Stormwater Management Copy

PRELIMINARY DRAINAGE REPORT

90% LEVEL

FOR

SCOTTSDALE NATIONAL GOLF CLUB

June 16, 2015
WP# 144147.06

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MISSION: CLIENT SERVICE™

PRELIMINARY DRAINAGE REPORT

FOR

SCOTTSDALE NATIONAL GOLF CLUB

November 18, 2014
WP# 144147

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*Will need 90% report with PP or DR.

3-PP-2015
6/22/2015

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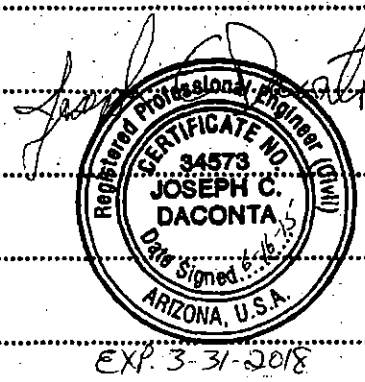
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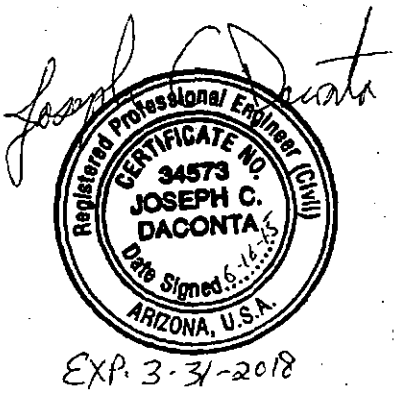
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1.0 INTRODUCTION

Scottsdale National Golf Club is a proposed golf course development in the City of Scottsdale, located between Rio Verde Drive (Dynamite Road) on the south and Dixileta Road on the north, west of 122nd Street, and east of 116th Street (refer to Exhibit 1 – *Vicinity Map*). The property will be an extension of the previously developed Scottsdale National Golf Club, and is located within Sections 26 and 27, Township 5 North, Range 5 East, of the Gila and Salt River Meridian. The Scottsdale National Golf Club consists of approximately 660 acres.

This Preliminary Drainage Report has been prepared in accordance with Wood, Patel & Associates, Inc.'s (Wood/Patel's) understanding of the City of Scottsdale's Design Standards & Policy Manual (Ref. 1) technical drainage requirements, as applicable for the development known as Scottsdale National Golf Club (hereafter referred to as the Site), as well as the *Drainage Design Manuals for Maricopa County, Hydrology and Hydraulics* (Ref. 2 & Ref. 3, respectively).

The Site is planned to include an 18-hole golf course, 9-hole golf course, clubhouse, comfort stations, and cottages (Casitas). This report includes the off-site and on-site hydrology and hydraulics entering and leaving the Site.

This report also presents a preliminary on-site drainage plan for storm water detention of the 100-year, 2-hour runoff volume, a pre- vs. post-peak flow analysis of the 100-year, 10-year and 2 year rainfall events and substantiates calculated flows leaving the Site do not exceed pre-developed levels. Hence, the downstream properties experience similar or reduced flow for each storm event. In addition, the significant water courses traversing through the Site will be maintained in their natural existing location.

2.0 DESCRIPTION OF STUDY AREA

2.1 Site Features

The Site lies in the northern planning section of the City of Scottsdale. The majority of the Site drains from the northwest to the southeast at approximately 2 percent. Elevations range from 2,800 in the north, to 2,645 feet in the southeast. A portion of the Site that is located east of 118th Street alignment has previously been mass graded, while the remainder of the Site is covered with typical Sonoran Desert vegetation including mesquite trees, saguaro cactus and creosote.

Based on the NRCS Aguila-Carefree Area, Arizona, Parts of Maricopa and Pinal Counties Soils Survey, the Site is primarily made up of a two (2) soil types. The first is classified as a very gravelly soil with shallow bedrock (Soil 61) and is hydrologic soil group D. Hydrologic soil group D is classified as soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. The second soil type is classified as a very gravelly clay soil (Soil 96) and is a hydrologic soil group C. Hydrologic soil group C is classified as soils that have slow infiltration rates when thoroughly wetted (refer to Plate 4 – *Existing Condition Soils Map* and Plate 5 – *Post-Development Soils Map*). The existing Scottsdale National Golf Club golf course exists along the majority of the eastern boundary, with exception to the southeast corner of the Site. The remainder of the Site is bound by undeveloped desert.

In general, there are two (2) separate rainfall seasons. The first occurs during the winter months from November to March when the area is subjected to occasional storms from the Pacific Ocean. While this is classified as a rainfall season, there can be periods of a month or more in this or any other season when practically no precipitation occurs. The second rainfall season occurs during July and August when Arizona is subjected to widespread thunderstorm activity where moisture supply originates both in the Gulf of Mexico and along Mexico's west coast. These thunderstorms are extremely variable in intensity and location.

2.2 Flood Insurance Rate Map (FIRM)

The Flood Insurance Rate Maps (FIRM) for Maricopa County, Arizona and incorporated areas, Map Numbers 04013C1330L and 04013C0914L, dated October 16, 2013, indicates

the Site is within Zone "X" shaded and Zone "X".
Zone "X" (shaded) is defined by FEMA as follows:

> *"Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood."*

Zone "X" is defined by FEMA as follows:

> *"Areas determined to be outside the 0.2% annual chance floodplain."*

The location of the Site relative to the FIRM panels is illustrated on Plate 3 – *FEMA Flood Insurance Rate Map*.

2.3 Major Drainage Courses

There are no major washes on the Site with an anticipated 100-year flow equal to or greater than 750 cfs; therefore, no washes are categorized as a Vista Corridor (refer to Ref. 6 for *Scenic Corridor Design Guidelines*). Significant water courses that traverse through the Site have been identified as washes with a 100-year flow greater than 50 cfs. These washes will be maintained in their natural existing location and will not be re-aligned.

2.4 Section 404 Jurisdictional Washes

There are several washes on the property that may be subject to jurisdiction of the U.S. Army Corps of Engineers' Section 404 requirements. A *Preliminary Jurisdictional Delineation Report for Scottsdale National Golf Club* has been prepared by Logan Simpson, dated March 2015, that has delineated potential Waters of the United States within the Site boundary. An application for a Section 404 Nationwide Permit may need to be submitted to the U.S. Army Corps of Engineers. Potential Section 404 washes should remain undisturbed where possible. As necessary, a Nationwide Permit will be obtained by the ownership.

3.0 EXISTING DRAINAGE CONDITIONS

3.1 Off-site Watershed Impacts

Off-site runoff entering the Site originates from the northwest. Off-site watersheds generally have moderately-steep topography with well-defined natural washes. Six (6) washes occur along the western and northern most Site boundaries (Dixileta Drive and 116th Street alignments), with watersheds ranging in size from 1 to 85 acres. These watersheds produce peak flows ranging from 7 cubic feet per second (cfs) to 239 cfs. Four (4) of the washes have peak flows in excess of 50 cfs.

An additional five (5) locations along the remainder of the Site expansion northern boundary (1/2 mile north of Rio Verde Drive) are affected by a combination of upstream on-site and off-site runoff. One (1) wash exceeds 50 cfs, and is a continuation of a wash affecting the western site boundary along the 116th Street alignment. Watershed delineations, peak flows, and an existing condition HEC-1 schematic are illustrated on Plate 8 – *Existing Condition HEC-1 Schematic*.

3.2 Existing On-site Drainage

The Site soils have low permeability and high runoff potential, coupled with fairly steep topography. The existing drainage conditions have incised washes which traverse the Site and their corresponding tributary areas are relatively small, with peak flows leaving the Site ranging from 7 cfs to 341 cfs.

Along the western Site boundary, three watersheds originate on-site and drain to the west and southwest. These drainage areas are anticipated to remain undisturbed in the post-development condition. Several additional watersheds that originate on-site and drain to the south across Rio Verde Drive have been identified and are detailed on Plate 8 – *Existing Condition HEC-1 Schematic*.

3.3 Existing Condition Hydrology

Existing condition hydrology has been modeled utilizing *DDMSW Version 4.8.0*, obtained from the Flood Control District of Maricopa County (FCDMC), and the U.S. Army Corps of Engineers' *HEC-1, Flood Hydrograph Package, Version 4.1*, (June 1998) to determine off-site and on-site peak flows prior to the development of the Site for the

100-year, 10-year and 2-year, 6-hour storm events. Refer to Plate 8 - *Existing Condition HEC-1 Schematic* and Appendix A for the HEC-1 output. Watersheds were delineated using topographic contours and maps obtained from the City of Scottsdale.

3.4 Existing Condition Hydraulics

Existing condition wash hydraulics have been modeled utilizing the U.S. Army Corps of Engineers' HEC-RAS, River Analysis System, Version 4.1.0 (Jan. 2010) to determine wash flow hydraulics for washes exceeding a 100-year peak flow of 50 cfs. As a result, washes' water surface elevations were obtained and 100-year floodplain delineations were completed for all significant washes traversing the Site. The washes' hydraulic results have been included within Appendix B – *Hydraulics* and the results are shown on Plate 10 – *Existing Condition HEC-RAS Map*.

3.5 Existing Drainage Along Rio Verde Drive

As the peak 100-year flow exits the Site along the southeast corner of the property, it immediately flows across Rio Verde Drive. A detailed hydraulic analysis was performed of the100-year peak flow from the Site boundary to approximately 700 feet downstream along the roadway in order to determine the hydraulic conditions of the existing condition peak discharge to Rio Verde Drive. The resulting 100-year peak flow exiting the Site at Rio Verde Drive was a combination of two washes' peak discharges joining at the property boundary and was determined to be equal to approximately 423 cfs. In addition, at the Rio Verde Drive roadway dip crossing located approximately 420 feet downstream of the Site, additional flow combines to a total 100-year peak discharge equal to approximately 582 cfs.

A HEC-RAS analysis along Rio Verde Drive determined that the peak flow exceeds the roadside wash bank capacities and begins to weir across Rio Verde Drive. The 100-year peak flow of approximately 418 cfs flows across Rio Verde Drive at an approximate width of 625 feet with 64 cfs continuing east along the north side of Rio Verde Drive. The Rio Verde Drive existing condition HEC-RAS exhibit and output is located within Appendix C – *Hydraulics*.

4.0 PROPOSED DRAINAGE CONDITION

4.1 Proposed On-site Drainage

The overall drainage concept is to route off-site flows through the Site within natural washes to historic discharge locations, maintaining existing drainage patterns. Proposed detention basins will provide 100-year, 2-hour stormwater storage for the disturbed portions of the Site. To substantiate post-development peak flows leaving the Site do not exceed pre-developed peak flows, a post-development HEC-1 model was developed to reflect proposed land uses, and included planned storage and attenuation for proposed detention basins.

On-site flows within disturbed areas will be conveyed through storm drain systems, channels, and/or washes to proposed detention basins. Detention basins shall be sized for the 100-year, 2-hour storm event. On-site runoff from storm events exceeding the 100-year, 2-hour flow shall pass through emergency overflow spillways or outlet culverts to safely discharge stormwater to adjacent washes. Detained runoff will be dissipated from the proposed basins by utilizing bleed-off pipes to adjacent washes.

In all locations, lowest floor elevations shall be set a minimum of 1 foot above the emergency overflow elevation, or the highest adjacent 100-year water surface elevation, whichever is greater.

4.2 Proposed Condition Hydrology

A post-development HEC-1 model was generated by utilizing the proposed site plan (see Plate 8 – ~~*Post-Development*~~ *Condition Land Use Map*). A relatively small portion of the Site has an increased percentage of impervious ground cover to simulate hard surfaces in the developed condition, such as asphalt, golf-cart paths, concrete, and roofs. The existing and proposed offline detention basins were included within the HEC-1 model. Resulting peak flows can be found within *Section 6.0 – Pre- vs. Post-Peak Flow Analysis*, and on Plate 9 – *Post-Developed Condition HEC-1 Schematic.* The Rational Method was utilized to determine peak flow rates for proposed on-site drainage systems and storm drain details within the proposed Casitas area. Post-Development HEC-1 output and Rational Method calculations are located within Appendix B - *Post Developed Condition Data and Hydrology*.

4.3 Erosion and Sediment Control

The proposed development includes on-site detention basins that will be utilized to detain the on-site 100-year, 2-hour runoff volume and reduce peak flows to pre-development levels. The off-site flows will be conveyed through the natural wash corridors, where the natural equilibrium of sediment transport within the stormwater runoff is not anticipated to be disturbed. Scour protection will be provided at culverts and at-grade golf-cart crossings at both the upstream and downstream ends as necessary. Consideration of culvert slope during the final culvert design stage shall be taken to help maintain wash velocities adequate to carry sediment through the culvert and in order to mitigate deposition at the inlets.

Where washes flow in proximity of any proposed structures, erosion hazard setbacks have been determined and are shown on Plate 11 – *Post-Development Condition HEC-RAS Map*. When structures have been proposed within the erosion hazard setback, bank protection (toed down to the potential wash scour depth) has been proposed to reduce the erosion setback limit. Erosion hazard setbacks and wash scour analyses were determined by utilizing the Arizona Department of Water Resources (ADWR) *State Standard for Watercourse System Sediment Balance* (SS 5-96) Guideline 1 - *Lateral Migration Setback Allowance for Riverine Floodplains in Arizona* and Guideline 2 – *Channel Degradation Estimation for Alluvial Channels in Arizona* Level 1 analyses, respectively; and are located within Appendix C – *Hydraulics*.

4.4 Proposed Condition Hydraulics

4.4.1 Wash Hydraulics/Floodplain Delineation

Existing wash corridors will be used to route off-site flows entering the Site to the appropriate historical outfall locations. The U.S. Army Corps of Engineers' HEC-RAS, River Analysis System, Version 4.1.0 (Jan. 2010) was utilized to model water surface elevations and wash velocities for peak-flow rates within all significant washes. The water surface elevations will be used to determine lowest floor elevations and 100-year floodplain limits. Post-Development HEC-RAS output is located in Appendix C – *Hydraulics* and the 100-year floodplain limits have been shown on Plate 11 – *Post-Development Condition HEC-RAS Map*.

4.4.2 Street Hydraulics

Currently, the proposed private entrance roadway for the Clubhouse will have ribbon curb. Runoff generated from the streets and roadway medians will flow to adjacent detention basins.

4.4.3 Preliminary Culvert Hydraulics

Where washes affect the proposed Clubhouse entrance roadway, preliminary culvert sizes were analyzed within the washes' respective HEC-RAS analysis. The resulting preliminary culvert sizes are shown on Plate 12 – *Post-Development Drainage Map*, and corresponding calculations are within the HEC-RAS output located within Appendix C - *Hydraulics*. Actual sizes may vary based on future detailed roadway design.

4.4.4 Preliminary Storm Drain Hydraulics

Within the proposed Casitas development area, preliminary storm drain systems were designed to intercept upstream flow and runoff generated from the Casitas area. Inlets have been designed to minimize ponding adjacent to the Casitas and proposed lowest finished floor elevations will be set a minimum of 1 foot above the highest adjacent water surface elevation of the 100-year storm event. Bentley *StormCAD V8i* was used to size the proposed storm drain system and to determine the resulting 100-year storm drain hydraulic grade line. Emergency overflow outfall will be designed within the proposed grading of the Casitas area and will occur to the east in the event that the storm drain system fails. The Casitas area site plan has not been finalized but no problems are foreseen with developing grading and drainage solutions that are City of Scottsdale compliant. The resulting preliminary storm drain design is shown on Plate 12 – *Post-Development Drainage Map*, and corresponding calculations are within Appendix C - *Hydraulics*.

4.5 Detention Basin Storage

Detention storage will be provided for runoff from the 100-year, 2-hour storm event for the proposed disturbed areas and therefore it is not anticipated that a Stormwater Waiver will be required for the Site. Proposed detention basins adjacent to Rio Verde Drive and the proposed Clubhouse Entrance will have ponded depths not to exceed 3 feet. The

proposed relatively small detention basins along the western boundary disturbance limits (Detention basins 022, 112 & 162) will pond to maximum depths of 5 feet during the 100-year, 6-hour storm event and drain within 12 to 24 hours. These proposed detention basins will have a minimum width of 50 feet and designed with erosion and stability protection to minimize the concern of potential breaching of the basin fill condition.

Detention for developed Sub-basins 072 thru 075, 077, 078, 081 through 084, 088, 089 and 106 will be provided within existing Detention Basin A. This detention basin is located along the southern boundary of the existing golf course, and currently detains volume from the existing golf course and upstream tributary area. The basin has capacity to detain 6.9 acre-feet, and the combined upstream proposed disturbance area required storage volume is 5.8 acre-feet.

Detention for the developed Sub-basins 010, 015, 045 and 055 will be provided within Detention Basins 022, 015 and 045. The detention basins' combined storage volume is approximately 2.0 acre-feet. The combined proposed disturbance area required storage volume is approximately 1.6 acre-feet.

Detention for developed Sub-basins 090 through 092, 097 and 100 will be provided within Detention Basin 092 & 092A. The basins will have an equalizer pipe between them and their combined proposed storage volume is approximately 5.0 acre-feet. The combined upstream proposed disturbance area required storage volume is approximately 4.4 acre-feet.

Detention for developed Sub-basins 99, 111, 130, 150 and 170 will be provided by a combination of Detention Basins 112, the 170 (the lake) and 130. The basins' combined proposed storage volume is 6.2 acre-feet and the total proposed disturbance area required storage volume is 6.2 acre-feet.

The proposed lake shall provide retention for Sub-basins 099 and 170. The 100-year, 2-hour runoff volume for these two sub-basins was determined to be approximately 4 acre-feet. A 42" storm drain system shall convey the 100-year peak flow from Sub-basin 099 into the lake. The storm drain design calculations are located within Appendix C – *Hydraulics*.

Detention for developed Sub-basins 163, 164 and 165 will be provided by Detention Basins 162, 163 and 164. The basins' combined storage volume is approximately 2.2 acre-feet and the total proposed disturbance area required storage volume is approximately 1.4 acre-feet. All storage basins used for detention to meet the 100-year, 2-hour storage requirements will have gravity bleed-off lines that shall drain the basins within 12 to 24 hours.

The runoff generated from the proposed Clubhouse and entry road shall be directed to basins located adjacent to the entry road. During final design, these basins may need to be re-graded to match and adjustments to the Site plan and shall be sized to detain the required runoff volumes. Basin locations, layout and sizes, along with details for inlet and outlet structures have been determined at a preliminary level and are detailed within the *Preliminary Grading and Drainage Plans for the Scottsdale National Golf Club*, prepared by Wood/Patel.

If land use parameters change, detention requirements shall be adjusted accordingly. Basins will be designed with emergency overflows, and adjacent lowest finished floors will be set with a minimum of 1 foot above the highest adjacent water surface elevation.

Detention volumes were calculated using the following equation:

$$V=C*(P/12)*A$$

Where:

C = Runoff Coefficient

P = Precipitation Depth in inches

A = Drainage Area in acres

Weighted runoff coefficients and drainage area parameters were determined from the *City of Scottsdale Design Standards and Policy Manual*. The 100-year, 2-hour precipitation depth for use in the City of Scottsdale is 2.775 inches, and was obtained from an isopluvial in the *City of Scottsdale Design Standards and Policy Manual*. Refer to Appendix B for detailed detention calculations.

4.6 Proposed Drainage Condition Along Rio Verde Drive

As a result of the on-site drainage system's detention basins, the 100-year peak flows exiting the Site along the southeast corner of the property and at Rio Verde Drive are reduced below the existing condition 100-year discharge. A detailed hydraulic analysis was performed of the post-development 100-year peak flow from the Site boundary to approximately 700 feet downstream along the roadway in order to determine the hydraulic conditions of the post-development condition peak discharge to Rio Verde Drive. The resulting post-development 100-year peak flow exiting the Site at Rio Verde Drive was a combination of two washes' peak discharges joining at the property boundary and was determined to be equal to approximately 239 cfs. In addition, at the Rio Verde Drive roadway dip crossing located approximately 420 feet downstream, additional flow combines to a total peak discharge of approximately 318 cfs.

A post-development HEC-RAS analysis along Rio Verde Drive determined that the peak flow exceeds the roadside wash bank capacities and begins to weir across Rio Verde Drive. The post-development 100-year peak flow now crossing over Rio Verde Drive is approximately 273 cfs and has been reduced in comparison to the existing condition 100-year peak flow. A 100-year flow of 45 cfs continues east along the north side of Rio Verde Drive. The Rio Verde Drive post-development HEC-RAS exhibit and output is located within Appendix C – *Hydraulics*.

5.0 DATA ANALYSIS METHODS

5.1 Hydrologic Procedures, Parameter Selection and Assumptions

A combination of City of Scottsdale's 2-foot contour interval quarter-section topography and 1-foot contour interval digital aerial topography was utilized to delineate off-site and on-site contributing watersheds. The U.S. Army Corps of Engineers' HEC-1 software was used to develop peak flows at concentration points entering and exiting the Site for both the existing and proposed conditions. The *City of Scottsdale Design Standards and Policies Manual* was used as a guideline for the following HEC-1 design parameters.

- Rainfall was determined using the City of Scottsdale isopluvial maps based on NOAA 14 data. The 100-year, 6-hour precipitation depth utilized in the model was 3.24 inches. DDMSW was utilized to perform an aerial reduction of the 100-year, 6-hour precipitation depth.
- Infiltration losses were determined using the Green and Ampt method, soil data obtained by the NRCS Web Soil Survey, and the Maricopa County DDMSW software.
- DDMSW was used to generate sub-basin hydrographs based on the Phoenix S-graph method as outlined in the *FCDMC Drainage Design Manual for Maricopa County, Arizona Volume 1, Hydrology*. The Phoenix S-graph is a dimensionless form of a unit hydrograph, and depending upon the S-graph, applies to watersheds that drain both non-urbanized mountainous terrain and urbanized development. Existing condition and proposed condition land uses were input into DDMSW, as well as watershed characteristics such as high elevation, low elevation, and watercourse length to generate the runoff hydrographs.
- Runoff hydrographs were routed using the Normal Depth Storage Routing Method.

Resulting existing and post-development peak flows can be found within Section 6.0 - *Pre- vs. Post-Peak Flow Analysis.*

5.2 Hydraulic Procedures, Methods, Parameter Selection, and Assumptions

Floodplain delineations, culvert sizing, and other detailed hydraulic calculations were performed at a preliminary level within this drainage report. Where necessary, detention

basins outlet weirs were designed to pass the 100-year basin peak outflow. Detention basin outlet culverts and bleed-off culverts were sized based on the assumption the outlets will be inlet controlled. This assumption was made due to the lack of detail at this stage in the planning process regarding finished grades, and is valid due to the significant slopes within the natural washes. Basin bleed-off pipes will be a minimum of 18-inch diameter and will have orifice plates to reduce the opening size in order to provide adequate basin drain times between 12 and 24 hours. Using the proposed orifice plate bleed-off pipe sizes, preliminary minimum basin drain times were determined for the detention basins. Basin drain time calculations can be found within Appendix C – *Hydraulics*.

It was assumed the lateral weir inlets to offline detention basins would act much like a broad crested weir because culverts at roadway crossings will be located in the same general location as the offline basins and will restrict flow passing beneath the roadway. When the culvert capacity is exceeded a flood pool upstream of the culvert will form adjacent to the detention basin. Once the flood pool reaches the crest elevation of the lateral weir, runoff will begin to flow into the detention basin. Thus weir equation 8.28 from the *FCDMC Drainage Design Manual, Volume II Hydraulics* was used to develop inlet rating curves for the basins.

$$Q = CLh^{3/2}$$

Where:

- Q is the flowrate passing over the weir in cubic feet per second (cfs)
- C is the weir coefficient, 3.0 for typical broad crested weir
- L is the weir crest length in feet
- h is the depth of flow over the weir in feet

5.3 Stormwater Storage Calculation Methods and Assumptions

Required stormwater storage calculations were performed using the Rational Method. The equations used to calculate the required and provided retention volumes are presented below.

$$V_{REQUIRED} = C * \left(\frac{P}{12}\right) * A$$

Where:

- V is the required retention volume in acre-feet
- C is the weighted "C" coefficient
- P is the precipitation in inches for the 100-year, 2-hour rainfall, 2.82 inches for the proposed site.
- A is the drainage area in acres

$$V_{PROVIDED} = \frac{\left[\left(\frac{Area1 + Area2}{2}\right) + \left(\frac{Area2 + Area3}{2}\right) + \left(\frac{Area3 + Area4}{2}\right)\right]}{43{,}560 \frac{S.F.}{Acre}}$$

Where:

- V is the provided retention volume in acre-feet
- Areas 1 through 4 are areas in square feet associated with each basin contour

The required detention volume calculations were based on the disturbed area of the golf course, graded areas, golf cart paths, Clubhouse and entry roads. The precipitation value of 2.775 inches and runoff coefficients utilized were based on criteria within the City of Scottsdale *Design Standards and Policies Manual.*

Please see Appendix B – *Post-Developed Condition Data and Hydrology* for detailed provided and required detention volume calculations.

6.0 PRE-PEAK VS. POST-PEAK FLOW ANALYSIS

Refer to the table below for the comparative peak discharge rates for the pre- vs. post-developed conditions at the concentration points along the project's eastern, southern, and western boundaries. During the 100-year, 6-hour storm event, the modeling results indicate post-development flows leaving the Site are at or below the pre-development peak flows at all historical outfall locations. Additionally, during the 2-year, 6-hour and 10-year, 6-hour storm events, the post-development flows leaving the Site were also at or below the pre-development peak flows at all historical outfall locations. The results are summarized in the following table.

HEC-1 ID	2-Year, 6-Hour		10-Year, 6-Hour		100-Year, 6-Hour	
	Pre-Developed Flow (cfs)	Post-Developed Flow (cfs)	Pre-Developed Flow (cfs)	Post-Developed Flow (cfs)	Pre-Developed Flow (cfs)	Post-Developed Flow (cfs)
005	54	54	125	125	240	240
025	10	10	22	22	39	39
030	10	9	21	20	38	35
035	4	4	8	8	13	13
040	3	1	6	2	10	3
CP060	79	61	201	136	382	316
CP310	80	74	165	135	269	263
CP092	68	59	176	103	341	117
CP130	50	47	115	96	233	192
CP132	119	88	297	196	582	318
CP165	32	19	73	40	134	89
210	8	8	16	16	29	29
220	11	10	23	22	40	39
230	3	3	6	6	10	10
240	4	4	8	8	13	13

7.0 MAINTENANCE

Ongoing maintenance of the designed or recommended drainage systems will be required to preserve the design integrity and purpose of the drainage system. Failure to provide maintenance can prevent the drainage system from performing to its intended design purpose and can result in reduced performance and protection levels. Maintenance is the responsibility of private developer, homeowners associations, etc. for facilities on private property within all easements and private streets, except for drainage structures within public rights-of-way accepted by the City of Scottsdale for maintenance. A regular maintenance program is required to have drainage systems perform to the level of protection or service as presented in this report.

8.0 CONCLUSIONS

Based on the results of the study, the following can be concluded:

- This Preliminary Drainage Report is prepared in accordance with our understanding of the City of Scottsdale and Maricopa County drainage requirements.
- Significant water courses traversing through the project will be maintained in their natural locations, per the City of Scottsdale requirements.
- Based on the HEC-1 computer modeling, resulting peak flows for the post-development condition 100-year, 10-year and 2-year, 6-hour storm exiting the Site do not exceed pre-development condition levels, as summarized within this report.
- On-site detention basins shall be designed to store the 100-year, 2-hour storm event for disturbed areas.
- Lowest floor elevations will be set a minimum of 1 foot above the highest adjacent 100-year water surface elevation.
- Outlet pipes shall evacuate detained runoff from basins within 12 to 24 hours, within the 36 hour requirement.
- Drainage infrastructure will be designed in accordance with the appropriate criteria defined in this report. For situations not covered in this report, *City of Scottsdale Design Standards and Policy Manual* and/or Maricopa County requirements shall be used for drainage facility design.
- The existing drainage condition, at the southeast corner of the Site, along Rio Verde Drive has been improved by the post-development drainage design system.
- Ongoing maintenance is required for the drainage systems in order to assure design performance. Maintenance is the responsibility of ownership.

9.0 WARNING AND DISCLAIMER OF LIABILITY

Appendix 4-1C

WARNING & DISCLAIMER OF LIABILITY

The Drainage and Floodplain Regulations and Ordinances of the City of Scottsdale are intended to "minimize the occurrence of losses, hazards and conditions adversely affecting the public health, safety and general welfare which might result from flooding caused by the surface runoff of rainfall" (Scottsdale Revised Code §37-16).

As defined in S.R.C. §37-17, a flood plain or "*Special flood hazard* area means an area having flood and/or flood related erosion hazards as shown on a FHBM or FIRM as zone A, AO, A1-30, AE, A99, AH, or E, and those areas identified as such by the floodplain administrator, delineated in accordance with subsection 37-18(b) and adopted by the floodplain board." It is possible that a property could be inundated by greater frequency flood events or by a flood greater in magnitude than a 100-year flood. Additionally, much of the Scottsdale area is a dynamic flood area; that is, the floodplains may shift from one location to another, over time, due to natural processes.

WARNING AND DISCLAIMER OF LIABILITY PURSUANT TO S.R.C §37-22
"The degree of flood protection provided by the requirements in this article is considered reasonable for regulatory purposes and is based on scientific and engineering considerations. Floods larger than the base flood can and will occur on rare occasions. Floodwater heights may be increased by man-made or natural causes. This article (Chapter 37, Article II) shall not create liability on the part of the city, any officer or employee thereof, or the federal government for any flood damages that result from reliance on this article or any administrative decision lawfully made thereunder."

Compliance with Drainage and Floodplain Regulations and Ordinances does not insure complete protection from flooding. The Floodplain Regulations and Ordinances meet established local and federal standards for floodplain management, but neither this review nor the Regulations and Ordinances take into account such flood related problems as natural erosion, streambed meander or man-made obstructions and diversions, all of which may have an adverse affect in the event of a flood. You are advised to consult your own engineer or other expert regarding these considerations.

I have read and understand the above. If I am an agent for an owner I have made the owner aware of and explained this disclaimer.

_____ _____ _____

Plan Check No. Owner or Agent Date

10.0 REFERENCES

1. *Design Standards and Policies Manual,* City of Scottsdale, January 2010.
2. *Drainage Design Manual for Maricopa, County, Arizona, 4th Edition, Hydrology*, Flood Control District of Maricopa County, August 15, 2013.
3. *Drainage Design Manual for Maricopa, County, Arizona, Hydraulics*, Flood Control District of Maricopa County, August 15, 2013.
4. National *Flood Insurance Program, Flood Insurance Rate Map, Panel Numbers 04013C1330L & 04013C0914L* Federal Emergency Management Agency (FEMA), dated October 16, 2013.
5. *HEC-1 Flood Hydrograph Package*, US Army Corps of Engineers, June 1998.
6. *Scenic Corridor Design Guidelines*, City of Scottsdale, March 2003.
7. *Bentley StormCAD V8i*, Haestad Methods Solution Center, November 2013.
8. *Final Drainage Report for The Golf Club Scottsdale*, Pinnacle Engineering, 2002.
9. Approved Grading & Drainage Plans for *The Golf Club Scottsdale*, Sheets 1 thru 16, Pinnacle Engineering, 8/2002.

APPENDIX A

EXISTING CONDITION DATA AND HYDROLOGY

Rainfall Data

ID	Method	Duration	2 Yr	5 Yr	10 Yr	25 Yr	50 Yr	100 Yr
DEFAULT	NOAA14	5 MIN	0.318	0.428	0.511	0.621	0.704	0.787
	NOAA14	10 MIN	0.484	0.652	0.778	0.945	1.071	1.198
	NOAA14	15 MIN	0.600	0.808	0.965	1.171	1.328	1.485
	NOAA14	30 MIN	0.808	1.088	1.299	1.578	1.788	1.999
	NOAA14	1 HOUR	1.000	1.346	1.608	1.952	2.213	2.474
	NOAA14	2 HOUR	1.141	1.513	1.798	2.183	2.474	2.775
	NOAA14	3 HOUR	1.212	1.577	1.868	2.272	2.593	2.923
	NOAA14	6 HOUR	1.442	1.827	2.135	2.559	2.891	3.235
	NOAA14	12 HOUR	1.734	2.175	2.526	3.001	3.368	3.744
	NOAA14	24 HOUR	2.121	2.765	3.290	4.036	4.642	5.287

Sub Basin Data

Flood Control District of Maricopa County
Drainage Design Management System
SUB BASINS
Project Reference: SNGC EXISTING

Area ID	Sub Basin Parameters								Rainfall Losses				
	Area (sq mi)	Length (mi)	Slope (ft/mi)	S-Graph	Lca (mi)	Lag (min)	Velocity (f/s)	Kn	IA (in)	DTHETA	PSIF (in)	XKSAT (in/hr)	RTIMP (%)
Major Basin ID: 01													
005	0.133	0.90	119.2	MOUNTAIN	0.48	21.10	3.75	0.050	0.35	0.40	6.00	0.176	
010	0.040	0.46	147.8	MOUNTAIN	0.22	11.70	3.47	0.050	0.35	0.40	6.00	0.176	
079	0.010	0.25	166.0	MOUNTAIN	0.12	7.20	3.04	0.050	0.35	0.40	6.00	0.176	
120	0.028	0.22	172.7	MOUNTAIN	0.09	6.10	3.18	0.050	0.35	0.40	6.00	0.176	
300	0.004	0.09	179.8	VALLEY	0.04	3.00	2.64	0.047	0.33	0.28	7.58	0.099	1
020	0.038	0.30	148.1	MOUNTAIN	0.12	7.80	3.33	0.050	0.35	0.40	6.00	0.176	
080	0.008	0.22	137.0	MOUNTAIN	0.09	6.40	3.03	0.050	0.35	0.39	6.16	0.165	
130	0.003	0.05	169.8	MOUNTAIN	0.03	2.30	1.99	0.050	0.35	0.39	6.16	0.159	
301	0.007	0.08	253.3	VALLEY	0.03	2.20	2.96	0.045	0.31	0.31	6.34	0.176	2
025	0.013	0.27	180.8	MOUNTAIN	0.11	7.10	3.38	0.050	0.35	0.40	6.00	0.176	
081	0.004	0.13	218.8	MOUNTAIN	0.06	4.10	2.77	0.050	0.35	0.40	6.00	0.176	
135	0.011	0.13	143.9	MOUNTAIN	0.06	4.50	2.61	0.050	0.35	0.40	6.00	0.176	
302	0.012	0.21	138.8	VALLEY	0.03	3.40	5.46	0.041	0.28	0.24	6.54	0.189	4
030	0.013	0.28	175.6	MOUNTAIN	0.15	8.10	3.04	0.050	0.35	0.40	6.00	0.176	
082	0.004	0.10	174.8	MOUNTAIN	0.06	3.90	2.32	0.050	0.35	0.40	6.00	0.176	
150	0.062	0.98	117.9	MOUNTAIN	0.60	23.80	3.64	0.050	0.35	0.40	6.00	0.176	
303	0.006	0.15	186.2	VALLEY	0.05	3.60	3.54	0.044	0.30	0.26	6.76	0.156	3
035	0.004	0.10	237.6	MOUNTAIN	0.05	3.40	2.60	0.050	0.35	0.40	6.00	0.176	
083	0.002	0.06	293.1	MOUNTAIN	0.03	2.20	2.33	0.050	0.35	0.40	6.00	0.176	
160	0.015	0.26	169.2	MOUNTAIN	0.14	7.70	2.97	0.050	0.35	0.40	6.00	0.176	
304	0.003	0.12	129.3	VALLEY	0.05	4.00	2.53	0.050	0.35	0.35	6.76	0.130	

* Non-default value

Flood Control District of Maricopa County
Drainage Design Management System
SUB BASINS
Project Reference: SNGC EXISTING

Area ID	Sub Basin Parameters								Rainfall Losses				
	Area (sq mi)	Length (mi)	Slope (ft/mi)	S-Graph	Lca (mi)	Lag (min)	Velocity (f/s)	Kn	IA (in)	DTHETA	PSIF (in)	XKSAT (in/hr)	RTIMP (%)
Major Basin ID: 01													
040	0.003	0.07	314.3	MOUNTAIN	0.03	2.30	2.66	0.050	0.35	0.40	6.00	0.176	
084	0.003	0.08	276.3	MOUNTAIN	0.04	2.70	2.45	0.050	0.35	0.40	6.00	0.176	
165	0.041	0.61	124.0	MOUNTAIN	0.27	14.50	3.71	0.050	0.35	0.40	6.00	0.176	
305	0.004	0.08	180.7	VALLEY	0.03	2.50	2.89	0.046	0.32	0.26	7.94	0.095	2
050	0.008	0.14	154.4	MOUNTAIN	0.04	3.80	3.14	0.050	0.35	0.40	6.00	0.176	
085	0.011	0.25	138.8	MOUNTAIN	0.14	7.80	2.75	0.050	0.35	0.40	6.00	0.176	
170	0.020	0.36	151.5	MOUNTAIN	0.21	10.40	3.06	0.050	0.35	0.40	6.00	0.176	
306	0.004	0.11	171.2	VALLEY	0.03	2.90	3.42	0.046	0.32	0.26	7.94	0.095	2
055	0.044	0.51	124.5	MOUNTAIN	0.31	14.30	3.16	0.050	0.35	0.40	6.00	0.176	
088	0.014	0.34	137.8	MOUNTAIN	0.14	8.90	3.38	0.050	0.35	0.39	6.16	0.158	
190	0.019	0.34	152.9	MOUNTAIN	0.18	9.60	3.12	0.050	0.35	0.40	6.00	0.176	
307	0.002	0.06	267.9	VALLEY	0.02	1.50	3.36	0.039	0.26	0.17	7.94	0.120	5
062	0.004	0.11	166.7	MOUNTAIN	0.05	3.70	2.54	0.050	0.35	0.40	6.00	0.176	
060	0.028	0.47	116.1	MOUNTAIN	0.31	13.10	3.11	0.047	0.32	0.37	6.00	0.189	3
090	0.002	0.09	200.0	MOUNTAIN	0.03	2.70	2.75	0.050	0.35	0.40	6.00	0.176	
200	0.012	0.32	144.7	VALLEY	0.16	9.00	3.10	0.050	0.35	0.39	6.16	0.166	
308	0.006	0.06	158.7	VALLEY	0.01	1.30	4.25	0.039	0.26	0.17	7.94	0.120	5
132	0.008	0.13	104.0	MOUNTAIN	0.06	4.60	2.37	0.050	0.35	0.32	7.58	0.090	
065	0.002	0.07	157.1	MOUNTAIN	0.04	3.00	2.09	0.050	0.35	0.40	6.00	0.176	
091	0.006	0.16	170.7	MOUNTAIN	0.07	5.00	2.91	0.050	0.35	0.40	6.00	0.176	

* Non default value

Flood Control District of Maricopa County
Drainage Design Management System
SUB BASINS
Project Reference: SNGC EXISTING

Area ID	Sub Basin Parameters								Rainfall Losses				
	Area (sq mi)	Length (mi)	Slope (ft/mi)	S-Graph	Lca (mi)	Lag (min)	Velocity (f/s)	Kn	IA (in)	DTHETA	PSIF (in)	XKSAT (in/hr)	RTIMP (%)
Major Basin ID: 01													
210	0.009	0.18	154.7	MOUNTAIN	0.08	5.50	2.88	0.050	0.35	0.40	6.00	0.176	
070	0.017	0.20	184.6	MOUNTAIN	0.09	5.70	2.98	0.050	0.35	0.40	6.00	0.176	
092	0.010	0.23	112.6	MOUNTAIN	0.12	7.50	2.71	0.050	0.35	0.39	6.16	0.164	
220	0.013	0.20	145.0	MOUNTAIN	0.10	6.30	2.78	0.050	0.35	0.40	6.00	0.176	
072	0.030	0.42	87.9	MOUNTAIN	0.24	12.90	2.88	0.050	0.35	0.40	6.00	0.176	
094	0.005	0.17	126.4	MOUNTAIN	0.10	6.20	2.49	0.050	0.35	0.40	6.00	0.176	
230	0.003	0.08	200.0	MOUNTAIN	0.02	2.20	2.97	0.050	0.35	0.40	6.00	0.176	
073	0.016	0.29	128.9	MOUNTAIN	0.16	8.90	2.85	0.050	0.35	0.40	6.00	0.176	
095	0.003	0.11	111.1	MOUNTAIN	0.06	4.30	2.19	0.050	0.35	0.40	6.00	0.176	
240	0.004	0.06	241.4	MOUNTAIN	0.02	1.90	2.62	0.050	0.35	0.40	6.00	0.176	
074	0.009	0.15	190.8	MOUNTAIN	0.07	4.70	2.83	0.050	0.35	0.40	6.00	0.176	
096	0.015	0.20	164.2	MOUNTAIN	0.12	6.60	2.67	0.050	0.35	0.40	6.00	0.176	
075	0.002	0.06	321.4	MOUNTAIN	0.02	1.80	2.71	0.050	0.35	0.40	6.00	0.176	
097	0.035	0.53	117.2	MOUNTAIN	0.29	14.30	3.26	0.050	0.35	0.40	6.00	0.176	
076	0.004	0.14	181.8	MOUNTAIN	0.06	4.40	2.86	0.050	0.35	0.40	6.00	0.176	
098	0.010	0.30	152.5	MOUNTAIN	0.14	8.30	3.15	0.050	0.35	0.40	6.00	0.176	
077	0.004	0.12	188.0	MOUNTAIN	0.06	4.00	2.55	0.050	0.35	0.40	6.00	0.176	
099	0.007	0.18	169.5	MOUNTAIN	0.09	5.60	2.77	0.050	0.35	0.40	6.00	0.176	
078	0.006	0.13	197.0	MOUNTAIN	0.06	4.20	2.77	0.050	0.35	0.40	6.00	0.176	
100	0.017	0.38	153.6	MOUNTAIN	0.21	10.60	3.18	0.050	0.35	0.40	6.00	0.176	
105	0.013	0.34	165.7	MOUNTAIN	0.17	9.30	3.27	0.050	0.35	0.40	6.00	0.176	

* Non-default value

Flood Control District of Maricopa County
Drainage Design Management System
SUB BASINS
Project Reference: SNGC EXISTING

Area ID	Sub Basin Parameters								Rainfall Losses				
	Area (sq mi)	Length (mi)	Slope (ft/mi)	S-Graph	Lca (mi)	Lag (min)	Velocity (f/s)	Kn	IA (in)	DTHETA	PSIF (in)	XKSAT (in/hr)	RTIMP (%)
Major Basin ID: 01													
106	0.007	0.14	118.9	MOUNTAIN	0.08	5.30	2.37	0.050	0.35	0.40	6.00	0.176	
111	0.009	0.24	190.7	MOUNTAIN	0.10	6.40	3.25	0.050	0.35	0.40	6.00	0.176	

