none"> <li>□ Potential Future Development</li> <li>□ Areas that were Disconnected from Golf Course Reuse System and now Drain North</li> <li>□ Areas that Drain to the Golf Course. Stormwater from these Areas must be Managed by the Future Development</li> </ul>
<p>Note: See flyer for additional information on each improvement alternative</p>	<p style="text-align: center;">  <span style="margin-left: 100px;">0</span> <span style="margin-left: 100px;">1000</span> <span style="margin-left: 100px;">2000 ft</span> </p>	



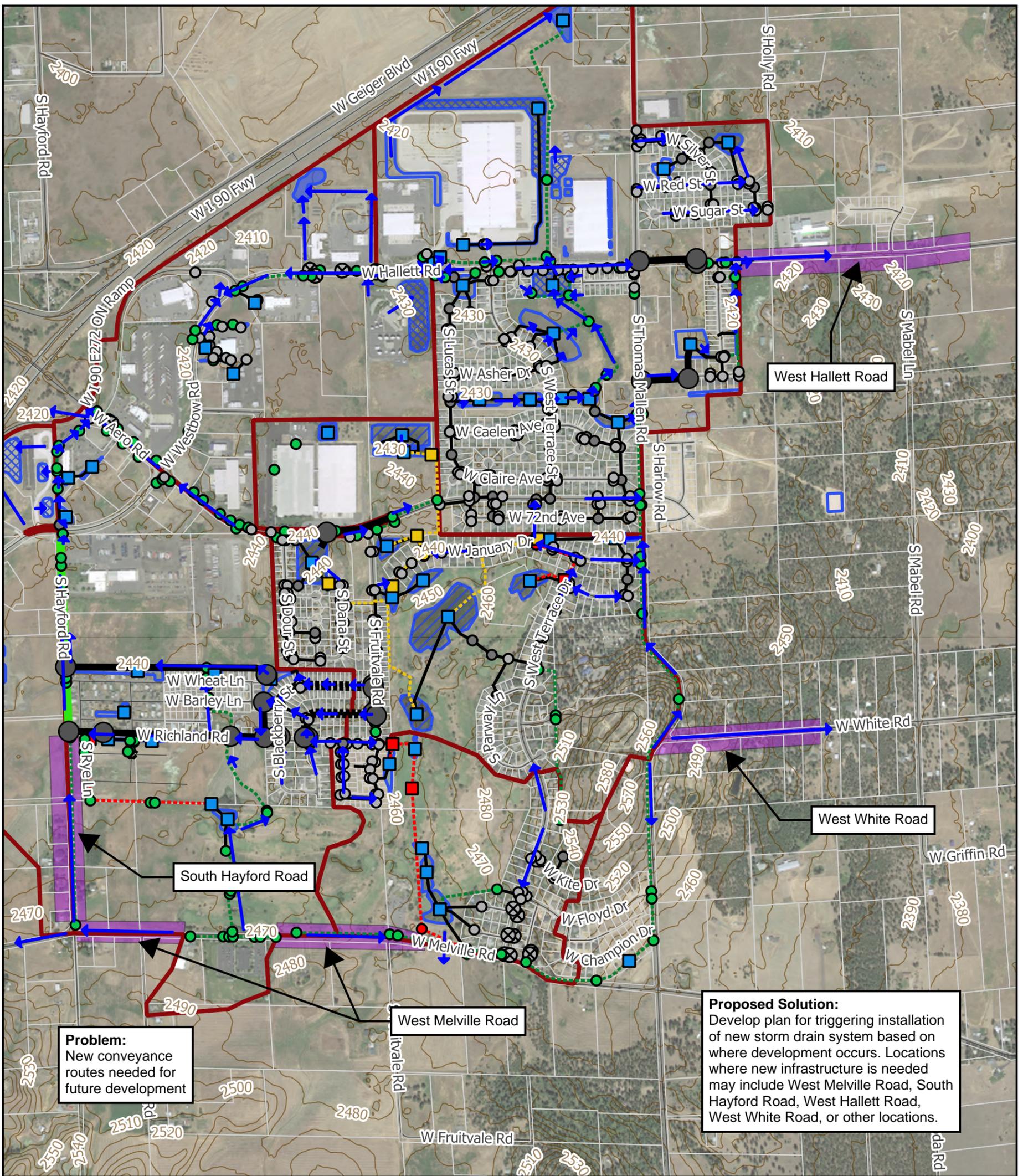
**Map 6: West Hallet Road Drainage System**

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Note: See flyer for additional information on each improvement alternative

Legend		
West Terrace Basins	● Catch Basin	▨ Reuse Pond
— Existing Circular Pipe	⊗ Drywell	▩ Evaporation Pond
- - - Existing Ditch/Swale	● Manhole	□ Detention Pond
- · - · Existing Force Main	● Ditch/Swale	■ Infiltration Pond
- · - · Existing Force Main (Not Functioning)	■ Storm Pond	— 10-ft USGS Contours
— Proposed Circular Pipe	■ Pump Station	— Roads
· · · · Proposed Force Main	■ Pump Station (Not Functioning)	□ Parcels
— Proposed Ditch	● Proposed Junctions	→ Flow Direction


0    100    200 ft  

**Problem:**  
New conveyance routes needed for future development

**Proposed Solution:**  
Develop plan for triggering installation of new storm drain system based on where development occurs. Locations where new infrastructure is needed may include West Melville Road, South Hayford Road, West Hallett Road, West White Road, or other locations.