* Non default value

Land Use Data

Flood Control District of Maricopa County
Drainage Design Management System
LAND USE
Project Reference: SNGC EXISTING

Sub Basin	Land Use Code	Area (sq mi)	Area (%)	Initial Loss (IA)	Percent Impervious (RTIMP)	Vegetation Cover (%)	DTHETA	Kn	Description
Major Basin ID: 01									
005	910	0.1330	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.1330	**100.0**						
010	910	0.0400	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0400	**100.0**						
020	910	0.0380	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0380	**100.0**						
025	910	0.0130	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0130	**100.0**						
030	910	0.0130	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0130	**100.0**						
035	910	0.0040	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0040	**100.0**						
040	910	0.0030	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0030	**100.0**						
050	910	0.0080	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0080	**100.0**						
055	910	0.0440	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0440	**100.0**						
060	720	0.0054	19.3	0.25	5	80.0	NORMAL	0.038	Golf courses
	910	0.0220	78.6	0.35	0	25.0	DRY	0.050	Desert
	920	0.0006	2.1	0.05	95	0.0	DRY	0.015	Impervious - Roadways & Rooftops

* Non default value

Flood Control District of Maricopa County
Drainage Design Management System
LAND USE
Project Reference: SNGC EXISTING

Sub Basin	Land Use Code	Area (sq mi)	Area (%)	Initial Loss (IA)	Percent Impervious (RTIMP)	Vegetation Cover (%)	DTHETA	Kn	Description
Major Basin ID: 01									
		0.0280	**100.0**						
062	910	0.0040	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0040	**100.0**						
065	910	0.0020	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0020	**100.0**						
070	910	0.0170	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0170	**100.0**						
072	910	0.0300	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0300	**100.0**						
073	910	0.0160	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0160	**100.0**						
074	910	0.0090	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0090	**100.0**						
075	910	0.0020	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0020	**100.0**						
076	910	0.0040	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0040	**100.0**						
077	910	0.0040	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0040	**100.0**						
078	910	0.0060	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0060	**100.0**						

* Non default value

Flood Control District of Maricopa County
Drainage Design Management System
LAND USE
Project Reference: SNGC EXISTING

Sub Basin	Land Use Code	Area (sq mi)	Area (%)	Initial Loss (IA)	Percent Impervious (RTIMP)	Vegetation Cover (%)	DTHETA	Kn	Description
Major Basin ID: 01									
079	910	0.0100	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0100	**100.0**						
080	910	0.0080	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0080	**100.0**						
081	910	0.0040	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0040	**100.0**						
082	910	0.0040	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0040	**100.0**						
083	910	0.0020	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0020	**100.0**						
084	910	0.0030	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0030	**100.0**						
085	910	0.0110	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0110	**100.0**						
088	910	0.0140	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0140	**100.0**						
090	910	0.0020	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0020	**100.0**						
091	910	0.0060	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0060	**100.0**						
092	910	0.0100	100.0	0.35	0	25.0	DRY	0.050	Desert

* Non default value

Flood Control District of Maricopa County
Drainage Design Management System
LAND USE
Project Reference: SNGC EXISTING

Sub Basin	Land Use Code	Area (sq mi)	Area (%)	Initial Loss (IA)	Percent Impervious (RTIMP)	Vegetation Cover (%)	DTHETA	Kn	Description
Major Basin ID: 01									
		0.0100	**100.0**						
094	910	0.0050	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0050	**100.0**						
095	910	0.0030	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0030	**100.0**						
096	910	0.0150	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0150	**100.0**						
097	910	0.0350	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0350	**100.0**						
098	910	0.0100	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0100	**100.0**						
099	910	0.0070	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0070	**100.0**						
100	910	0.0170	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0170	**100.0**						
105	910	0.0130	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0130	**100.0**						
106	910	0.0070	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0070	**100.0**						
111	910	0.0090	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0090	**100.0**						

* Non default value

Flood Control District of Maricopa County
Drainage Design Management System
LAND USE
Project Reference: SNGC EXISTING

Sub Basin	Land Use Code	Area (sq mi)	Area (%)	Initial Loss (IA)	Percent Impervious (RTIMP)	Vegetation Cover (%)	DTHETA	Kn	Description
Major Basin ID: 01									
120	910	0.0280	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0280	**100.0**						
130	910	0.0030	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0030	**100.0**						
132	910	0.0080	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0080	**100.0**						
135	910	0.0110	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0110	**100.0**						
150	910	0.0620	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0620	**100.0**						
160	910	0.0150	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0150	**100.0**						
165	910	0.0407	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0407	**100.0**						
170	910	0.0200	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0200	**100.0**						
190	910	0.0190	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0190	**100.0**						
200	910	0.0120	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0120	**100.0**						
210	910	0.0090	100.0	0.35	0	25.0	DRY	0.050	Desert

* Non default value

Sub Basin	Land Use Code	Area (sq mi)	Area (%)	Initial Loss (IA)	Percent Impervious (RTIMP)	Vegetation Cover (%)	DTHETA	Kn	Description
Major Basin ID: 01									
		0.0090	**100.0**						
220	910	0.0130	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0130	**100.0**						
230	910	0.0030	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0030	**100.0**						
240	910	0.0040	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0040	**100.0**						
300	720	0.0010	25.0	0.25	5	80.0	NORMAL	0.038	Golf courses
	910	0.0030	75.0	0.35	0	25.0	DRY	0.050	Desert
		0.0040	**100.0**						
301	720	0.0027	38.6	0.25	5	80.0	NORMAL	0.038	Golf courses
	910	0.0043	61.4	0.35	0	25.0	DRY	0.050	Desert
		0.0070	**100.0**						
302	720	0.0090	75.0	0.25	5	80.0	NORMAL	0.038	Golf courses
	910	0.0030	25.0	0.35	0	25.0	DRY	0.050	Desert
		0.0120	**100.0**						
303	720	0.0030	50.0	0.25	5	80.0	NORMAL	0.038	Golf courses
	910	0.0030	50.0	0.35	0	25.0	DRY	0.050	Desert
		0.0060	**100.0**						
304	910	0.0030	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0030	**100.0**						

* Non default value

Sub Basin	Land Use Code	Area (sq mi)	Area (%)	Initial Loss (IA)	Percent Impervious (RTIMP)	Vegetation Cover (%)	DTHETA	Kn	Description
Major Basin ID: 01									
305	720	0.0012	30.0	0.25	5	80.0	NORMAL	0.038	Golf courses
	910	0.0028	70.0	0.35	0	25.0	DRY	0.050	Desert
		0.0040	**100.0**						
306	720	0.0012	30.0	0.25	5	80.0	NORMAL	0.038	Golf courses
	910	0.0028	70.0	0.35	0	25.0	DRY	0.050	Desert
		0.0040	**100.0**						
307	720	0.0018	90.0	0.25	5	80.0	NORMAL	0.038	Golf courses
	910	0.0002	10.0	0.35	0	25.0	DRY	0.050	Desert
		0.0020	**100.0**						
308	720	0.0054	90.0	0.25	5	80.0	NORMAL	0.038	Golf courses
	910	0.0006	10.0	0.35	0	25.0	DRY	0.050	Desert
		0.0060	**100.0**						

Soil Data

Area ID	Book Number	Map Unit	Soil ID	Area (sq mi)	Area (%)	XKSAT	Rock Percent (%)	Effective Rock (%)	Comments
Major Basin ID: 01									
005	645	61	64561	0.133	100.00	0.150	-	100	
010	645	61	64561	0.040	100.00	0.150	-	100	
020	645	61	64561	0.038	100.00	0.150	-	100	
025	645	61	64561	0.013	100.00	0.150	-	100	
030	645	61	64561	0.013	100.00	0.150	-	100	
035	645	61	64561	0.004	100.00	0.150	-	100	
040	645	61	64561	0.003	100.00	0.150	-	100	
050	645	61	64561	0.008	100.00	0.150	-	100	
055	645	61	64561	0.044	100.00	0.150	-	100	
060	645	96	64596	0.001	2.50	0.070	-	100	
	645	61	64561	0.027	97.50	0.150	-	100	
062	645	61	64561	0.004	100.00	0.150	-	100	
065	645	61	64561	0.002	100.00	0.150	-	100	
070	645	61	64561	0.017	100.00	0.150	-	100	
072	645	61	64561	0.030	100.00	0.150	-	100	
073	645	61	64561	0.016	100.00	0.150	-	100	
074	645	61	64561	0.009	100.00	0.150	-	100	
075	645	61	64561	0.002	100.00	0.150	-	100	
076	645	61	64561	0.004	100.00	0.150	-	100	
077	645	61	64561	0.004	100.00	0.150	-	100	
078	645	61	64561	0.006	100.00	0.150	-	100	
079	645	61	64561	0.010	100.00	0.150	-	100	
080	645	61	64561	0.008	91.70	0.150	-	100	
	645	96	64596	0.001	8.30	0.070	-	100	
081	645	61	64561	0.004	100.00	0.150	-	100	
082	645	61	64561	0.004	100.00	0.150	-	100	
083	645	61	64561	0.002	100.00	0.150	-	100	
084	645	61	64561	0.003	100.00	0.150	-	100	
085	645	61	64561	0.011	100.00	0.150	-	100	
088	645	61	64561	0.012	85.60	0.150	-	100	
	645	96	64596	0.002	14.40	0.070	-	100	
090	645	61	64561	0.002	100.00	0.150	-	100	
091	645	61	64561	0.006	100.00	0.150	-	100	
092	645	61	64561	0.009	90.60	0.150	-	100	
	645	96	64596	0.001	9.40	0.070	-	100	
094	645	61	64561	0.005	100.00	0.150	-	100	
095	645	61	64561	0.003	100.00	0.150	-	100	
096	645	61	64561	0.015	100.00	0.150	-	100	
097	645	61	64561	0.035	100.00	0.150	-	100	
098	645	61	64561	0.010	100.00	0.150	-	100	
099	645	61	64561	0.007	100.00	0.150	-	100	
100	645	61	64561	0.017	100.00	0.150	-	100	
105	645	61	64561	0.013	100.00	0.150	-	100	
106	645	61	64561	0.007	100.00	0.150	-	100	
111	645	61	64561	0.009	100.00	0.150	-	100	
120	645	61	64561	0.028	100.00	0.150	-	100	
130	645	61	64561	0.003	86.70	0.150	-	100	
	645	96	64596	0.000	13.30	0.070	-	100	
132	645	96	64596	0.007	87.50	0.070	-	100	

Area ID	Book Number	Map Unit	Soil ID	Area (sq mi)	Area (%)	XKSAT	Rock Percent (%)	Effective Rock (%)	Comments
Major Basin ID: 01									
132	645	61	64561	0.001	12.50	0.150	-	100	
135	645	61	64561	0.011	100.00	0.150	-	100	
150	645	61	64561	0.062	100.00	0.150	-	100	
160	645	61	64561	0.015	100.00	0.150	-	100	
165	645	61	64561	0.041	100.00	0.150	-	100	
170	645	61	64561	0.020	100.00	0.150	-	100	
190	645	61	64561	0.019	100.00	0.150	-	100	
200	645	61	64561	0.011	92.50	0.150	-	100	
	645	96	64596	0.001	7.50	0.070	-	100	
210	645	61	64561	0.009	100.00	0.150	-	100	
220	645	61	64561	0.013	100.00	0.150	-	100	
230	645	61	64561	0.003	100.00	0.150	-	100	
240	645	61	64561	0.004	100.00	0.150	-	100	
300	645	61	64561	0.000	7.50	0.150	-	100	
	645	96	64596	0.004	92.50	0.070	-	100	
301	645	61	64561	0.005	77.10	0.150	-	100	
	645	96	64596	0.002	22.90	0.070	-	100	
302	645	61	64561	0.008	65.80	0.150	-	100	
	645	96	64596	0.004	34.20	0.070	-	100	
303	645	61	64561	0.003	53.30	0.150	-	100	
	645	96	64596	0.003	46.70	0.070	-	100	
304	645	61	64561	0.002	60.00	0.150	-	100	
	645	96	64596	0.001	40.00	0.070	-	100	
305	645	96	64596	0.004	100.00	0.070	-	100	
306	645	96	64596	0.004	100.00	0.070	-	100	
307	645	96	64596	0.002	100.00	0.070	-	100	
308	645	96	64596	0.006	100.00	0.070	-	100	

Routing Data

Flood Control District of Maricopa County
Drainage Design Management System
HEC-1 ROUTING DATA
Project Reference: SNGC EXISTING

Route ID	LOB N	Chan N	ROB N	Length (ft)	Slope (ft/ft)	Max Elev (ft)		1.	2.	3.	4.	5.	6.	7.	8.
NORMAL DEPTH															
Major Basin 01															
R106	0.025	0.025	0.025	750.00	0.0310	-	X:	-	10.00	20.00	34.00	37.00	48.00	53.00	74.00
							Y:	2,683.00	2,682.00	2,681.00	2,675.00	2,675.00	2,681.00	2,682.00	2,686.00
R130B	0.025	0.025	0.025	561.00	0.0120	-	X:	-	25.00	29.00	31.00	38.00	40.00	41.00	62.00
							Y:	2,649.00	2,648.00	2,647.00	2,646.00	2,646.00	2,647.00	2,648.00	2,649.00
R132A	0.035	0.025	0.035	550.00	0.0250	-	X:	-	30.00	50.00	70.00	80.00	90.00	110.00	120.00
							Y:	2,645.00	2,644.00	2,643.00	2,642.00	2,642.00	2,643.00	2,645.00	2,646.00
R132B	0.035	0.025	0.035	300.00	0.0250	-	X:	-	30.00	50.00	70.00	80.00	90.00	110.00	120.00
							Y:	2,645.00	2,644.00	2,643.00	2,642.00	2,642.00	2,643.00	2,645.00	2,646.00
R150	0.025	0.025	0.025	4,933.00	0.0210	-	X:	-	7.00	27.00	43.00	47.00	50.00	55.00	95.00
							Y:	2,725.00	2,724.00	2,722.00	2,721.00	2,720.80	2,721.00	2,722.00	2,725.00
R165	0.025	0.025	0.025	238.00	0.0420	-	X:	-	6.00	11.00	47.00	62.00	68.00	77.00	93.00
							Y:	2,689.00	2,688.00	2,687.00	2,687.30	2,686.70	2,687.00	2,688.00	2,689.00
R301	0.025	0.025	0.025	442.00	0.0410	-	X:	-	5.00	12.00	38.00	53.00	82.00	109.00	150.00
							Y:	2,660.00	2,659.00	2,658.00	2,656.00	2,656.00	2,657.00	2,658.00	2,660.00
R302A	0.025	0.025	0.025	320.00	0.0280	-	X:	-	12.00	20.00	32.00	36.00	50.00	59.00	69.00
							Y:	2,649.00	2,648.00	2,647.00	2,646.50	2,646.50	2,647.00	2,648.00	2,649.00
R302B	0.025	0.025	0.025	276.00	0.0330	-	X:	-	14.00	30.00	52.00	62.00	87.00	100.00	115.00
							Y:	2,652.00	2,651.00	2,650.00	2,649.00	2,649.00	2,650.00	2,651.00	2,652.00
R303	0.025	0.025	0.025	400.00	0.0200	-	X:	-	8.00	15.00	29.00	33.00	42.00	48.00	52.00
							Y:	2,657.00	2,656.00	2,655.00	2,654.00	2,654.00	2,655.00	2,656.00	2,657.00
R305A	0.025	0.025	0.025	415.00	0.0410	-	X:	-	10.00	23.00	31.00	55.00	63.00	69.00	74.00
							Y:	2,650.00	2,649.00	2,648.00	2,647.00	2,647.00	2,648.00	2,649.00	2,650.00

Route ID	LOB N	Chan N	ROB N	Length (ft)	Slope (ft/ft)	Max Elev (ft)		1.	2.	3.	4.	5.	6.	7.	8.
R305B	0.025	0.025	0.025	279.00	0.0220	-	X:	-	22.00	30.00	37.00	50.00	60.00	80.00	94.00
							Y:	2,649.00	2,648.00	2,647.00	2,646.00	2,646.00	2,647.00	2,648.00	2,649.00
R306	0.025	0.025	0.025	505.00	0.0180	-	X:	-	5.00	9.00	13.00	18.00	27.00	43.00	58.00
							Y:	2,644.00	2,643.00	2,642.00	2,641.00	2,641.00	2,642.00	2,643.00	2,644.00
R55	0.025	0.025	0.025	2,470.00	0.0230	-	X:	-	9.00	18.00	33.00	52.00	60.00	68.00	73.00
							Y:	2,741.00	2,740.50	2,740.00	2,739.00	2,739.00	2,740.00	2,740.50	2,741.00
R60A	0.035	0.025	0.035	2,000.00	0.0220	-	X:	-	4.00	9.00	13.00	24.00	28.00	36.00	45.00
							Y:	2,706.00	2,705.00	2,704.00	2,703.00	2,703.00	2,704.00	2,705.00	2,706.00
R60B	0.035	0.025	0.035	2,450.00	0.0220	-	X:	-	4.00	9.00	13.00	24.00	28.00	36.00	45.00
							Y:	2,706.00	2,705.00	2,704.00	2,703.00	2,703.00	2,704.00	2,705.00	2,706.00
R72	0.025	0.025	0.025	1,798.00	0.0210	-	X:	-	12.00	23.00	30.00	40.00	50.00	67.00	88.00
							Y:	2,739.00	2,737.00	2,736.00	2,735.00	2,735.00	2,736.00	2,737.00	2,739.00
R73	0.025	0.025	0.025	1,401.00	0.0260	-	X:	-	56.00	65.00	74.00	78.00	84.00	89.00	99.00
							Y:	2,741.00	2,740.00	2,739.00	2,738.00	2,738.00	2,739.00	2,740.00	2,743.00
R74	0.025	0.025	0.025	540.00	0.0220	-	X:	-	8.00	22.00	38.00	97.00	105.00	111.00	118.00
							Y:	2,731.00	2,730.00	2,728.00	2,727.00	2,727.00	2,728.00	2,729.00	2,730.00
R76	0.025	0.025	0.025	240.00	0.0210	-	X:	-	13.00	15.00	19.00	23.00	33.00	38.00	42.00
							Y:	2,719.00	2,718.00	2,717.00	2,716.00	2,716.00	2,717.00	2,718.00	2,719.00
R78A	0.025	0.025	0.025	521.00	0.0400	-	X:	-	7.00	17.00	23.00	25.00	46.00	82.00	92.00
							Y:	2,713.00	2,710.00	2,708.00	2,707.00	2,707.00	2,708.00	2,711.00	2,712.00
R78B	0.025	0.025	0.025	590.00	0.0220	-	X:	-	17.00	22.00	31.00	58.00	61.00	95.00	108.00
							Y:	2,712.00	2,709.00	2,707.00	2,706.00	2,706.00	2,707.00	2,710.00	2,717.00
R79	0.025	0.025	0.025	774.00	0.0260	-	X:	-	4.00	7.00	14.00	18.00	21.00	30.00	44.00
							Y:	2,694.00	2,693.00	2,692.00	2,691.00	2,691.00	2,692.00	2,693.00	2,694.00

Route ID	LOB N	Chan N	ROB N	Length (ft)	Slope (ft/ft)	Max Elev (ft)		1.	2.	3.	4.	5.	6.	7.	8.
R80	0.025	0.025	0.025	790.00	0.0270	-	X:	-	6.00	15.00	21.00	28.00	31.00	37.00	41.00
							Y:	2,676.00	2,675.00	2,673.00	2,671.00	2,671.00	2,672.00	2,673.00	2,674.00
R82	0.025	0.025	0.025	383.00	0.0290	-	X:	-	13.00	23.00	32.00	33.00	51.00	52.00	53.00
							Y:	2,702.00	2,701.00	2,699.00	2,698.00	2,698.00	2,699.00	2,704.00	2,705.00
R84A	0.025	0.025	0.025	339.00	0.0290	-	X:	-	4.00	8.00	12.00	15.00	28.00	36.00	44.00
							Y:	2,690.00	2,689.00	2,688.00	2,687.00	2,687.00	2,690.00	2,692.00	2,694.00
R84B	0.025	0.025	0.025	347.00	0.0290	-	X:	-	16.00	25.00	32.00	34.00	38.00	43.00	51.00
							Y:	2,694.00	2,690.00	2,689.00	2,688.00	2,688.00	2,689.00	2,690.00	2,692.00
R85	0.025	0.025	0.025	1,070.00	0.0210	-	X:	-	5.00	12.00	22.00	27.00	39.00	53.00	67.00
							Y:	2,676.00	2,675.00	2,674.00	2,673.00	2,673.00	2,674.00	2,677.00	2,678.00
R92	0.025	0.025	0.025	1,216.00	0.0210	-	X:	-	21.00	24.00	26.00	33.00	36.00	38.00	54.00
							Y:	2,660.00	2,659.00	2,658.00	2,657.00	2,657.00	2,658.00	2,659.00	2,660.00
R94	0.025	0.025	0.025	918.00	0.0210	-	X:	-	22.00	34.00	45.00	48.00	52.00	78.00	91.00
							Y:	2,707.00	2,706.00	2,705.00	2,703.00	2,703.00	2,705.00	2,706.00	2,707.00
R95	0.025	0.025	0.025	571.00	0.0190	-	X:	-	9.00	29.00	35.00	39.00	44.00	54.00	59.00
							Y:	2,685.00	2,684.00	2,683.00	2,682.00	2,681.30	2,682.00	2,683.00	2,683.20
R96	0.025	0.025	0.025	987.00	0.0190	-	X:	-	7.00	23.00	42.00	47.00	50.00	77.00	99.00
							Y:	2,698.00	2,697.00	2,696.00	2,694.50	2,694.50	2,695.00	2,696.00	2,697.00
R97	0.025	0.025	0.025	2,435.00	0.0210	-	X:	-	17.00	46.00	67.00	74.00	79.00	84.00	91.00
							Y:	2,721.00	2,720.00	2,719.00	2,718.00	2,718.00	2,719.00	2,720.00	2,721.00

Detention Basin A

Diversion Rating Curve

Detention Basin DETA Inlet Rating Curve

Description: Basin A Diversion Rating Curve
Project: **Scottsdale National Golf Club**
Reference: *Drainage Design Manual for Maricopa County, Arizona - Hydrology*
City of Scottsdale, *Design Standards and Policies Manual Chapter 4 Grading & Drainage*, January 2010.

Date: 6/13/2015

Existing 10' X 3' Box Culvert - Diversion Rating Curve

10' X 3' Box Culvert Flow (cfs)	Weir Diversion Flow (cfs)	Total Flow (cfs)	Headwater elevation (ft)
97	0	97	2638.50
112	4	116	2638.75
127	13	140	2639.00
143	23	166	2639.25
161	36	197	2639.50
178	50	228	2639.75
196	66	262	2640.00
215	83	298	2640.25
234	102	336	2640.50
254	121	375	2640.75
274	142	416	2641.00
312	188	500	2641.50

Flood Control District of Maricopa County
Drainage Design Management System
HEC-1 DIVERSIONS
Project Reference: SNGC EXISTING

Diversion ID/ DT Card ID	Maximum Volume (ac-ft)	Maximum Diversion (cfs)		1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
DIV307			**Inflow (cfs)**		97	116	166	228	262	298	336	375	500
DTV307			**Diversion (cfs)**			4	23	50	66	83	102	121	188
DETA	7		**Inflow (cfs)**		10,000								
DTTA			**Diversion (cfs)**		10,000								
DETB	1		**Inflow (cfs)**		10,000								
DTTB			**Diversion (cfs)**		10,000								
DETC	1		**Inflow (cfs)**		10,000								
DTTC			**Diversion (cfs)**		10,000								
DETD	-		**Inflow (cfs)**		10,000								
DTTD			**Diversion (cfs)**		10,000								
DETE	-		**Inflow (cfs)**		10,000								
DTTE			**Diversion (cfs)**		10,000								

Existing Detention Data

Flood Control District of Maricopa County
Drainage Design Management System
HEC-1 STORAGE FACILITIES

6/13/2015

Storage Basin ID:	DETA											
Spillway Characteristics (SS)			1	2	3	4	5	6	7	8	9	10
Spillway Crest Elevation:	-NA-	**Volume (ac-ft)**		2.1	2.3	2.5						
Spillway Length:	-NA-	**Discharge (cfs)**	0	0	0	0	0	0	0	0	0	0
Discharge Coefficient:	-NA-	**Elevation (ft)**	2,635.0	2,636.0	2,637.0	2,638.0	-	-	-	-	-	-
Weir Coefficient:	-NA-											
Low-Level Outlet (SL)			11	12	13	14	15	16	17	18	19	20
Centerline Elevation:	-NA-	**Volume (ac-ft)**	-	-	-	-	-	-	-	-	-	-
Cross-Section Area:	-NA-	**Discharge (cfs)**	0	0	0	0	0	0	0	0	0	0
Discharge Coefficient:	-NA-	**Elevation (ft)**	-	-	-	-	-	-	-	-	-	-
Orifice Equation Exponent:	-NA-											
Top of Dam Overflow (ST)			2 Yr	5 Yr	10 Yr	25 Yr	50 Yr	100 Yr				
Elevation Top of Dam:	-NA-	**Peak Volume (ac-ft)**	0.24	0.00	1.42	0.00	0.00	5.77				
Length of Dam:	-NA-	**Peak Stage (ft)**	2,635.11	0.00	2,635.68	0.00	0.00	0.00				
Discharge Coefficient:	-NA-	**Peak Discharge (cfs)**	0.00	0.00	0.00	0.00	0.00	0.00				
Weir Coefficient:	-NA-											

Storage Basin ID:	DETB											
Spillway Characteristics (SS)			1	2	3	4	5	6	7	8	9	10
Spillway Crest Elevation:	-NA-	**Volume (ac-ft)**		0.1	0.1	0.3						
Spillway Length:	-NA-	**Discharge (cfs)**	0	0	0	0	0	0	0	0	0	0
Discharge Coefficient:	-NA-	**Elevation (ft)**	2,641.0	2,642.0	2,643.0	2,644.0	-	-	-	-	-	-
Weir Coefficient:	-NA-											
Low-Level Outlet (SL)			11	12	13	14	15	16	17	18	19	20
Centerline Elevation:	-NA-	**Volume (ac-ft)**	-	-	-	-	-	-	-	-	-	-
Cross-Section Area:	-NA-	**Discharge (cfs)**	0	0	0	0	0	0	0	0	0	0
Discharge Coefficient:	-NA-	**Elevation (ft)**	-	-	-	-	-	-	-	-	-	-
Orifice Equation Exponent:	-NA-											
Top of Dam Overflow (ST)			2 Yr	5 Yr	10 Yr	25 Yr	50 Yr	100 Yr				
Elevation Top of Dam:	-NA-	**Peak Volume (ac-ft)**	0.33	0.00	0.00	0.00	0.00	0.00				
Length of Dam:	-NA-	**Peak Stage (ft)**	0.00	0.00	0.00	0.00	0.00	0.00				
Discharge Coefficient:	-NA-	**Peak Discharge (cfs)**	0.00	0.00	16.00	0.00	0.00	94.00				
Weir Coefficient:	-NA-											

Storage Basin ID:	DETC										
Spillway Characteristics (SS)			1	2	3	4	5	6	7	8	9	10
Spillway Crest Elevation:	-NA-	**Volume (ac-ft)**		0.1	0.1	0.3						
Spillway Length:	-NA-	**Discharge (cfs)**	0	0	0	0	0	0	0	0	0	0
Discharge Coefficient:	-NA-	**Elevation (ft)**	2,646.0	2,647.0	2,648.0	2,649.0	-	-	-	-	-	-
Weir Coefficient:	-NA-											
Low-Level Outlet (SL)			11	12	13	14.	15	16	17	18	19	20
Centerline Elevation:	-NA-	**Volume (ac-ft)**	-	-	-	-	-	-	-	-	-	-
Cross-Section Area:	-NA-	**Discharge (cfs)**	0	0	0	0	0	0	0	0	0	0
Discharge Coefficient:	-NA-	**Elevation (ft)**	-	-	-	-	-	-	-	-	-	-
Orifice Equation Exponent:	-NA-											
Top of Dam Overflow (ST)			2 Yr	5 Yr	10 Yr	25 Yr	50 Yr	100 Yr				
Elevation Top of Dam:	-NA-	**Peak Volume (ac-ft)**	0.15	0.00	0.42	0.00	0.00	0.00				
Length of Dam:	-NA-	**Peak Stage (ft)**	2,648.15	0.00	0.00	0.00	0.00	0.00				
Discharge Coefficient:	-NA-	**Peak Discharge (cfs)**	0.00	0.00	0.00	0.00	0.00	37.00				
Weir Coefficient:	-NA-											

Storage Basin ID:	DETD										
Spillway Characteristics (SS)			1	2	3	4	5	6	7	8	9	10
Spillway Crest Elevation:	-NA-	**Volume (ac-ft)**		0.1								
Spillway Length:	-NA-	**Discharge (cfs)**	0	0	0	0	0	0	0	0	0	0
Discharge Coefficient:	-NA-	**Elevation (ft)**	2,646.0	2,647.0	-	-	-	-	-	-	-	-
Weir Coefficient:	-NA-											
Low-Level Outlet (SL)			11	12	13	14.	15	16	17	18	19	20
Centerline Elevation:	-NA-	**Volume (ac-ft)**	-	-	-	-	-	-	-	-	-	-
Cross-Section Area:	-NA-	**Discharge (cfs)**	0	0	0	0	0	0	0	0	0	0
Discharge Coefficient:	-NA-	**Elevation (ft)**	-	-	-	-	-	-	-	-	-	-
Orifice Equation Exponent:	-NA-											
Top of Dam Overflow (ST)			2 Yr	5 Yr	10 Yr	25 Yr	50 Yr	100 Yr				
Elevation Top of Dam:	-NA-	**Peak Volume (ac-ft)**	0.00	0.00	0.00	0.00	0.00	0.00				
Length of Dam:	-NA-	**Peak Stage (ft)**	0.00	0.00	0.00	0.00	0.00	0.00				
Discharge Coefficient:	-NA-	**Peak Discharge (cfs)**	7.00	0.00	12.00	0.00	0.00	20.00				
Weir Coefficient:	-NA-											

Flood Control District of Maricopa County
Drainage Design Management System
HEC-1 STORAGE FACILITIES

Storage Basin ID:	DETE										
Spillway Characteristics (SS)			1	2	3	4	5	6	7	8	9	10
Spillway Crest Elevation:	-NA-	**Volume (ac-ft)**		-	0.1							
Spillway Length:	-NA-	**Discharge (cfs)**	0	0	0	0	0	0	0	0	0	0
Discharge Coefficient:	-NA-	**Elevation (ft)**	2,661.0	2,662.0	2,663.0	-	-	-	-	-	-	-
Weir Coefficient:	-NA-											
Low-Level Outlet (SL)			11	12	13	14	15	16	17	18	19	20
Centerline Elevation:	-NA-	**Volume (ac-ft)**	-	-	-	-	-	-	-	-	-	-
Cross-Section Area:	-NA-	**Discharge (cfs)**	0	0	0	0	0	0	0	0	0	0
Discharge Coefficient:	-NA-	**Elevation (ft)**	-	-	-	-	-	-	-	-	-	-
Orifice Equation Exponent:	-NA-											
Top of Dam Overflow (ST)			2 Yr	5 Yr	10 Yr	25 Yr	50 Yr	100 Yr				
Elevation Top of Dam:	-NA-	**Peak Volume (ac-ft)**	0.10	0.00	0.00	0.00	0.00	0.00				
Length of Dam:	-NA-	**Peak Stage (ft)**	0.00	0.00	0.00	0.00	0.00	0.00				
Discharge Coefficient:	-NA-	**Peak Discharge (cfs)**	0.00	0.00	9.00	0.00	0.00	14.00				
Weir Coefficient:	-NA-											

Existing Condition

HEC-1 Output

Existing Condition 100-year, 6-hour

HEC-1 Output

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*               JUN  1998               *
*            VERSION 4.1                *
*                                       *
*  RUN DATE   12JUN15  TIME  08:34:44   *
*                                       *
*****************************************
```

```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*         609 SECOND STREET             *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 756-1104              *
*                                       *
*****************************************
```

```
X     X  XXXXXXX   XXXXX           X
X     X  X        X     X         XX
X     X  X        X               X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X               X
X     X  X        X     X         X
X     X  XXXXXXX   XXXXX          XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM


```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
    1         ID        Flood Control District of Maricopa County
    2         ID        SNGC EXISTING - Scottsdale National Golf Club Existing
    3         ID        100 YEAR
    4         ID        6 Hour  Storm
    5         ID        Unit Hydrograph: S-Graph
    6         ID        Storm: Multiple
    7         ID        06/01/2015
    8         ID        WOOD/PATEL JCD
    9         ID            FILE NAME: SNGEX100.DAT
              *DIAGRAM
   10         IT       1  1JUN15       0    2000
   11         IO       5
   12         IN      15
              *
   13         JD   3.235  0.0001
   14         PC   0.000   0.008   0.016   0.025   0.033   0.041   0.050   0.058   0.066   0.074
   15         PC   0.087   0.099   0.118   0.138   0.216   0.377   0.834   0.911   0.931   0.950
   16         PC   0.962   0.972   0.983   0.991   1.000
   17         JD   3.216  0.5000
   18         PC   0.000   0.008   0.016   0.025   0.033   0.041   0.050   0.058   0.066   0.074
   19         PC   0.087   0.099   0.118   0.138   0.216   0.377   0.834   0.911   0.931   0.950
   20         PC   0.962   0.972   0.983   0.991   1.000
   21         JD   3.154     2.8
   22         PC   0.000   0.009   0.016   0.025   0.034   0.042   0.051   0.059   0.067   0.076
   23         PC   0.087   0.100   0.120   0.163   0.252   0.451   0.694   0.837   0.900   0.938
   24         PC   0.950   0.963   0.975   0.988   1.000
              *
   25         KK     005   BASIN
   26         BA   0.133
   27         LG    0.35    0.40    6.00    0.18       0
   28         UI       0      21      21      21      21      27      61      70      84     101
   29         UI     124     132     142     154     161     171     190     217     250     252
   30         UI     181     157     143     133     126     123     116     110     105     101
   31         UI      97      90      86      82      77      72      66      61      56      53
   32         UI      52      50      49      46      44      42      35      35      32      27
   33         UI      27      27      25      23      23      23      23      16      16      16
   34         UI      16      16      16      12      10      10      10      10      10      10
   35         UI      10      10      10       5       4       4       4       4       4       4
   36         UI       4       4       4       4       4       4       4       4       4       4
   37         UI       4       4       4       4       4       4       4       4       0       0
              *
   38         KK     025   BASIN
   39         BA   0.013
   40         LG    0.35    0.40    6.00    0.18       0
   41         UI       0       6      10      24      38      47      62      59      39      34
   42         UI      30      25      21      17      15      13      10       8       7       6
   43         UI       5       5       3       3       3       2       1       1       1       1
   44         UI       1       1       1       0       0       0       0       0       0       0
   45         UI       0       0       0       0       0       0       0       0       0       0
              *
```



```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
   46         KK     030   BASIN
   47         BA   0.013
   48         LG    0.35    0.40    6.00    0.18       0
   49         UI       0       5       7      18      29      37      43      59      49      35
   50         UI      31      27      24      21      18      14      13      12       9       8
   51         UI       7       6       5       4       4       3       3       3       2       1
   52         UI       1       1       1       1       1       1       1       1       0       0
   53         UI       0       0       0       0       0       0       0       0       0       0
              *
```

```
 54          KK     035   BASIN
 55          BA   0.004
 56          LG    0.35    0.40    6.00    0.18       0
 57          UI       0       6      21      37      28      19      14       9       6       5
 58          UI       3       2       2       1       1       1       0       0       0       0
 59          UI       0       0       0       0       0       0       0       0       0       0
 60          UI       0       0       0       0       0       0       0       0       0       0
 61          UI       0       0       0       0       0       0       0       0       0       0
             *

 62          KK     040   BASIN
 63          BA   0.003
 64          LG    0.35    0.40    6.00    0.18       0
 65          UI       0      10      36      29      17      10       6       3       2       1
 66          UI       1       0       0       0       0       0       0       0       0       0
 67          UI       0       0       0       0       0       0       0       0       0       0
 68          UI       0       0       0       0       0       0       0       0       0       0
 69          UI       0       0       0       0       0       0       0       0       0       0
             *

 70          KK     CS1 COMBINE
 71          HC       5
             *

 72          KK     010   BASIN
 73          BA   0.040
 74          LG    0.35    0.40    6.00    0.18       0
 75          UI       0      12      12      18      37      51      69      79      88     101
 76          UI     129     119      83      72      67      61      56      51      47      42
 77          UI      37      32      29      27      25      23      19      17      15      14
 78          UI      13      13       9       9       9       7       6       6       6       6
 79          UI       6       2       2       2       2       2       2       2       2       2
 80          UI       2       2       2       2       2       0       0       0       0       0
             *

 81          KK     050   BASIN
 82          BA   0.008
 83          LG    0.35    0.40    6.00    0.18       0
 84          UI       0       9      33      57      66      40      30      21      16      11
 85          UI       8       6       4       3       1       1       1       1       0       0
 86          UI       0       0       0       0       0       0       0       0       0       0
 87          UI       0       0       0       0       0       0       0       0       0       0
 88          UI       0       0       0       0       0       0       0       0       0       0
             *
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 89          KK    CP010 COMBINE
 90          HC       2
             *

 91          KK     R60A   ROUTE
 92          RS       2    FLOW
 93          RC   0.035   0.025   0.035    2000  0.0220    0.00
 94          RX    0.00    4.00    9.00   13.00   24.00   28.00   36.00   45.00
 95          RY 2706.0 2705.00 2704.00 2703.00 2703.00 2704.00 2705.00 2706.00
             *

 96          KK     020   BASIN
 97          BA   0.038
 98          LG    0.35    0.40    6.00    0.18       0
 99          UI       0      16      23      58      92     115     139     188     127     101
100          UI      89      79      68      58      47      40      37      31      25      21
101          UI      18      16      13      13       8       8       8       6       3       3
102          UI       3       3       3       3       3       3       3       0       0       0
103          UI       0       0       0       0       0       0       0       0       0       0
             *

104          KK     R55   ROUTE
105          RS       4    FLOW
106          RC   0.025   0.025   0.025    2470  0.0230    0.00
107          RX    0.00    9.00   18.00   33.00   52.00   60.00   68.00   73.00
108          RY 2741.0 2740.50 2740.00 2739.00 2739.00 2740.00 2740.50 2741.00
             *

109          KK     055   BASIN
110          BA   0.044
111          LG    0.35    0.40    6.00    0.18       0
112          UI       0      10      10      10      24      35      45      61      67      75
113          UI      81      93     113     122      81      71      54      60      56      52
114          UI      49      45      42      39      34      31      27      25      24      23
115          UI      22      18      17      14      13      13      11      11      11       8
116          UI       8       8       8       6       5       5       5       5       5       5
117          UI       2       2       2       2       2       2       2       2       2       2
118          UI       2       2       2       2       2       2       2       0       0       0
             *

119          KK     062   BASIN
120          BA   0.004
121          LG    0.35    0.40    6.00    0.18       0
122          UI       0       5      18      30      32      20      15      10       8       5
123          UI       4       3       2       1       1       1       1       1       0       0
124          UI       0       0       0       0       0       0       0       0       0       0
125          UI       0       0       0       0       0       0       0       0       0       0
126          UI       0       0       0       0       0       0       0       0       0       0
             *
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

127          KK    CP055 COMBINE
128          HC       3
```

```
                *
129             KK    R60B   ROUTE
130             RS       3    FLOW
131             RC   0.035   0.025   0.035    2450  0.0220    0.00
132             RX    0.00    4.00    9.00   13.00   24.00   28.00   36.00   45.00
133             RY  2706.0 2705.00 2704.00 2703.00 2703.00 2704.00 2705.00 2706.00
                *
134             KK     060   BASIN
135             BA   0.028
136             LG    0.32    0.37    6.00    0.19       3
137             UI       0       7       7       7      21      28      37      45      51      55
138             UI      63      78      83      55      48      43      41      37      35      32
139             UI      29      27      24      21      19      18      17      16      14      12
140             UI      11       9       9       8       8       7       6       6       6       5
141             UI       4       4       4       4       4       3       1       1       1       1
142             UI       1       1       1       1       1       1       1       1       1       1
143             UI       1       0       0       0       0       0       0       0       0       0
                *
144             KK   CP060 COMBINE
145             HC       3
                *
146             KK     CS2 COMBINE
147             HC       2
                *
148             KK     070   BASIN
149             BA   0.017
150             LG    0.35    0.40    6.00    0.18       0
151             UI       0      10      25      54      74     106      80      59      49      41
152             UI      32      25      22      16      13      11       8       7       5       5
153             UI       3       2       2       2       2       2       2       0       0       0
154             UI       0       0       0       0       0       0       0       0       0       0
155             UI       0       0       0       0       0       0       0       0       0       0
                *
156             KK     R72   ROUTE
157             RS       4    FLOW
158             RC   0.025   0.025   0.025    1798  0.0210    0.00
159             RX    0.00   12.00   23.00   30.00   40.00   50.00   67.00   88.00
160             RY  2739.0 2737.00 2736.00 2735.00 2735.00 2736.00 2737.00 2739.00
                *
161             KK     072   BASIN
162             BA   0.030
163             LG    0.35    0.40    6.00    0.18       0
164             UI       0       8       8       8      23      31      41      49      56      61
165             UI      71      88      84      58      51      46      43      40      37      34
166             UI      31      28      25      22      20      19      18      16      14      13
1                                          HEC-1 INPUT                                        PAGE  5
LINE            ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
167             UI      10      10       9       9       9       6       6       6       6       4
168             UI       4       4       4       4       4       2       2       2       2       2
169             UI       2       2       2       2       2       2       2       2       2       2
170             UI       0       0       0       0       0       0       0       0       0       0
                *
171             KK     065   BASIN
172             BA   0.002
173             LG    0.35    0.40    6.00    0.18       0
174             UI       0       4      14      21      13       9       6       4       3       2
175             UI       1       1       0       0       0       0       0       0       0       0
176             UI       0       0       0       0       0       0       0       0       0       0
177             UI       0       0       0       0       0       0       0       0       0       0
178             UI       0       0       0       0       0       0       0       0       0       0
                *
179             KK     R73   ROUTE
180             RS       2    FLOW
181             RC   0.025   0.025   0.025    1401  0.0260    0.00
182             RX    0.00   56.00   65.00   74.00   78.00   84.00   89.00   99.00
183             RY  2741.0 2740.00 2739.00 2738.00 2738.00 2739.00 2740.00 2743.00
                *
184             KK     073   BASIN
185             BA   0.016
186             LG    0.35    0.40    6.00    0.18       0
187             UI       0       6       6      18      28      38      45      54      70      48
188             UI      38      34      30      27      24      21      17      15      14      12
189             UI      10       8       7       7       6       5       5       3       3       3
190             UI       3       2       1       1       1       1       1       1       1       1
191             UI       1       1       0       0       0       0       0       0       0       0
                *
192             KK   CP073 COMBINE
193             HC       4
                *
194             KK     R74   ROUTE
195             RS       1    FLOW
196             RC   0.025   0.025   0.025     540  0.0220    0.00
197             RX    0.00    8.00   22.00   38.00   97.00  105.00  111.00  118.00
198             RY  2731.0 2730.00 2728.00 2727.00 2727.00 2728.00 2729.00 2730.00
                *
199             KK     074   BASIN
200             BA   0.009
201             LG    0.35    0.40    6.00    0.18       0
202             UI       0       6      22      43      61      55      37      30      23      17
203             UI      14      10       8       6       5       3       3       1       1       1
```

```
204          UI       1       1       0       0       0       0       0       0       0       0
205          UI       0       0       0       0       0       0       0       0       0       0
206          UI       0       0       0       0       0       0       0       0       0       0
             *
1                                        HEC-1 INPUT                                        PAGE  6

LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

207          KK     075   BASIN
208          BA   0.002
209          LG    0.35    0.40    6.00    0.18       0
210          UI       0      12      32      17       9       4       2       1       1       0
211          UI       0       0       0       0       0       0       0       0       0       0
212          UI       0       0       0       0       0       0       0       0       0       0
213          UI       0       0       0       0       0       0       0       0       0       0
214          UI       0       0       0       0       0       0       0       0       0       0
             *

215          KK   CP075 COMBINE
216          HC       3
             *

217          KK     R76   ROUTE
218          RS       1    FLOW
219          RC   0.025   0.025   0.025     240  0.0210    0.00
220          RX    0.00   13.00   15.00   19.00   23.00   33.00   38.00   42.00
221          RY  2719.0 2718.00 2717.00 2716.00 2716.00 2717.00 2718.00 2719.00
             *

222          KK     076   BASIN
223          BA   0.004
224          LG    0.35    0.40    6.00    0.18       0
225          UI       0       3      12      21      32      21      16      13       9       7
226          UI       5       4       3       2       1       1       1       1       1       1
227          UI       1       0       0       0       0       0       0       0       0       0
228          UI       0       0       0       0       0       0       0       0       0       0
229          UI       0       0       0       0       0       0       0       0       0       0
             *

230          KK   CP076 COMBINE
231          HC       2
             *

232          KK    R78B   ROUTE
233          RS       1    FLOW
234          RC   0.025   0.025   0.025     590  0.0220    0.00
235          RX    0.00   17.00   22.00   31.00   58.00   61.00   95.00  108.00
236          RY  2712.0 2709.00 2707.00 2706.00 2706.00 2707.00 2710.00 2717.00
             *

237          KK     077   BASIN
238          BA   0.004
239          LG    0.35    0.40    6.00    0.18       0
240          UI       0       4      15      25      33      20      16      12       8       6
241          UI       4       3       2       2       1       1       1       1       1       0
242          UI       0       0       0       0       0       0       0       0       0       0
243          UI       0       0       0       0       0       0       0       0       0       0
244          UI       0       0       0       0       0       0       0       0       0       0
             *
1                                        HEC-1 INPUT                                        PAGE  7

LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

245          KK    R78A   ROUTE
246          RS       1    FLOW
247          RC   0.025   0.025   0.025     521  0.0400    0.00
248          RX    0.00    7.00   17.00   23.00   25.00   46.00   82.00   92.00
249          RY  2713.0 2710.00 2708.00 2707.00 2707.00 2708.00 2711.00 2712.00
             *

250          KK     078   BASIN
251          BA   0.006
252          LG    0.35    0.40    6.00    0.18       0
253          UI       0       5      20      35      49      31      24      18      13      10
254          UI       7       5       4       3       2       1       1       1       1       1
255          UI       0       0       0       0       0       0       0       0       0       0
256          UI       0       0       0       0       0       0       0       0       0       0
257          UI       0       0       0       0       0       0       0       0       0       0
             *

258          KK   CP078 COMBINE
259          HC       3
             *

260          KK     R79   ROUTE
261          RS       1    FLOW
262          RC   0.025   0.025   0.025     774  0.0260    0.00
263          RX    0.00    4.00    7.00   14.00   18.00   21.00   30.00   44.00
264          RY  2694.0 2693.00 2692.00 2691.00 2691.00 2692.00 2693.00 2694.00
             *

265          KK     079   BASIN
266          BA   0.010
267          LG    0.35    0.40    6.00    0.18       0
268          UI       0       5       8      18      29      35      46      47      31      26
269          UI      23      20      17      13      11      10       8       6       6       5
270          UI       4       4       3       2       2       2       1       1       1       1
271          UI       1       1       1       1       0       0       0       0       0       0
272          UI       0       0       0       0       0       0       0       0       0       0
             *

273          KK   CP079 COMBINE
274          HC       2
```

```
                *
  275           KK     R80   ROUTE
  276           RS       1    FLOW
  277           RC   0.025   0.025   0.025     790  0.0270    0.00
  278           RX    0.00    6.00   15.00   21.00   28.00   31.00   37.00   41.00
  279           RY  2676.0 2675.00 2673.00 2671.00 2671.00 2672.00 2673.00 2674.00
                *
1                                       HEC-1 INPUT                                    PAGE  8

 LINE           ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  280           KK     081   BASIN
  281           BA   0.004
  282           LG    0.35    0.40    6.00    0.18       0
  283           UI       0       4      14      24      33      20      16      12       8       7
  284           UI       5       3       3       2       2       1       1       1       1       0
  285           UI       0       0       0       0       0       0       0       0       0       0
  286           UI       0       0       0       0       0       0       0       0       0       0
  287           UI       0       0       0       0       0       0       0       0       0       0
                *
  288           KK     R82   ROUTE
  289           RS       1    FLOW
  290           RC   0.025   0.025   0.025     383  0.0290    0.00
  291           RX    0.00   13.00   23.00   32.00   33.00   51.00   52.00   53.00
  292           RY  2702.0 2701.00 2699.00 2698.00 2698.00 2699.00 2704.00 2705.00
                *
  293           KK     082   BASIN
  294           BA   0.004
  295           LG    0.35    0.40    6.00    0.18       0
  296           UI       0       4      16      27      33      20      15      11       8       6
  297           UI       4       3       2       2       1       1       1       1       1       0
  298           UI       0       0       0       0       0       0       0       0       0       0
  299           UI       0       0       0       0       0       0       0       0       0       0
  300           UI       0       0       0       0       0       0       0       0       0       0
                *
  301           KK   CP082 COMBINE
  302           HC       2
                *
  303           KK    R84B   ROUTE
  304           RS       1    FLOW
  305           RC   0.025   0.025   0.025     347  0.0290    0.00
  306           RX    0.00   16.00   25.00   32.00   34.00   38.00   43.00   51.00
  307           RY  2694.0 2690.00 2689.00 2688.00 2688.00 2689.00 2690.00 2692.00
                *
  308           KK     083   BASIN
  309           BA   0.002
  310           LG    0.35    0.40    6.00    0.18       0
  311           UI       0       8      26      19      11       6       3       2       1       1
  312           UI       1       0       0       0       0       0       0       0       0       0
  313           UI       0       0       0       0       0       0       0       0       0       0
  314           UI       0       0       0       0       0       0       0       0       0       0
  315           UI       0       0       0       0       0       0       0       0       0       0
                *
  316           KK    R84A   ROUTE
  317           RS       1    FLOW
  318           RC   0.025   0.025   0.025     339  0.0290    0.00
  319           RX    0.00    4.00    8.00   12.00   15.00   28.00   36.00   44.00
  320           RY  2690.0 2689.00 2688.00 2687.00 2687.00 2690.00 2692.00 2694.00
                *
1                                       HEC-1 INPUT                                    PAGE  9

 LINE           ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  321           KK     084   BASIN
  322           BA   0.003
  323           LG    0.35    0.40    6.00    0.18       0
  324           UI       0       7      25      33      19      12       8       5       3       2
  325           UI       1       1       1       0       0       0       0       0       0       0
  326           UI       0       0       0       0       0       0       0       0       0       0
  327           UI       0       0       0       0       0       0       0       0       0       0
  328           UI       0       0       0       0       0       0       0       0       0       0
                *
  329           KK   CP084 COMBINE
  330           HC       3
                *
  331           KK     R85   ROUTE
  332           RS       1    FLOW
  333           RC   0.025   0.025   0.025    1070  0.0210    0.00
  334           RX    0.00    5.00   12.00   22.00   27.00   39.00   53.00   67.00
  335           RY  2676.0 2675.00 2674.00 2673.00 2673.00 2674.00 2677.00 2678.00
                *
  336           KK     080   BASIN
  337           BA   0.008
  338           LG    0.35    0.39    6.16    0.17       0
  339           UI       0       4       8      20      28      36      46      29      24      20
  340           UI      17      14      11      10       8       6       5       5       3       3
  341           UI       2       2       2       1       1       1       1       1       1       1
  342           UI       0       0       0       0       0       0       0       0       0       0
  343           UI       0       0       0       0       0       0       0       0       0       0
                *
  344           KK     085   BASIN
  345           BA   0.011
```

```
346          LG    0.35    0.40    6.00    0.18       0
347          UI       0       5       7      17      27      33      40      54      37      29
348          UI      26      23      20      17      14      12      11       9       7       6
349          UI       5       5       4       4       2       2       2       2       1       1
350          UI       1       1       1       1       1       1       1       0       0       0
351          UI       0       0       0       0       0       0       0       0       0       0
             *

352          KK   CP085 COMBINE
353          HC       4
             *

354          KK     304   BASIN
355          BA   0.003
356          LG    0.35    0.35    6.76    0.13       0
357          UI       0       3      11      17      28      24      16       9       4       2
358          UI       1       1       0       0       0       0       0       0       0       0
359          UI       0       0       0       0       0       0       0       0       0       0
360          UI       0       0       0       0       0       0       0       0       0       0
361          UI       0       0       0       0       0       0       0       0       0       0
             *
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

362          KK   CP304 COMBINE
363          HC       2
             *

364          KK   R305B   ROUTE
365          RS       1    FLOW
366          RC   0.025   0.025   0.025     279  0.0220    0.00
367          RX    0.00   22.00   30.00   37.00   50.00   60.00   80.00   94.00
368          RY  2649.0 2648.00 2647.00 2646.00 2646.00 2647.00 2648.00 2649.00
             *

369          KK     088   BASIN
370          BA   0.014
371          LG    0.35    0.39    6.16    0.16       0
372          UI       0       5       5      16      25      33      39      47      62      42
373          UI      33      30      27      24      21      18      15      13      12      11
374          UI       9       7       6       6       5       4       4       3       3       3
375          UI       3       2       1       1       1       1       1       1       1       1
376          UI       1       1       0       0       0       0       0       0       0       0
             *

377          KK   R305A   ROUTE
378          RS       1    FLOW
379          RC   0.025   0.025   0.025     415  0.0410    0.00
380          RX    0.00   10.00   23.00   31.00   55.00   63.00   69.00   74.00
381          RY  2650.0 2649.00 2648.00 2647.00 2647.00 2648.00 2649.00 2650.00
             *

382          KK     305   BASIN
383          BA   0.004
384          LG    0.32    0.26    7.94    0.10       2
385          UI       0      12      34      57      33      12       4       2       0       0
386          UI       0       0       0       0       0       0       0       0       0       0
387          UI       0       0       0       0       0       0       0       0       0       0
388          UI       0       0       0       0       0       0       0       0       0       0
389          UI       0       0       0       0       0       0       0       0       0       0
             *

390          KK   CP305 COMBINE
391          HC       3
             *

392          KK    R306   ROUTE
393          RS       1    FLOW
394          RC   0.025   0.025   0.025     505  0.0180    0.00
395          RX    0.00    5.00    9.00   13.00   18.00   27.00   43.00   58.00
396          RY  2644.0 2643.00 2642.00 2641.00 2641.00 2642.00 2643.00 2644.00
             *
```



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LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

397          KK     306   BASIN
398          BA   0.004
399          LG    0.32    0.26    7.94    0.10       2
400          UI       0       9      26      48      38      21       8       3       1       0
401          UI       0       0       0       0       0       0       0       0       0       0
402          UI       0       0       0       0       0       0       0       0       0       0
403          UI       0       0       0       0       0       0       0       0       0       0
404          UI       0       0       0       0       0       0       0       0       0       0
             *

405          KK   CP306 COMBINE
406          HC       2
             *

407          KK  DIV307  DIVERT
408          DT  DTV307     0.0     0.0
409          DI     0.0    97.0   116.0   166.0   228.0   262.0   298.0   336.0   375.0   500.0
410          DQ     0.0     0.0     4.0    23.0    50.0    66.0    83.0   102.0   121.0   188.0
             *

411          KK     300   BASIN
412          BA   0.004
413          LG    0.33    0.28    7.58    0.10       1
414          UI       0       8      24      45      40      23       9       4       1       0
415          UI       0       0       0       0       0       0       0       0       0       0
416          UI       0       0       0       0       0       0       0       0       0       0
```

```
417          UI       0       0       0       0       0       0       0       0       0       0
418          UI       0       0       0       0       0       0       0       0       0       0
             *

419          KK    DETE  DIVERT
420          DT    DTTE     0.1     0.0
421          DI     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
422          DQ     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
             *

423          KK    R301   ROUTE
424          RS       1    FLOW
425          RC   0.025   0.025   0.025     442  0.0410    0.00
426          RX    0.00    5.00   12.00   38.00   53.00   82.00  109.00  150.00
427          RY  2660.0 2659.00 2658.00 2656.00 2656.00 2657.00 2658.00 2660.00
             *

428          KK     301   BASIN
429          BA   0.007
430          LG    0.31    0.31    6.34    0.18       2
431          UI       0      27      81     101      43      13       3       0       0       0
432          UI       0       0       0       0       0       0       0       0       0       0
433          UI       0       0       0       0       0       0       0       0       0       0
434          UI       0       0       0       0       0       0       0       0       0       0
435          UI       0       0       0       0       0       0       0       0       0       0
             *
```

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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

436          KK   CP301 COMBINE
437          HC       2
             *

438          KK    DETC  DIVERT
439          DT    DTTC     0.5     0.0
440          DI     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
441          DQ     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
             *

442          KK   R302A   ROUTE
443          RS       1    FLOW
444          RC   0.025   0.025   0.025     320  0.0280    0.00
445          RX    0.00   12.00   20.00   32.00   36.00   50.00   59.00   69.00
446          RY  2649.0 2648.00 2647.00 2646.50 2646.50 2647.00 2648.00 2649.00
             *

447          KK     105   BASIN
448          BA   0.013
449          LG    0.35    0.40    6.00    0.18       0
450          UI       0       5       5      13      21      29      34      39      52      45
451          UI      32      28      25      23      20      18      15      13      11      11
452          UI       9       8       6       6       5       5       4       4       3       2
453          UI       2       2       2       1       1       1       1       1       1       1
454          UI       1       1       1       0       0       0       0       0       0       0
             *

455          KK    R106   ROUTE
456          RS       1    FLOW
457          RC   0.025   0.025   0.025     750  0.0310    0.00
458          RX    0.00   10.00   20.00   34.00   37.00   48.00   53.00   74.00
459          RY  2683.0 2682.00 2681.00 2675.00 2675.00 2681.00 2682.00 2686.00
             *

460          KK     106   BASIN
461          BA   0.007
462          LG    0.35    0.40    6.00    0.18       0
463          UI       0       4      13      26      35      47      29      24      20      16
464          UI      12      10       8       6       5       3       3       2       2       1
465          UI       1       1       1       1       1       0       0       0       0       0
466          UI       0       0       0       0       0       0       0       0       0       0
467          UI       0       0       0       0       0       0       0       0       0       0
             *

468          KK   CP106 COMBINE
469          HC       2
             *

470          KK    R303   ROUTE
471          RS       1    FLOW
472          RC   0.025   0.025   0.025     400  0.0200    0.00
473          RX    0.00    8.00   15.00   29.00   33.00   42.00   48.00   52.00
474          RY  2657.0 2656.00 2655.00 2654.00 2654.00 2655.00 2656.00 2657.00
             *
```

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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

475          KK     303   BASIN
476          BA   0.006
477          LG    0.30    0.26    6.76    0.16       3
478          UI       0       8      26      41      64      43      27      11       6       2
479          UI       2       0       0       0       0       0       0       0       0       0
480          UI       0       0       0       0       0       0       0       0       0       0
481          UI       0       0       0       0       0       0       0       0       0       0
482          UI       0       0       0       0       0       0       0       0       0       0
             *

483          KK   CP303 COMBINE
484          HC       2
             *

485          KK    DETD  DIVERT
```

```
486          DT    DTTD      0.1      0.0
487          DI     0.0 10000.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
488          DQ     0.0 10000.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
             *

489          KK   R302B    ROUTE
490          RS       1     FLOW
491          RC   0.025    0.025    0.025      276   0.0330     0.00
492          RX    0.00    14.00    30.00    52.00    62.00    87.00   100.00   115.00
493          RY  2652.0  2651.00  2650.00  2649.00  2649.00  2650.00  2651.00  2652.00
             *

494          KK     302    BASIN
495          BA   0.012
496          LG    0.28     0.24     6.54     0.19        4
497          UI       0       18       59       96      130       82       45       19        9        4
498          UI       4        0        0        0        0        0        0        0        0        0
499          UI       0        0        0        0        0        0        0        0        0        0
500          UI       0        0        0        0        0        0        0        0        0        0
501          UI       0        0        0        0        0        0        0        0        0        0
             *

502          KK   CP302  COMBINE
503          HC       3
             *

504          KK    DETB   DIVERT
505          DT    DTTB      0.5      0.0
506          DI     0.0 10000.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
507          DQ     0.0 10000.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
             *

508          KK     307    BASIN
509          BA   0.002
510          LG    0.26     0.17     7.94     0.12        5
511          UI       0       16       42       16        3        0        0        0        0        0
512          UI       0        0        0        0        0        0        0        0        0        0
513          UI       0        0        0        0        0        0        0        0        0        0
514          UI       0        0        0        0        0        0        0        0        0        0
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

515          UI       0        0        0        0        0        0        0        0        0        0
             *

516          KK     308    BASIN
517          BA   0.006
518          LG    0.26     0.17     7.94     0.12        5
519          UI       0       64      135       29        0        0        0        0        0        0
520          UI       0        0        0        0        0        0        0        0        0        0
521          UI       0        0        0        0        0        0        0        0        0        0
522          UI       0        0        0        0        0        0        0        0        0        0
523          UI       0        0        0        0        0        0        0        0        0        0
             *

524          KK  DIV307 RETRIEVE
525          DR  DTV307
             *

526          KK   CP308  COMBINE
527          HC       4
             *

528          KK    DETA   DIVERT
529          DT    DTTA      6.9      0.0
530          DI     0.0 10000.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
531          DQ     0.0 10000.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
             *

532          KK   CP310  COMBINE
533          HC       2
             *

534          KK     090    BASIN
535          BA   0.002
536          LG    0.35     0.40     6.00     0.18        0
537          UI       0        5       17       22       13        8        5        3        2        1
538          UI       1        0        0        0        0        0        0        0        0        0
539          UI       0        0        0        0        0        0        0        0        0        0
540          UI       0        0        0        0        0        0        0        0        0        0
541          UI       0        0        0        0        0        0        0        0        0        0
             *

542          KK     091    BASIN
543          BA   0.006
544          LG    0.35     0.40     6.00     0.18        0
545          UI       0        4       13       25       35       40       25       20       16       12
546          UI      10        8        6        5        3        3        2        2        1        1
547          UI       1        1        1        1        0        0        0        0        0        0
548          UI       0        0        0        0        0        0        0        0        0        0
549          UI       0        0        0        0        0        0        0        0        0        0
             *
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

550          KK     CS3  COMBINE
551          HC       4
             *

552          KK     120    BASIN
553          BA   0.028
554          LG    0.35     0.40     6.00     0.18        0
```

```
555          UI       0      15      34      77     108     142     154      98      83      70
556          UI      58      45      37      33      24      19      17      13      12       8
557          UI       8       7       3       3       3       3       3       3       3       0
558          UI       0       0       0       0       0       0       0       0       0       0
559          UI       0       0       0       0       0       0       0       0       0       0
             *

560          KK     R97   ROUTE
561          RS       4    FLOW
562          RC   0.025   0.025   0.025    2435  0.0210    0.00
563          RX    0.00   17.00   46.00   67.00   74.00   79.00   84.00   91.00
564          RY  2721.0 2720.00 2719.00 2718.00 2718.00 2719.00 2720.00 2721.00
             *

565          KK     097   BASIN
566          BA   0.035
567          LG    0.35    0.40    6.00    0.18       0
568          UI       0       8       8       8      19      28      36      48      53      60
569          UI      65      74      90      97      65      56      51      48      44      41
570          UI      39      36      33      31      27      25      22      20      19      19
571          UI      17      15      14      11      11      10       9       9       9       6
572          UI       6       6       6       4       4       4       4       4       4       4
573          UI       2       2       2       2       2       2       2       2       2       2
574          UI       2       2       2       2       2       2       2       0       0       0
             *

575          KK     111   BASIN
576          BA   0.009
577          LG    0.35    0.40    6.00    0.18       0
578          UI       0       5       9      22      32      40      52      32      27      23
579          UI      19      16      12      11       9       7       6       5       4       3
580          UI       2       2       2       1       1       1       1       1       1       1
581          UI       0       0       0       0       0       0       0       0       0       0
582          UI       0       0       0       0       0       0       0       0       0       0
             *

583          KK   CP111 COMBINE
584          HC       3
             *

585          KK     R96   ROUTE
586          RS       2    FLOW
587          RC   0.025   0.025   0.025     987  0.0190    0.00
588          RX    0.00    7.00   23.00   42.00   47.00   50.00   77.00   99.00
589          RY  2698.0 2697.00 2696.00 2694.50 2694.50 2695.00 2696.00 2697.00
             *
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

590          KK     099   BASIN
591          BA   0.007
592          LG    0.35    0.40    6.00    0.18       0
593          UI       0       4      11      23      32      45      32      24      20      17
594          UI      13      10       9       6       5       4       3       3       2       2
595          UI       1       1       1       1       1       1       0       0       0       0
596          UI       0       0       0       0       0       0       0       0       0       0
597          UI       0       0       0       0       0       0       0       0       0       0
             *

598          KK     100   BASIN
599          BA   0.017
600          LG    0.35    0.40    6.00    0.18       0
601          UI       0       5       5      11      20      28      35      40      46      59
602          UI      56      38      33      31      28      25      23      21      18      15
603          UI      13      13      12      10       9       7       7       6       6       4
604          UI       4       4       3       3       3       3       3       1       1       1
605          UI       1       1       1       1       1       1       1       1       1       0
             *

606          KK   CP100 COMBINE
607          HC       2
             *

608          KK     R94   ROUTE
609          RS       1    FLOW
610          RC   0.025   0.025   0.025     918  0.0210    0.00
611          RX    0.00   22.00   34.00   45.00   48.00   52.00   78.00   91.00
612          RY  2707.0 2706.00 2705.00 2703.00 2703.00 2705.00 2706.00 2707.00
             *

613          KK     094   BASIN
614          BA   0.005
615          LG    0.35    0.40    6.00    0.18       0
616          UI       0       3       6      13      19      24      28      18      15      13
617          UI      11       8       7       6       5       3       3       2       2       2
618          UI       1       1       1       1       1       1       1       1       1       0
619          UI       0       0       0       0       0       0       0       0       0       0
620          UI       0       0       0       0       0       0       0       0       0       0
             *

621          KK     096   BASIN
622          BA   0.015
623          LG    0.35    0.40    6.00    0.18       0
624          UI       0       8      15      34      50      62      86      56      45      39
625          UI      33      28      22      18      16      12      10       9       7       6
626          UI       5       4       4       3       1       1       1       1       1       1
627          UI       1       0       0       0       0       0       0       0       0       0
628          UI       0       0       0       0       0       0       0       0       0       0
             *
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
```

```
629          KK   CP096 COMBINE
630          HC       4
             *

631          KK     R95   ROUTE
632          RS       1    FLOW
633          RC   0.025   0.025   0.025     571  0.0190    0.00
634          RX    0.00    9.00   29.00   35.00   39.00   44.00   54.00   59.00
635          RY  2685.0 2684.00 2683.00 2682.00 2681.30 2682.00 2683.00 2683.20
             *

636          KK     098   BASIN
637          BA   0.010
638          LG    0.35    0.40    6.00    0.18       0
639          UI       0       4       5      13      21      27      32      42      41      27
640          UI      24      21      19      16      14      11      10       9       8       6
641          UI       5       5       4       3       3       3       2       2       2       1
642          UI       1       1       1       1       1       1       1       1       1       0
643          UI       0       0       0       0       0       0       0       0       0       0
             *

644          KK     095   BASIN
645          BA   0.003
646          LG    0.35    0.40    6.00    0.18       0
647          UI       0       2      10      17      24      16      12       9       7       5
648          UI       4       3       2       2       1       1       0       0       0       0
649          UI       0       0       0       0       0       0       0       0       0       0
650          UI       0       0       0       0       0       0       0       0       0       0
651          UI       0       0       0       0       0       0       0       0       0       0
             *

652          KK   CP095 COMBINE
653          HC       3
             *

654          KK     R92   ROUTE
655          RS       1    FLOW
656          RC   0.025   0.025   0.025    1216  0.0210    0.00
657          RX    0.00   21.00   24.00   26.00   33.00   36.00   38.00   54.00
658          RY  2660.0 2659.00 2658.00 2657.00 2657.00 2658.00 2659.00 2660.00
             *

659          KK     092   BASIN
660          BA   0.010
661          LG    0.35    0.39    6.16    0.16       0
662          UI       0       4       7      17      26      33      41      50      32      26
663          UI      23      20      17      14      12      11       9       7       6       5
664          UI       5       3       3       2       2       2       2       1       1       1
665          UI       1       1       1       1       1       0       0       0       0       0
666          UI       0       0       0       0       0       0       0       0       0       0
             *
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

667          KK   CP092 COMBINE
668          HC       2
             *

669          KK     135   BASIN
670          BA   0.011
671          LG    0.35    0.40    6.00    0.18       0
672          UI       0       8      31      56      84      60      44      35      26      20
673          UI      16      11       9       6       5       4       3       2       2       2
674          UI       2       0       0       0       0       0       0       0       0       0
675          UI       0       0       0       0       0       0       0       0       0       0
676          UI       0       0       0       0       0       0       0       0       0       0
             *

677          KK   R132A   ROUTE
678          RS       1    FLOW
679          RC   0.035   0.025   0.035     550  0.0250    0.00
680          RX    0.00   30.00   50.00   70.00   80.00   90.00  110.00  120.00
681          RY  2645.0 2644.00 2643.00 2642.00 2642.00 2643.00 2645.00 2646.00
             *

682          KK    R150   ROUTE
683          RS      11    FLOW
684          RC   0.025   0.025   0.025    4933  0.0210    0.00
685          RX    0.00    7.00   27.00   43.00   47.00   50.00   55.00   95.00
686          RY  2725.0 2724.00 2722.00 2721.00 2720.80 2721.00 2722.00 2725.00
             *

687          KK     150   BASIN
688          BA   0.062
689          LG    0.35    0.40    6.00    0.18       0
690          UI       0       9       9       9       9       9      17      25      30      35
691          UI      40      51      54      57      61      65      68      71      79      88
692          UI     100     109      86      69      62      58      54      52      51      49
693          UI      46      44      43      41      40      37      35      34      33      30
694          UI      28      27      24      23      22      21      21      20      20      18
695          UI      18      16      14      14      14      11      11      11      11      10
696          UI      10      10      10      10       7       7       7       7       7       7
697          UI       7       5       4       4       4       4       4       4       4       4
698          UI       4       4       3       2       2       2       2       2       2       2
699          UI       2       2       2       2       2       2       2       2       2       2
700          UI       2       2       2       2       2       2       2       2       2       2
701          UI       0       0       0       0       0       0       0       0       0       0
             *

702          KK     170   BASIN
703          BA   0.020
704          LG    0.35    0.40    6.00    0.18       0
```

```
 705          UI       0       6       6      14      24      35      42      49      56      74
 706          UI      61      45      39      36      32      29      26      24      21      17
 707          UI      16      15      14      11       9       8       8       7       6       5
 708          UI       5       4       3       3       3       3       2       1       1       1
 709          UI       1       1       1       1       1       1       1       1       1       0
              *
1                                        HEC-1 INPUT                                        PAGE 19

 LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 710          KK     190   BASIN
 711          BA   0.019
 712          LG    0.35    0.40    6.00    0.18       0
 713          UI       0       7       7      17      28      40      47      53      68      72
 714          UI      48      41      37      33      30      27      23      19      17      16
 715          UI      14      12      10       9       8       7       6       5       5       4
 716          UI       3       3       3       3       1       1       1       1       1       1
 717          UI       1       1       1       1       1       0       0       0       0       0
              *

 718          KK   CP190 COMBINE
 719          HC       4
              *

 720          KK   R130B   ROUTE
 721          RS       1    FLOW
 722          RC   0.025   0.025   0.025     561  0.0120    0.00
 723          RX    0.00   25.00   29.00   31.00   38.00   40.00   41.00   62.00
 724          RY  2649.0 2648.00 2647.00 2646.00 2646.00 2647.00 2648.00 2649.00
              *

 725          KK     200   BASIN
 726          BA   0.012
 727          LG    0.35    0.39    6.16    0.17       0
 728          UI       0       4       4      15      20      25      29      34      45      56
 729          UI      47      39      33      28      23      18      11       8       7       5
 730          UI       4       2       1       1       1       1       1       0       0       0
 731          UI       0       0       0       0       0       0       0       0       0       0
 732          UI       0       0       0       0       0       0       0       0       0       0
              *

 733          KK     130   BASIN
 734          BA   0.003
 735          LG    0.35    0.39    6.16    0.16       0
 736          UI       0      10      36      29      17      10       6       3       2       1
 737          UI       1       0       0       0       0       0       0       0       0       0
 738          UI       0       0       0       0       0       0       0       0       0       0
 739          UI       0       0       0       0       0       0       0       0       0       0
 740          UI       0       0       0       0       0       0       0       0       0       0
              *

 741          KK   CP130 COMBINE
 742          HC       3
              *

 743          KK   R132B   ROUTE
 744          RS       1    FLOW
 745          RC   0.035   0.025   0.035     300  0.0250    0.00
 746          RX    0.00   30.00   50.00   70.00   80.00   90.00  110.00  120.00
 747          RY  2645.0 2644.00 2643.00 2642.00 2642.00 2643.00 2645.00 2646.00
              *
1                                        HEC-1 INPUT                                        PAGE 20

 LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 748          KK     132   BASIN
 749          BA   0.008
 750          LG    0.35    0.32    7.58    0.09       0
 751          UI       0       6      21      39      58      46      32      26      20      15
 752          UI      12       8       7       5       4       3       2       1       1       1
 753          UI       1       1       0       0       0       0       0       0       0       0
 754          UI       0       0       0       0       0       0       0       0       0       0
 755          UI       0       0       0       0       0       0       0       0       0       0
              *

 756          KK   CP132 COMBINE
 757          HC       3
              *

 758          KK     160   BASIN
 759          BA   0.015
 760          LG    0.35    0.40    6.00    0.18       0
 761          UI       0       7       9      23      37      47      57      75      49      40
 762          UI      35      31      27      23      18      16      14      12       9       8
 763          UI       7       6       5       5       3       3       3       2       1       1
 764          UI       1       1       1       1       1       1       0       0       0       0
 765          UI       0       0       0       0       0       0       0       0       0       0
              *

 766          KK    R165   ROUTE
 767          RS       1    FLOW
 768          RC   0.025   0.025   0.025     238  0.0420    0.00
 769          RX    0.00    6.00   11.00   47.00   62.00   68.00   77.00   93.00
 770          RY  2689.0 2688.00 2687.00 2687.30 2686.70 2687.00 2688.00 2689.00
              *

 771          KK     165   BASIN
 772          BA   0.041
 773          LG    0.35    0.40    6.00    0.18       0
 774          UI       0      10      10      10      21      32      41      55      61      68
 775          UI      74      83     101     115      80      67      59      56      52      49
 776          UI      46      42      39      37      33      30      25      24      23      22
 777          UI      20      19      16      15      12      12      11      10      10       9
```

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 778          UI      7       7       7       7       5       5       5       5       5       5
 779          UI      3       2       2       2       2       2       2       2       2       2
 780          UI      2       2       2       2       2       2       2       0       0       0
              *

 781          KK   CP165 COMBINE
 782          HC      2
              *

 783          KK     CS4 COMBINE
 784          HC      3
              *
1                                        HEC-1 INPUT                                    PAGE 21

LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 785          KK    210   BASIN
 786          BA  0.009
 787          LG   0.35    0.40    6.00    0.18       0
 788          UI      0       6      15      31      42      60      39      31      26      21
 789          UI     16      13      11       8       6       5       4       3       3       2
 790          UI      1       1       1       1       1       1       0       0       0       0
 791          UI      0       0       0       0       0       0       0       0       0       0
 792          UI      0       0       0       0       0       0       0       0       0       0
              *

 793          KK    220   BASIN
 794          BA  0.013
 795          LG   0.35    0.40    6.00    0.18       0
 796          UI      0       7      14      33      47      60      74      46      39      33
 797          UI     28      22      18      16      13       9       8       7       5       5
 798          UI      3       3       2       1       1       1       1       1       1       1
 799          UI      0       0       0       0       0       0       0       0       0       0
 800          UI      0       0       0       0       0       0       0       0       0       0
              *

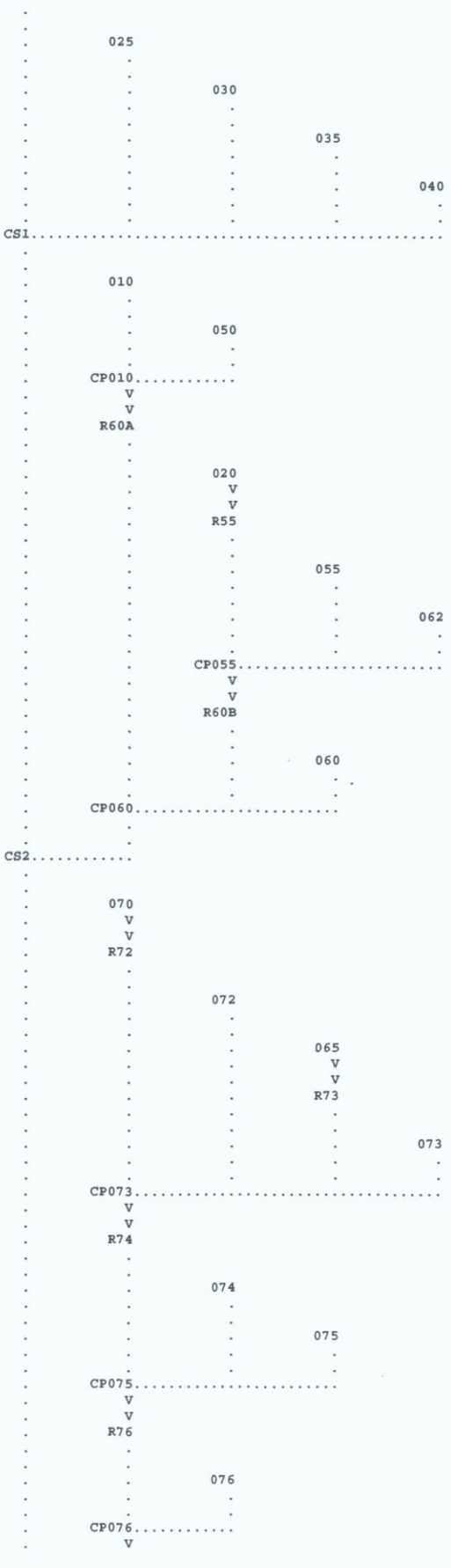
 801          KK    230   BASIN
 802          BA  0.003
 803          LG   0.35    0.40    6.00    0.18       0
 804          UI      0      11      40      28      16       9       5       3       2       1
 805          UI      1       0       0       0       0       0       0       0       0       0
 806          UI      0       0       0       0       0       0       0       0       0       0
 807          UI      0       0       0       0       0       0       0       0       0       0
 808          UI      0       0       0       0       0       0       0       0       0       0
              *

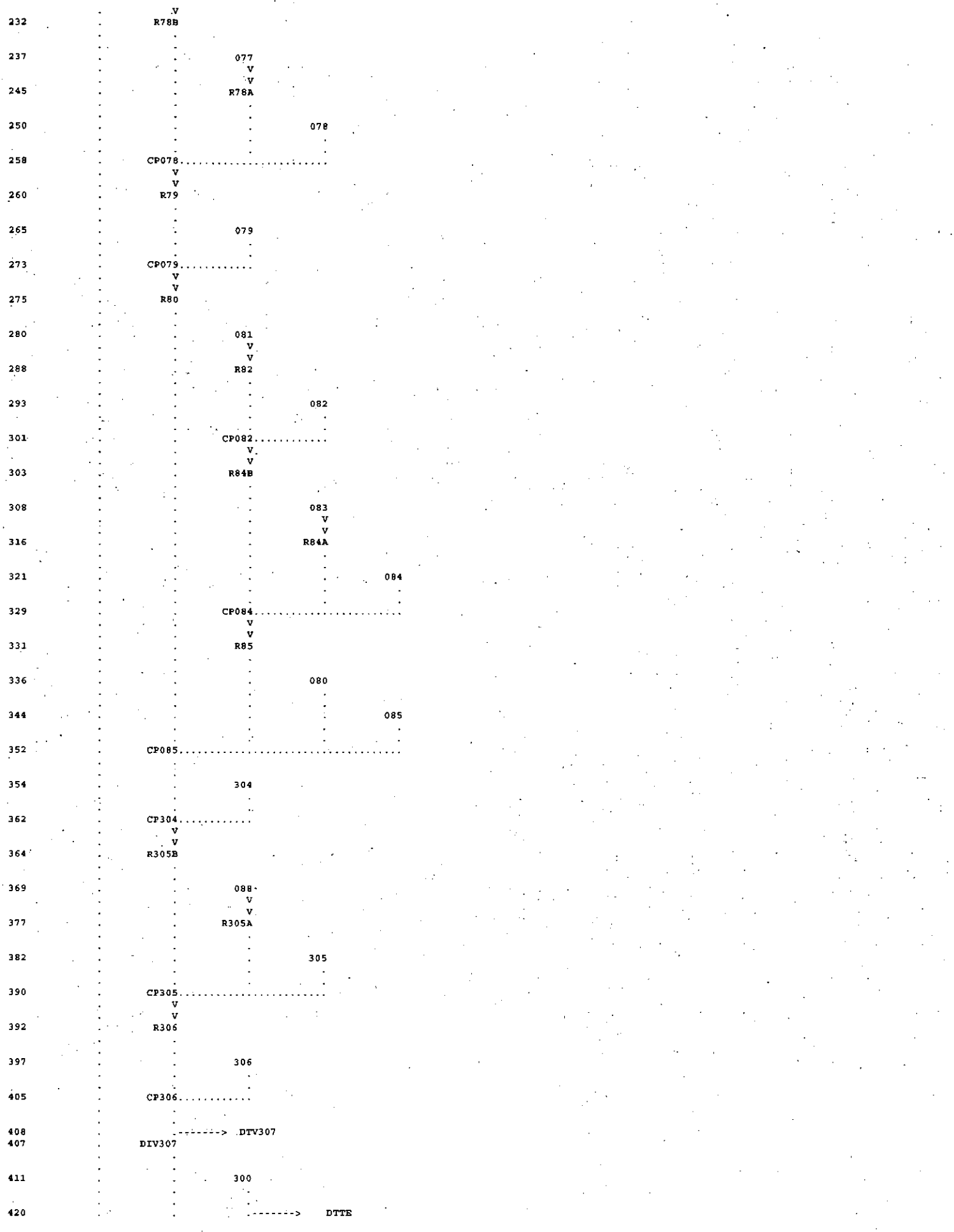
 809          KK    240   BASIN
 810          BA  0.004
 811          LG   0.35    0.40    6.00    0.18       0
 812          UI      0      21      61      35      19       9       5       2       1       0
 813          UI      0       0       0       0       0       0       0       0       0       0
 814          UI      0       0       0       0       0       0       0       0       0       0
 815          UI      0       0       0       0       0       0       0       0       0       0
 816          UI      0       0       0       0       0       0       0       0       0       0
              *
 817          ZZ
```

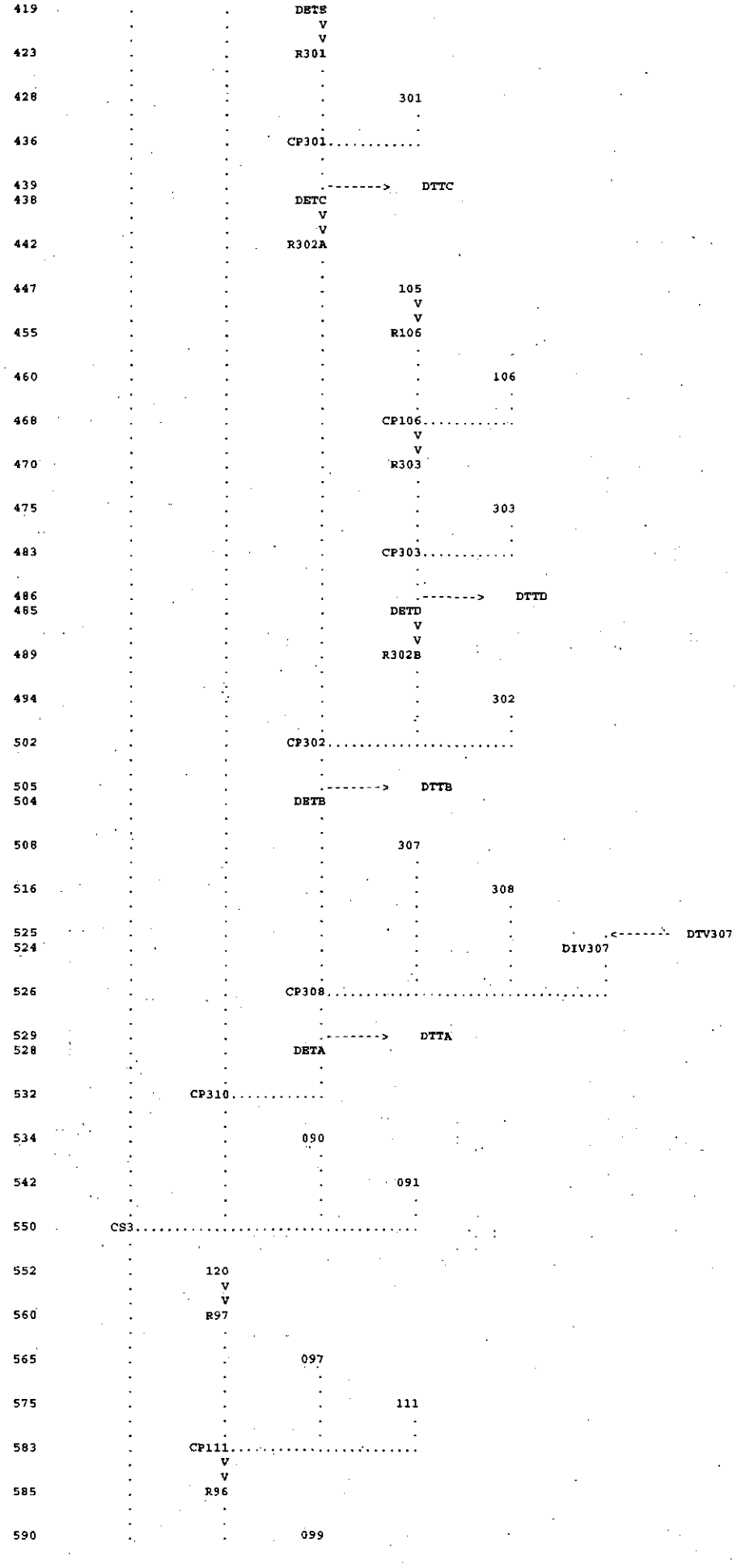
SCHEMATIC DIAGRAM OF STREAM NETWORK

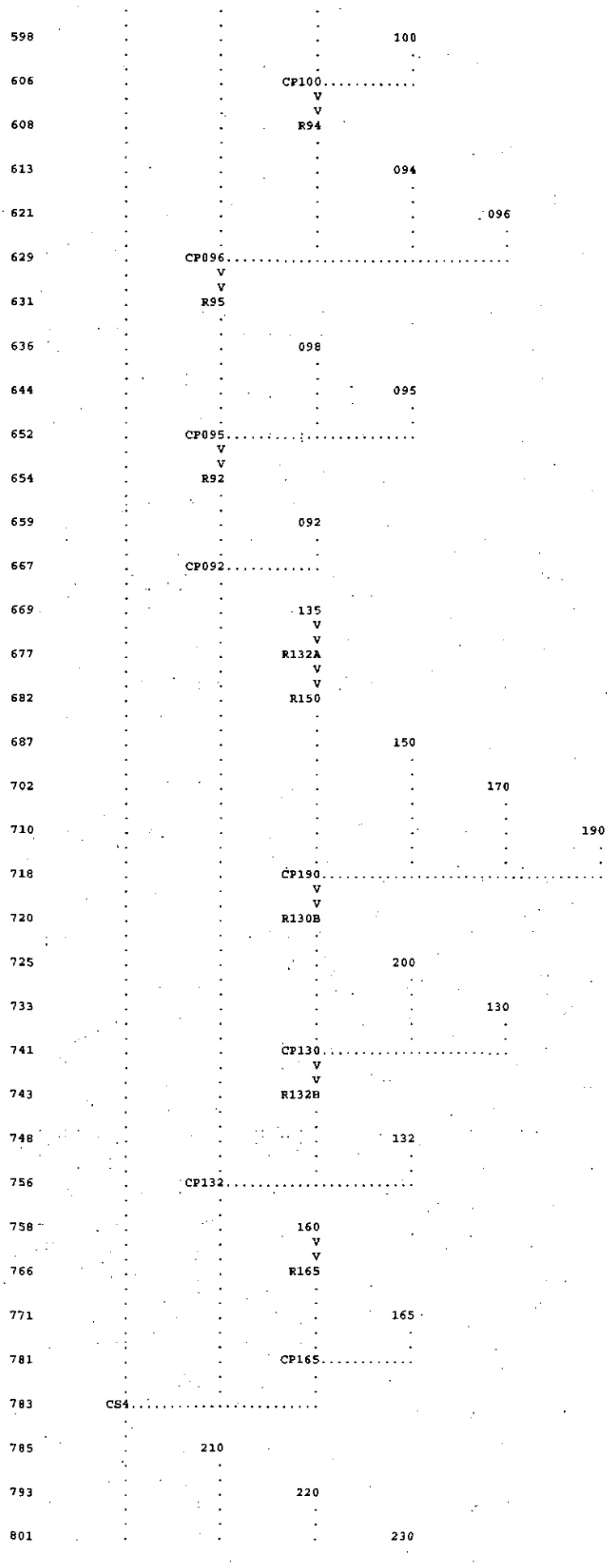
INPUT LINE NO.