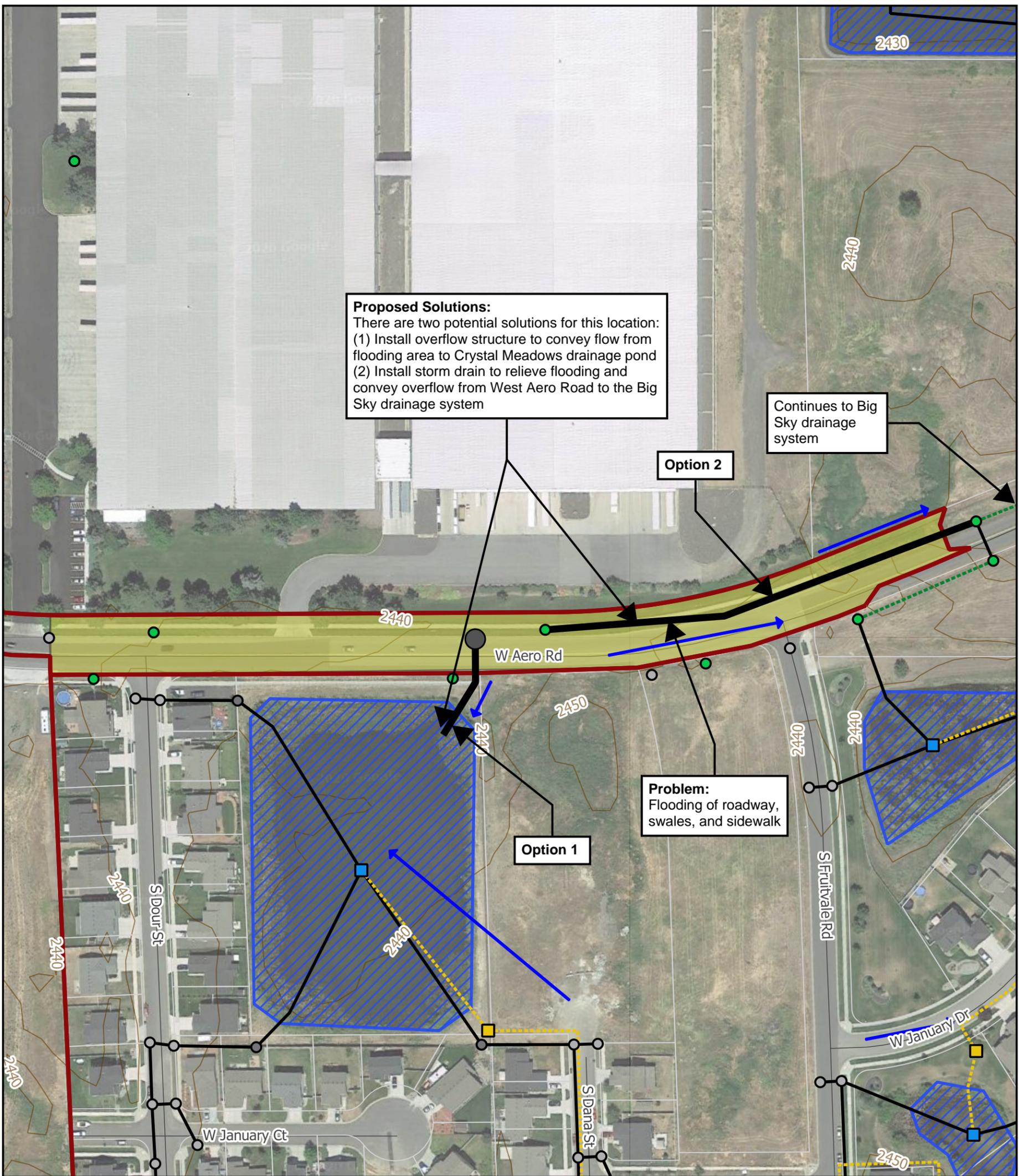
### Map 7: Planning for Storm Drains to Serve New Developments

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Note: See flyer for additional information on each improvement alternative

Legend		
West Terrace Basins	○ Catch Basin	▨ Reuse Pond
— Existing Circular Pipe	⊗ Drywell	▩ Evaporation Pond
- - - Existing Ditch/Swale	● Manhole	□ Detention Pond
- · - · Existing Force Main	● Ditch/Swale	■ Infiltration Pond
- · - · Existing Force Main (Not Functioning)	■ Storm Pond	— 10-ft USGS Contours
— Proposed Circular Pipe	■ Pump Station	— Roads
- · - · Proposed Force Main	■ Pump Station (Not Functioning)	□ Parcels
— Proposed Ditch	● Proposed Junctions	→ Flow Direction

0
900
1800 ft



**Map 8: West Aero Road Conveyance**

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Note: See flyer for additional information on each improvement alternative

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  - - - Existing Ditch/Swale
  - · - · Existing Force Main
  - · · · Existing Force Main (Not Functioning)
  - Proposed Circular Pipe
  - · · · Proposed Force Main
  - Proposed Ditch

- Legend**
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  - Pump Station (Not Functioning)
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- 10-ft USGS Contours
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