(V) ROUTING (.) CONNECTOR (---->) DIVERSION OR PUMP FLOW (<----) RETURN OF DIVERTED OR PUMPED FLOW




R78B
077
R78A
078
CP078
R79
079
CP079
R80
081
R82
082
CP082
R84B
083
R84A
084
CP084
R85
080
085
CP085
304
CP304
R305B
088
R305A
305
CP305
R306
306
CP306
DTV307
DIV307
300
DTTE


419 DETE
423 R301
428 301
436 CP301
439 DTTC
438 DETC
442 R302A
447 105
455 R106
460 106
468 CP106
470 R303
475 303
483 CP303
486 DTTD
485 DETD
489 R302B
494 302
502 CP302
505 DTTB
504 DETB
508 307
516 308
525 DTV307
524 DIV307
526 CP308
529 DTTA
528 DETA
532 CP310
534 090
542 091
550 CS3
552 120
560 R97
565 097
575 111
583 CP111
585 R96
590 099


598 100
606 CP100
608 R94
613 094
621 096
629 CP096
631 R95
636 098
644 095
652 CP095
654 R92
659 092
667 CP092
669 135
677 R132A
682 R150
687 150
702 170
710 190
718 CP190
720 R130B
725 200
733 130
741 CP130
743 R132B
748 132
756 CP132
758 160
766 R165
771 165
781 CP165
783 CS4
785 210
793 220
801 230

809 240

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

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*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*              JUN  1998                *
*           VERSION 4.1                 *
*                                       *
*  RUN DATE   12JUN15  TIME  08:34:44   *
*                                       *
*****************************************
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*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*         609 SECOND STREET             *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 756-1104              *
*                                       *
*****************************************
```

Flood Control District of Maricopa County
SNGC EXISTING - Scottsdale National Golf Club Existing
100 YEAR
6 Hour Storm
Unit Hydrograph: S-Graph
Storm: Multiple
06/01/2015
WOOD/PATEL JCD
FILE NAME: SNGCFUT2.DAT

```
11 IO        OUTPUT CONTROL VARIABLES
                 IPRNT          5  PRINT CONTROL
                 IPLOT          0  PLOT CONTROL
                 QSCAL          0.  HYDROGRAPH PLOT SCALE

   IT        HYDROGRAPH TIME DATA
                 NMIN           1  MINUTES IN COMPUTATION INTERVAL
                 IDATE      1JUN15  STARTING DATE
                 ITIME        0000  STARTING TIME
                   NQ         2000  NUMBER OF HYDROGRAPH ORDINATES
                NDDATE      2JUN15  ENDING DATE
                NDTIME        0919  ENDING TIME
                 ICENT          19  CENTURY MARK

              COMPUTATION INTERVAL      .02 HOURS
                 TOTAL TIME BASE    33.32 HOURS

      ENGLISH UNITS
           DRAINAGE AREA          SQUARE MILES
           PRECIPITATION DEPTH    INCHES
           LENGTH, ELEVATION      FEET
           FLOW                   CUBIC FEET PER SECOND
           STORAGE VOLUME         ACRE-FEET
           SURFACE AREA           ACRES
           TEMPERATURE            DEGREES FAHRENHEIT

13 JD        INDEX STORM NO. 1
                 STRM        3.23  PRECIPITATION DEPTH
                 TRDA         .00  TRANSPOSITION DRAINAGE AREA

14 PI        PRECIPITATION PATTERN
               .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
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.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
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.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.03	.03	.03	.03	.03
.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.00	.00	.00	.00	.00
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21 JD INDEX STORM NO. 3

STRM 3.15 PRECIPITATION DEPTH

TRDA 2.80 TRANSPOSITION DRAINAGE AREA

22 PI PRECIPITATION PATTERN

.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
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.00	.00	.00	.00	.00	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.02	.02	.02	.02	.02
.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.00	.00	.00	.00	.00
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RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	005	240.	4.17	23.	6.	4.	.13		
HYDROGRAPH AT	025	39.	4.03	2.	1.	0.	.01		
HYDROGRAPH AT	030	38.	4.05	2.	1.	0.	.01		
HYDROGRAPH AT	035	13.	4.02	1.	0.	0.	.00		
HYDROGRAPH AT	040	10.	4.02	1.	0.	0.	.00		
5 COMBINED AT	CS1	292.	4.10	29.	7.	5.	.17		
HYDROGRAPH AT	010	100.	4.08	7.	2.	1.	.04		
HYDROGRAPH AT	050	26.	4.02	1.	0.	0.	.01		
2 COMBINED AT	CP010	121.	4.05	8.	2.	1.	.05		
ROUTED TO	R60A	117.	4.08	8.	2.	1.	.05		
HYDROGRAPH AT	020	111.	4.05	7.	2.	1.	.04		
ROUTED TO	R55	106.	4.12	7.	2.	1.	.04		
HYDROGRAPH AT	055	100.	4.10	8.	2.	1.	.04		
HYDROGRAPH AT	062	13.	4.02	1.	0.	0.	.00		
3 COMBINED AT	CP055	211.	4.10	15.	4.	3.	.09		
ROUTED TO	R60B	207.	4.15	15.	4.	3.	.09		
HYDROGRAPH AT	060	68.	4.08	5.	1.	1.	.03		
3 COMBINED AT	CP060	382.	4.12	28.	7.	5.	.16		
2 COMBINED AT	CS2	671.	4.12	57.	14.	10.	.33		
HYDROGRAPH AT	070	53.	4.02	3.	1.	1.	.02		
ROUTED TO	R72	52.	4.08	3.	1.	1.	.02		
HYDROGRAPH AT	072	72.	4.08	5.	1.	1.	.03		
HYDROGRAPH AT	065	7.	4.02	0.	0.	0.	.00		
ROUTED TO	R73	6.	4.05	0.	0.	0.	.00		
HYDROGRAPH AT	073	45.	4.05	3.	1.	0.	.02		
4 COMBINED AT	CP073	173.	4.07	11.	3.	2.	.06		
ROUTED TO	R74	172.	4.08	11.	3.	2.	.06		
HYDROGRAPH AT	074	29.	4.02	2.	0.	0.	.01		
HYDROGRAPH AT	075	7.	4.02	0.	0.	0.	.00		
3 COMBINED AT	CP075	196.	4.05	13.	3.	2.	.08		
ROUTED TO	R76	195.	4.05	13.	3.	2.	.08		
HYDROGRAPH AT	076	13.	4.02	1.	0.	0.	.00		

+	2 COMBINED AT CP076	207.	4.05	14.	3.	2.	.08
+	ROUTED TO R78B	206.	4.07	14.	3.	2.	.08
+	HYDROGRAPH AT 077	13.	4.02	1.	0.	0.	.00
+	ROUTED TO R78A	13.	4.03	1.	0.	0.	.00
+	HYDROGRAPH AT 078	20.	4.02	1.	0.	0.	.01
+	3 COMBINED AT CP078	234.	4.05	16.	4.	3.	.09
+	ROUTED TO R79	232.	4.07	16.	4.	3.	.09
+	HYDROGRAPH AT 079	30.	4.03	2.	0.	0.	.01
+	2 COMBINED AT CP079	260.	4.07	17.	4.	3.	.10
+	ROUTED TO R80	258.	4.08	17.	4.	3.	.10
+	HYDROGRAPH AT 081	13.	4.02	1.	0.	0.	.00
+	ROUTED TO R82	13.	4.03	1.	0.	0.	.00
+	HYDROGRAPH AT 082	13.	4.02	1.	0.	0.	.00
+	2 COMBINED AT CP082	26.	4.02	1.	0.	0.	.01
+	ROUTED TO R84B	26.	4.03	1.	0.	0.	.01
+	HYDROGRAPH AT 083	7.	4.02	0.	0.	0.	.00
+	ROUTED TO R84A	7.	4.02	0.	0.	0.	.00
+	HYDROGRAPH AT 084	10.	4.02	1.	0.	0.	.00
+	3 COMBINED AT CP084	43.	4.02	2.	1.	0.	.01
+	ROUTED TO R85	41.	4.03	2.	1.	0.	.01
+	HYDROGRAPH AT 080	25.	4.03	1.	0.	0.	.01
+	HYDROGRAPH AT 085	32.	4.05	2.	0.	0.	.01
+	4 COMBINED AT CP085	350.	4.07	23.	6.	4.	.13
+	HYDROGRAPH AT 304	10.	4.02	1.	0.	0.	.00
+	2 COMBINED AT CP304	358.	4.07	23.	6.	4.	.14
+	ROUTED TO R305B	357.	4.07	23.	6.	4.	.14
+	HYDROGRAPH AT 088	40.	4.05	3.	1.	0.	.01
+	ROUTED TO R305A	40.	4.07	3.	1.	0.	.01
+	HYDROGRAPH AT 305	14.	4.02	1.	0.	0.	.00
+	3 COMBINED AT CP305	402.	4.07	27.	7.	5.	.15
+	ROUTED TO R306	401.	4.07	27.	7.	5.	.15
+	HYDROGRAPH AT 306	14.	4.02	1.	0.	0.	.00
+	2 COMBINED AT CP306	408.	4.07	28.	7.	5.	.16
+	DIVERSION TO DTV307	139.	4.07	6.	1.	1.	.16
+	HYDROGRAPH AT DIV307	269.	4.07	22.	5.	4.	.16

+	HYDROGRAPH AT 300	14.	4.02	1.	0.	0.	.00
+	DIVERSION TO DTTE	9.	3.82	0.	0.	0.	.00
+	HYDROGRAPH AT DETE	14.	4.02	1.	0.	0.	.00
+	ROUTED TO R301	14.	4.02	1.	0.	0.	.00
+	HYDROGRAPH AT 301	24.	4.02	1.	0.	0.	.01
+	2 COMBINED AT CP301	37.	4.02	2.	0.	0.	.01
+	DIVERSION TO DTTC	37.	3.93	1.	0.	0.	.01
+	HYDROGRAPH AT DETC	37.	4.02	1.	0.	0.	.01
+	ROUTED TO R302A	37.	4.02	1.	0.	0.	.01
+	HYDROGRAPH AT 105	36.	4.05	2.	1.	0.	.01
+	ROUTED TO R106	36.	4.07	2.	1.	0.	.01
+	HYDROGRAPH AT 106	22.	4.02	1.	0.	0.	.01
+	2 COMBINED AT CP106	57.	4.03	3.	1.	1.	.02
+	ROUTED TO R303	56.	4.05	3.	1.	1.	.02
+	HYDROGRAPH AT 303	20.	4.02	1.	0.	0.	.01
+	2 COMBINED AT CP303	75.	4.03	5.	1.	1.	.03
+	DIVERSION TO DTTD	11.	3.70	0.	0.	0.	.03
+	HYDROGRAPH AT DETD	75.	4.03	4.	1.	1.	.03
+	ROUTED TO R302B	75.	4.05	4.	1.	1.	.03
+	HYDROGRAPH AT 302	41.	4.02	2.	1.	0.	.01
+	3 COMBINED AT CP302	151.	4.03	8.	2.	1.	.05
+	DIVERSION TO DTTB	54.	3.83	1.	0.	0.	.05
+	HYDROGRAPH AT DETB	151.	4.03	7.	2.	1.	.05
+	HYDROGRAPH AT 307	7.	4.02	0.	0.	0.	.00
+	HYDROGRAPH AT 308	21.	4.02	1.	0.	0.	.01
+	HYDROGRAPH AT DIV307	139.	4.07	6.	1.	1.	.16
+	4 COMBINED AT CP308	302.	4.03	14.	4.	3.	.06
+	DIVERSION TO DTTA	302.	4.03	14.	3.	3.	.06
+	HYDROGRAPH AT DETA	10.	4.40	0.	0.	0.	.06
+	2 COMBINED AT CP310	269.	4.07	22.	6.	4.	.21
+	HYDROGRAPH AT 090	7.	4.02	0.	0.	0.	.00
+	HYDROGRAPH AT 091	19.	4.02	1.	0.	0.	.01
+	4 COMBINED AT CS3	922.	4.10	79.	20.	14.	.55
+	HYDROGRAPH AT 120	87.	4.03	5.	1.	1.	.03
+	ROUTED TO R97	82.	4.10	5.	1.	1.	.03

+ HYDROGRAPH AT	097	80.	4.10	6.	2.	1.	.04
+ HYDROGRAPH AT	111	28.	4.03	2.	0.	0.	.01
+ 3 COMBINED AT	CP111	184.	4.08	12.	3.	2.	.07
+ ROUTED TO	R96	181.	4.12	12.	3.	2.	.07
+ HYDROGRAPH AT	099	22.	4.02	1.	0.	0.	.01
+ HYDROGRAPH AT	100	45.	4.07	3.	1.	1.	.02
+ 2 COMBINED AT	CP100	66.	4.05	4.	1.	1.	.02
+ ROUTED TO	R94	64.	4.07	4.	1.	1.	.02
+ HYDROGRAPH AT	094	16.	4.02	1.	0.	0.	.00
+ HYDROGRAPH AT	096	46.	4.03	3.	1.	0.	.01
+ 4 COMBINED AT	CP096	291.	4.08	20.	5.	4.	.12
+ ROUTED TO	R95	289.	4.08	20.	5.	4.	.12
+ HYDROGRAPH AT	098	29.	4.05	2.	0.	0.	.01
+ HYDROGRAPH AT	095	10.	4.02	1.	0.	0.	.00
+ 3 COMBINED AT	CP095	322.	4.08	22.	6.	4.	.13
+ ROUTED TO	R92	316.	4.10	22.	6.	4.	.13
+ HYDROGRAPH AT	092	30.	4.03	2.	0.	0.	.01
+ 2 COMBINED AT	CP092	341.	4.10	24.	6.	4.	.14
+ HYDROGRAPH AT	135	36.	4.02	2.	0.	0.	.01
+ ROUTED TO	R132A	35.	4.03	2.	0.	0.	.01
+ ROUTED TO	R150	31.	4.22	2.	0.	0.	.01
+ HYDROGRAPH AT	150	103.	4.20	11.	3.	2.	.06
+ HYDROGRAPH AT	170	53.	4.07	3.	1.	1.	.02
+ HYDROGRAPH AT	190	52.	4.05	3.	1.	1.	.02
+ 4 COMBINED AT	CP190	205.	4.13	19.	5.	3.	.11
+ ROUTED TO	R130B	203.	4.15	19.	5.	3.	.11
+ HYDROGRAPH AT	200	37.	4.05	2.	1.	0.	.01
+ HYDROGRAPH AT	130	10.	4.02	1.	0.	0.	.00
+ 3 COMBINED AT	CP130	233.	4.13	22.	5.	4.	.13
+ ROUTED TO	R132B	233.	4.13	22.	5.	4.	.13
+ HYDROGRAPH AT	132	27.	4.02	2.	0.	0.	.01
+ 3 COMBINED AT	CP132	582.	4.10	48.	12.	9.	.27
HYDROGRAPH AT	160	44.	4.05	3.	1.	0.	.01
+ ROUTED TO	R165	44.	4.05	3.	1.	0.	.01
+ HYDROGRAPH AT	165	93.	4.10	7.	2.	1.	.04

2 COMBINED AT							
+	CP165	134.	4.08	10.	2.	2.	.06
3 COMBINED AT							
+	CS4	1424.	4.10	130.	33.	23.	.88
HYDROGRAPH AT							
+	210	29.	4.02	2.	0.	0.	.01
HYDROGRAPH AT							
+	220	40.	4.03	2.	1.	0.	.01
HYDROGRAPH AT							
+	230	10.	4.02	1.	0.	0.	.00
HYDROGRAPH AT							
+	240	13.	4.02	1.	0.	0.	.00

*** NORMAL END OF HEC-1 ***

Existing Condition 10-year, 6-hour

HEC-1 Output

```
1*****************************************
*                                       *
*  FLOOD HYDROGRAPH PACKAGE  (HEC-1)    *
*            JUN  1998                  *
*          VERSION 4.1                  *
*                                       *
*  RUN DATE  12JUN15  TIME  08:34:52    *
*                                       *
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*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*         609 SECOND STREET             *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 756-1104              *
*                                       *
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X    X  XXXXXXX   XXXXX          X
X    X  X        X     X        XX
X    X  X        X              X
XXXXXXX  XXXX    X        XXXXX X
X    X  X        X              X
X    X  X        X     X        X
X    X  XXXXXXX   XXXXX         XXX
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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM


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LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
    1     ID        Flood Control District of Maricopa County
    2     ID        SNGC EXISTING - Scottsdale National Golf Club Existing
    3     ID        10 YEAR
    4     ID        6 Hour  Storm
    5     ID        Unit Hydrograph: S-Graph
    6     ID        Storm: Multiple
    7     ID        06/01/2015
    8     ID           FILE NAME: SNGCEX10.DAT
          *DIAGRAM
    9     IT     1  1JUN15      0    2000
   10     IO     5
   11     IN    15
          *
   12     JD  2.135  0.0001
   13     PC  0.000  0.008  0.016  0.025  0.033  0.041  0.050  0.058  0.066  0.074
   14     PC  0.087  0.099  0.118  0.138  0.216  0.377  0.834  0.911  0.931  0.950
   15     PC  0.962  0.972  0.983  0.991  1.000
   16     JD  2.122  0.5000
   17     PC  0.000  0.008  0.016  0.025  0.033  0.041  0.050  0.058  0.066  0.074
   18     PC  0.087  0.099  0.118  0.138  0.216  0.377  0.834  0.911  0.931  0.950
   19     PC  0.962  0.972  0.983  0.991  1.000
   20     JD  2.082    2.8
   21     PC  0.000  0.009  0.016  0.025  0.034  0.042  0.051  0.059  0.067  0.076
   22     PC  0.087  0.100  0.120  0.163  0.252  0.451  0.694  0.837  0.900  0.938
   23     PC  0.950  0.963  0.975  0.988  1.000
          *
   24     KK    005  BASIN
   25     BA  0.133
   26     LG   0.35   0.40   6.00   0.18      0
   27     UI      0     21     21     21     27     61     70     84    101
   28     UI    124    132    142    154    161    171    190    217    250    252
   29     UI    181    157    143    133    126    123    116    110    105    101
   30     UI     97     90     86     82     77     72     66     61     56     53
   31     UI     52     50     49     46     44     42     35     35     32     27
   32     UI     27     27     25     23     23     23     23     16     16     16
   33     UI     16     16     16     12     10     10     10     10     10     10
   34     UI     10     10     10      5      4      4      4      4      4      4
   35     UI      4      4      4      4      4      4      4      4      4      4
   36     UI      4      4      4      4      4      4      4      4      0      0
          *
   37     KK    025  BASIN
   38     BA  0.013
   39     LG   0.35   0.40   6.00   0.18      0
   40     UI      0      6     10     24     38     47     62     59     39     34
   41     UI     30     25     21     17     15     13     10      8      7      6
   42     UI      5      5      3      3      3      2      1      1      1      1
   43     UI      1      1      1      0      0      0      0      0      0      0
   44     UI      0      0      0      0      0      0      0      0      0      0
          *
```



```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
   45     KK    030  BASIN
   46     BA  0.013
   47     LG   0.35   0.40   6.00   0.18      0
   48     UI      0      5      7     18     29     37     43     59     49     35
   49     UI     31     27     24     21     18     14     13     12      9      8
   50     UI      7      6      5      4      4      3      3      3      2      1
   51     UI      1      1      1      1      1      1      1      1      0      0
   52     UI      0      0      0      0      0      0      0      0      0      0
          *
   53     KK    035  BASIN
```

```
   54          BA   0.004
   55          LG    0.35    0.40    6.00    0.18       0
   56          UI       0       6      21      37      28      19      14       9       6       5
   57          UI       3       2       2       1       1       1       0       0       0       0
   58          UI       0       0       0       0       0       0       0       0       0       0
   59          UI       0       0       0       0       0       0       0       0       0       0
   60          UI       0       0       0       0       0       0       0       0       0       0
               *

   61          KK     040   BASIN
   62          BA   0.003
   63          LG    0.35    0.40    6.00    0.18       0
   64          UI       0      10      36      29      17      10       6       3       2       1
   65          UI       1       0       0       0       0       0       0       0       0       0
   66          UI       0       0       0       0       0       0       0       0       0       0
   67          UI       0       0       0       0       0       0       0       0       0       0
   68          UI       0       0       0       0       0       0       0       0       0       0
               *

   69          KK     CS1 COMBINE
   70          HC       5
               *

   71          KK     010   BASIN
   72          BA   0.040
   73          LG    0.35    0.40    6.00    0.18       0
   74          UI       0      12      12      18      37      51      69      79      88     101
   75          UI     129     119      83      72      67      61      56      51      47      42
   76          UI      37      32      29      27      25      23      19      17      15      14
   77          UI      13      13       9       9       9       7       6       6       6       6
   78          UI       6       2       2       2       2       2       2       2       2       2
   79          UI       2       2       2       2       2       0       0       0       0       0
               *

   80          KK     050   BASIN
   81          BA   0.008
   82          LG    0.35    0.40    6.00    0.18       0
   83          UI       0       9      33      57      66      40      30      21      16      11
   84          UI       8       6       4       3       1       1       1       1       0       0
   85          UI       0       0       0       0       0       0       0       0       0       0
   86          UI       0       0       0       0       0       0       0       0       0       0
   87          UI       0       0       0       0       0       0       0       0       0       0
               *
1                                        HEC-1 INPUT                                        PAGE  3

 LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

   88          KK    CP010 COMBINE
   89          HC       2
               *

   90          KK     R60A   ROUTE
   91          RS        3    FLOW
   92          RC    0.035   0.025   0.035    2000  0.0220    0.00
   93          RX     0.00    4.00    9.00   13.00   24.00   28.00   36.00   45.00
   94          RY   2706.0 2705.00 2704.00 2703.00 2703.00 2704.00 2705.00 2706.00
               *

   95          KK     020   BASIN
   96          BA   0.038
   97          LG    0.35    0.40    6.00    0.18       0
   98          UI       0      16      23      58      92     115     139     188     127     101
   99          UI      89      79      68      58      47      40      37      31      25      21
  100          UI      18      16      13      13       8       8       8       6       3       3
  101          UI       3       3       3       3       3       3       3       0       0       0
  102          UI       0       0       0       0       0       0       0       0       0       0
               *

  103          KK     R55   ROUTE
  104          RS        5    FLOW
  105          RC   0.025   0.025   0.025    2470  0.0230    0.00
  106          RX    0.00    9.00   18.00   33.00   52.00   60.00   68.00   73.00
  107          RY  2741.0 2740.50 2740.00 2739.00 2739.00 2740.00 2740.50 2741.00
               *

  108          KK     055   BASIN
  109          BA   0.044
  110          LG    0.35    0.40    6.00    0.18       0
  111          UI       0      10      10      10      24      35      45      61      67      75
  112          UI      81      93     113     122      81      71      64      60      56      52
  113          UI      49      45      42      39      34      31      27      25      24      23
  114          UI      22      18      17      14      13      13      11      11      11       8
  115          UI       8       8       8       6       5       5       5       5       5       5
  116          UI       2       2       2       2       2       2       2       2       2       2
  117          UI       2       2       2       2       2       2       2       0       0       0
               *

  118          KK     062   BASIN
  119          BA   0.004
  120          LG    0.35    0.40    6.00    0.18       0
  121          UI       0       5      18      30      32      20      15      10       8       5
  122          UI       4       3       2       1       1       1       1       1       0       0
  123          UI       0       0       0       0       0       0       0       0       0       0
  124          UI       0       0       0       0       0       0       0       0       0       0
  125          UI       0       0       0       0       0       0       0       0       0       0
               *
1                                        HEC-1 INPUT                                        PAGE  4

 LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  126          KK    CP055 COMBINE
  127          HC       3
               *
```

```
128          KK    R60B   ROUTE
129          RS       4    FLOW
130          RC   0.035   0.025   0.035    2450  0.0220    0.00
131          RX    0.00    4.00    9.00   13.00   24.00   28.00   36.00   45.00
132          RY 2706.0 2705.00 2704.00 2703.00 2703.00 2704.00 2705.00 2706.00
             *

133          KK     060   BASIN
134          BA   0.028
135          LG    0.32    0.37    6.00    0.19       3
136          UI       0       7       7       7      21      28      37      45      51      55
137          UI      63      78      83      55      48      43      41      37      35      32
138          UI      29      27      24      21      19      18      17      16      14      12
139          UI      11       9       9       8       8       7       6       6       6       5
140          UI       4       4       4       4       4       3       1       1       1       1
141          UI       1       1       1       1       1       1       1       1       1       1
142          UI       1       0       0       0       0       0       0       0       0       0
             *

143          KK   CP060 COMBINE
144          HC       3
             *

145          KK     CS2 COMBINE
146          HC       2
             *

147          KK     070   BASIN
148          BA   0.017
149          LG    0.35    0.40    6.00    0.18       0
150          UI       0      10      25      54      74     106      80      59      49      41
151          UI      32      25      22      16      13      11       8       7       5       5
152          UI       3       2       2       2       2       2       2       0       0       0
153          UI       0       0       0       0       0       0       0       0       0       0
154          UI       0       0       0       0       0       0       0       0       0       0
             *

155          KK     R72   ROUTE
156          RS       3    FLOW
157          RC   0.025   0.025   0.025    1798  0.0210    0.00
158          RX    0.00   12.00   23.00   30.00   40.00   50.00   67.00   88.00
159          RY 2739.0 2737.00 2736.00 2735.00 2735.00 2736.00 2737.00 2739.00
             *

160          KK     072   BASIN
161          BA   0.030
162          LG    0.35    0.40    6.00    0.18       0
163          UI       0       8       8       8      23      31      41      49      56      61
164          UI      71      88      84      58      51      46      43      40      37      34
165          UI      31      28      25      22      20      19      18      16      14      13
1                                          HEC-1 INPUT                                    PAGE  5

LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

166          UI      10      10       9       9       9       6       6       6       6       4
167          UI       4       4       4       4       4       2       2       2       2       2
168          UI       2       2       2       2       2       2       2       2       2       2
169          UI       0       0       0       0       0       0       0       0       0       0
             *

170          KK     065   BASIN
171          BA   0.002
172          LG    0.35    0.40    6.00    0.18       0
173          UI       0       4      14      21      13       9       6       4       3       2
174          UI       1       1       0       0       0       0       0       0       0       0
175          UI       0       0       0       0       0       0       0       0       0       0
176          UI       0       0       0       0       0       0       0       0       0       0
177          UI       0       0       0       0       0       0       0       0       0       0
             *

178          KK     R73   ROUTE
179          RS       4    FLOW
180          RC   0.025   0.025   0.025    1401  0.0260    0.00
181          RX    0.00   56.00   65.00   74.00   78.00   84.00   89.00   99.00
182          RY 2741.0 2740.00 2739.00 2738.00 2738.00 2739.00 2740.00 2743.00
             *

183          KK     073   BASIN
184          BA   0.016
185          LG    0.35    0.40    6.00    0.18       0
186          UI       0       6       6      18      28      38      45      54      70      48
187          UI      38      34      30      27      24      21      17      15      14      12
188          UI      10       8       7       7       6       5       5       3       3       3
189          UI       3       2       1       1       1       1       1       1       1       1
190          UI       1       1       0       0       0       0       0       0       0       0
             *

191          KK   CP073 COMBINE
192          HC       4
             *

193          KK     R74   ROUTE
194          RS       1    FLOW
195          RC   0.025   0.025   0.025     540  0.0220    0.00
196          RX    0.00    8.00   22.00   38.00   97.00  105.00  111.00  118.00
197          RY 2731.0 2730.00 2728.00 2727.00 2727.00 2728.00 2729.00 2730.00
             *

198          KK     074   BASIN
199          BA   0.009
200          LG    0.35    0.40    6.00    0.18       0
201          UI       0       6      22      43      61      55      37      30      23      17
202          UI      14      10       8       6       5       3       3       1       1       1
203          UI       1       1       0       0       0       0       0       0       0       0
```

```
204          UI       0       0       0       0       0       0       0       0       0       0
205          UI       0       0       0       0       0       0       0       0       0       0
             *
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

206          KK     075   BASIN
207          BA   0.002
208          LG    0.35    0.40    6.00    0.18       0
209          UI       0      12      32      17       9       4       2       1       1       0
210          UI       0       0       0       0       0       0       0       0       0       0
211          UI       0       0       0       0       0       0       0       0       0       0
212          UI       0       0       0       0       0       0       0       0       0       0
213          UI       0       0       0       0       0       0       0       0       0       0
             *

214          KK   CP075 COMBINE
215          HC       3
             *

216          KK     R76   ROUTE
217          RS       1    FLOW
218          RC   0.025   0.025   0.025     240  0.0210    0.00
219          RX    0.00   13.00   15.00   19.00   23.00   33.00   38.00   42.00
220          RY  2719.0 2718.00 2717.00 2716.00 2716.00 2717.00 2718.00 2719.00
             *

221          KK     076   BASIN
222          BA   0.004
223          LG    0.35    0.40    6.00    0.18       0
224          UI       0       3      12      21      32      21      16      13       9       7
225          UI       5       4       3       2       1       1       1       1       1       1
226          UI       1       0       0       0       0       0       0       0       0       0
227          UI       0       0       0       0       0       0       0       0       0       0
228          UI       0       0       0       0       0       0       0       0       0       0
             *

229          KK   CP076 COMBINE
230          HC       2
             *

231          KK    R78B   ROUTE
232          RS       1    FLOW
233          RC   0.025   0.025   0.025     590  0.0220    0.00
234          RX    0.00   17.00   22.00   31.00   58.00   61.00   95.00  108.00
235          RY  2712.0 2709.00 2707.00 2706.00 2706.00 2707.00 2710.00 2717.00
             *

236          KK     077   BASIN
237          BA   0.004
238          LG    0.35    0.40    6.00    0.18       0
239          UI       0       4      15      25      33      20      16      12       8       6
240          UI       4       3       2       2       1       1       1       1       1       0
241          UI       0       0       0       0       0       0       0       0       0       0
242          UI       0       0       0       0       0       0       0       0       0       0
243          UI       0       0       0       0       0       0       0       0       0       0
             *
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

244          KK    R78A   ROUTE
245          RS       1    FLOW
246          RC   0.025   0.025   0.025     521  0.0400    0.00
247          RX    0.00    7.00   17.00   23.00   25.00   46.00   82.00   92.00
248          RY  2713.0 2710.00 2708.00 2707.00 2707.00 2708.00 2711.00 2712.00
             *

249          KK     078   BASIN
250          BA   0.006
251          LG    0.35    0.40    6.00    0.18       0
252          UI       0       5      20      35      49      31      24      18      13      10
253          UI       7       5       4       3       2       1       1       1       1       1
254          UI       0       0       0       0       0       0       0       0       0       0
255          UI       0       0       0       0       0       0       0       0       0       0
256          UI       0       0       0       0       0       0       0       0       0       0
             *

257          KK   CP078 COMBINE
258          HC       3
             *

259          KK     R79   ROUTE
260          RS       2    FLOW
261          RC   0.025   0.025   0.025     774  0.0260    0.00
262          RX    0.00    4.00    7.00   14.00   18.00   21.00   30.00   44.00
263          RY  2694.0 2693.00 2692.00 2691.00 2691.00 2692.00 2693.00 2694.00
             *

264          KK     079   BASIN
265          BA   0.010
266          LG    0.35    0.40    6.00    0.18       0
267          UI       0       5       8      18      29      35      46      47      31      26
268          UI      23      20      17      13      11      10       8       6       6       5
269          UI       4       4       3       2       2       2       1       1       1       1
270          UI       1       1       1       1       0       0       0       0       0       0
271          UI       0       0       0       0       0       0       0       0       0       0
             *

272          KK   CP079 COMBINE
273          HC       2
             *
```

```
 274          KK      R80    ROUTE
 275          RS        1     FLOW
 276          RC    0.025    0.025    0.025      790   0.0270     0.00
 277          RX     0.00     6.00    15.00    21.00    28.00    31.00    37.00    41.00
 278          RY  2676.0 2675.00 2673.00 2671.00 2671.00 2672.00 2673.00 2674.00
              *
1                                        HEC-1 INPUT                                        PAGE  8

LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 279          KK      081    BASIN
 280          BA    0.004
 281          LG     0.35     0.40     6.00     0.18        0
 282          UI        0        4       14       24       33       20       16       12        8        7
 283          UI        5        3        3        2        2        1        1        1        1        0
 284          UI        0        0        0        0        0        0        0        0        0        0
 285          UI        0        0        0        0        0        0        0        0        0        0
 286          UI        0        0        0        0        0        0        0        0        0        0
              *

 287          KK      R82    ROUTE
 288          RS        1     FLOW
 289          RC    0.025    0.025    0.025      383   0.0290     0.00
 290          RX     0.00    13.00    23.00    32.00    33.00    51.00    52.00    53.00
 291          RY  2702.0 2701.00 2699.00 2698.00 2698.00 2699.00 2704.00 2705.00
              *

 292          KK      082    BASIN
 293          BA    0.004
 294          LG     0.35     0.40     6.00     0.18        0
 295          UI        0        4       16       27       33       20       15       11        8        6
 296          UI        4        3        2        2        1        1        1        1        1        0
 297          UI        0        0        0        0        0        0        0        0        0        0
 298          UI        0        0        0        0        0        0        0        0        0        0
 299          UI        0        0        0        0        0        0        0        0        0        0
              *

 300          KK    CP082 COMBINE
 301          HC        2
              *

 302          KK     R84B    ROUTE
 303          RS        1     FLOW
 304          RC    0.025    0.025    0.025      347   0.0290     0.00
 305          RX     0.00    16.00    25.00    32.00    34.00    38.00    43.00    51.00
 306          RY  2694.0 2690.00 2689.00 2688.00 2688.00 2689.00 2690.00 2692.00
              *

 307          KK      083    BASIN
 308          BA    0.002
 309          LG     0.35     0.40     6.00     0.18        0
 310          UI        0        8       26       19       11        6        3        2        1        1
 311          UI        1        0        0        0        0        0        0        0        0        0
 312          UI        0        0        0        0        0        0        0        0        0        0
 313          UI        0        0        0        0        0        0        0        0        0        0
 314          UI        0        0        0        0        0        0        0        0        0        0
              *

 315          KK     R84A    ROUTE
 316          RS        1     FLOW
 317          RC    0.025    0.025    0.025      339   0.0290     0.00
 318          RX     0.00     4.00     8.00    12.00    15.00    28.00    36.00    44.00
 319          RY  2690.0 2689.00 2688.00 2687.00 2687.00 2690.00 2692.00 2694.00
              *
1                                        HEC-1 INPUT                                        PAGE  9

LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 320          KK      084    BASIN
 321          BA    0.003
 322          LG     0.35     0.40     6.00     0.18        0
 323          UI        0        7       25       33       19       12        8        5        3        2
 324          UI        1        1        1        0        0        0        0        0        0        0
 325          UI        0        0        0        0        0        0        0        0        0        0
 326          UI        0        0        0        0        0        0        0        0        0        0
 327          UI        0        0        0        0        0        0        0        0        0        0
              *

 328          KK    CP084 COMBINE
 329          HC        3
              *

 330          KK      R85    ROUTE
 331          RS        2     FLOW
 332          RC    0.025    0.025    0.025     1070   0.0210     0.00
 333          RX     0.00     5.00    12.00    22.00    27.00    39.00    53.00    67.00
 334          RY  2676.0 2675.00 2674.00 2673.00 2673.00 2674.00 2677.00 2678.00
              *

 335          KK      080    BASIN
 336          BA    0.008
 337          LG     0.35     0.39     6.16     0.17        0
 338          UI        0        4        8       20       28       36       46       29       24       20
 339          UI       17       14       11       10        8        6        5        5        3        3
 340          UI        2        2        2        1        1        1        1        1        1        1
 341          UI        0        0        0        0        0        0        0        0        0        0
 342          UI        0        0        0        0        0        0        0        0        0        0
              *

 343          KK      085    BASIN
 344          BA    0.011
 345          LG     0.35     0.40     6.00     0.18        0
```

```
346          UI       0       5       7      17      27      33      40      54      37      29
347          UI      26      23      20      17      14      12      11       9       7       6
348          UI       5       5       4       4       2       2       2       2       1       1
349          UI       1       1       1       1       1       1       1       0       0       0
350          UI       0       0       0       0       0       0       0       0       0       0
             *

351          KK   CP085 COMBINE
352          HC       4
             *

353          KK     304   BASIN
354          BA   0.003
355          LG    0.35    0.35    6.76    0.13       0
356          UI       0       3      11      17      28      24      16       9       4       2
357          UI       1       1       0       0       0       0       0       0       0       0
358          UI       0       0       0       0       0       0       0       0       0       0
359          UI       0       0       0       0       0       0       0       0       0       0
360          UI       0       0       0       0       0       0       0       0       0       0
             *
1                                        HEC-1 INPUT                                    PAGE 10

LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

361          KK   CP304 COMBINE
362          HC       2
             *

363          KK   R305B   ROUTE
364          RS       1    FLOW
365          RC   0.025   0.025   0.025     279  0.0220    0.00
366          RX    0.00   22.00   30.00   37.00   50.00   60.00   80.00   94.00
367          RY  2649.0 2648.00 2647.00 2646.00 2646.00 2647.00 2648.00 2649.00
             *

368          KK     088   BASIN
369          BA   0.014
370          LG    0.35    0.39    6.16    0.16       0
371          UI       0       5       5      16      25      33      39      47      62      42
372          UI      33      30      27      24      21      18      15      13      12      11
373          UI       9       7       6       6       5       4       4       3       3       3
374          UI       3       2       1       1       1       1       1       1       1       1
375          UI       1       1       0       0       0       0       0       0       0       0
             *

376          KK   R305A   ROUTE
377          RS       1    FLOW
378          RC   0.025   0.025   0.025     415  0.0410    0.00
379          RX    0.00   10.00   23.00   31.00   55.00   63.00   69.00   74.00
380          RY  2650.0 2649.00 2648.00 2647.00 2647.00 2648.00 2649.00 2650.00
             *

381          KK     305   BASIN
382          BA   0.004
383          LG    0.32    0.26    7.94    0.10       2
384          UI       0      12      34      57      33      12       4       2       0       0
385          UI       0       0       0       0       0       0       0       0       0       0
386          UI       0       0       0       0       0       0       0       0       0       0
387          UI       0       0       0       0       0       0       0       0       0       0
388          UI       0       0       0       0       0       0       0       0       0       0
             *

389          KK   CP305 COMBINE
390          HC       3
             *

391          KK    R306   ROUTE
392          RS       1    FLOW
393          RC   0.025   0.025   0.025     505  0.0180    0.00
394          RX    0.00    5.00    9.00   13.00   18.00   27.00   43.00   58.00
395          RY  2644.0 2643.00 2642.00 2641.00 2641.00 2642.00 2643.00 2644.00
             *
1                                        HEC-1 INPUT                                    PAGE 11

LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

396          KK     306   BASIN
397          BA   0.004
398          LG    0.32    0.26    7.94    0.10       2
399          UI       0       9      26      48      38      21       8       3       1       0
400          UI       0       0       0       0       0       0       0       0       0       0
401          UI       0       0       0       0       0       0       0       0       0       0
402          UI       0       0       0       0       0       0       0       0       0       0
403          UI       0       0       0       0       0       0       0       0       0       0
             *

404          KK   CP306 COMBINE
405          HC       2
             *

406          KK  DIV307  DIVERT
407          DT  DTV307     0.0     0.0
408          DI     0.0    97.0   116.0   166.0   228.0   262.0   298.0   336.0   375.0   500.0
409          DQ     0.0     0.0     4.0    23.0    50.0    66.0    83.0   102.0   121.0   188.0
             *

410          KK     300   BASIN
411          BA   0.004
412          LG    0.33    0.28    7.58    0.10       1
413          UI       0       8      24      45      40      23       9       4       1       0
414          UI       0       0       0       0       0       0       0       0       0       0
415          UI       0       0       0       0       0       0       0       0       0       0
416          UI       0       0       0       0       0       0       0       0       0       0
```

```
417          UI       0       0       0       0       0       0       0       0       0       0
             *

418          KK    DETE  DIVERT
419          DT    DTTE     0.1     0.0
420          DI     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
421          DQ     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
             *

422          KK    R301   ROUTE
423          RS       1    FLOW
424          RC   0.025   0.025   0.025     442  0.0410    0.00
425          RX    0.00    5.00   12.00   38.00   53.00   82.00  109.00  150.00
426          RY  2660.0 2659.00 2658.00 2656.00 2656.00 2657.00 2658.00 2660.00
             *

427          KK     301   BASIN
428          BA   0.007
429          LG    0.31    0.31    6.34    0.18       2
430          UI       0      27      81     101      43      13       3       0       0       0
431          UI       0       0       0       0       0       0       0       0       0       0
432          UI       0       0       0       0       0       0       0       0       0       0
433          UI       0       0       0       0       0       0       0       0       0       0
434          UI       0       0       0       0       0       0       0       0       0       0
             *
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

435          KK   CP301 COMBINE
436          HC       2
             *

437          KK    DETC  DIVERT
438          DT    DTTC     0.5     0.0
439          DI     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
440          DQ     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
             *

441          KK   R302A   ROUTE
442          RS       1    FLOW
443          RC   0.025   0.025   0.025     320  0.0280    0.00
444          RX    0.00   12.00   20.00   32.00   36.00   50.00   59.00   69.00
445          RY  2649.0 2648.00 2647.00 2646.50 2646.50 2647.00 2648.00 2649.00
             *

446          KK     105   BASIN
447          BA   0.013
448          LG    0.35    0.40    6.00    0.18       0
449          UI       0       5       5      13      21      29      34      39      52      45
450          UI      32      28      25      23      20      18      15      13      11      11
451          UI       9       8       6       6       5       5       4       4       3       2
452          UI       2       2       2       1       1       1       1       1       1       1
453          UI       1       1       1       0       0       0       0       0       0       0
             *

454          KK    R106   ROUTE
455          RS       2    FLOW
456          RC   0.025   0.025   0.025     750  0.0310    0.00
457          RX    0.00   10.00   20.00   34.00   37.00   48.00   53.00   74.00
458          RY  2683.0 2682.00 2681.00 2675.00 2675.00 2681.00 2682.00 2686.00
             *

459          KK     106   BASIN
460          BA   0.007
461          LG    0.35    0.40    6.00    0.18       0
462          UI       0       4      13      26      35      47      29      24      20      16
463          UI      12      10       8       6       5       3       3       2       2       1
464          UI       1       1       1       1       1       0       0       0       0       0
465          UI       0       0       0       0       0       0       0       0       0       0
466          UI       0       0       0       0       0       0       0       0       0       0
             *

467          KK   CP106 COMBINE
468          HC       2
             *

469          KK    R303   ROUTE
470          RS       1    FLOW
471          RC   0.025   0.025   0.025     400  0.0200    0.00
472          RX    0.00    8.00   15.00   29.00   33.00   42.00   48.00   52.00
473          RY  2657.0 2656.00 2655.00 2654.00 2654.00 2655.00 2656.00 2657.00
             *
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

474          KK     303   BASIN
475          BA   0.006
476          LG    0.30    0.26    6.76    0.16       3
477          UI       0       8      26      41      64      43      27      11       6       2
478          UI       2       0       0       0       0       0       0       0       0       0
479          UI       0       0       0       0       0       0       0       0       0       0
480          UI       0       0       0       0       0       0       0       0       0       0
481          UI       0       0       0       0       0       0       0       0       0       0
             *

482          KK   CP303 COMBINE
483          HC       2
             *

484          KK    DETD  DIVERT
485          DT    DTTD     0.1     0.0
```

```
486          DI     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
487          DQ     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
             *

488          KK   R302B   ROUTE
489          RS       1    FLOW
490          RC   0.025   0.025   0.025     276  0.0330    0.00
491          RX    0.00   14.00   30.00   52.00   62.00   87.00  100.00  115.00
492          RY  2652.0 2651.00 2650.00 2649.00 2649.00 2650.00 2651.00 2652.00
             *

493          KK     302   BASIN
494          BA   0.012
495          LG    0.28    0.24    6.54    0.19       4
496          UI       0      18      59      96     130      82      45      19       9       4
497          UI       4       0       0       0       0       0       0       0       0       0
498          UI       0       0       0       0       0       0       0       0       0       0
499          UI       0       0       0       0       0       0       0       0       0       0
500          UI       0       0       0       0       0       0       0       0       0       0
             *

501          KK   CP302 COMBINE
502          HC       3
             *

503          KK    DETB  DIVERT
504          DT    DTTB     0.5     0.0
505          DI     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
506          DQ     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
             *

507          KK     307   BASIN
508          BA   0.002
509          LG    0.26    0.17    7.94    0.12       5
510          UI       0      16      42      16       3       0       0       0       0       0
511          UI       0       0       0       0       0       0       0       0       0       0
512          UI       0       0       0       0       0       0       0       0       0       0
513          UI       0       0       0       0       0       0       0       0       0       0
1                                          HEC-1 INPUT                                    PAGE 14

LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

514          UI       0       0       0       0       0       0       0       0       0       0
             *

515          KK     308   BASIN
516          BA   0.006
517          LG    0.26    0.17    7.94    0.12       5
518          UI       0      64     135      29       0       0       0       0       0       0
519          UI       0       0       0       0       0       0       0       0       0       0
520          UI       0       0       0       0       0       0       0       0       0       0
521          UI       0       0       0       0       0       0       0       0       0       0
522          UI       0       0       0       0       0       0       0       0       0       0
             *

523          KK  DIV307RETRIEVE
524          DR  DTV307
             *

525          KK   CP308 COMBINE
526          HC       4
             *

527          KK    DETA  DIVERT
528          DT    DTTA     6.9     0.0
529          DI     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
530          DQ     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
             *

531          KK   CP310 COMBINE
532          HC       2
             *

533          KK     090   BASIN
534          BA   0.002
535          LG    0.35    0.40    6.00    0.18       0
536          UI       0       5      17      22      13       8       5       3       2       1
537          UI       1       0       0       0       0       0       0       0       0       0
538          UI       0       0       0       0       0       0       0       0       0       0
539          UI       0       0       0       0       0       0       0       0       0       0
540          UI       0       0       0       0       0       0       0       0       0       0
             *

541          KK     091   BASIN
542          BA   0.006
543          LG    0.35    0.40    6.00    0.18       0
544          UI       0       4      13      25      35      40      25      20      16      12
545          UI      10       8       6       5       3       3       2       2       1       1
546          UI       1       1       1       1       0       0       0       0       0       0
547          UI       0       0       0       0       0       0       0       0       0       0
548          UI       0       0       0       0       0       0       0       0       0       0
             *

1                                          HEC-1 INPUT                                    PAGE 15

LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

549          KK      CS3 COMBINE
550          HC       4
             *

551          KK     120   BASIN
552          BA   0.028
553          LG    0.35    0.40    6.00    0.18       0
554          UI       0      15      34      77     108     142     154      98      83      70
```

```
555          UI      58      45      37      33      24      19      17      13      12       8
556          UI       8       7       3       3       3       3       3       3       3       0
557          UI       0       0       0       0       0       0       0       0       0       0
558          UI       0       0       0       0       0       0       0       0       0       0
             *

559          KK     R97   ROUTE
560          RS       5    FLOW
561          RC   0.025   0.025   0.025    2435  0.0210    0.00
562          RX    0.00   17.00   46.00   67.00   74.00   79.00   84.00   91.00
563          RY  2721.0 2720.00 2719.00 2718.00 2718.00 2719.00 2720.00 2721.00
             *

564          KK     097   BASIN
565          BA   0.035
566          LG    0.35    0.40    6.00    0.18       0
567          UI       0       8       8       8      19      28      36      48      53      60
568          UI      65      74      90      97      65      56      51      48      44      41
569          UI      39      36      33      31      27      25      22      20      19      19
570          UI      17      15      14      11      11      10       9       9       9       6
571          UI       6       6       6       4       4       4       4       4       4       4
572          UI       2       2       2       2       2       2       2       2       2       2
573          UI       2       2       2       2       2       2       2       0       0       0
             *

574          KK     111   BASIN
575          BA   0.009
576          LG    0.35    0.40    6.00    0.18       0
577          UI       0       5       9      22      32      40      52      32      27      23
578          UI      19      16      12      11       9       7       6       5       4       3
579          UI       2       2       2       1       1       1       1       1       1       1
580          UI       0       0       0       0       0       0       0       0       0       0
581          UI       0       0       0       0       0       0       0       0       0       0
             *

582          KK   CP111 COMBINE
583          HC       3
             *

584          KK     R96   ROUTE
585          RS       2    FLOW
586          RC   0.025   0.025   0.025     987  0.0190    0.00
587          RX    0.00    7.00   23.00   42.00   47.00   50.00   77.00   99.00
588          RY  2698.0 2697.00 2696.00 2694.50 2694.50 2695.00 2696.00 2697.00
             *
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

589          KK     099   BASIN
590          BA   0.007
591          LG    0.35    0.40    6.00    0.18       0
592          UI       0       4      11      23      32      45      32      24      20      17
593          UI      13      10       9       6       5       4       3       3       2       2
594          UI       1       1       1       1       1       1       0       0       0       0
595          UI       0       0       0       0       0       0       0       0       0       0
596          UI       0       0       0       0       0       0       0       0       0       0
             *

597          KK     100   BASIN
598          BA   0.017
599          LG    0.35    0.40    6.00    0.18       0
600          UI       0       5       5      11      20      28      35      40      46      59
601          UI      56      38      33      31      28      25      23      21      18      15
602          UI      13      13      12      10       9       7       7       6       6       4
603          UI       4       4       3       3       3       3       3       1       1       1
604          UI       1       1       1       1       1       1       1       1       1       0
             *

605          KK   CP100 COMBINE
606          HC       2
             *

607          KK     R94   ROUTE
608          RS       2    FLOW
609          RC   0.025   0.025   0.025     918  0.0210    0.00
610          RX    0.00   22.00   34.00   45.00   48.00   52.00   78.00   91.00
611          RY  2707.0 2706.00 2705.00 2703.00 2703.00 2705.00 2706.00 2707.00
             *

612          KK     094   BASIN
613          BA   0.005
614          LG    0.35    0.40    6.00    0.18       0
615          UI       0       3       6      13      19      24      28      18      15      13
616          UI      11       8       7       6       5       3       3       2       2       2
617          UI       1       1       1       1       1       1       1       1       1       0
618          UI       0       0       0       0       0       0       0       0       0       0
619          UI       0       0       0       0       0       0       0       0       0       0
             *

620          KK     096   BASIN
621          BA   0.015
622          LG    0.35    0.40    6.00    0.18       0
623          UI       0       8      15      34      50      62      86      56      45      39
624          UI      33      28      22      18      16      12      10       9       7       6
625          UI       5       4       4       3       1       1       1       1       1       1
626          UI       1       0       0       0       0       0       0       0       0       0
627          UI       0       0       0       0       0       0       0       0       0       0
             *
```



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LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
```

```
628          KK   CP096 COMBINE
629          HC       4
             *
630          KK     R95   ROUTE
631          RS       1    FLOW
632          RC   0.025   0.025   0.025     571  0.0190    0.00
633          RX    0.00    9.00   29.00   35.00   39.00   44.00   54.00   59.00
634          RY  2685.0 2684.00 2683.00 2682.00 2681.30 2682.00 2683.00 2683.20
             *
635          KK     098   BASIN
636          BA   0.010
637          LG    0.35    0.40    6.00    0.18       0
638          UI       0       4       5      13      21      27      32      42      41      27
639          UI      24      21      19      16      14      11      10       9       8       6
640          UI       5       5       4       3       3       3       2       2       2       1
641          UI       1       1       1       1       1       1       1       1       1       0
642          UI       0       0       0       0       0       0       0       0       0       0
             *
643          KK     095   BASIN
644          BA   0.003
645          LG    0.35    0.40    6.00    0.18       0
646          UI       0       2      10      17      24      16      12       9       7       5
647          UI       4       3       2       2       1       1       0       0       0       0
648          UI       0       0       0       0       0       0       0       0       0       0
649          UI       0       0       0       0       0       0       0       0       0       0
650          UI       0       0       0       0       0       0       0       0       0       0
             *
651          KK   CP095 COMBINE
652          HC       3
             *
653          KK     R92   ROUTE
654          RS       1    FLOW
655          RC   0.025   0.025   0.025    1216  0.0210    0.00
656          RX    0.00   21.00   24.00   26.00   33.00   36.00   38.00   54.00
657          RY  2660.0 2659.00 2658.00 2657.00 2657.00 2658.00 2659.00 2660.00
             *
658          KK     092   BASIN
659          BA   0.010
660          LG    0.35    0.39    6.16    0.16       0
661          UI       0       4       7      17      26      33      41      50      32      26
662          UI      23      20      17      14      12      11       9       7       6       5
663          UI       5       3       3       2       2       2       2       1       1       1
664          UI       1       1       1       1       1       0       0       0       0       0
665          UI       0       0       0       0       0       0       0       0       0       0
             *
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
666          KK   CP092 COMBINE
667          HC       2
             *
668          KK     135   BASIN
669          BA   0.011
670          LG    0.35    0.40    6.00    0.18       0
671          UI       0       8      31      56      84      60      44      35      26      20
672          UI      16      11       9       6       5       4       3       2       2       2
673          UI       2       0       0       0       0       0       0       0       0       0
674          UI       0       0       0       0       0       0       0       0       0       0
675          UI       0       0       0       0       0       0       0       0       0       0
             *
676          KK   R132A   ROUTE
677          RS       1    FLOW
678          RC   0.035   0.025   0.035     550  0.0250    0.00
679          RX    0.00   30.00   50.00   70.00   80.00   90.00  110.00  120.00
680          RY  2645.0 2644.00 2643.00 2642.00 2642.00 2643.00 2645.00 2646.00
             *
681          KK    R150   ROUTE
682          RS      15    FLOW
683          RC   0.025   0.025   0.025    4933  0.0210    0.00
684          RX    0.00    7.00   27.00   43.00   47.00   50.00   55.00   95.00
685          RY  2725.0 2724.00 2722.00 2721.00 2720.80 2721.00 2722.00 2725.00
             *
686          KK     150   BASIN
687          BA   0.062
688          LG    0.35    0.40    6.00    0.18       0
689          UI       0       9       9       9       9       9      17      25      30      35
690          UI      40      51      54      57      61      65      68      71      79      88
691          UI     100     109      86      69      62      58      54      52      51      49
692          UI      46      44      43      41      40      37      35      34      33      30
693          UI      28      27      24      23      22      21      21      20      20      18
694          UI      18      16      14      14      14      11      11      11      11      10
695          UI      10      10      10      10       7       7       7       7       7       7
696          UI       7       5       4       4       4       4       4       4       4       4
697          UI       4       4       3       2       2       2       2       2       2       2
698          UI       2       2       2       2       2       2       2       2       2       2
699          UI       2       2       2       2       2       2       2       2       2       2
700          UI       0       0       0       0       0       0       0       0       0       0
             *
701          KK     170   BASIN
702          BA   0.020
703          LG    0.35    0.40    6.00    0.18       0
704          UI       0       6       6      14      24      35      42      49      56      74
```

```
705          UI      61      45      39      36      32      29      26      24      21      17
706          UI      16      15      14      11       9       8       8       7       6       5
707          UI       5       4       3       3       3       3       2       1       1       1
708          UI       1       1       1       1       1       1       1       1       1       0
             *
```



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LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

709          KK    190   BASIN
710          BA  0.019
711          LG   0.35    0.40    6.00    0.18       0
712          UI      0       7       7      17      28      40      47      53      68      72
713          UI     48      41      37      33      30      27      23      19      17      16
714          UI     14      12      10       9       8       7       6       5       5       4
715          UI      3       3       3       3       1       1       1       1       1       1
716          UI      1       1       1       1       1       0       0       0       0       0
             *

717          KK   CP190 COMBINE
718          HC       4
             *

719          KK   R130B   ROUTE
720          RS       1    FLOW
721          RC   0.025   0.025   0.025     561  0.0120    0.00
722          RX    0.00   25.00   29.00   31.00   38.00   40.00   41.00   62.00
723          RY  2649.0 2648.00 2647.00 2646.00 2646.00 2647.00 2648.00 2649.00
             *

724          KK     200   BASIN
725          BA   0.012
726          LG   0.35    0.39    6.16    0.17       0
727          UI      0       4       4      15      20      25      29      34      45      56
728          UI     47      39      33      28      23      18      11       8       7       5
729          UI      4       2       1       1       1       1       1       0       0       0
730          UI      0       0       0       0       0       0       0       0       0       0
731          UI      0       0       0       0       0       0       0       0       0       0
             *

732          KK    130   BASIN
733          BA   0.003
734          LG   0.35    0.39    6.16    0.16       0
735          UI      0      10      36      29      17      10       6       3       2       1
736          UI      1       0       0       0       0       0       0       0       0       0
737          UI      0       0       0       0       0       0       0       0       0       0
738          UI      0       0       0       0       0       0       0       0       0       0
739          UI      0       0       0       0       0       0       0       0       0       0
             *

740          KK   CP130 COMBINE
741          HC       3
             *

742          KK   R132B   ROUTE
743          RS       1    FLOW
744          RC   0.035   0.025   0.035     300  0.0250    0.00
745          RX    0.00   30.00   50.00   70.00   80.00   90.00  110.00  120.00
746          RY  2645.0 2644.00 2643.00 2642.00 2642.00 2643.00 2645.00 2646.00
             *
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

747          KK    132   BASIN
748          BA   0.008
749          LG   0.35    0.32    7.58    0.09       0
750          UI      0       6      21      39      58      46      32      26      20      15
751          UI     12       8       7       5       4       3       2       1       1       1
752          UI      1       1       0       0       0       0       0       0       0       0
753          UI      0       0       0       0       0       0       0       0       0       0
754          UI      0       0       0       0       0       0       0       0       0       0
             *

755          KK   CP132 COMBINE
756          HC       3
             *

757          KK    160   BASIN
758          BA   0.015
759          LG   0.35    0.40    6.00    0.18       0
760          UI      0       7       9      23      37      47      57      75      49      40
761          UI     35      31      27      23      18      16      14      12       9       8
762          UI      7       6       5       5       3       3       3       2       1       1
763          UI      1       1       1       1       1       1       0       0       0       0
764          UI      0       0       0       0       0       0       0       0       0       0
             *

765          KK   R165   ROUTE
766          RS       1    FLOW
767          RC   0.025   0.025   0.025     238  0.0420    0.00
768          RX    0.00    6.00   11.00   47.00   62.00   68.00   77.00   93.00
769          RY  2689.0 2688.00 2687.00 2687.30 2686.70 2687.00 2688.00 2689.00
             *

770          KK    165   BASIN
771          BA   0.041
772          LG   0.35    0.40    6.00    0.18       0
773          UI      0      10      10      10      21      32      41      55      61      68
774          UI     74      83     101     115      80      67      59      56      52      49
775          UI     46      42      39      37      33      30      25      24      23      22
776          UI     20      19      16      15      12      12      11      10      10       9
777          UI      7       7       7       7       5       5       5       5       5       5
```

```
 778          UI        3        2        2        2        2        2        2        2        2        2
 779          UI        2        2        2        2        2        2        2        0        0        0
              *

 780          KK    CP165 COMBINE
 781          HC        2
              *

 782          KK      CS4 COMBINE
 783          HC        3
              *
```



```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 784          KK      210   BASIN
 785          BA    0.009
 786          LG    0.35     0.40     6.00     0.18        0
 787          UI       0        6       15       31       42       60       39       31       26       21
 788          UI      16       13       11        8        6        5        4        3        3        2
 789          UI       1        1        1        1        1        1        0        0        0        0
 790          UI       0        0        0        0        0        0        0        0        0        0
 791          UI       0        0        0        0        0        0        0        0        0        0
              *

 792          KK      220   BASIN
 793          BA    0.013
 794          LG    0.35     0.40     6.00     0.18        0
 795          UI       0        7       14       33       47       60       74       46       39       33
 796          UI      28       22       18       16       13        9        8        7        5        5
 797          UI       3        3        2        1        1        1        1        1        1        1
 798          UI       0        0        0        0        0        0        0        0        0        0
 799          UI       0        0        0        0        0        0        0        0        0        0
              *

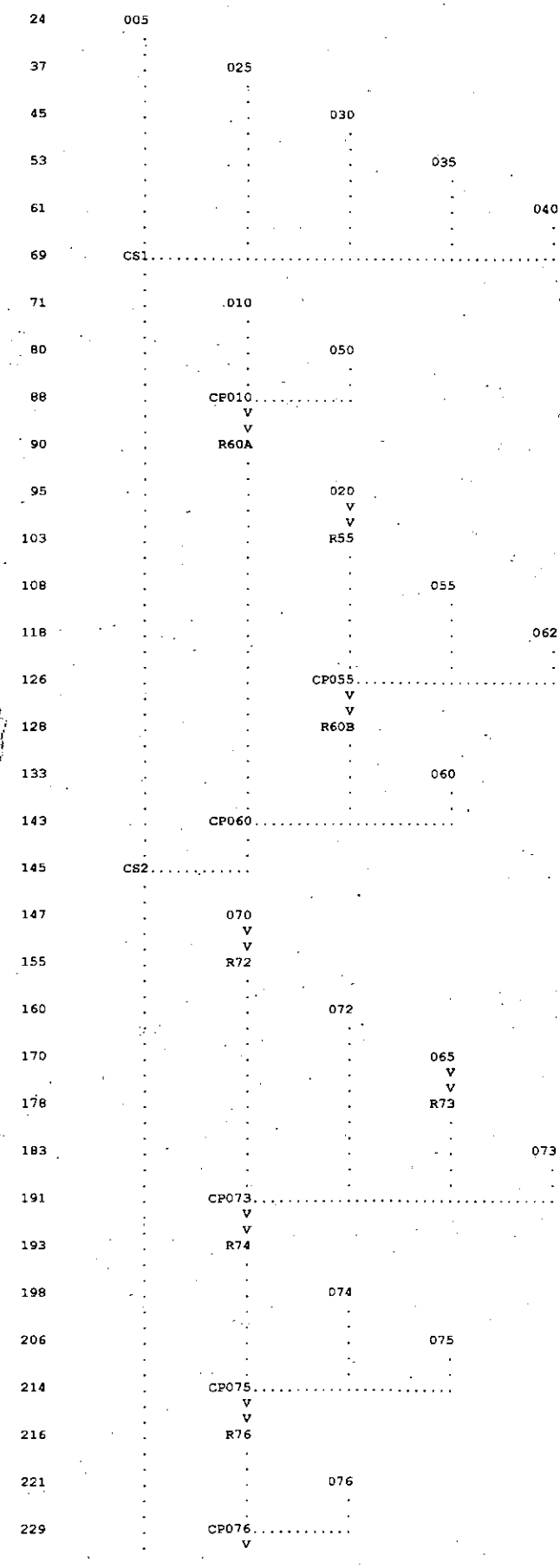
 800          KK      230   BASIN
 801          BA    0.003
 802          LG    0.35     0.40     6.00     0.18        0
 803          UI       0       11       40       28       16        9        5        3        2        1
 804          UI       1        0        0        0        0        0        0        0        0        0
 805          UI       0        0        0        0        0        0        0        0        0        0
 806          UI       0        0        0        0        0        0        0        0        0        0
 807          UI       0        0        0        0        0        0        0        0        0        0
              *

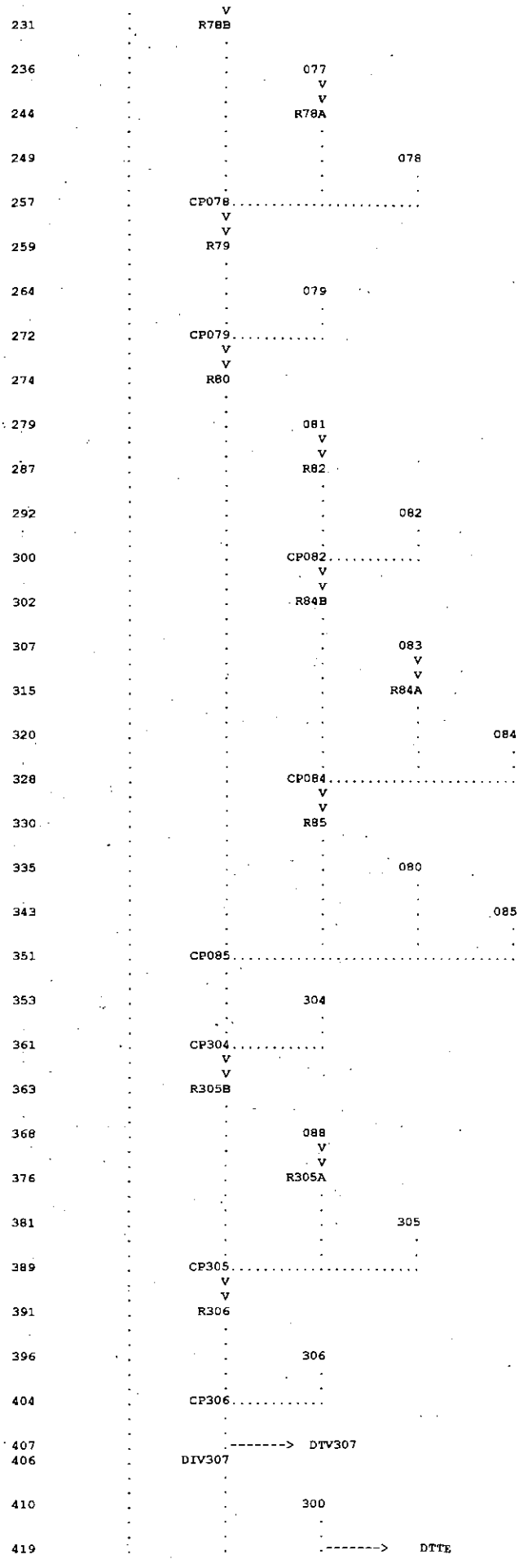
 808          KK      240   BASIN
 809          BA    0.004
 810          LG    0.35     0.40     6.00     0.18        0
 811          UI       0       21       61       35       19        9        5        2        1        0
 812          UI       0        0        0        0        0        0        0        0        0        0
 813          UI       0        0        0        0        0        0        0        0        0        0
 814          UI       0        0        0        0        0        0        0        0        0        0
 815          UI       0        0        0        0        0        0        0        0        0        0
              *
 816          ZZ
```

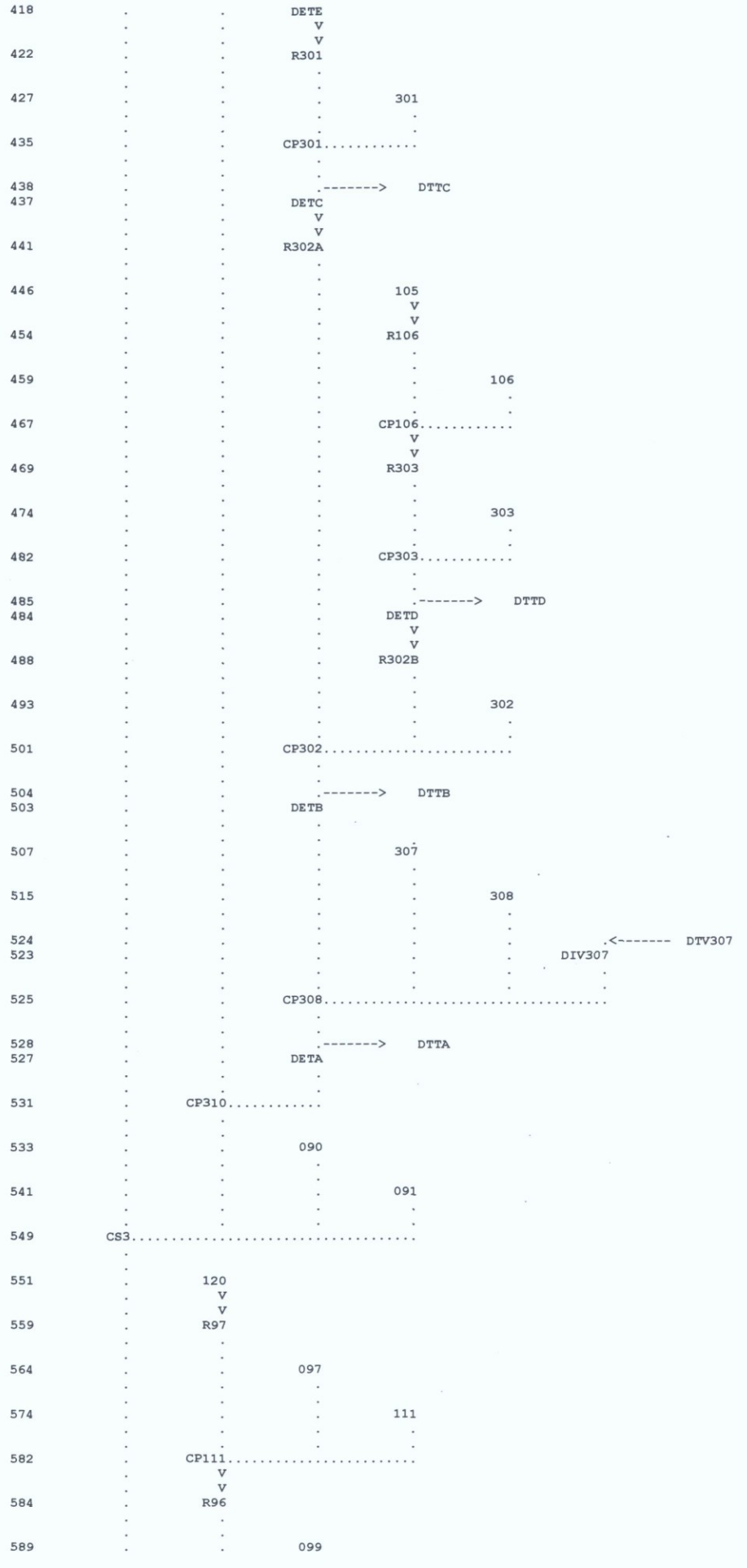
SCHEMATIC DIAGRAM OF STREAM NETWORK

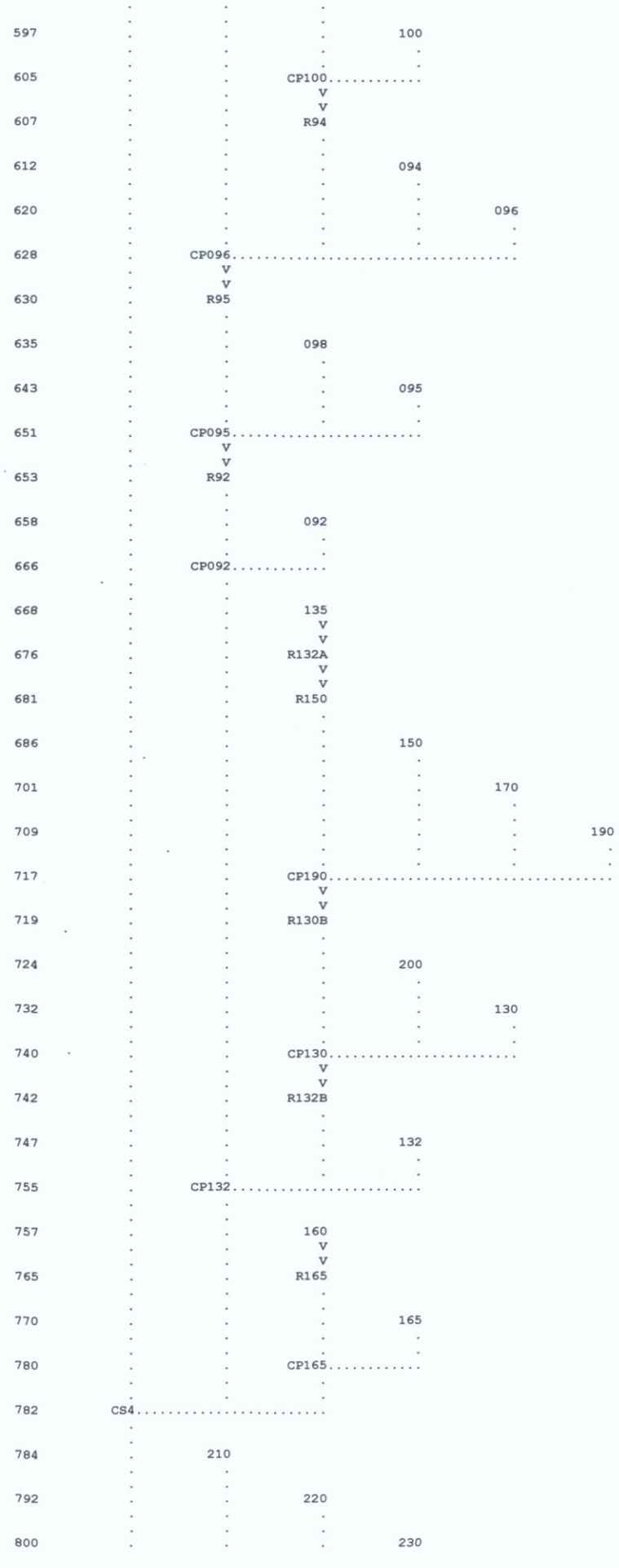
INPUT LINE NO.

(V) ROUTING
(.) CONNECTOR
(---->) DIVERSION OR PUMP FLOW
(<----) RETURN OF DIVERTED OR PUMPED FLOW




231 R78B
236 077
244 R78A
249 078
257 CP078
259 R79
264 079
272 CP079
274 R80
279 081
287 R82
292 082
300 CP082
302 R84B
307 083
315 R84A
320 084
328 CP084
330 R85
335 080
343 085
351 CP085
353 304
361 CP304
363 R305B
368 088
376 R305A
381 305
389 CP305
391 R306
396 306
404 CP306
407 DTV307
406 DIV307
410 300
419 DTTE


418 DETE
422 R301
427 301
435 CP301
438 DTTC
437 DETC
441 R302A
446 105
454 R106
459 106
467 CP106
469 R303
474 303
482 CP303
485 DTTD
484 DETD
488 R302B
493 302
501 CP302
504 DTTB
503 DETB
507 307
515 308
524 DTV307
523 DIV307
525 CP308
528 DTTA
527 DETA
531 CP310
533 090
541 091
549 CS3
551 120
559 R97
564 097
574 111
582 CP111
584 R96
589 099


597
100
605
CP100
607
R94
612
094
620
096
628
CP096
630
R95
635
098
643
095
651
CP095
653
R92
658
092
666
CP092
668
135
676
R132A
681
R150
686
150
701
170
709
190
717
CP190
719
R130B
724
200
732
130
740
CP130
742
R132B
747
132
755
CP132
757
160
765
R165
770
165
780
CP165
782
CS4
784
210
792
220
800
230

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE (HEC-1)    *
*              JUN  1998                *
*            VERSION 4.1                *
*                                       *
*  RUN DATE   12JUN15  TIME  08:34:52   *
*                                       *
*****************************************
```


```
*****************************************
*                                       *
*   U.S. ARMY CORPS OF ENGINEERS        *
*   HYDROLOGIC ENGINEERING CENTER       *
*        609 SECOND STREET              *
*      DAVIS, CALIFORNIA 95616          *
*           (916) 756-1104              *
*                                       *
*****************************************
```


Flood Control District of Maricopa County
SNGC EXISTING - Scottsdale National Golf Club Existing
10 YEAR
6 Hour Storm
Unit Hydrograph: S-Graph
Storm: Multiple
06/01/2015
FILE NAME: SNGCEX10.DAT

```
10 IO          OUTPUT CONTROL VARIABLES
                    IPRNT          5  PRINT CONTROL
                    IPLOT          0  PLOT CONTROL
                    QSCAL          0.  HYDROGRAPH PLOT SCALE

   IT          HYDROGRAPH TIME DATA
                    NMIN           1  MINUTES IN COMPUTATION INTERVAL
                   IDATE      1JUN15  STARTING DATE
                   ITIME        0000  STARTING TIME
                      NQ        2000  NUMBER OF HYDROGRAPH ORDINATES
                  NDDATE      2JUN15  ENDING DATE
                  NDTIME        0919  ENDING TIME
                   ICENT          19  CENTURY MARK

                COMPUTATION INTERVAL      .02 HOURS
                   TOTAL TIME BASE    33.32 HOURS

        ENGLISH UNITS
             DRAINAGE AREA          SQUARE MILES
             PRECIPITATION DEPTH    INCHES
             LENGTH, ELEVATION      FEET
             FLOW                   CUBIC FEET PER SECOND
             STORAGE VOLUME         ACRE-FEET
             SURFACE AREA           ACRES
             TEMPERATURE            DEGREES FAHRENHEIT

12 JD          INDEX STORM NO. 1
                    STRM        2.13  PRECIPITATION DEPTH
                    TRDA         .00  TRANSPOSITION DRAINAGE AREA

13 PI            PRECIPITATION PATTERN
                  .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
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                  .01   .01   .01   .01   .01   .03   .03   .03   .03   .03
                  .03   .03   .03   .03   .03   .03   .03   .03   .03   .03
                  .01   .01   .01   .01   .01   .01   .01   .01   .01   .01
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16 JD          INDEX STORM NO. 2
                    STRM        2.12  PRECIPITATION DEPTH
                    TRDA         .50  TRANSPOSITION DRAINAGE AREA

17 PI            PRECIPITATION PATTERN
                  .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
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20 JD INDEX STORM NO. 3

STRM 2.08 PRECIPITATION DEPTH

TRDA 2.80 TRANSPOSITION DRAINAGE AREA

21 PI PRECIPITATION PATTERN

.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
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.01	.01	.01	.01	.01	.02	.02	.02	.02	.02
.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
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RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	005	125.	4.18	11.	3.	2.	.13		
HYDROGRAPH AT	025	22.	4.03	1.	0.	0.	.01		
HYDROGRAPH AT	030	21.	4.05	1.	0.	0.	.01		
HYDROGRAPH AT	035	8.	4.02	0.	0.	0.	.00		
HYDROGRAPH AT	040	6.	4.02	0.	0.	0.	.00		
5 COMBINED AT	CS1	151.	4.10	13.	3.	2.	.17		
HYDROGRAPH AT	010	55.	4.08	3.	1.	1.	.04		
HYDROGRAPH AT	050	15.	4.02	1.	0.	0.	.01		
2 COMBINED AT	CP010	67.	4.05	4.	1.	1.	.05		
ROUTED TO	R60A	63.	4.10	4.	1.	1.	.05		
HYDROGRAPH AT	020	63.	4.05	3.	1.	1.	.04		
ROUTED TO	R55	59.	4.13	3.	1.	1.	.04		
HYDROGRAPH AT	055	54.	4.12	4.	1.	1.	.04		
HYDROGRAPH AT	062	8.	4.02	0.	0.	0.	.00		
3 COMBINED AT	CP055	114.	4.12	7.	2.	1.	.09		
ROUTED TO	R60B	111.	4.18	7.	2.	1.	.09		
HYDROGRAPH AT	060	37.	4.10	2.	1.	0.	.03		
3 COMBINED AT	CP060	201.	4.15	13.	3.	2.	.16		
2 COMBINED AT	CS2	347.	4.15	26.	7.	5.	.33		
HYDROGRAPH AT	070	31.	4.03	1.	0.	0.	.02		
ROUTED TO	R72	29.	4.08	1.	0.	0.	.02		
HYDROGRAPH AT	072	39.	4.10	2.	1.	0.	.03		
HYDROGRAPH AT	065	4.	4.02	0.	0.	0.	.00		
ROUTED TO	R73	4.	4.08	0.	0.	0.	.00		
HYDROGRAPH AT	073	25.	4.05	1.	0.	0.	.02		
4 COMBINED AT	CP073	95.	4.08	5.	1.	1.	.06		
ROUTED TO	R74	93.	4.10	5.	1.	1.	.06		
HYDROGRAPH AT	074	17.	4.02	1.	0.	0.	.01		
HYDROGRAPH AT	075	4.	4.02	0.	0.	0.	.00		
3 COMBINED AT	CP075	104.	4.07	6.	2.	1.	.08		
ROUTED TO	R76	104.	4.08	6.	2.	1.	.08		
HYDROGRAPH AT	076	8.	4.02	0.	0.	0.	.00		

+	2 COMBINED AT CP076	109.	4.07	6.	2.	1.	.08
+	ROUTED TO R78B	107.	4.10	6.	2.	1.	.08
+	HYDROGRAPH AT 077	8.	4.02	0.	0.	0.	.00
+	ROUTED TO R78A	7.	4.03	0.	0.	0.	.00
+	HYDROGRAPH AT 078	11.	4.02	0.	0.	0.	.01
+	3 COMBINED AT CP078	119.	4.08	7.	2.	1.	.09
+	ROUTED TO R79	118.	4.10	7.	2.	1.	.09
+	HYDROGRAPH AT 079	17.	4.03	1.	0.	0.	.01
+	2 COMBINED AT CP079	132.	4.08	8.	2.	1.	.10
+	ROUTED TO R80	130.	4.10	8.	2.	1.	.10
+	HYDROGRAPH AT 081	8.	4.02	0.	0.	0.	.00
+	ROUTED TO R82	8.	4.03	0.	0.	0.	.00
+	HYDROGRAPH AT 082	8.	4.02	0.	0.	0.	.00
+	2 COMBINED AT CP082	15.	4.02	1.	0.	0.	.01
+	ROUTED TO R84B	15.	4.03	1.	0.	0.	.01
+	HYDROGRAPH AT 083	4.	4.02	0.	0.	0.	.00
+	ROUTED TO R84A	4.	4.02	0.	0.	0.	.00
+	HYDROGRAPH AT 084	6.	4.02	0.	0.	0.	.00
+	3 COMBINED AT CP084	25.	4.02	1.	0.	0.	.01
+	ROUTED TO R85	23.	4.05	1.	0.	0.	.01
+	HYDROGRAPH AT 080	14.	4.03	1.	0.	0.	.01
+	HYDROGRAPH AT 085	18.	4.05	1.	0.	0.	.01
+	4 COMBINED AT CP085	178.	4.08	11.	3.	2.	.13
+	HYDROGRAPH AT 304	6.	4.02	0.	0.	0.	.00
+	2 COMBINED AT CP304	181.	4.08	11.	3.	2.	.14
+	ROUTED TO R305B	181.	4.08	11.	3.	2.	.14
+	HYDROGRAPH AT 088	23.	4.05	1.	0.	0.	.01
+	ROUTED TO R305A	22.	4.07	1.	0.	0.	.01
+	HYDROGRAPH AT 305	9.	4.02	0.	0.	0.	.00
+	3 COMBINED AT CP305	204.	4.08	12.	3.	2.	.15
+	ROUTED TO R306	203.	4.10	12.	3.	2.	.15
+	HYDROGRAPH AT 306	9.	4.02	0.	0.	0.	.00
+	2 COMBINED AT CP306	204.	4.08	13.	3.	2.	.16
+	DIVERSION TO DTV307	40.	4.08	1.	0.	0.	.16
+	HYDROGRAPH AT DIV307	165.	4.08	12.	3.	2.	.16

+	HYDROGRAPH AT 300	9.	4.02	0.	0.	0.	.00
+	DIVERSION TO DTTE	8.	3.92	0.	0.	0.	.00
+	HYDROGRAPH AT DETE	9.	4.02	0.	0.	0.	.00
+	ROUTED TO R301	8.	4.03	0.	0.	0.	.00
+	HYDROGRAPH AT 301	14.	4.02	1.	0.	0.	.01
+	2 COMBINED AT CP301	22.	4.02	1.	0.	0.	.01
+	DIVERSION TO DTTC	22.	4.02	1.	0.	0.	.01
+	HYDROGRAPH AT DETC	0.	.00	0.	0.	0.	.01
+	ROUTED TO R302A	0.	.00	0.	0.	0.	.01
+	HYDROGRAPH AT 105	20.	4.05	1.	0.	0.	.01
+	ROUTED TO R106	20.	4.08	1.	0.	0.	.01
+	HYDROGRAPH AT 106	13.	4.03	1.	0.	0.	.01
+	2 COMBINED AT CP106	32.	4.05	2.	0.	0.	.02
+	ROUTED TO R303	31.	4.07	2.	0.	0.	.02
+	HYDROGRAPH AT 303	12.	4.02	1.	0.	0.	.01
+	2 COMBINED AT CP303	42.	4.03	2.	1.	0.	.03
+	DIVERSION TO DTTD	17.	3.87	0.	0.	0.	.03
+	HYDROGRAPH AT DETD	42.	4.03	2.	0.	0.	.03
+	ROUTED TO R302B	42.	4.05	2.	0.	0.	.03
+	HYDROGRAPH AT 302	25.	4.02	1.	0.	0.	.01
+	3 COMBINED AT CP302	65.	4.03	3.	1.	1.	.05
+	DIVERSION TO DTTB	54.	3.95	1.	0.	0.	.05
+	HYDROGRAPH AT DETB	65.	4.03	2.	1.	0.	.05
+	HYDROGRAPH AT 307	4.	4.02	0.	0.	0.	.00
+	HYDROGRAPH AT 308	13.	4.02	1.	0.	0.	.01
+	HYDROGRAPH AT DIV307	40.	4.08	1.	0.	0.	.16
+	4 COMBINED AT CP308	109.	4.03	4.	1.	1.	.06
+	DIVERSION TO DTTA	109.	4.03	4.	1.	1.	.06
+	HYDROGRAPH AT DETA	0.	.00	0.	0.	0.	.06
+	2 COMBINED AT CP310	165.	4.08	12.	3.	2.	.21
+	HYDROGRAPH AT 090	4.	4.02	0.	0.	0.	.00
+	HYDROGRAPH AT 091	11.	4.02	0.	0.	0.	.01
+	4 COMBINED AT CS3	494.	4.12	38.	9.	7.	.55
+	HYDROGRAPH AT 120	50.	4.03	2.	1.	0.	.03
+	ROUTED TO R97	46.	4.12	2.	1.	0.	.03

+	HYDROGRAPH AT	097	43.	4.12	3.	1.	1.	.04
+	HYDROGRAPH AT	111	16.	4.03	1.	0.	0.	.01
+	3 COMBINED AT	CP111	99.	4.10	6.	1.	1.	.07
+	ROUTED TO	R96	97.	4.13	6.	1.	1.	.07
+	HYDROGRAPH AT	099	13.	4.03	1.	0.	0.	.01
+	HYDROGRAPH AT	100	25.	4.07	1.	0.	0.	.02
+	2 COMBINED AT	CP100	37.	4.05	2.	0.	0.	.02
+	ROUTED TO	R94	36.	4.08	2.	0.	0.	.02
+	HYDROGRAPH AT	094	9.	4.03	0.	0.	0.	.00
+	HYDROGRAPH AT	096	26.	4.03	1.	0.	0.	.01
+	4 COMBINED AT	CP096	153.	4.10	9.	2.	2.	.12
+	ROUTED TO	R95	151.	4.12	9.	2.	2.	.12
+	HYDROGRAPH AT	098	16.	4.05	1.	0.	0.	.01
+	HYDROGRAPH AT	095	6.	4.02	0.	0.	0.	.00
+	3 COMBINED AT	CP095	167.	4.10	10.	3.	2.	.13
+	ROUTED TO	R92	164.	4.12	10.	3.	2.	.13
+	HYDROGRAPH AT	092	17.	4.05	1.	0.	0.	.01
+	2 COMBINED AT	CP092	176.	4.12	11.	3.	2.	.14
+	HYDROGRAPH AT	135	21.	4.02	1.	0.	0.	.01
+	ROUTED TO	R132A	20.	4.03	1.	0.	0.	.01
+	ROUTED TO	R150	17.	4.28	1.	0.	0.	.01
+	HYDROGRAPH AT	150	53.	4.20	5.	1.	1.	.06
+	HYDROGRAPH AT	170	29.	4.07	2.	0.	0.	.02
+	HYDROGRAPH AT	190	29.	4.07	2.	0.	0.	.02
+	4 COMBINED AT	CP190	98.	4.12	9.	2.	2.	.11
+	ROUTED TO	R130B	97.	4.13	9.	2.	2.	.11
+	HYDROGRAPH AT	200	22.	4.05	1.	0.	0.	.01
+	HYDROGRAPH AT	130	6.	4.02	0.	0.	0.	.00
+	3 COMBINED AT	CP130	115.	4.12	10.	3.	2.	.13
+	ROUTED TO	R132B	115.	4.13	10.	3.	2.	.13
+	HYDROGRAPH AT	132	17.	4.02	1.	0.	0.	.01
+	3 COMBINED AT	CP132	297.	4.12	22.	6.	4.	.27
+	HYDROGRAPH AT	160	25.	4.05	1.	0.	0.	.01
+	ROUTED TO	R165	25.	4.07	1.	0.	0.	.01
+	HYDROGRAPH AT	165	50.	4.12	3.	1.	1.	.04

+	2 COMBINED AT CP165	73.	4.08	4.	1.	1.	.06
+	3 COMBINED AT CS4	724.	4.12	58.	14.	10.	.88
+	HYDROGRAPH AT 210	16.	4.02	1.	0.	0.	.01
+	HYDROGRAPH AT 220	23.	4.03	1.	0.	0.	.01
+	HYDROGRAPH AT 230	6.	4.02	0.	0.	0.	.00
+	HYDROGRAPH AT 240	8.	4.02	0.	0.	0.	.00

*** NORMAL END OF HEC-1 ***

Existing Condition 2-year, 6-hour

HEC-1 Output

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*              JUN  1998                *
*            VERSION 4.1                *
*                                       *
* RUN DATE   12JUN15  TIME  08:35:01    *
*                                       *
*****************************************
```

```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*         609 SECOND STREET             *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 756-1104              *
*                                       *
*****************************************
```

```
X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX   XXXXX          XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM


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LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  1           ID        Flood Control District of Maricopa County
  2           ID        SNGC EXISTING - Scottsdale National Golf Club Existing
  3           ID        2 YEAR
  4           ID        6 Hour  Storm
  5           ID        Unit Hydrograph: S-Graph
  6           ID        Storm: Multiple
  7           ID        06/01/2015
  8           ID            FILE NAME: SNGCEX2.DAT
              *DIAGRAM
  9           IT     1  1JUN15      0    2000
 10           IO     5
 11           IN    15
              *
 12           JD  1.442  0.0001
 13           PC  0.000   0.008   0.016   0.025   0.033   0.041   0.050   0.058   0.066   0.074
 14           PC  0.087   0.099   0.118   0.138   0.216   0.377   0.834   0.911   0.931   0.950
 15           PC  0.962   0.972   0.983   0.991   1.000
 16           JD  1.433  0.5000
 17           PC  0.000   0.008   0.016   0.025   0.033   0.041   0.050   0.058   0.066   0.074
 18           PC  0.087   0.099   0.118   0.138   0.216   0.377   0.834   0.911   0.931   0.950
 19           PC  0.962   0.972   0.983   0.991   1.000
 20           JD  1.406     2.8
 21           PC  0.000   0.009   0.016   0.025   0.034   0.042   0.051   0.059   0.067   0.076
 22           PC  0.087   0.100   0.120   0.163   0.252   0.451   0.694   0.837   0.900   0.938
 23           PC  0.950   0.963   0.975   0.988   1.000
              *

 24           KK    005   BASIN
 25           BA  0.133
 26           LG   0.35    0.40    6.00    0.18       0
 27           UI      0      21      21      21      21      27      61      70      84     101
 28           UI    124     132     142     154     161     171     190     217     250     252
 29           UI    181     157     143     133     126     123     116     110     105     101
 30           UI     97      90      86      82      77      72      66      61      56      53
 31           UI     52      50      49      46      44      42      35      35      32      27
 32           UI     27      27      25      23      23      23      23      16      16      16
 33           UI     16      16      16      12      10      10      10      10      10      10
 34           UI     10      10      10       5       4       4       4       4       4       4
 35           UI      4       4       4       4       4       4       4       4       4       4
 36           UI      4       4       4       4       4       4       4       4       0       0
              *

 37           KK    025   BASIN
 38           BA  0.013
 39           LG   0.35    0.40    6.00    0.18       0
 40           UI      0       6      10      24      38      47      62      59      39      34
 41           UI     30      25      21      17      15      13      10       8       7       6
 42           UI      5       5       3       3       3       2       1       1       1       1
 43           UI      1       1       1       0       0       0       0       0       0       0
 44           UI      0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 45           KK    030   BASIN
 46           BA  0.013
 47           LG   0.35    0.40    6.00    0.18       0
 48           UI      0       5       7      18      29      37      43      59      49      35
 49           UI     31      27      24      21      18      14      13      12       9       8
 50           UI      7       6       5       4       4       3       3       3       2       1
 51           UI      1       1       1       1       1       1       1       1       0       0
 52           UI      0       0       0       0       0       0       0       0       0       0
              *

 53           KK    035   BASIN
```

```
 54          BA   0.004
 55          LG    0.35    0.40    6.00    0.18       0
 56          UI       0       6      21      37      28      19      14       9       6       5
 57          UI       3       2       2       1       1       1       0       0       0       0
 58          UI       0       0       0       0       0       0       0       0       0       0
 59          UI       0       0       0       0       0       0       0       0       0       0
 60          UI       0       0       0       0       0       0       0       0       0       0
             *

 61          KK     040   BASIN
 62          BA   0.003
 63          LG    0.35    0.40    6.00    0.18       0
 64          UI       0      10      36      29      17      10       6       3       2       1
 65          UI       1       0       0       0       0       0       0       0       0       0
 66          UI       0       0       0       0       0       0       0       0       0       0
 67          UI       0       0       0       0       0       0       0       0       0       0
 68          UI       0       0       0       0       0       0       0       0       0       0
             *

 69          KK     CS1 COMBINE
 70          HC       5
             *

 71          KK     010   BASIN
 72          BA   0.040
 73          LG    0.35    0.40    6.00    0.18       0
 74          UI       0      12      12      18      37      51      69      79      88     101
 75          UI     129     119      83      72      67      61      56      51      47      42
 76          UI      37      32      29      27      25      23      19      17      15      14
 77          UI      13      13       9       9       9       7       6       6       6       6
 78          UI       6       2       2       2       2       2       2       2       2       2
 79          UI       2       2       2       2       2       0       0       0       0       0
             *

 80          KK     050   BASIN
 81          BA   0.008
 82          LG    0.35    0.40    6.00    0.18       0
 83          UI       0       9      33      57      66      40      30      21      16      11
 84          UI       8       6       4       3       1       1       1       1       0       0
 85          UI       0       0       0       0       0       0       0       0       0       0
 86          UI       0       0       0       0       0       0       0       0       0       0
 87          UI       0       0       0       0       0       0       0       0       0       0
             *
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LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 88          KK   CP010 COMBINE
 89          HC       2
             *

 90          KK    R60A   ROUTE
 91          RS       6    FLOW
 92          RC   0.035   0.025   0.035    2000  0.0220    0.00
 93          RX    0.00    4.00    9.00   13.00   24.00   28.00   36.00   45.00
 94          RY  2706.0 2705.00 2704.00 2703.00 2703.00 2704.00 2705.00 2706.00
             *

 95          KK     020   BASIN
 96          BA   0.038
 97          LG    0.35    0.40    6.00    0.18       0
 98          UI       0      16      23      58      92     115     139     188     127     101
 99          UI      89      79      68      58      47      40      37      31      25      21
100          UI      18      16      13      13       8       8       8       6       3       3
101          UI       3       3       3       3       3       3       3       0       0       0
102          UI       0       0       0       0       0       0       0       0       0       0
             *

103          KK     R55   ROUTE
104          RS       8    FLOW
105          RC   0.025   0.025   0.025    2470  0.0230    0.00
106          RX    0.00    9.00   18.00   33.00   52.00   60.00   68.00   73.00
107          RY  2741.0 2740.50 2740.00 2739.00 2739.00 2740.00 2740.50 2741.00
             *

108          KK     055   BASIN
109          BA   0.044
110          LG    0.35    0.40    6.00    0.18       0
111          UI       0      10      10      10      24      35      45      61      67      75
112          UI      81      93     113     122      81      71      64      60      56      52
113          UI      49      45      42      39      34      31      27      25      24      23
114          UI      22      18      17      14      13      13      11      11      11       8
115          UI       8       8       8       6       5       5       5       5       5       5
116          UI       2       2       2       2       2       2       2       2       2       2
117          UI       2       2       2       2       2       2       2       0       0       0
             *

118          KK     062   BASIN
119          BA   0.004
120          LG    0.35    0.40    6.00    0.18       0
121          UI       0       5      18      30      32      20      15      10       8       5
122          UI       4       3       2       1       1       1       1       1       0       0
123          UI       0       0       0       0       0       0       0       0       0       0
124          UI       0       0       0       0       0       0       0       0       0       0
125          UI       0       0       0       0       0       0       0       0       0       0
             *
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LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

126          KK   CP055 COMBINE
127          HC       3
             *
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```
128          KK    R60B   ROUTE
129          RS       5    FLOW
130          RC   0.035   0.025   0.035    2450  0.0220    0.00
131          RX    0.00    4.00    9.00   13.00   24.00   28.00   36.00   45.00
132          RY  2706.0 2705.00 2704.00 2703.00 2703.00 2704.00 2705.00 2706.00
             *
133          KK     060   BASIN
134          BA   0.028
135          LG    0.32    0.37    6.00    0.19       3
136          UI       0       7       7       7      21      28      37      45      51      55
137          UI      63      78      83      55      48      43      41      37      35      32
138          UI      29      27      24      21      19      18      17      16      14      12
139          UI      11       9       9       8       8       7       6       6       6       5
140          UI       4       4       4       4       4       3       1       1       1       1
141          UI       1       1       1       1       1       1       1       1       1       1
142          UI       1       0       0       0       0       0       0       0       0       0
             *
143          KK   CP060 COMBINE
144          HC       3
             *
145          KK     CS2 COMBINE
146          HC       2
             *
147          KK     070   BASIN
148          BA   0.017
149          LG    0.35    0.40    6.00    0.18       0
150          UI       0      10      25      54      74     106      80      59      49      41
151          UI      32      25      22      16      13      11       8       7       5       5
152          UI       3       2       2       2       2       2       2       0       0       0
153          UI       0       0       0       0       0       0       0       0       0       0
154          UI       0       0       0       0       0       0       0       0       0       0
             *
155          KK     R72   ROUTE
156          RS       5    FLOW
157          RC   0.025   0.025   0.025    1798  0.0210    0.00
158          RX    0.00   12.00   23.00   30.00   40.00   50.00   67.00   88.00
159          RY  2739.0 2737.00 2736.00 2735.00 2735.00 2736.00 2737.00 2739.00
             *
160          KK     072   BASIN
161          BA   0.030
162          LG    0.35    0.40    6.00    0.18       0
163          UI       0       8       8       8      23      31      41      49      56      61
164          UI      71      88      84      58      51      46      43      40      37      34
165          UI      31      28      25      22      20      19      18      16      14      13
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
166          UI      10      10       9       9       9       6       6       6       6       4
167          UI       4       4       4       4       4       2       2       2       2       2
168          UI       2       2       2       2       2       2       2       2       2       2
169          UI       0       0       0       0       0       0       0       0       0       0
             *
170          KK     065   BASIN
171          BA   0.002
172          LG    0.35    0.40    6.00    0.18       0
173          UI       0       4      14      21      13       9       6       4       3       2
174          UI       1       1       0       0       0       0       0       0       0       0
175          UI       0       0       0       0       0       0       0       0       0       0
176          UI       0       0       0       0       0       0       0       0       0       0
177          UI       0       0       0       0       0       0       0       0       0       0
             *
178          KK     R73   ROUTE
179          RS       5    FLOW
180          RC   0.025   0.025   0.025    1401  0.0260    0.00
181          RX    0.00   56.00   65.00   74.00   78.00   84.00   89.00   99.00
182          RY  2741.0 2740.00 2739.00 2738.00 2738.00 2739.00 2740.00 2743.00
             *
183          KK     073   BASIN
184          BA   0.016
185          LG    0.35    0.40    6.00    0.18       0
186          UI       0       6       6      18      28      38      45      54      70      48
187          UI      38      34      30      27      24      21      17      15      14      12
188          UI      10       8       7       7       6       5       5       3       3       3
189          UI       3       2       1       1       1       1       1       1       1       1
190          UI       1       1       0       0       0       0       0       0       0       0
             *
191          KK   CP073 COMBINE
192          HC       4
             *
193          KK     R74   ROUTE
194          RS       3    FLOW
195          RC   0.025   0.025   0.025     540  0.0220    0.00
196          RX    0.00    8.00   22.00   38.00   97.00  105.00  111.00  118.00
197          RY  2731.0 2730.00 2728.00 2727.00 2727.00 2728.00 2729.00 2730.00
             *
198          KK     074   BASIN
199          BA   0.009
200          LG    0.35    0.40    6.00    0.18       0
201          UI       0       6      22      43      61      55      37      30      23      17
202          UI      14      10       8       6       5       3       3       1       1       1
203          UI       1       1       0       0       0       0       0       0       0       0
```

```
204          UI      0       0       0       0       0       0       0       0       0       0
205          UI      0       0       0       0       0       0       0       0       0       0
             *
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

206          KK     075   BASIN
207          BA   0.002
208          LG    0.35    0.40    6.00    0.18       0
209          UI       0      12      32      17       9       4       2       1       1       0
210          UI       0       0       0       0       0       0       0       0       0       0
211          UI       0       0       0       0       0       0       0       0       0       0
212          UI       0       0       0       0       0       0       0       0       0       0
213          UI       0       0       0       0       0       0       0       0       0       0
             *

214          KK   CP075 COMBINE
215          HC       3
             *

216          KK     R76   ROUTE
217          RS       1    FLOW
218          RC   0.025   0.025   0.025     240  0.0210    0.00
219          RX    0.00   13.00   15.00   19.00   23.00   33.00   38.00   42.00
220          RY  2719.0 2718.00 2717.00 2716.00 2716.00 2717.00 2718.00 2719.00
             *

221          KK     076   BASIN
222          BA   0.004
223          LG    0.35    0.40    6.00    0.18       0
224          UI       0       3      12      21      32      21      16      13       9       7
225          UI       5       4       3       2       1       1       1       1       1       1
226          UI       1       0       0       0       0       0       0       0       0       0
227          UI       0       0       0       0       0       0       0       0       0       0
228          UI       0       0       0       0       0       0       0       0       0       0
             *

229          KK   CP076 COMBINE
230          HC       2
             *

231          KK    R78B   ROUTE
232          RS       1    FLOW
233          RC   0.025   0.025   0.025     590  0.0220    0.00
234          RX    0.00   17.00   22.00   31.00   58.00   61.00   95.00  108.00
235          RY  2712.0 2709.00 2707.00 2706.00 2706.00 2707.00 2710.00 2717.00
             *

236          KK     077   BASIN
237          BA   0.004
238          LG    0.35    0.40    6.00    0.18       0
239          UI       0       4      15      25      33      20      16      12       8       6
240          UI       4       3       2       2       1       1       1       1       1       0
241          UI       0       0       0       0       0       0       0       0       0       0
242          UI       0       0       0       0       0       0       0       0       0       0
243          UI       0       0       0       0       0       0       0       0       0       0
             *
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

244          KK    R78A   ROUTE
245          RS       1    FLOW
246          RC   0.025   0.025   0.025     521  0.0400    0.00
247          RX    0.00    7.00   17.00   23.00   25.00   46.00   82.00   92.00
248          RY  2713.0 2710.00 2708.00 2707.00 2707.00 2708.00 2711.00 2712.00
             *

249          KK     078   BASIN
250          BA   0.006
251          LG    0.35    0.40    6.00    0.18       0
252          UI       0       5      20      35      49      31      24      18      13      10
253          UI       7       5       4       3       2       1       1       1       1       1
254          UI       0       0       0       0       0       0       0       0       0       0
255          UI       0       0       0       0       0       0       0       0       0       0
256          UI       0       0       0       0       0       0       0       0       0       0
             *

257          KK   CP078 COMBINE
258          HC       3
             *

259          KK     R79   ROUTE
260          RS       1    FLOW
261          RC   0.025   0.025   0.025     774  0.0260    0.00
262          RX    0.00    4.00    7.00   14.00   18.00   21.00   30.00   44.00
263          RY  2694.0 2693.00 2692.00 2691.00 2691.00 2692.00 2693.00 2694.00
             *

264          KK     079   BASIN
265          BA   0.010
266          LG    0.35    0.40    6.00    0.18       0
267          UI       0       5       8      18      29      35      46      47      31      26
268          UI      23      20      17      13      11      10       8       6       6       5
269          UI       4       4       3       2       2       2       1       1       1       1
270          UI       1       1       1       1       0       0       0       0       0       0
271          UI       0       0       0       0       0       0       0       0       0       0
             *

272          KK   CP079 COMBINE
273          HC       2
             *
```

```
 274          KK     R80   ROUTE
 275          RS       2    FLOW
 276          RC   0.025   0.025   0.025     790  0.0270    0.00
 277          RX    0.00    6.00   15.00   21.00   28.00   31.00   37.00   41.00
 278          RY  2676.0 2675.00 2673.00 2671.00 2671.00 2672.00 2673.00 2674.00
              *
1                                        HEC-1 INPUT                                        PAGE  8

LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 279          KK     081   BASIN
 280          BA   0.004
 281          LG    0.35    0.40    6.00    0.18       0
 282          UI       0       4      14      24      33      20      16      12       8       7
 283          UI       5       3       3       2       2       1       1       1       1       0
 284          UI       0       0       0       0       0       0       0       0       0       0
 285          UI       0       0       0       0       0       0       0       0       0       0
 286          UI       0       0       0       0       0       0       0       0       0       0
              *

 287          KK     R82   ROUTE
 288          RS       1    FLOW
 289          RC   0.025   0.025   0.025     383  0.0290    0.00
 290          RX    0.00   13.00   23.00   32.00   33.00   51.00   52.00   53.00
 291          RY  2702.0 2701.00 2699.00 2698.00 2698.00 2699.00 2704.00 2705.00
              *

 292          KK     082   BASIN
 293          BA   0.004
 294          LG    0.35    0.40    6.00    0.18       0
 295          UI       0       4      16      27      33      20      15      11       8       6
 296          UI       4       3       2       2       1       1       1       1       1       0
 297          UI       0       0       0       0       0       0       0       0       0       0
 298          UI       0       0       0       0       0       0       0       0       0       0
 299          UI       0       0       0       0       0       0       0       0       0       0
              *

 300          KK   CP082 COMBINE
 301          HC       2
              *

 302          KK    R84B   ROUTE
 303          RS       1    FLOW
 304          RC   0.025   0.025   0.025     347  0.0290    0.00
 305          RX    0.00   16.00   25.00   32.00   34.00   38.00   43.00   51.00
 306          RY  2694.0 2690.00 2689.00 2688.00 2688.00 2689.00 2690.00 2692.00
              *

 307          KK     083   BASIN
 308          BA   0.002
 309          LG    0.35    0.40    6.00    0.18       0
 310          UI       0       8      26      19      11       6       3       2       1       1
 311          UI       1       0       0       0       0       0       0       0       0       0
 312          UI       0       0       0       0       0       0       0       0       0       0
 313          UI       0       0       0       0       0       0       0       0       0       0
 314          UI       0       0       0       0       0       0       0       0       0       0
              *

 315          KK    R84A   ROUTE
 316          RS       1    FLOW
 317          RC   0.025   0.025   0.025     339  0.0290    0.00
 318          RX    0.00    4.00    8.00   12.00   15.00   28.00   36.00   44.00
 319          RY  2690.0 2689.00 2688.00 2687.00 2687.00 2690.00 2692.00 2694.00
              *
1                                        HEC-1 INPUT                                        PAGE  9

LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 320          KK     084   BASIN
 321          BA   0.003
 322          LG    0.35    0.40    6.00    0.18       0
 323          UI       0       7      25      33      19      12       8       5       3       2
 324          UI       1       1       1       0       0       0       0       0       0       0
 325          UI       0       0       0       0       0       0       0       0       0       0
 326          UI       0       0       0       0       0       0       0       0       0       0
 327          UI       0       0       0       0       0       0       0       0       0       0
              *

 328          KK   CP084 COMBINE
 329          HC       3
              *

 330          KK     R85   ROUTE
 331          RS       2    FLOW
 332          RC   0.025   0.025   0.025    1070  0.0210    0.00
 333          RX    0.00    5.00   12.00   22.00   27.00   39.00   53.00   67.00
 334          RY  2676.0 2675.00 2674.00 2673.00 2673.00 2674.00 2677.00 2678.00
              *

 335          KK     080   BASIN
 336          BA   0.008
 337          LG    0.35    0.39    6.16    0.17       0
 338          UI       0       4       8      20      28      36      46      29      24      20
 339          UI      17      14      11      10       8       6       5       5       3       3
 340          UI       2       2       2       1       1       1       1       1       1       1
 341          UI       0       0       0       0       0       0       0       0       0       0
 342          UI       0       0       0       0       0       0       0       0       0       0
              *

 343          KK     085   BASIN
 344          BA   0.011
 345          LG    0.35    0.40    6.00    0.18       0
```

```
346          UI        0        5        7       17       27       33       40       54       37       29
347          UI       26       23       20       17       14       12       11        9        7        6
348          UI        5        5        4        4        2        2        2        2        1        1
349          UI        1        1        1        1        1        1        1        0        0        0
350          UI        0        0        0        0        0        0        0        0        0        0
             *

351          KK    CP085 COMBINE
352          HC        4
             *

353          KK      304    BASIN
354          BA    0.003
355          LG     0.35     0.35     6.76     0.13        0
356          UI        0        3       11       17       28       24       16        9        4        2
357          UI        1        1        0        0        0        0        0        0        0        0
358          UI        0        0        0        0        0        0        0        0        0        0
359          UI        0        0        0        0        0        0        0        0        0        0
360          UI        0        0        0        0        0        0        0        0        0        0
             *
1                                          HEC-1 INPUT                                          PAGE 10

LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

361          KK    CP304 COMBINE
362          HC        2
             *

363          KK     R305B    ROUTE
364          RS        1     FLOW
365          RC    0.025    0.025    0.025      279   0.0220     0.00
366          RX     0.00    22.00    30.00    37.00    50.00    60.00    80.00    94.00
367          RY   2649.0  2648.00  2647.00  2646.00  2646.00  2647.00  2648.00  2649.00
             *

368          KK      088    BASIN
369          BA    0.014
370          LG     0.35     0.39     6.16     0.16        0
371          UI        0        5        5       16       25       33       39       47       62       42
372          UI       33       30       27       24       21       18       15       13       12       11
373          UI        9        7        6        6        5        4        4        3        3        3
374          UI        3        2        1        1        1        1        1        1        1        1
375          UI        1        1        0        0        0        0        0        0        0        0
             *

376          KK     R305A    ROUTE
377          RS        2     FLOW
378          RC    0.025    0.025    0.025      415   0.0410     0.00
379          RX     0.00    10.00    23.00    31.00    55.00    63.00    69.00    74.00
380          RY   2650.0  2649.00  2648.00  2647.00  2647.00  2648.00  2649.00  2650.00
             *

381          KK      305    BASIN
382          BA    0.004
383          LG     0.32     0.26     7.94     0.10        2
384          UI        0       12       34       57       33       12        4        2        0        0
385          UI        0        0        0        0        0        0        0        0        0        0
386          UI        0        0        0        0        0        0        0        0        0        0
387          UI        0        0        0        0        0        0        0        0        0        0
388          UI        0        0        0        0        0        0        0        0        0        0
             *

389          KK    CP305 COMBINE
390          HC        3
             *

391          KK     R306    ROUTE
392          RS        1     FLOW
393          RC    0.025    0.025    0.025      505   0.0180     0.00
394          RX     0.00     5.00     9.00    13.00    18.00    27.00    43.00    58.00
395          RY   2644.0  2643.00  2642.00  2641.00  2641.00  2642.00  2643.00  2644.00
             *
1                                          HEC-1 INPUT                                          PAGE 11

LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

396          KK      306    BASIN
397          BA    0.004
398          LG     0.32     0.26     7.94     0.10        2
399          UI        0        9       26       48       38       21        8        3        1        0
400          UI        0        0        0        0        0        0        0        0        0        0
401          UI        0        0        0        0        0        0        0        0        0        0
402          UI        0        0        0        0        0        0        0        0        0        0
403          UI        0        0        0        0        0        0        0        0        0        0
             *

404          KK    CP306 COMBINE
405          HC        2
             *

406          KK   DIV307  DIVERT
407          DT   DTV307      0.0      0.0
408          DI        0     97.0    116.0    166.0    228.0    262.0    298.0    336.0    375.0    500.0
409          DQ        0        0      4.0     23.0     50.0     66.0     83.0    102.0    121.0    188.0
             *

410          KK      300    BASIN
411          BA    0.004
412          LG     0.33     0.28     7.58     0.10        1
413          UI        0        8       24       45       40       23        9        4        1        0
414          UI        0        0        0        0        0        0        0        0        0        0
415          UI        0        0        0        0        0        0        0        0        0        0
416          UI        0        0        0        0        0        0        0        0        0        0
```

```
417          UI       0       0       0       0       0       0       0       0       0       0
             *

418          KK    DETE  DIVERT
419          DT    DTTE     0.1     0.0
420          DI     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
421          DQ     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
             *

422          KK    R301   ROUTE
423          RS       1    FLOW
424          RC   0.025   0.025   0.025     442  0.0410    0.00
425          RX    0.00    5.00   12.00   38.00   53.00   82.00  109.00  150.00
426          RY  2660.0 2659.00 2658.00 2656.00 2656.00 2657.00 2658.00 2660.00
             *

427          KK     301   BASIN
428          BA   0.007
429          LG    0.31    0.31    6.34    0.18       2
430          UI       0      27      81     101      43      13       3       0       0       0
431          UI       0       0       0       0       0       0       0       0       0       0
432          UI       0       0       0       0       0       0       0       0       0       0
433          UI       0       0       0       0       0       0       0       0       0       0
434          UI       0       0       0       0       0       0       0       0       0       0
             *
1                                        HEC-1 INPUT                                    PAGE 12

LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

435          KK   CP301 COMBINE
436          HC       2
             *

437          KK    DETC  DIVERT
438          DT    DTTC     0.5     0.0
439          DI     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
440          DQ     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
             *

441          KK   R302A   ROUTE
442          RS       1    FLOW
443          RC   0.025   0.025   0.025     320  0.0280    0.00
444          RX    0.00   12.00   20.00   32.00   36.00   50.00   59.00   69.00
445          RY  2649.0 2648.00 2647.00 2646.50 2646.50 2647.00 2648.00 2649.00
             *

446          KK     105   BASIN
447          BA   0.013
448          LG    0.35    0.40    6.00    0.18       0
449          UI       0       5       5      13      21      29      34      39      52      45
450          UI      32      28      25      23      20      18      15      13      11      11
451          UI       9       8       6       6       5       5       4       4       3       2
452          UI       2       2       2       1       1       1       1       1       1       1
453          UI       1       1       1       0       0       0       0       0       0       0
             *

454          KK    R106   ROUTE
455          RS       2    FLOW
456          RC   0.025   0.025   0.025     750  0.0310    0.00
457          RX    0.00   10.00   20.00   34.00   37.00   48.00   53.00   74.00
458          RY  2683.0 2682.00 2681.00 2675.00 2675.00 2681.00 2682.00 2686.00
             *

459          KK     106   BASIN
460          BA   0.007
461          LG    0.35    0.40    6.00    0.18       0
462          UI       0       4      13      26      35      47      29      24      20      16
463          UI      12      10       8       6       5       3       3       2       2       1
464          UI       1       1       1       1       1       0       0       0       0       0
465          UI       0       0       0       0       0       0       0       0       0       0
466          UI       0       0       0       0       0       0       0       0       0       0
             *

467          KK   CP106 COMBINE
468          HC       2
             *

469          KK    R303   ROUTE
470          RS       2    FLOW
471          RC   0.025   0.025   0.025     400  0.0200    0.00
472          RX    0.00    8.00   15.00   29.00   33.00   42.00   48.00   52.00
473          RY  2657.0 2656.00 2655.00 2654.00 2654.00 2655.00 2656.00 2657.00
             *
1                                        HEC-1 INPUT                                    PAGE 13

LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

474          KK     303   BASIN
475          BA   0.006
476          LG    0.30    0.26    6.76    0.16       3
477          UI       0       8      26      41      64      43      27      11       6       2
478          UI       2       0       0       0       0       0       0       0       0       0
479          UI       0       0       0       0       0       0       0       0       0       0
480          UI       0       0       0       0       0       0       0       0       0       0
481          UI       0       0       0       0       0       0       0       0       0       0
             *

482          KK   CP303 COMBINE
483          HC       2
             *

484          KK    DETD  DIVERT
485          DT    DTTD     0.1     0.0
```

```
486          DI     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
487          DQ     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
             *

488          KK   R302B   ROUTE
489          RS       1    FLOW
490          RC   0.025   0.025   0.025     276  0.0330    0.00
491          RX    0.00   14.00   30.00   52.00   62.00   87.00  100.00  115.00
492          RY  2652.0 2651.00 2650.00 2649.00 2649.00 2650.00 2651.00 2652.00
             *

493          KK     302   BASIN
494          BA   0.012
495          LG    0.28    0.24    6.54    0.19       4
496          UI       0      18      59      96     130      82      45      19       9       4
497          UI       4       0       0       0       0       0       0       0       0       0
498          UI       0       0       0       0       0       0       0       0       0       0
499          UI       0       0       0       0       0       0       0       0       0       0
500          UI       0       0       0       0       0       0       0       0       0       0
             *

501          KK   CP302 COMBINE
502          HC       3
             *

503          KK    DETB  DIVERT
504          DT    DTTB     0.5     0.0
505          DI     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
506          DQ     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
             *

507          KK     307   BASIN
508          BA   0.002
509          LG    0.26    0.17    7.94    0.12       5
510          UI       0      16      42      16       3       0       0       0       0       0
511          UI       0       0       0       0       0       0       0       0       0       0
512          UI       0       0       0       0       0       0       0       0       0       0
513          UI       0       0       0       0       0       0       0       0       0       0
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

514          UI       0       0       0       0       0       0       0       0       0       0
             *

515          KK     308   BASIN
516          BA   0.006
517          LG    0.26    0.17    7.94    0.12       5
518          UI       0      64     135      29       0       0       0       0       0       0
519          UI       0       0       0       0       0       0       0       0       0       0
520          UI       0       0       0       0       0       0       0       0       0       0
521          UI       0       0       0       0       0       0       0       0       0       0
522          UI       0       0       0       0       0       0       0       0       0       0
             *

523          KK  DIV307RETRIEVE
524          DR  DTV307
             *

525          KK   CP308 COMBINE
526          HC       4
             *

527          KK    DETA  DIVERT
528          DT    DTTA     6.9     0.0
529          DI     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
530          DQ     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
             *

531          KK   CP310 COMBINE
532          HC       2
             *

533          KK     090   BASIN
534          BA   0.002
535          LG    0.35    0.40    6.00    0.18       0
536          UI       0       5      17      22      13       8       5       3       2       1
537          UI       1       0       0       0       0       0       0       0       0       0
538          UI       0       0       0       0       0       0       0       0       0       0
539          UI       0       0       0       0       0       0       0       0       0       0
540          UI       0       0       0       0       0       0       0       0       0       0
             *

541          KK     091   BASIN
542          BA   0.006
543          LG    0.35    0.40    6.00    0.18       0
544          UI       0       4      13      25      35      40      25      20      16      12
545          UI      10       8       6       5       3       3       2       2       1       1
546          UI       1       1       1       1       0       0       0       0       0       0
547          UI       0       0       0       0       0       0       0       0       0       0
548          UI       0       0       0       0       0       0       0       0       0       0
             *
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

549          KK      CS3 COMBINE
550          HC       4
             *

551          KK     120   BASIN
552          BA   0.028
553          LG    0.35    0.40    6.00    0.18       0
554          UI       0      15      34      77     108     142     154      98      83      70
```

```
555          UI      58      45      37      33      24      19      17      13      12       8
556          UI       8       7       3       3       3       3       3       3       3       0
557          UI       0       0       0       0       0       0       0       0       0       0
558          UI       0       0       0       0       0       0       0       0       0       0
             *

559          KK     R97   ROUTE
560          RS       7    FLOW
561          RC   0.025   0.025   0.025    2435  0.0210    0.00
562          RX    0.00   17.00   46.00   67.00   74.00   79.00   84.00   91.00
563          RY  2721.0 2720.00 2719.00 2718.00 2718.00 2719.00 2720.00 2721.00
             *

564          KK     097   BASIN
565          BA   0.035
566          LG    0.35    0.40    6.00    0.18       0
567          UI       0       8       8       8      19      28      36      48      53      60
568          UI      65      74      90      97      65      56      51      48      44      41
569          UI      39      36      33      31      27      25      22      20      19      19
570          UI      17      15      14      11      11      10       9       9       9       6
571          UI       6       6       6       4       4       4       4       4       4       4
572          UI       2       2       2       2       2       2       2       2       2       2
573          UI       2       2       2       2       2       2       2       0       0       0
             *

574          KK     111   BASIN
575          BA   0.009
576          LG    0.35    0.40    6.00    0.18       0
577          UI       0       5       9      22      32      40      52      32      27      23
578          UI      19      16      12      11       9       7       6       5       4       3
579          UI       2       2       2       1       1       1       1       1       1       1
580          UI       0       0       0       0       0       0       0       0       0       0
581          UI       0       0       0       0       0       0       0       0       0       0
             *

582          KK   CP111 COMBINE
583          HC       3
             *

584          KK     R96   ROUTE
585          RS       3    FLOW
586          RC   0.025   0.025   0.025     987  0.0190    0.00
587          RX    0.00    7.00   23.00   42.00   47.00   50.00   77.00   99.00
588          RY  2698.0 2697.00 2696.00 2694.50 2694.50 2695.00 2696.00 2697.00
             *
```

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```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

589          KK     099   BASIN
590          BA   0.007
591          LG    0.35    0.40    6.00    0.18       0
592          UI       0       4      11      23      32      45      32      24      20      17
593          UI      13      10       9       6       5       4       3       3       2       2
594          UI       1       1       1       1       1       1       0       0       0       0
595          UI       0       0       0       0       0       0       0       0       0       0
596          UI       0       0       0       0       0       0       0       0       0       0
             *

597          KK     100   BASIN
598          BA   0.017
599          LG    0.35    0.40    6.00    0.18       0
600          UI       0       5       5      11      20      28      35      40      46      59
601          UI      56      38      33      31      28      25      23      21      18      15
602          UI      13      13      12      10       9       7       7       6       6       4
603          UI       4       4       3       3       3       3       3       1       1       1
604          UI       1       1       1       1       1       1       1       1       1       0
             *

605          KK   CP100 COMBINE
606          HC       2
             *

607          KK     R94   ROUTE
608          RS       3    FLOW
609          RC   0.025   0.025   0.025     918  0.0210    0.00
610          RX    0.00   22.00   34.00   45.00   48.00   52.00   78.00   91.00
611          RY  2707.0 2706.00 2705.00 2703.00 2703.00 2705.00 2706.00 2707.00
             *

612          KK     094   BASIN
613          BA   0.005
614          LG    0.35    0.40    6.00    0.18       0
615          UI       0       3       6      13      19      24      28      18      15      13
616          UI      11       8       7       6       5       3       3       2       2       2
617          UI       1       1       1       1       1       1       1       1       1       0
618          UI       0       0       0       0       0       0       0       0       0       0
619          UI       0       0       0       0       0       0       0       0       0       0
             *

620          KK     096   BASIN
621          BA   0.015
622          LG    0.35    0.40    6.00    0.18       0
623          UI       0       8      15      34      50      62      86      56      45      39
624          UI      33      28      22      18      16      12      10       9       7       6
625          UI       5       4       4       3       1       1       1       1       1       1
626          UI       1       0       0       0       0       0       0       0       0       0
627          UI       0       0       0       0       0       0       0       0       0       0
             *
```

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```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
```

```
628          KK   CP096 COMBINE
629          HC      4
             *
630          KK     R95   ROUTE
631          RS       1    FLOW
632          RC   0.025   0.025   0.025     571  0.0190    0.00
633          RX    0.00    9.00   29.00   35.00   39.00   44.00   54.00   59.00
634          RY  2685.0 2684.00 2683.00 2682.00 2681.30 2682.00 2683.00 2683.20
             *
635          KK     098   BASIN
636          BA   0.010
637          LG    0.35    0.40    6.00    0.18       0
638          UI       0       4       5      13      21      27      32      42      41      27
639          UI      24      21      19      16      14      11      10       9       8       6
640          UI       5       5       4       3       3       3       2       2       2       1
641          UI       1       1       1       1       1       1       1       1       1       0
642          UI       0       0       0       0       0       0       0       0       0       0
             *
643          KK     095   BASIN
644          BA   0.003
645          LG    0.35    0.40    6.00    0.18       0
646          UI       0       2      10      17      24      16      12       9       7       5
647          UI       4       3       2       2       1       1       0       0       0       0
648          UI       0       0       0       0       0       0       0       0       0       0
649          UI       0       0       0       0       0       0       0       0       0       0
650          UI       0       0       0       0       0       0       0       0       0       0
             *
651          KK   CP095 COMBINE
652          HC       3
             *
653          KK     R92   ROUTE
654          RS       2    FLOW
655          RC   0.025   0.025   0.025    1216  0.0210    0.00
656          RX    0.00   21.00   24.00   26.00   33.00   36.00   38.00   54.00
657          RY  2660.0 2659.00 2658.00 2657.00 2657.00 2658.00 2659.00 2660.00
             *
658          KK     092   BASIN
659          BA   0.010
660          LG    0.35    0.39    6.16    0.16       0
661          UI       0       4       7      17      26      33      41      50      32      26
662          UI      23      20      17      14      12      11       9       7       6       5
663          UI       5       3       3       2       2       2       2       1       1       1
664          UI       1       1       1       1       1       0       0       0       0       0
665          UI       0       0       0       0       0       0       0       0       0       0
             *
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
666          KK   CP092 COMBINE
667          HC       2
             *
668          KK     135   BASIN
669          BA   0.011
670          LG    0.35    0.40    6.00    0.18       0
671          UI       0       8      31      56      84      60      44      35      26      20
672          UI      16      11       9       6       5       4       3       2       2       2
673          UI       2       0       0       0       0       0       0       0       0       0
674          UI       0       0       0       0       0       0       0       0       0       0
675          UI       0       0       0       0       0       0       0       0       0       0
             *
676          KK   R132A   ROUTE
677          RS       1    FLOW
678          RC   0.035   0.025   0.035     550  0.0250    0.00
679          RX    0.00   30.00   50.00   70.00   80.00   90.00  110.00  120.00
680          RY  2645.0 2644.00 2643.00 2642.00 2642.00 2643.00 2645.00 2646.00
             *
681          KK    R150   ROUTE
682          RS      21    FLOW
683          RC   0.025   0.025   0.025    4933  0.0210    0.00
684          RX    0.00    7.00   27.00   43.00   47.00   50.00   55.00   95.00
685          RY  2725.0 2724.00 2722.00 2721.00 2720.80 2721.00 2722.00 2725.00
             *
686          KK     150   BASIN
687          BA   0.062
688          LG    0.35    0.40    6.00    0.18       0
689          UI       0       9       9       9       9       9      17      25      30      35
690          UI      40      51      54      57      61      65      68      71      79      88
691          UI     100     109      86      69      62      58      54      52      51      49
692          UI      46      44      43      41      40      37      35      34      33      30
693          UI      28      27      24      23      22      21      21      20      20      18
694          UI      18      16      14      14      14      11      11      11      11      10
695          UI      10      10      10      10       7       7       7       7       7       7
696          UI       7       5       4       4       4       4       4       4       4       4
697          UI       4       4       3       2       2       2       2       2       2       2
698          UI       2       2       2       2       2       2       2       2       2       2
699          UI       2       2       2       2       2       2       2       2       2       2
700          UI       0       0       0       0       0       0       0       0       0       0
             *
701          KK     170   BASIN
702          BA   0.020
703          LG    0.35    0.40    6.00    0.18       0
704          UI       0       6       6      14      24      35      42      49      56      74
```

```
705          UI      61      45      39      36      32      29      26      24      21      17
706          UI      16      15      14      11       9       8       8       7       6       5
707          UI       5       4       3       3       3       3       2       1       1       1
708          UI       1       1       1       1       1       1       1       1       1       0
             *
```



```
LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

709          KK     190   BASIN
710          BA   0.019
711          LG    0.35    0.40    6.00    0.18       0
712          UI       0       7       7      17      28      40      47      53      68      72
713          UI      48      41      37      33      30      27      23      19      17      16
714          UI      14      12      10       9       8       7       6       5       5       4
715          UI       3       3       3       3       1       1       1       1       1       1
716          UI       1       1       1       1       1       0       0       0       0       0
             *

717          KK   CP190 COMBINE
718          HC       4
             *

719          KK   R130B   ROUTE
720          RS       1    FLOW
721          RC   0.025   0.025   0.025     561  0.0120    0.00
722          RX    0.00   25.00   29.00   31.00   38.00   40.00   41.00   62.00
723          RY  2649.0 2648.00 2647.00 2646.00 2646.00 2647.00 2648.00 2649.00
             *

724          KK     200   BASIN
725          BA   0.012
726          LG    0.35    0.39    6.16    0.17       0
727          UI       0       4       4      15      20      25      29      34      45      56
728          UI      47      39      33      28      23      18      11       8       7       5
729          UI       4       2       1       1       1       1       1       0       0       0
730          UI       0       0       0       0       0       0       0       0       0       0
731          UI       0       0       0       0       0       0       0       0       0       0
             *

732          KK     130   BASIN
733          BA   0.003
734          LG    0.35    0.39    6.16    0.16       0
735          UI       0      10      36      29      17      10       6       3       2       1
736          UI       1       0       0       0       0       0       0       0       0       0
737          UI       0       0       0       0       0       0       0       0       0       0
738          UI       0       0       0       0       0       0       0       0       0       0
739          UI       0       0       0       0       0       0       0       0       0       0
             *

740          KK   CP130 COMBINE
741          HC       3
             *

742          KK   R132B   ROUTE
743          RS       1    FLOW
744          RC   0.035   0.025   0.035     300  0.0250    0.00
745          RX    0.00   30.00   50.00   70.00   80.00   90.00  110.00  120.00
746          RY  2645.0 2644.00 2643.00 2642.00 2642.00 2643.00 2645.00 2646.00
             *
```



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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

747          KK     132   BASIN
748          BA   0.008
749          LG    0.35    0.32    7.58    0.09       0
750          UI       0       6      21      39      58      46      32      26      20      15
751          UI      12       8       7       5       4       3       2       1       1       1
752          UI       1       1       0       0       0       0       0       0       0       0
753          UI       0       0       0       0       0       0       0       0       0       0
754          UI       0       0       0       0       0       0       0       0       0       0
             *

755          KK   CP132 COMBINE
756          HC       3
             *

757          KK     160   BASIN
758          BA   0.015
759          LG    0.35    0.40    6.00    0.18       0
760          UI       0       7       9      23      37      47      57      75      49      40
761          UI      35      31      27      23      18      16      14      12       9       8
762          UI       7       6       5       5       3       3       3       2       1       1
763          UI       1       1       1       1       1       1       0       0       0       0
764          UI       0       0       0       0       0       0       0       0       0       0
             *

765          KK    R165   ROUTE
766          RS       1    FLOW
767          RC   0.025   0.025   0.025     238  0.0420    0.00
768          RX    0.00    6.00   11.00   47.00   62.00   68.00   77.00   93.00
769          RY  2689.0 2688.00 2687.00 2687.30 2686.70 2687.00 2688.00 2689.00
             *

770          KK     165   BASIN
771          BA   0.041
772          LG    0.35    0.40    6.00    0.18       0
773          UI       0      10      10      10      21      32      41      55      61      68
774          UI      74      83     101     115      80      67      59      56      52      49
775          UI      46      42      39      37      33      30      25      24      23      22
776          UI      20      19      16      15      12      12      11      10      10       9
777          UI       7       7       7       7       5       5       5       5       5       5
```

```
 778          UI        3        2        2        2        2        2        2        2        2        2
 779          UI        2        2        2        2        2        2        2        0        0        0
              *

 780          KK    CP165 COMBINE
 781          HC        2
              *

 782          KK      CS4 COMBINE
 783          HC        3
              *
```



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LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 784          KK      210   BASIN
 785          BA    0.009
 786          LG    0.35     0.40     6.00     0.18        0
 787          UI       0        6       15       31       42       60       39       31       26       21
 788          UI      16       13       11        8        6        5        4        3        3        2
 789          UI       1        1        1        1        1        1        0        0        0        0
 790          UI       0        0        0        0        0        0        0        0        0        0
 791          UI       0        0        0        0        0        0        0        0        0        0
              *

 792          KK      220   BASIN
 793          BA    0.013
 794          LG    0.35     0.40     6.00     0.18        0
 795          UI       0        7       14       33       47       60       74       46       39       33
 796          UI      28       22       18       16       13        9        8        7        5        5
 797          UI       3        3        2        1        1        1        1        1        1        1
 798          UI       0        0        0        0        0        0        0        0        0        0
 799          UI       0        0        0        0        0        0        0        0        0        0
              *

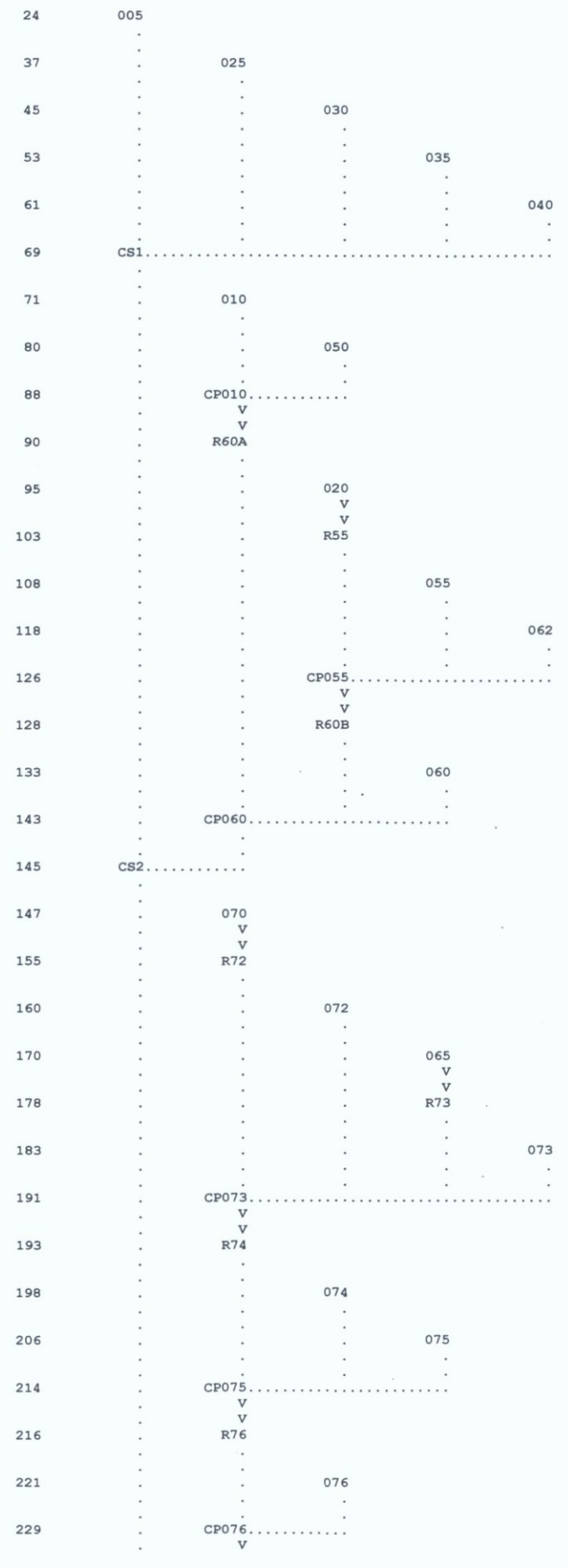
 800          KK      230   BASIN
 801          BA    0.003
 802          LG    0.35     0.40     6.00     0.18        0
 803          UI       0       11       40       28       16        9        5        3        2        1
 804          UI       1        0        0        0        0        0        0        0        0        0
 805          UI       0        0        0        0        0        0        0        0        0        0
 806          UI       0        0        0        0        0        0        0        0        0        0
 807          UI       0        0        0        0        0        0        0        0        0        0
              *

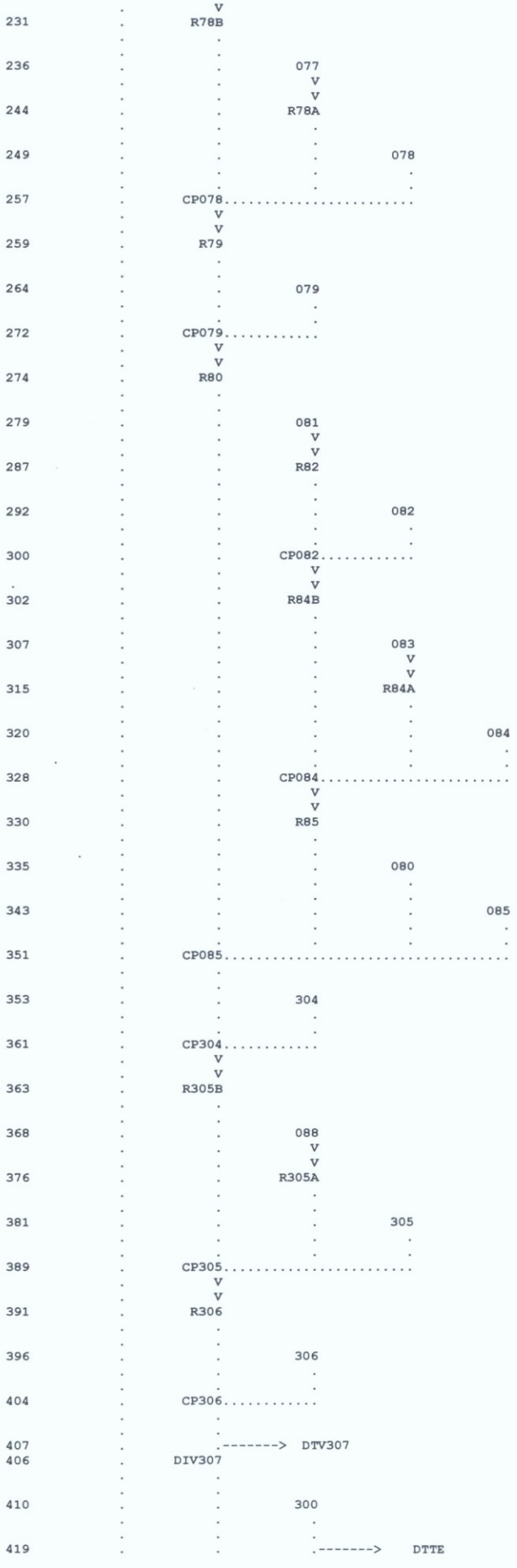
 808          KK      240   BASIN
 809          BA    0.004
 810          LG    0.35     0.40     6.00     0.18        0
 811          UI       0       21       61       35       19        9        5        2        1        0
 812          UI       0        0        0        0        0        0        0        0        0        0
 813          UI       0        0        0        0        0        0        0        0        0        0
 814          UI       0        0        0        0        0        0        0        0        0        0
 815          UI       0        0        0        0        0        0        0        0        0        0
              *
 816          ZZ
```

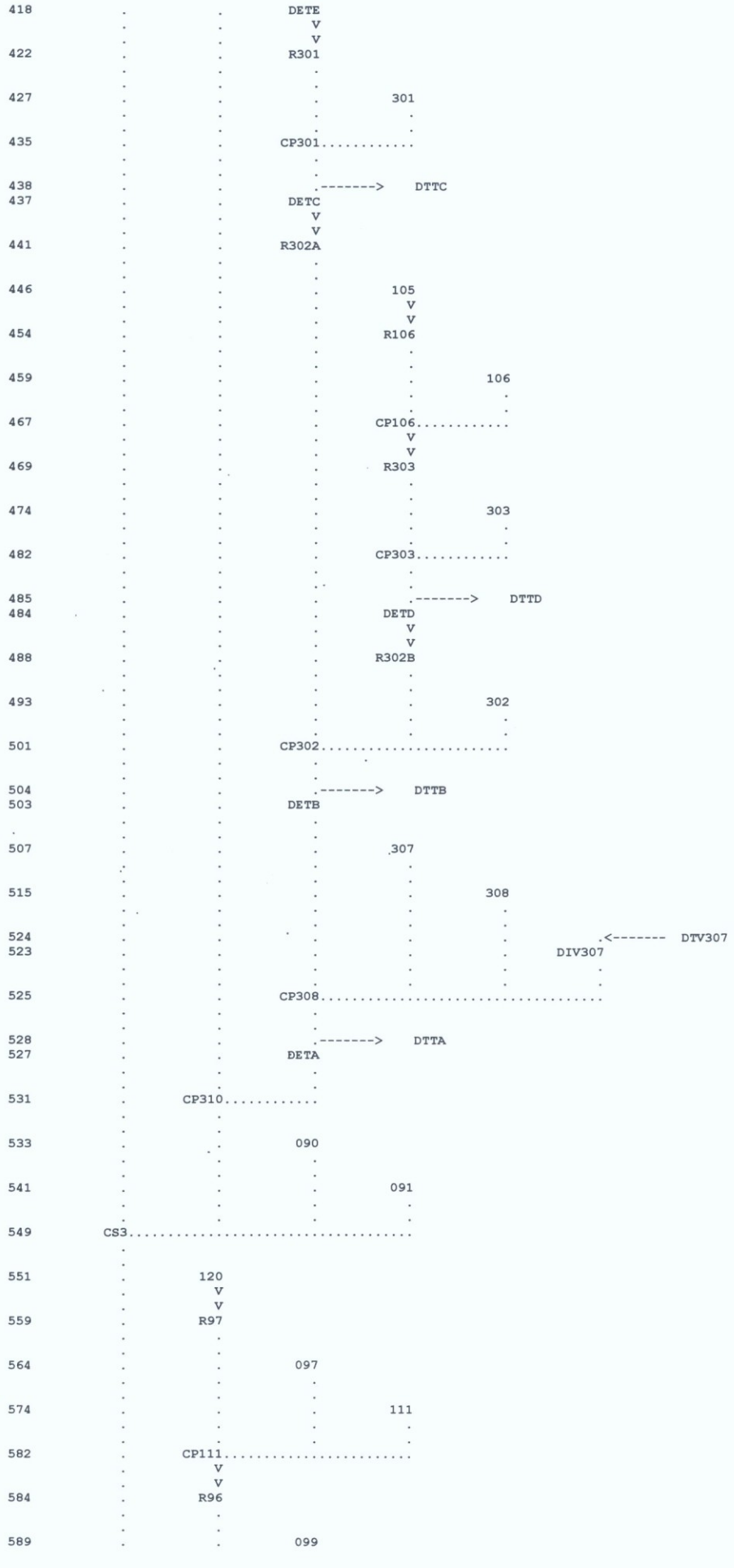
SCHEMATIC DIAGRAM OF STREAM NETWORK

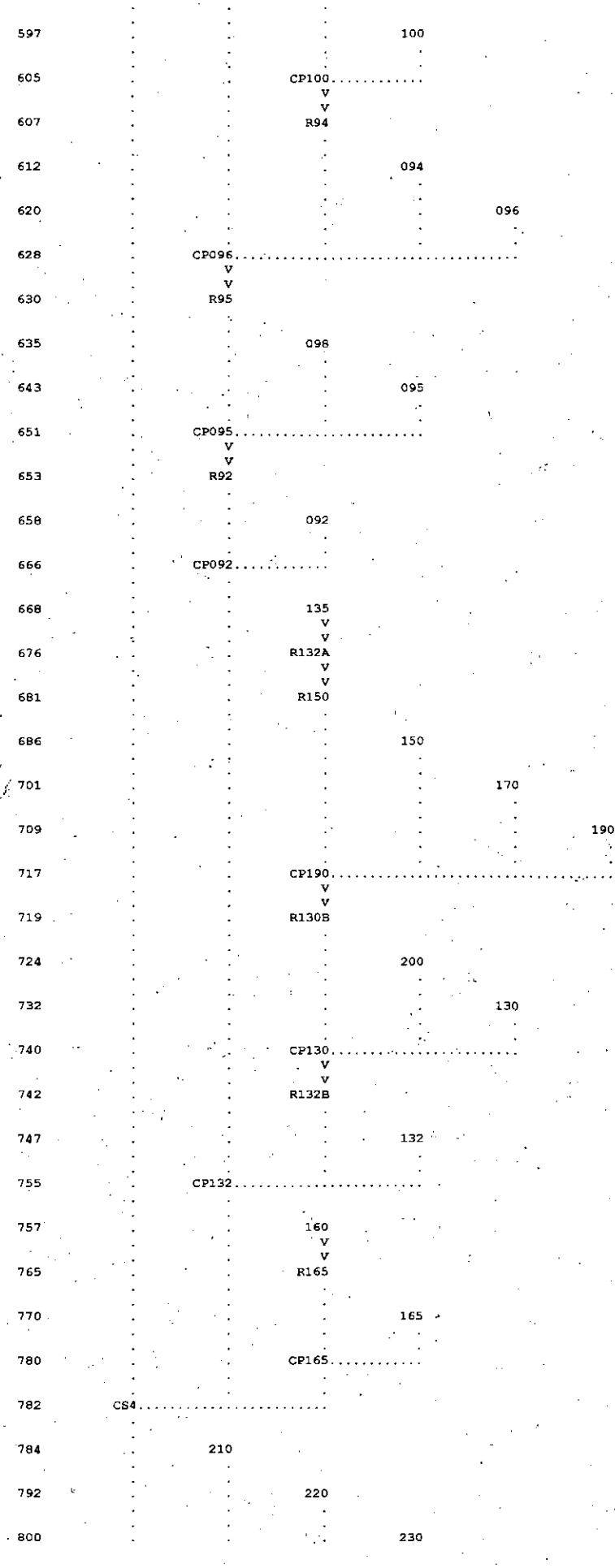
INPUT LINE NO.

(V) ROUTING
(.) CONNECTOR
(---->) DIVERSION OR PUMP FLOW
(<----) RETURN OF DIVERTED OR PUMPED FLOW




231 R78B
236 077
244 R78A
249 078
257 CP078
259 R79
264 079
272 CP079
274 R80
279 081
287 R82
292 082
300 CP082
302 R84B
307 083
315 R84A
320 084
328 CP084
330 R85
335 080
343 085
351 CP085
353 304
361 CP304
363 R305B
368 088
376 R305A
381 305
389 CP305
391 R306
396 306
404 CP306
407 DTV307
406 DIV307
410 300
419 DTTE


418 DETE
422 R301
427 301
435 CP301
438 DTTC
437 DETC
441 R302A
446 105
454 R106
459 106
467 CP106
469 R303
474 303
482 CP303
485 DTTD
484 DETD
488 R302B
493 302
501 CP302
504 DTTB
503 DETB
507 307
515 308
524 DTV307
523 DIV307
525 CP308
528 DTTA
527 DETA
531 CP310
533 090
541 091
549 CS3
551 120
559 R97
564 097
574 111
582 CP111
584 R96
589 099


597
100
605
CP100
607
R94
612
094
620
096
628
CP096
630
R95
635
098
643
095
651
CP095
653
R92
658
092
666
CP092
668
135
676
R132A
681
R150
686
150
701
170
709
190
717
CP190
719
R130B
724
200
732
130
740
CP130
742
R132B
747
132
755
CP132
757
160
765
R165
770
165
780
CP165
782
CS4
784
210
792
220
800
230

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*              JUN  1998                *
*           VERSION 4.1                 *
*                                       *
*  RUN DATE   12JUN15  TIME  08:35:01   *
*                                       *
*****************************************
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*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*         609 SECOND STREET             *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 756-1104              *
*                                       *
*****************************************
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Flood Control District of Maricopa County
SNGC EXISTING - Scottsdale National Golf Club Existing
2 YEAR
6 Hour Storm
Unit Hydrograph: S-Graph
Storm: Multiple
06/01/2015
FILE NAME: SNGCEX2.DAT

```
10 IO          OUTPUT CONTROL VARIABLES
                    IPRNT          5  PRINT CONTROL
                    IPLOT          0  PLOT CONTROL
                    QSCAL          0.  HYDROGRAPH PLOT SCALE

   IT          HYDROGRAPH TIME DATA
                    NMIN           1  MINUTES IN COMPUTATION INTERVAL
                    IDATE      1JUN15  STARTING DATE
                    ITIME        0000  STARTING TIME
                      NQ         2000  NUMBER OF HYDROGRAPH ORDINATES
                   NDDATE      2JUN15  ENDING DATE
                   NDTIME        0919  ENDING TIME
                   ICENT           19  CENTURY MARK

                COMPUTATION INTERVAL      .02 HOURS
                   TOTAL TIME BASE    33.32 HOURS

       ENGLISH UNITS
            DRAINAGE AREA          SQUARE MILES
            PRECIPITATION DEPTH    INCHES
            LENGTH, ELEVATION      FEET
            FLOW                   CUBIC FEET PER SECOND
            STORAGE VOLUME         ACRE-FEET
            SURFACE AREA           ACRES
            TEMPERATURE            DEGREES FAHRENHEIT

12 JD          INDEX STORM NO. 1
                    STRM         1.44  PRECIPITATION DEPTH
                    TRDA          .00  TRANSPOSITION DRAINAGE AREA

13 PI            PRECIPITATION PATTERN
                  .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
```

.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

1

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	005	54.	4.20	4.	1.	1.	.13		
HYDROGRAPH AT	025	10.	4.05	0.	0.	0.	.01		
HYDROGRAPH AT	030	10.	4.07	0.	0.	0.	.01		
HYDROGRAPH AT	035	4.	4.02	0.	0.	0.	.00		
HYDROGRAPH AT	040	3.	4.02	0.	0.	0.	.00		
5 COMBINED AT	CS1	62.	4.12	6.	1.	1.	.17		
HYDROGRAPH AT	010	25.	4.10	1.	0.	0.	.04		
HYDROGRAPH AT	050	8.	4.02	0.	0.	0.	.01		
2 COMBINED AT	CP010	29.	4.05	2.	0.	0.	.05		
ROUTED TO	R60A	28.	4.15	2.	0.	0.	.05		
HYDROGRAPH AT	020	29.	4.05	1.	0.	0.	.04		
ROUTED TO	R55	26.	4.18	1.	0.	0.	.04		
HYDROGRAPH AT	055	24.	4.12	1.	0.	0.	.04		
HYDROGRAPH AT	062	4.	4.02	0.	0.	0.	.00		
3 COMBINED AT	CP055	49.	4.17	3.	1.	1.	.09		
ROUTED TO	R60B	46.	4.25	3.	1.	1.	.09		
HYDROGRAPH AT	060	17.	4.10	1.	0.	0.	.03		
3 COMBINED AT	CP060	79.	4.20	6.	1.	1.	.16		
2 COMBINED AT	CS2	140.	4.20	11.	3.	2.	.33		
HYDROGRAPH AT	070	15.	4.03	1.	0.	0.	.02		
ROUTED TO	R72	13.	4.12	1.	0.	0.	.02		
HYDROGRAPH AT	072	17.	4.10	1.	0.	0.	.03		
HYDROGRAPH AT	065	2.	4.02	0.	0.	0.	.00		
ROUTED TO	R73	2.	4.10	0.	0.	0.	.00		
HYDROGRAPH AT	073	11.	4.07	1.	0.	0.	.02		
4 COMBINED AT	CP073	42.	4.10	2.	1.	0.	.06		
ROUTED TO	R74	41.	4.13	2.	1.	0.	.06		
HYDROGRAPH AT	074	8.	4.03	0.	0.	0.	.01		
HYDROGRAPH AT	075	2.	4.02	0.	0.	0.	.00		
3 COMBINED AT	CP075	44.	4.13	3.	1.	0.	.08		
ROUTED TO	R76	43.	4.15	3.	1.	0.	.08		
HYDROGRAPH AT	076	4.	4.03	0.	0.	0.	.00		

+	2 COMBINED AT CP076	44.	4.15	3.	1.	0.	.08
+	ROUTED TO R78B	42.	4.17	3.	1.	0.	.08
+	HYDROGRAPH AT 077	4.	4.03	0.	0.	0.	.00
+	ROUTED TO R78A	4.	4.05	0.	0.	0.	.00
+	HYDROGRAPH AT 078	6.	4.03	0.	0.	0.	.01
+	3 COMBINED AT CP078	44.	4.15	3.	1.	1.	.09
+	ROUTED TO R79	44.	4.17	3.	1.	1.	.09
+	HYDROGRAPH AT 079	8.	4.05	0.	0.	0.	.01
+	2 COMBINED AT CP079	47.	4.10	3.	1.	1.	.10
+	ROUTED TO R80	47.	4.13	3.	1.	1.	.10
+	HYDROGRAPH AT 081	4.	4.03	0.	0.	0.	.00
+	ROUTED TO R82	4.	4.05	0.	0.	0.	.00
+	HYDROGRAPH AT 082	4.	4.03	0.	0.	0.	.00
+	2 COMBINED AT CP082	7.	4.03	0.	0.	0.	.01
+	ROUTED TO R84B	7.	4.05	0.	0.	0.	.01
+	HYDROGRAPH AT 083	2.	4.02	0.	0.	0.	.00
+	ROUTED TO R84A	2.	4.02	0.	0.	0.	.00
+	HYDROGRAPH AT 084	3.	4.02	0.	0.	0.	.00
+	3 COMBINED AT CP084	12.	4.03	0.	0.	0.	.01
+	ROUTED TO R85	11.	4.07	0.	0.	0.	.01
+	HYDROGRAPH AT 080	7.	4.05	0.	0.	0.	.01
+	HYDROGRAPH AT 085	8.	4.05	0.	0.	0.	.01
+	4 COMBINED AT CP085	68.	4.10	4.	1.	1.	.13
+	HYDROGRAPH AT 304	3.	4.02	0.	0.	0.	.00
+	2 COMBINED AT CP304	70.	4.08	5.	1.	1.	.14
+	ROUTED TO R305B	69.	4.10	5.	1.	1.	.14
+	HYDROGRAPH AT 088	11.	4.07	1.	0.	0.	.01
+	ROUTED TO R305A	10.	4.10	1.	0.	0.	.01
+	HYDROGRAPH AT 305	5.	4.02	0.	0.	0.	.00
+	3 COMBINED AT CP305	80.	4.10	5.	1.	1.	.15
+	ROUTED TO R306	79.	4.10	5.	1.	1.	.15
+	HYDROGRAPH AT 306	5.	4.02	0.	0.	0.	.00
+	2 COMBINED AT CP306	80.	4.10	5.	1.	1.	.16
+	DIVERSION TO DTV307	0.	.00	0.	0.	0.	.16
+	HYDROGRAPH AT DIV307	80.	4.10	5.	1.	1.	.16

+	HYDROGRAPH AT 300	5.	4.02	0.	0.	0.	.00
+	DIVERSION TO DTTE	5.	4.02	0.	0.	0.	.00
+	HYDROGRAPH AT DETE	0.	4.32	0.	0.	0.	.00
+	ROUTED TO R301	0.	4.32	0.	0.	0.	.00
+	HYDROGRAPH AT 301	8.	4.02	0.	0.	0.	.01
+	2 COMBINED AT CP301	8.	4.02	0.	0.	0.	.01
+	DIVERSION TO DTTC	8.	4.02	0.	0.	0.	.01
+	HYDROGRAPH AT DETC	0.	.00	0.	0.	0.	.01
+	ROUTED TO R302A	0.	.00	0.	0.	0.	.01
+	HYDROGRAPH AT 105	9.	4.07	0.	0.	0.	.01
+	ROUTED TO R106	9.	4.10	0.	0.	0.	.01
+	HYDROGRAPH AT 106	6.	4.03	0.	0.	0.	.01
+	2 COMBINED AT CP106	14.	4.05	1.	0.	0.	.02
+	ROUTED TO R303	14.	4.08	1.	0.	0.	.02
+	HYDROGRAPH AT 303	7.	4.02	0.	0.	0.	.01
+	2 COMBINED AT CP303	19.	4.05	1.	0.	0.	.03
+	DIVERSION TO DTTD	13.	3.95	0.	0.	0.	.03
+	HYDROGRAPH AT DETD	19.	4.05	1.	0.	0.	.03
+	ROUTED TO R302B	19.	4.07	1.	0.	0.	.03
+	HYDROGRAPH AT 302	14.	4.02	1.	0.	0.	.01
+	3 COMBINED AT CP302	31.	4.03	1.	0.	0.	.05
+	DIVERSION TO DTTB	31.	4.03	1.	0.	0.	.05
+	HYDROGRAPH AT DETB	13.	4.15	0.	0.	0.	.05
+	HYDROGRAPH AT 307	3.	4.02	0.	0.	0.	.00
+	HYDROGRAPH AT 308	8.	4.02	0.	0.	0.	.01
+	HYDROGRAPH AT DIV307	0.	.00	0.	0.	0.	.16
+	4 COMBINED AT CP308	13.	4.15	1.	0.	0.	.06
+	DIVERSION TO DTTA	13.	4.15	1.	0.	0.	.06
+	HYDROGRAPH AT DETA	0.	.00	0.	0.	0.	.06
+	2 COMBINED AT CP310	80.	4.10	5.	1.	1.	.21
+	HYDROGRAPH AT 090	2.	4.02	0.	0.	0.	.00
+	HYDROGRAPH AT 091	5.	4.03	0.	0.	0.	.01
+	4 COMBINED AT CS3	199.	4.17	16.	4.	3.	.55
+	HYDROGRAPH AT 120	23.	4.05	1.	0.	0.	.03
+	ROUTED TO R97	20.	4.17	1.	0.	0.	.03

+	HYDROGRAPH AT 097	19.	4.12	1.	0.	0.	.04
+	HYDROGRAPH AT 111	7.	4.05	0.	0.	0.	.01
+	3 COMBINED AT CP111	42.	4.13	2.	1.	0.	.07
+	ROUTED TO R96	41.	4.18	2.	1.	0.	.07
+	HYDROGRAPH AT 099	6.	4.03	0.	0.	0.	.01
+	HYDROGRAPH AT 100	11.	4.08	1.	0.	0.	.02
+	2 COMBINED AT CP100	17.	4.05	1.	0.	0.	.02
+	ROUTED TO R94	16.	4.10	1.	0.	0.	.02
+	HYDROGRAPH AT 094	4.	4.05	0.	0.	0.	.00
+	HYDROGRAPH AT 096	12.	4.05	1.	0.	0.	.01
+	4 COMBINED AT CP096	60.	4.13	4.	1.	1.	.12
+	ROUTED TO R95	60.	4.15	4.	1.	1.	.12
+	HYDROGRAPH AT 098	7.	4.07	0.	0.	0.	.01
+	HYDROGRAPH AT 095	3.	4.03	0.	0.	0.	.00
+	3 COMBINED AT CP095	65.	4.13	4.	1.	1.	.13
+	ROUTED TO R92	64.	4.17	4.	1.	1.	.13
+	HYDROGRAPH AT 092	8.	4.05	0.	0.	0.	.01
+	2 COMBINED AT CP092	68.	4.15	5.	1.	1.	.14
+	HYDROGRAPH AT 135	10.	4.03	0.	0.	0.	.01
+	ROUTED TO R132A	9.	4.05	0.	0.	0.	.01
+	ROUTED TO R150	7.	4.40	0.	0.	0.	.01
+	HYDROGRAPH AT 150	23.	4.23	2.	1.	0.	.06
+	HYDROGRAPH AT 170	13.	4.08	1.	0.	0.	.02
+	HYDROGRAPH AT 190	13.	4.07	1.	0.	0.	.02
+	4 COMBINED AT CP190	42.	4.12	4.	1.	1.	.11
+	ROUTED TO R130B	41.	4.13	4.	1.	1.	.11
+	HYDROGRAPH AT 200	10.	4.07	0.	0.	0.	.01
+	HYDROGRAPH AT 130	3.	4.02	0.	0.	0.	.00
+	3 COMBINED AT CP130	50.	4.12	4.	1.	1.	.13
+	ROUTED TO R132B	49.	4.13	4.	1.	1.	.13
+	HYDROGRAPH AT 132	9.	4.02	0.	0.	0.	.01
+	3 COMBINED AT CP132	119.	4.13	9.	2.	2.	.27
+	HYDROGRAPH AT 160	12.	4.05	1.	0.	0.	.01
+	ROUTED TO R165	11.	4.07	1.	0.	0.	.01
+	HYDROGRAPH AT 165	22.	4.12	1.	0.	0.	.04

+	2 COMBINED AT CP165	32.	4.10	2.	0.	0.	.06
+	3 COMBINED AT CS4	257.	4.13	21.	5.	4.	.88
+	HYDROGRAPH AT 210	8.	4.03	0.	0.	0.	.01
+	HYDROGRAPH AT 220	11.	4.05	0.	0.	0.	.01
+	HYDROGRAPH AT 230	3.	4.02	0.	0.	0.	.00
+	HYDROGRAPH AT 240	4.	4.02	0.	0.	0.	.00

*** NORMAL END OF HEC-1 ***



APPENDIX B

POST-DEVELOPED CONDITION DATA AND HYDROLOGY

Sub-Basin Data

Area ID	Sub Basin Parameters								Rainfall Losses				
	Area (sq mi)	Length (mi)	Slope (ft/mi)	S-Graph	Lca (mi)	Lag (min)	Velocity (f/s)	Kn	IA (in)	DTHETA	PSIF (in)	XKSAT (in/hr)	RTIMP (%)
Major Basin ID: 01													
005	0.133	0.90	119.2	MOUNTAIN	0.48	21.10	3.75	0.050	0.35	0.40	6.00	0.176	
010	0.026	0.46	137.6	MOUNTAIN	0.22	11.60	3.48	0.049	0.34	0.39	6.00	0.182	2
015	0.010	0.16	125.0	VALLEY	0.11	4.60	3.07	0.037	0.24	0.25	6.00	0.263	8
020	0.038	0.30	148.1	MOUNTAIN	0.12	7.80	3.33	0.050	0.35	0.40	6.00	0.176	
022	0.022	0.20	106.6	MOUNTAIN	0.07	5.80	2.98	0.050	0.35	0.40	6.00	0.176	1
025	0.013	0.28	178.2	MOUNTAIN	0.11	7.10	3.40	0.050	0.35	0.40	6.00	0.176	
030	0.012	0.28	172.5	MOUNTAIN	0.15	8.00	3.13	0.049	0.34	0.39	6.00	0.182	1
035	0.004	0.10	233.0	MOUNTAIN	0.05	3.20	2.79	0.047	0.33	0.38	6.00	0.188	3
040	0.001	0.03	363.6	MOUNTAIN	0.01	.90	3.10	0.042	0.28	0.34	6.00	0.207	12
045	0.005	0.04	205.1	VALLEY	0.03	1.70	2.08	0.041	0.27	0.30	6.00	0.239	5
050	0.008	0.14	154.4	MOUNTAIN	0.04	3.70	3.20	0.049	0.34	0.40	6.00	0.174	2
055	0.028	0.53	112.2	MOUNTAIN	0.29	11.20	4.13	0.039	0.26	0.32	6.00	0.221	14
060	0.028	0.47	116.1	MOUNTAIN	0.31	13.10	3.11	0.047	0.32	0.37	6.00	0.189	3
065	0.002	0.07	152.8	MOUNTAIN	0.04	3.00	2.11	0.050	0.35	0.40	6.00	0.176	
070	0.017	0.20	184.6	MOUNTAIN	0.09	5.70	2.98	0.050	0.35	0.40	6.00	0.176	
072	0.030	0.40	106.3	VALLEY	0.26	11.20	3.09	0.045	0.31	0.34	6.00	0.210	3
073	0.021	0.29	160.3	VALLEY	0.15	6.80	3.71	0.041	0.28	0.30	6.00	0.237	5
074	0.012	0.17	201.2	VALLEY	0.06	3.90	3.86	0.042	0.28	0.31	6.00	0.228	5
075	0.002	0.06	321.4	MOUNTAIN	0.02	1.80	2.77	0.049	0.34	0.39	6.00	0.180	
077	0.004	0.12	188.0	MOUNTAIN	0.06	3.80	2.71	0.047	0.32	0.36	6.00	0.198	1
078	0.017	0.45	126.1	VALLEY	0.25	11.30	3.52	0.045	0.31	0.35	6.00	0.200	5

* Non default value

Area ID	Sub Basin Parameters								Rainfall Losses				
	Area (sq mi)	Length (mi)	Slope (ft/mi)	S-Graph	Lca (mi)	Lag (min)	Velocity (f/s)	Kn	IA (in)	DTHETA	PSIF (in)	XKSAT (in/hr)	RTIMP (%)
Major Basin ID: 01													
081	0.005	0.13	218.8	VALLEY	0.06	3.70	3.08	0.045	0.31	0.34	6.00	0.213	2
082	0.018	0.35	117.1	VALLEY	0.18	9.00	3.44	0.044	0.30	0.36	6.00	0.195	10
083	0.002	0.06	293.1	MOUNTAIN	0.03	1.80	2.85	0.041	0.27	0.40	6.00	0.164	25
084	0.007	0.14	147.9	VALLEY	0.08	4.00	3.15	0.039	0.26	0.39	6.00	0.171	28
088	0.003	0.08	146.3	VALLEY	0.04	2.80	2.58	0.044	0.30	0.25	7.27	0.121	6
089	0.001	0.04	227.3	MOUNTAIN	0.02	1.70	2.28	0.048	0.33	0.38	6.00	0.189	1
090	0.017	0.14	69.9	VALLEY	0.08	3.40	3.69	0.029	0.17	0.40	6.00	0.150	58
091	0.009	0.22	109.1	VALLEY	0.13	7.50	2.58	0.049	0.34	0.39	6.00	0.180	
092	0.004	0.04	108.1	VALLEY	0.01	1.20	2.70	0.041	0.28	0.37	6.54	0.130	24
097	0.050	0.74	112.5	VALLEY	0.37	16.50	3.94	0.046	0.31	0.36	6.00	0.198	4
099	0.029	0.27	177.8	VALLEY	0.15	6.50	3.64	0.041	0.27	0.29	6.00	0.239	6
100	0.017	0.50	120.0	VALLEY	0.31	12.80	3.42	0.045	0.31	0.34	6.00	0.209	4
105	0.012	0.34	165.7	MOUNTAIN	0.17	9.30	3.27	0.050	0.35	0.40	6.00	0.176	
106	0.002	0.06	209.7	MOUNTAIN	0.02	1.40	4.03	0.033	0.20	0.35	6.76	0.115	48
111	0.052	0.67	108.5	VALLEY	0.42	10.20	5.78	0.028	0.27	0.25	6.00	0.219	7
112	0.019	0.22	131.2	MOUNTAIN	0.12	7.20	2.71	0.050	0.35	0.40	6.00	0.176	
120	0.028	0.22	172.7	MOUNTAIN	0.10	6.30	3.05	0.050	0.35	0.40	6.00	0.176	
130	0.006	0.10	106.8	VALLEY	0.07	4.00	2.26	0.044	0.30	0.40	6.00	0.168	16
132	0.009	0.20	111.1	MOUNTAIN	0.08	6.10	2.86	0.050	0.35	0.32	7.58	0.090	1
135	0.011	0.13	143.9	MOUNTAIN	0.06	4.50	2.61	0.050	0.35	0.40	6.00	0.176	

Flood Control District of Maricopa County
Drainage Design Management System
SUB BASINS
Project Reference: SNGC PROP

Area ID	Sub Basin Parameters								Rainfall Losses				
	Area (sq mi)	Length (mi)	Slope (ft/mi)	S-Graph	Lca (mi)	Lag (min)	Velocity (f/s)	Kn	IA (in)	DTHETA	PSIF (in)	XKSAT (in/hr)	RTIMP (%)
Major Basin ID: 01													
150	0.011	0.24	126.1	VALLEY	0.13	6.60	3.18	0.043	0.29	0.33	6.00	0.219	5
162	0.010	0.21	122.1	MOUNTAIN	0.09	6.40	2.91	0.050	0.35	0.40	6.00	0.176	
163	0.006	0.13	84.6	VALLEY	0.08	3.60	3.17	0.033	0.35	0.40	6.00	0.176	
165	0.023	0.40	140.0	VALLEY	0.20	10.10	3.47	0.047	0.32	0.38	6.00	0.186	4
164	0.012	0.11	193.0	VALLEY	0.06	3.00	3.31	0.038	0.25	0.25	6.00	0.267	5
170	0.030	0.33	147.7	VALLEY	0.15	7.40	3.85	0.042	0.27	0.31	6.00	0.192	5
200	0.005	0.29	150.3	VALLEY	0.15	8.40	3.00	0.050	0.35	0.38	6.34	0.146	
210	0.009	0.18	154.7	MOUNTAIN	0.08	5.50	2.88	0.050	0.35	0.40	6.00	0.176	
220	0.013	0.20	90.0	MOUNTAIN	0.10	6.90	2.54	0.050	0.35	0.40	6.00	0.176	
230	0.003	0.08	200.0	MOUNTAIN	0.02	2.20	2.97	0.050	0.35	0.40	6.00	0.176	
240	0.004	0.06	241.4	MOUNTAIN	0.02	1.90	2.62	0.050	0.35	0.40	6.00	0.176	
300	0.004	0.09	179.8	VALLEY	0.04	3.00	2.64	0.047	0.33	0.32	7.58	0.087	8
301	0.007	0.08	226.2	VALLEY	0.03	2.00	3.68	0.038	0.25	0.19	6.54	0.219	6
302	0.012	0.21	138.8	VALLEY	0.03	3.00	6.06	0.037	0.24	0.18	6.76	0.197	10
303	0.006	0.15	186.2	VALLEY	0.05	3.10	4.09	0.038	0.25	0.17	6.76	0.190	5
304	0.003	0.12	129.3	VALLEY	0.05	3.10	3.33	0.038	0.25	0.15	7.00	0.185	5
305	0.004	0.08	180.7	VALLEY	0.03	2.10	3.50	0.038	0.25	0.15	7.94	0.125	5
306	0.004	0.10	197.9	VALLEY	0.06	2.60	3.25	0.035	0.23	0.17	7.94	0.118	15
307	0.002	0.06	267.9	VALLEY	0.02	1.40	3.44	0.038	0.25	0.15	7.94	0.125	5
308	0.006	0.06	158.7	VALLEY	0.04	2.20	2.58	0.038	0.25	0.15	7.58	0.141	5

* Non default value

Land Use Data

Flood Control District of Maricopa County
Drainage Design Management System
LAND USE
Project Reference: SNGC PROP

Sub Basin	Land Use Code	Area (sq mi)	Area (%)	Initial Loss (IA)	Percent Impervious (RTIMP)	Vegetation Cover (%)	DTHETA	Kn	Description
Major Basin ID: 01									
005	910	0.1328	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.1328	**100.0**						
010	720	0.0020	7.7	0.25	5	80.0	NORMAL	0.038	Golf courses
	910	0.0237	91.2	0.35	0	25.0	DRY	0.050	Desert
	920	0.0003	1.2	0.05	95	0.0	DRY	0.015	Impervious-Roadways & Rooftops
		0.0260	**100.1**						
015	720	0.0097	97.0	0.25	5	80.0	NORMAL	0.038	Golf courses
	920	0.0003	3.0	0.05	95	0.0	DRY	0.015	Impervious-Roadways & Rooftops
		0.0100	**100.0**						
020	910	0.0383	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0383	**100.0**						
022	720	0.0002	0.9	0.25	5	80.0	NORMAL	0.038	Golf courses
	910	0.0219	98.6	0.35	0	25.0	DRY	0.050	Desert
	920	0.0001	0.5	0.05	95	0.0	DRY	0.015	Impervious-Roadways & Rooftops
		0.0222	**100.0**						
025	910	0.0129	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0129	**100.0**						
030	720	0.0009	7.8	0.25	5	80.0	NORMAL	0.038	Golf courses
	910	0.0106	91.4	0.35	0	25.0	DRY	0.050	Desert
	920	0.0001	0.9	0.05	95	0.0	DRY	0.015	Impervious-Roadways & Rooftops
		0.0116	**100.1**						

* Non default value

Sub Basin	Land Use Code	Area (sq mi)	Area (%)	Initial Loss (IA)	Percent Impervious (RTIMP)	Vegetation Cover (%)	DTHETA	Kn	Description
Major Basin ID: 01									
035	720	0.0006	15.0	0.25	5	80.0	NORMAL	0.038	Golf courses
	910	0.0033	82.5	0.35	0	25.0	DRY	0.050	Desert
	920	0.0001	2.5	0.05	95	0.0	DRY	0.015	Impervious-Roadways & Rooftops
		0.0040	**100.0**						
040	720	0.0004	40.0	0.25	5	80.0	NORMAL	0.038	Golf courses
	910	0.0005	50.0	0.35	0	25.0	DRY	0.050	Desert
	920	0.0001	10.0	0.05	95	0.0	DRY	0.015	Impervious-Roadways & Rooftops
		0.0010	**100.0**						
045	720	0.0035	70.0	0.25	5	80.0	NORMAL	0.038	Golf courses
	910	0.0014	28.0	0.35	0	25.0	DRY	0.050	Desert
	920	0.0001	2.0	0.05	95	0.0	DRY	0.015	Impervious-Roadways & Rooftops
		0.0050	**100.0**						
050	910	0.0078	97.5	0.35	0	25.0	DRY	0.050	Desert
	920	0.0002	2.5	0.05	95	0.0	DRY	0.015	Impervious-Roadways & Rooftops
		0.0080	**100.0**						
055	720	0.0156	55.7	0.25	5	80.0	NORMAL	0.038	Golf courses
	910	0.0090	32.1	0.35	0	25.0	DRY	0.050	Desert
	920	0.0034	12.1	0.05	95	0.0	DRY	0.015	Impervious-Roadways & Rooftops
		0.0280	**99.9**						
060	720	0.0054	19.3	0.25	5	80.0	NORMAL	0.038	Golf courses
	910	0.0220	78.6	0.35	0	25.0	DRY	0.050	Desert

* Non default value

Flood Control District of Maricopa County
Drainage Design Management System
LAND USE
Project Reference: SNGC PROP

Sub Basin	Land Use Code	Area (sq mi)	Area (%)	Initial Loss (IA)	Percent Impervious (RTIMP)	Vegetation Cover (%)	DTHETA	Kn	Description
Major Basin ID: 01									
060	920	0.0006	2.1	0.05	95	0.0	DRY	0.015	Impervious-Roadways & Rooftops
		0.0280	**100.0**						
065	910	0.0025	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0025	**100.0**						
070	910	0.0171	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0171	**100.0**						
072	720	0.0118	38.8	0.25	5	80.0	NORMAL	0.038	Golf courses
	910	0.0181	59.5	0.35	0	25.0	DRY	0.050	Desert
	920	0.0005	1.6	0.05	95	0.0	DRY	0.015	Impervious-Roadways & Rooftops
		0.0304	**99.9**						
073	720	0.0145	67.8	0.25	5	80.0	NORMAL	0.038	Golf courses
	910	0.0065	30.4	0.35	0	25.0	DRY	0.050	Desert
	920	0.0004	1.9	0.05	95	0.0	DRY	0.015	Impervious-Roadways & Rooftops
		0.0214	**100.1**						
074	720	0.0069	59.5	0.25	5	80.0	NORMAL	0.038	Golf courses
	910	0.0044	37.9	0.35	0	25.0	DRY	0.050	Desert
	920	0.0003	2.6	0.05	95	0.0	DRY	0.015	Impervious-Roadways & Rooftops
		0.0116	**100.0**						
075	720	0.0001	5.3	0.25	5	80.0	NORMAL	0.038	Golf courses
	910	0.0018	94.7	0.35	0	25.0	DRY	0.050	Desert
		0.0019	**100.0**						

* Non default value

Sub Basin	Land Use Code	Area (sq mi)	Area (%)	Initial Loss (IA)	Percent Impervious (RTIMP)	Vegetation Cover (%)	DTHETA	Kn	Description
Major Basin ID: 01									
077	720	0.0010	25.6	0.25	5	80.0	NORMAL	0.038	Golf courses
	910	0.0029	74.4	0.35	0	25.0	DRY	0.050	Desert
		0.0039	**100.0**						
078	720	0.0054	31.4	0.25	5	80.0	NORMAL	0.038	Golf courses
	910	0.0112	65.1	0.35	0	25.0	DRY	0.050	Desert
	920	0.0006	3.5	0.05	95	0.0	DRY	0.015	Impervious-Roadways & Rooftops
		0.0172	**100.0**						
081	720	0.0019	42.2	0.25	5	80.0	NORMAL	0.038	Golf courses
	910	0.0026	57.8	0.35	0	25.0	DRY	0.050	Desert
		0.0045	**100.0**						
082	720	0.0049	27.2	0.25	5	80.0	NORMAL	0.038	Golf courses
	910	0.0115	63.9	0.35	0	25.0	DRY	0.050	Desert
	920	0.0016	8.9	0.05	95	0.0	DRY	0.015	Impervious-Roadways & Rooftops
		0.0180	**100.0**						
083	910	0.0011	73.3	0.35	0	25.0	DRY	0.050	Desert
	920	0.0004	26.7	0.05	95	0.0	DRY	0.015	Impervious-Roadways & Rooftops
		0.0015	**100.0**						
084	720	0.0006	8.6	0.25	5	80.0	NORMAL	0.038	Golf courses
	910	0.0044	62.9	0.35	0	25.0	DRY	0.050	Desert
	920	0.0020	28.6	0.05	95	0.0	DRY	0.015	Impervious-Roadways & Rooftops
		0.0070	**100.1**						

* Non default value

Sub Basin	Land Use Code	Area (sq mi)	Area (%)	Initial Loss (IA)	Percent Impervious (RTIMP)	Vegetation Cover (%)	DTHETA	Kn	Description
Major Basin ID: 01									
088	720	0.0011	42.3	0.25	5	80.0	NORMAL	0.038	Golf courses
	910	0.0014	53.8	0.35	0	25.0	DRY	0.050	Desert
	920	0.0001	3.8	0.05	95	0.0	DRY	0.015	Impervious-Roadways & Rooftops
		0.0026	**99.9**						
089	720	0.0002	15.4	0.25	5	80.0	NORMAL	0.038	Golf courses
	910	0.0011	84.6	0.35	0	25.0	DRY	0.050	Desert
		0.0013	**100.0**						
090	910	0.0067	39.4	0.35	0	25.0	DRY	0.050	Desert
	920	0.0103	60.6	0.05	95	0.0	DRY	0.015	Impervious-Roadways & Rooftops
		0.0170	**100.0**						
091	720	0.0005	5.4	0.25	5	80.0	NORMAL	0.038	Golf courses
	910	0.0088	94.6	0.35	0	25.0	DRY	0.050	Desert
		0.0093	**100.0**						
092	910	0.0030	75.0	0.35	0	25.0	DRY	0.050	Desert
	920	0.0010	25.0	0.05	95	0.0	DRY	0.015	Impervious-Roadways & Rooftops
		0.0040	**100.0**						
097	720	0.0135	26.9	0.25	5	80.0	NORMAL	0.038	Golf courses
	910	0.0352	70.3	0.35	0	25.0	DRY	0.050	Desert
	920	0.0014	2.8	0.05	95	0.0	DRY	0.015	Impervious-Roadways & Rooftops
		0.0501	**100.0**						
099	720	0.0210	70.2	0.25	5	80.0	NORMAL	0.038	Golf courses

Sub Basin	Land Use Code	Area (sq mi)	Area (%)	Initial Loss (IA)	Percent Impervious (RTIMP)	Vegetation Cover (%)	DTHETA	Kn	Description
Major Basin ID: 01									
099	910	0.0080	26.8	0.35	0	25.0	DRY	0.050	Desert
	920	0.0009	3.0	0.05	95	0.0	DRY	0.015	Impervious-Roadways & Rooftops
		0.0299	**100.0**						
100	720	0.0066	37.9	0.25	5	80.0	NORMAL	0.038	Golf courses
	910	0.0104	59.8	0.35	0	25.0	DRY	0.050	Desert
	920	0.0004	2.3	0.05	95	0.0	DRY	0.015	Impervious-Roadways & Rooftops
		0.0174	**100.0**						
105	910	0.0121	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0121	**100.0**						
106	910	0.0009	50.0	0.35	0	25.0	DRY	0.050	Desert
	920	0.0009	50.0	0.05	95	0.0	DRY	0.015	Impervious-Roadways & Rooftops
		0.0018	**100.0**						
111	110	0.0270	52.5	0.30	5	30.0	NORMAL	0.020	Rural Residential (<= 1/5 du per acre)
	720	0.0232	45.1	0.25	5	80.0	NORMAL	0.038	Golf courses
	920	0.0012	2.3	0.05	95	0.0	DRY	0.015	Impervious-Roadways & Rooftops
		0.0514	**99.9**						
112	910	0.0190	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0190	**100.0**						
120	910	0.0275	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0275	**100.0**						
130	910	0.0050	83.3	0.35	0	25.0	DRY	0.050	Desert

* Non default value

Flood Control District of Maricopa County
Drainage Design Management System
LAND USE
Project Reference: SNGC PROP

Sub Basin	Land Use Code	Area (sq mi)	Area (%)	Initial Loss (IA)	Percent Impervious (RTIMP)	Vegetation Cover (%)	DTHETA	Kn	Description
Major Basin ID: 01									
130	920	0.0010	16.7	0.05	95	0.0	DRY	0.015	Impervious-Roadways & Rooftops
		0.0060	**100.0**						
132	910	0.0089	98.9	0.35	0	25.0	DRY	0.050	Desert
	920	0.0001	1.1	0.05	95	0.0	DRY	0.015	Impervious-Roadways & Rooftops
		0.0090	**100.0**						
135	910	0.0113	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0113	**100.0**						
150	720	0.0052	48.6	0.25	5	80.0	NORMAL	0.038	Golf courses
	910	0.0052	48.6	0.35	0	25.0	DRY	0.050	Desert
	920	0.0003	2.8	0.05	95	0.0	DRY	0.015	Impervious-Roadways & Rooftops
		0.0107	**100.0**						
162	910	0.0100	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0100	**100.0**						
163	900	0.0040	66.7	0.35	0	25.0	DRY	0.025	Vacant (Existing land use database only)
	910	0.0020	33.3	0.35	0	25.0	DRY	0.050	Desert
		0.0060	**100.0**						
164	720	0.0120	100.0	0.25	5	80.0	NORMAL	0.038	Golf courses
		0.0120	**100.0**						
165	720	0.0033	14.3	0.25	5	80.0	NORMAL	0.038	Golf courses
	910	0.0188	81.7	0.35	0	25.0	DRY	0.050	Desert
	920	0.0009	3.9	0.05	95	0.0	DRY	0.015	Impervious-Roadways & Rooftops

* Non default value

Sub Basin	Land Use Code	Area (sq mi)	Area (%)	Initial Loss (IA)	Percent Impervious (RTIMP)	Vegetation Cover (%)	DTHETA	Kn	Description
Major Basin ID: 01									
		0.0230	**99.9**						
170	720	0.0080	26.7	0.25	5	80.0	NORMAL	0.038	Golf courses
	740	0.0038	12.7	0.00	0	0.0	WET	0.020	Water
	910	0.0170	56.7	0.35	0	25.0	DRY	0.050	Desert
	920	0.0012	4.0	0.05	95	0.0	DRY	0.015	Impervious-Roadways & Rooftops
		0.0300	**100.1**						
200	910	0.0035	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0035	**100.0**						
210	910	0.0092	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0092	**100.0**						
220	910	0.0133	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0133	**100.0**						
230	910	0.0034	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0034	**100.0**						
240	910	0.0038	100.0	0.35	0	25.0	DRY	0.050	Desert
		0.0038	**100.0**						
300	910	0.0034	91.9	0.35	0	25.0	DRY	0.050	Desert
	920	0.0003	8.1	0.05	95	0.0	DRY	0.015	Impervious-Roadways & Rooftops
		0.0037	**100.0**						
301	720	0.0068	98.6	0.25	5	80.0	NORMAL	0.038	Golf courses
	920	0.0001	1.4	0.05	95	0.0	DRY	0.015	Impervious-Roadways & Rooftops

* Non default value

Sub Basin	Land Use Code	Area (sq mi)	Area (%)	Initial Loss (IA)	Percent Impervious (RTIMP)	Vegetation Cover (%)	DTHETA	Kn	Description
Major Basin ID: 01									
		0.0069	**100.0**						
302	720	0.0110	94.8	0.25	5	80.0	NORMAL	0.038	Golf courses
	920	0.0006	5.2	0.05	95	0.0	DRY	0.015	Impervious-Roadways & Rooftops
		0.0116	**100.0**						
303	720	0.0057	100.0	0.25	5	80.0	NORMAL	0.038	Golf courses
		0.0057	**100.0**						
304	720	0.0032	100.0	0.25	5	80.0	NORMAL	0.038	Golf courses
		0.0032	**100.0**						
305	720	0.0043	100.0	0.25	5	80.0	NORMAL	0.038	Golf courses
		0.0043	**100.0**						
306	720	0.0039	88.6	0.25	5	80.0	NORMAL	0.038	Golf courses
	920	0.0005	11.4	0.05	95	0.0	DRY	0.015	Impervious-Roadways & Rooftops
		0.0044	**100.0**						
307	720	0.0020	100.0	0.25	5	80.0	NORMAL	0.038	Golf courses
		0.0020	**100.0**						
308	720	0.0063	100.0	0.25	5	80.0	NORMAL	0.038	Golf courses
		0.0063	**100.0**						

Soil Data

Area ID	Book Number	Map Unit	Soil ID	Area (sq mi)	Area (%)	XKSAT	Rock Percent (%)	Effective Rock (%)	Comments
Major Basin ID: 01									
005	645	61	64561	0.133	100.00	0.150	-	100	
010	645	61	64561	0.026	100.00	0.150	-	100	
015	645	61	64561	0.010	100.00	0.150	-	100	
020	645	61	64561	0.038	100.00	0.150	-	100	
022	645	61	64561	0.022	100.00	0.150	-	100	
025	645	61	64561	0.013	100.00	0.150	-	100	
030	645	61	64561	0.012	100.00	0.150	-	100	
035	645	61	64561	0.004	100.00	0.150	-	100	
040	645	61	64561	0.001	100.00	0.150	-	100	
045	645	61	64561	0.005	100.00	0.150	-	100	
050	645	61	64561	0.008	100.00	0.150	-	100	
055	645	61	64561	0.028	100.00	0.150	-	100	
060	645	96	64596	0.001	2.50	0.070	-	100	
	645	61	64561	0.027	97.50	0.150	-	100	
065	645	61	64561	0.003	100.00	0.150	-	100	
070	645	61	64561	0.017	100.00	0.150	-	100	
072	645	61	64561	0.030	100.00	0.150	-	100	
073	645	61	64561	0.021	100.00	0.150	-	100	
074	645	61	64561	0.012	100.00	0.150	-	100	
075	645	61	64561	0.002	100.00	0.150	-	100	
077	645	61	64561	0.004	100.00	0.150	-	100	
078	645	61	64561	0.017	98.20	0.150	-	100	
	645	96	64596	0.000	1.80	0.070	-	100	
081	645	61	64561	0.005	100.00	0.150	-	100	
082	645	61	64561	0.018	98.90	0.150	-	100	
	645	96	64596	0.000	1.10	0.070	-	100	
083	645	61	64561	0.002	100.00	0.150	-	100	
084	645	61	64561	0.007	100.00	0.150	-	100	
088	645	61	64561	0.001	26.80	0.150	-	100	
	645	96	64596	0.003	73.20	0.070	-	100	
089	645	61	64561	0.001	100.00	0.150	-	100	
090	645	61	64561	0.017	99.40	0.150	-	100	
	645	96	64596	0.000	0.60	0.070	-	100	
091	645	61	64561	0.009	100.00	0.150	-	100	
092	645	61	64561	0.003	67.50	0.150	-	100	
	645	96	64596	0.001	32.50	0.070	-	100	
097	645	61	64561	0.050	100.00	0.150	-	100	
099	645	61	64561	0.029	100.00	0.150	-	100	
100	645	61	64561	0.017	100.00	0.150	-	100	
105	645	61	64561	0.012	100.00	0.150	-	100	
106	645	61	64561	0.001	61.10	0.150	-	100	
	645	96	64596	0.001	38.90	0.070	-	100	
111	645	61	64561	0.052	100.00	0.150	-	100	
112	645	61	64561	0.019	100.00	0.150	-	100	
120	645	61	64561	0.028	100.00	0.150	-	100	
130	645	61	64561	0.006	100.00	0.150	-	100	
132	645	61	64561	0.001	13.20	0.150	-	100	
	645	96	64596	0.008	86.80	0.070	-	100	
135	645	61	64561	0.011	100.00	0.150	-	100	

Route ID	Shape	Length (ft)	Slope (ft/ft)	Manning's N	Diameter (in)	Height (ft)	Width (ft)	Side Slope (h/v)
MUSKINGUM-CUNGE								
Major Basin 01								
R82	PIPE	1,450.00	0.0220	0.013	24	-	-	-
R84A	PIPE	830.00	0.0300	0.013	36	-	-	-
R99	PIPE	650.00	0.0050	0.013	48	-	-	-

Route ID	LOB N	Chan N	ROB N	Length (ft)	Slope (ft/ft)	Max Elev (ft)		1.	2.	3.	4.	5.	6.	7.	8.
NORMAL DEPTH															
Major Basin 01															
R111	0.035	0.025	0.035	3,800.00	0.0210	-	X:	-	7.00	27.00	43.00	47.00	50.00	55.00	95.00
							Y:	2,725.00	2,724.00	2,722.00	2,721.00	2,720.80	2,721.00	2,722.00	2,725.00
R112	0.035	0.025	0.035	1,100.00	0.0236	-	X:	-	7.00	27.00	43.00	47.00	50.00	55.00	95.00
							Y:	2,725.00	2,724.00	2,722.00	2,721.00	2,720.80	2,721.00	2,722.00	2,725.00
R130B	0.035	0.025	0.035	500.00	0.0260	-	X:	-	20.00	26.00	29.00	31.00	34.00	40.00	60.00
							Y:	2,649.00	2,649.00	2,647.00	2,646.00	2,646.00	2,647.00	2,649.00	2,650.00
R130C	0.035	0.025	0.035	450.00	0.0260	-	X:	-	20.00	26.00	29.00	31.00	34.00	40.00	60.00
							Y:	2,649.00	2,649.00	2,647.00	2,646.00	2,646.00	2,647.00	2,649.00	2,650.00
R132A	0.035	0.025	0.035	550.00	0.0250	-	X:	-	30.00	50.00	70.00	80.00	90.00	110.00	120.00
							Y:	2,645.00	2,644.00	2,643.00	2,642.00	2,642.00	2,643.00	2,645.00	2,646.00
R132B	0.035	0.025	0.035	300.00	0.0250	-	X:	-	30.00	50.00	70.00	80.00	90.00	110.00	120.00
							Y:	2,645.00	2,644.00	2,643.00	2,642.00	2,642.00	2,643.00	2,645.00	2,646.00
R163	0.025	0.025	0.025	238.00	0.0420	-	X:	-	6.00	11.00	47.00	62.00	68.00	77.00	93.00
							Y:	2,689.00	2,688.00	2,687.00	2,687.30	2,686.70	2,687.00	2,688.00	2,689.00
R164	0.035	0.025	0.035	1,400.00	0.0050	-	X:	-	20.00	26.00	29.00	31.00	34.00	40.00	60.00
							Y:	2,650.00	2,651.00	2,649.00	2,648.00	2,648.00	2,649.00	2,651.00	2,650.00
R165	0.035	0.025	0.035	1,840.00	0.0050	-	X:	-	20.00	26.00	29.00	31.00	34.00	40.00	60.00
							Y:	2,650.00	2,651.00	2,649.00	2,648.00	2,648.00	2,649.00	2,651.00	2,650.00
R301	0.035	0.025	0.035	442.00	0.0410	-	X:	-	5.00	12.00	38.00	53.00	82.00	109.00	150.00
							Y:	2,660.00	2,659.00	2,658.00	2,656.00	2,656.00	2,657.00	2,658.00	2,660.00
R302A	0.035	0.025	0.035	320.00	0.0280	-	X:	-	12.00	20.00	32.00	36.00	50.00	59.00	69.00
							Y:	2,649.00	2,648.00	2,647.00	2,646.50	2,646.50	2,647.00	2,648.00	2,649.00

Route ID	LOB N	Chan N	ROB N	Length (ft)	Slope (ft/ft)	Max Elev (ft)		1.	2.	3.	4.	5.	6.	7.	8.
R302B	0.035	0.025	0.035	276.00	0.0330	-	X:	-	14.00	30.00	52.00	62.00	87.00	100.00	115.00
							Y:	2,652.00	2,651.00	2,650.00	2,649.00	2,649.00	2,650.00	2,651.00	2,652.00
R304	0.035	0.025	0.035	611.00	0.0250	-	X:	-	8.00	15.00	29.00	33.00	42.00	48.00	52.00
							Y:	2,657.00	2,656.00	2,655.00	2,654.00	2,654.00	2,655.00	2,656.00	2,657.00
R305A	0.035	0.025	0.035	415.00	0.0410	-	X:	-	10.00	23.00	31.00	55.00	63.00	69.00	74.00
							Y:	2,650.00	2,649.00	2,648.00	2,647.00	2,647.00	2,648.00	2,649.00	2,650.00
R305B	0.035	0.025	0.035	279.00	0.0220	-	X:	-	22.00	30.00	37.00	50.00	60.00	80.00	94.00
							Y:	2,649.00	2,648.00	2,647.00	2,646.00	2,646.00	2,647.00	2,648.00	2,649.00
R306	0.035	0.025	0.035	505.00	0.0180	-	X:	-	5.00	9.00	13.00	18.00	27.00	43.00	58.00
							Y:	2,644.00	2,643.00	2,642.00	2,641.00	2,641.00	2,642.00	2,643.00	2,644.00
R55A	0.035	0.025	0.035	1,600.00	0.0230	-	X:	-	9.00	18.00	33.00	52.00	60.00	68.00	73.00
							Y:	2,741.00	2,740.50	2,740.00	2,739.00	2,739.00	2,740.00	2,740.50	2,741.00
R55B	0.035	0.025	0.035	2,343.00	0.0230	-	X:	-	9.00	18.00	33.00	52.00	60.00	68.00	73.00
							Y:	2,741.00	2,740.50	2,740.00	2,739.00	2,739.00	2,740.00	2,740.50	2,741.00
R60A	0.035	0.025	0.035	2,000.00	0.0220	-	X:	-	4.00	9.00	13.00	24.00	28.00	36.00	45.00
							Y:	2,706.00	2,705.00	2,704.00	2,703.00	2,703.00	2,704.00	2,705.00	2,706.00
R60B	0.035	0.025	0.035	2,450.00	0.0220	-	X:	-	4.00	9.00	13.00	24.00	28.00	36.00	45.00
							Y:	2,706.00	2,705.00	2,704.00	2,703.00	2,703.00	2,704.00	2,705.00	2,706.00
R72	0.035	0.025	0.035	1,798.00	0.0210	-	X:	-	12.00	23.00	30.00	40.00	50.00	67.00	88.00
							Y:	2,739.00	2,737.00	2,736.00	2,735.00	2,735.00	2,736.00	2,737.00	2,739.00
R73	0.035	0.025	0.035	1,401.00	0.0260	-	X:	-	56.00	65.00	74.00	78.00	84.00	89.00	99.00
							Y:	2,741.00	2,740.00	2,739.00	2,738.00	2,738.00	2,739.00	2,740.00	2,743.00
R74	0.035	0.025	0.035	540.00	0.0220	-	X:	-	8.00	22.00	38.00	97.00	105.00	111.00	118.00
							Y:	2,731.00	2,730.00	2,728.00	2,738.00	2,727.00	2,728.00	2,729.00	2,730.00

Route ID	LOB N	Chan N	ROB N	Length (ft)	Slope (ft/ft)	Max Elev (ft)		1.	2.	3.	4.	5.	6.	7.	8.
R78	0.035	0.025	0.035	1,450.00	0.0240	-	X:	-	7.00	17.00	23.00	25.00	46.00	82.00	92.00
							Y:	2,713.00	2,710.00	2,708.00	2,707.00	2,707.00	2,708.00	2,711.00	2,712.00
R78A	0.035	0.025	0.035	700.00	0.0210	-	X:	-	17.00	22.00	31.00	58.00	61.00	95.00	108.00
							Y:	2,712.00	2,709.00	2,707.00	2,706.00	2,706.00	2,707.00	2,710.00	2,717.00
R78B	0.035	0.025	0.035	350.00	0.0310	-	X:	-	7.00	17.00	23.00	25.00	46.00	82.00	92.00
							Y:	2,713.00	2,710.00	2,708.00	2,707.00	2,707.00	2,708.00	2,711.00	2,712.00
R91	0.035	0.025	0.035	1,080.00	0.0190	-	X:	-	9.00	29.00	35.00	39.00	44.00	54.00	59.00
							Y:	2,685.00	2,684.00	2,683.00	2,682.00	2,681.30	2,682.00	2,683.00	2,683.20
R92	0.035	0.025	0.035	180.00	0.0210	-	X:	-	21.00	24.00	26.00	33.00	36.00	38.00	54.00
							Y:	2,660.00	2,659.00	2,658.00	2,657.00	2,657.00	2,658.00	2,659.00	2,660.00
R97	0.035	0.025	0.035	4,000.00	0.0210	-	X:	-	7.00	27.00	43.00	47.00	50.00	55.00	95.00
							Y:	2,725.00	2,724.00	2,722.00	2,721.00	2,720.80	2,721.00	2,722.00	2,725.00

Proposed Detention Data

Basin Weir Outlet Calculations

Site: Scottsdale National Golf Club
Location: Scottsdale
Description: Outlet Structure Summary
References: City of Scottsdale, *Design Standards and Policies Manual Chapter 4 Drainage*, Jan, 2010.
Date: 6/16/2015

$$Q^{(1)} = CLH^{3/2}$$

Where:
Q = Weir Capacity (cfs)
C = Weir Coefficient = 2.4-3.5 for Broad Crested Weirs, Use: 2.8
L = Length of Weir (ft)
H = Max Headwater Depth of Weir Flow (ft)

Basin Name	HEC-1 Q100 Basin Outflow (cfs)	Outlet Elevation	Exit Structure	Weir Length, L (ft)	Weir Coefficient	Weir Depth, H (ft)	Weir Outlet Capacity Q (cfs)
015	27	2736	Weir Outlet	10	2.8	1	28.0
022	143	2771	Weir Outlet	55	2.8	1	154.0
045	17	2733	Weir Outlet	10	2.8	1	28.0
075	180	2722	Weir Outlet	65	2.8	1	182.0
112	66	2735	Weir Outlet	45	2.8	1	126.0
130	68	2660	Weir Outlet	25	2.8	1	70.0
163	20	2700	Weir Outlet	8	2.8	1	22.4
164	40	2712	Weir Outlet	15	2.8	1	42.0

Flood Control District of Maricopa County
Drainage Design Management System
HEC-1 STORAGE FACILITIES

6/13/2015

Storage Basin ID:	DET112										
Spillway Characteristics (SS)			1	2	3	4	5	6	7	8	9	10
Spillway Crest Elevation:	-NA-	**Volume (ac-ft)**		0.1	0.2	0.3	0.6	1.0	1.4			
Spillway Length:	-NA-	**Discharge (cfs)**	0	1	1	2	2	3	70	0	0	0
Discharge Coefficient:	-NA-	**Elevation (ft)**	2,732.0	2,733.0	2,734.0	2,735.0	2,736.0	2,737.0	2,738.0	-	-	-
Weir Coefficient:	-NA-											
Low-Level Outlet (SL)			11	12	13	14	15	16	17	18	19	20
Centerline Elevation:	-NA-	**Volume (ac-ft)**	-	-	-	-	-	-	-	-	-	-
Cross-Section Area:	-NA-	**Discharge (cfs)**	0	0	0	0	0	0	0	0	0	0
Discharge Coefficient:	-NA-	**Elevation (ft)**	-	-	-	-	-	-	-	-	-	-
Orifice Equation Exponent:	-NA-											
Top of Dam Overflow (ST)			2 Yr	5 Yr	10 Yr	25 Yr	50 Yr	100 Yr				
Elevation Top of Dam:	-NA-	**Peak Volume (ac-ft)**	0.32	0.00	1.01	0.00	0.00	1.41				
Length of Dam:	-NA-	**Peak Stage (ft)**	2,735.00	0.00	2,737.12	0.00	0.00	2,737.94				
Discharge Coefficient:	-NA-	**Peak Discharge (cfs)**	2.00	0.00	11.00	0.00	0.00	66.00				
Weir Coefficient:	-NA-											

Storage Basin ID:	DET130										
Spillway Characteristics (SS)			1	2	3	4	5	6	7	8	9	10
Spillway Crest Elevation:	-NA-	**Volume (ac-ft)**		0.1	0.3	0.5	0.7	0.9	1.1	1.2		
Spillway Length:	-NA-	**Discharge (cfs)**	0	1	1	2	2	3	23	65	0	0
Discharge Coefficient:	-NA-	**Elevation (ft)**	2,655.0	2,656.0	2,657.0	2,658.0	2,659.0	2,660.0	2,660.5	2,661.0	-	-
Weir Coefficient:	-NA-											
Low-Level Outlet (SL)			11	12	13	14	15	16	17	18	19	20
Centerline Elevation:	-NA-	**Volume (ac-ft)**	-	-	-	-	-	-	-	-	-	-
Cross-Section Area:	-NA-	**Discharge (cfs)**	0	0	0	0	0	0	0	0	0	0
Discharge Coefficient:	-NA-	**Elevation (ft)**	-	-	-	-	-	-	-	-	-	-
Orifice Equation Exponent:	-NA-											
Top of Dam Overflow (ST)			2 Yr	5 Yr	10 Yr	25 Yr	50 Yr	100 Yr				
Elevation Top of Dam:	-NA-	**Peak Volume (ac-ft)**	0.45	0.00	0.96	0.00	0.00	1.21				
Length of Dam:	-NA-	**Peak Stage (ft)**	2,658.00	0.00	2,660.08	0.00	0.00	2,660.89				
Discharge Coefficient:	-NA-	**Peak Discharge (cfs)**	2.00	0.00	6.00	0.00	0.00	56.00				
Weir Coefficient:	-NA-											

Storage Basin ID:	**DET162**											
Spillway Characteristics (SS)			1	2	3	4	5	6	7	8	9	10
Spillway Crest Elevation:	-NA-	**Volume (ac-ft)**		-	0.1	0.3	0.6	1.1				
Spillway Length:	-NA-	**Discharge (cfs)**	0	1	1	2	2	3	0	0	0	0
Discharge Coefficient:	-NA-	**Elevation (ft)**	2,732.0	2,733.0	2,734.0	2,735.0	2,736.0	2,737.0	-	-	-	-
Weir Coefficient:	-NA-											
Low-Level Outlet (SL)			11	12	13	14.	15	16	17	18	19	20
Centerline Elevation:	-NA-	**Volume (ac-ft)**	-	-	-	-	-	-	-	-	-	-
Cross-Section Area:	-NA-	**Discharge (cfs)**	0	0	0	0	0	0	0	0	0	0
Discharge Coefficient:	-NA-	**Elevation (ft)**	-	-	-	-	-	-	-	-	-	-
Orifice Equation Exponent:	-NA-											
Top of Dam Overflow (ST)			2 Yr	5 Yr	10 Yr	25 Yr	50 Yr	100 Yr				
Elevation Top of Dam:	-NA-	**Peak Volume (ac-ft)**	0.03	0.00	0.29	0.00	0.00	0.29				
Length of Dam:	-NA-	**Peak Stage (ft)**	2,733.00	0.00	2,735.00	0.00	0.00	2,735.00				
Discharge Coefficient:	-NA-	**Peak Discharge (cfs)**	1.00	0.00	2.00	0.00	0.00	2.00				
Weir Coefficient:	-NA-											

Storage Basin ID:	**DET22**											
Spillway Characteristics (SS)			1	2	3	4	5	6	7	8	9	10
Spillway Crest Elevation:	-NA-	**Volume (ac-ft)**		-	0.1	0.3	0.6	1.2	1.9			
Spillway Length:	-NA-	**Discharge (cfs)**	0	1	1	2	2	3	170	0	0	0
Discharge Coefficient:	-NA-	**Elevation (ft)**	2,766.0	2,767.0	2,768.0	2,769.0	2,770.0	2,771.0	2,772.0	-	-	-
Weir Coefficient:	-NA-											
Low-Level Outlet (SL)			11	12	13	14.	15	16	17	18	19	20
Centerline Elevation:	-NA-	**Volume (ac-ft)**	-	-	-	-	-	-	-	-	-	-
Cross-Section Area:	-NA-	**Discharge (cfs)**	0	0	0	0	0	0	0	0	0	0
Discharge Coefficient:	-NA-	**Elevation (ft)**	-	-	-	-	-	-	-	-	-	-
Orifice Equation Exponent:	-NA-											
Top of Dam Overflow (ST)			2 Yr	5 Yr	10 Yr	25 Yr	50 Yr	100 Yr				
Elevation Top of Dam:	-NA-	**Peak Volume (ac-ft)**	0.30	0.00	1.39	0.00	0.00	1.80				
Length of Dam:	-NA-	**Peak Stage (ft)**	2,769.00	0.00	2,771.30	0.00	0.00	2,771.84				
Discharge Coefficient:	-NA-	**Peak Discharge (cfs)**	2.00	0.00	53.00	0.00	0.00	143.00				
Weir Coefficient:	-NA-											

Storage Basin ID:	DET75										
Spillway Characteristics (SS)			1	2	3	4	5	6	7	8	9	10
Spillway Crest Elevation:	-NA-	**Volume (ac-ft)**		0.1	0.3	0.6	1.2	1.9				
Spillway Length:	-NA-	**Discharge (cfs)**	0	6	17	32	43	250	0	0	0	0
Discharge Coefficient:	-NA-	**Elevation (ft)**	2,717.0	2,718.0	2,719.0	2,720.0	2,721.0	2,722.0	-	-	-	-
Weir Coefficient:	-NA-											
Low-Level Outlet (SL)			11	12	13	14.	15	16	17	18	19	20
Centerline Elevation:	-NA-	**Volume (ac-ft)**	-	-	-	-	-	-	-	-	-	-
Cross-Section Area:	-NA-	**Discharge (cfs)**	0	0	0	0	0	0	0	0	0	0
Discharge Coefficient:	-NA-	**Elevation (ft)**	-	-	-	-	-	-	-	-	-	-
Orifice Equation Exponent:	-NA-											
Top of Dam Overflow (ST)			2 Yr	5 Yr	10 Yr	25 Yr	50 Yr	100 Yr				
Elevation Top of Dam:	-NA-	**Peak Volume (ac-ft)**	0.69	0.00	1.41	0.00	0.00	1.85				
Length of Dam:	-NA-	**Peak Stage (ft)**	2,720.09	0.00	2,721.31	0.00	0.00	2,721.90				
Discharge Coefficient:	-NA-	**Peak Discharge (cfs)**	33.00	0.00	108.00	0.00	0.00	230.00				
Weir Coefficient:	-NA-											

Storage Basin ID:	DET81										
Spillway Characteristics (SS)			1	2	3	4	5	6	7	8	9	10
Spillway Crest Elevation:	-NA-	**Volume (ac-ft)**		-	0.1	0.2						
Spillway Length:	-NA-	**Discharge (cfs)**	0	4	5	7	0	0	0	0	0	0
Discharge Coefficient:	-NA-	**Elevation (ft)**	2,702.0	2,703.0	2,704.0	2,705.0	-	-	-	-	-	-
Weir Coefficient:	-NA-											
Low-Level Outlet (SL)			11	12	13	14.	15	16	17	18	19	20
Centerline Elevation:	-NA-	**Volume (ac-ft)**	-	-	-	-	-	-	-	-	-	-
Cross-Section Area:	-NA-	**Discharge (cfs)**	0	0	0	0	0	0	0	0	0	0
Discharge Coefficient:	-NA-	**Elevation (ft)**	-	-	-	-	-	-	-	-	-	-
Orifice Equation Exponent:	-NA-											
Top of Dam Overflow (ST)			2 Yr	5 Yr	10 Yr	25 Yr	50 Yr	100 Yr				
Elevation Top of Dam:	-NA-	**Peak Volume (ac-ft)**	0.02	0.00	0.09	0.00	0.00	0.23				
Length of Dam:	-NA-	**Peak Stage (ft)**	2,703.00	0.00	2,704.00	0.00	0.00	2,705.00				
Discharge Coefficient:	-NA-	**Peak Discharge (cfs)**	4.00	0.00	5.00	0.00	0.00	7.00				
Weir Coefficient:	-NA-											

Storage Basin ID:	**DET92**											
Spillway Characteristics (SS)			1	2	3	4	5	6	7	8	9	10
Spillway Crest Elevation:	2,659.70	**Volume (ac-ft)**		0.7	2.3	4.1	5.0	6.1				
Spillway Length:	50.00	**Discharge (cfs)**	0	1	2	2	3	4	0	0	0	0
Discharge Coefficient:	2.80	**Elevation (ft)**	2,656.5	2,657.0	2,658.0	2,659.0	2,659.5	2,660.0	-	-	-	-
Weir Coefficient:	1.50											
Low-Level Outlet (SL)			11	12	13	14	15	16	17	18	19	20
Centerline Elevation:	2,656.40	**Volume (ac-ft)**	-	-	-	-	-	-	-	-	-	-
Cross-Section Area:	0.44	**Discharge (cfs)**	0	0	0	0	0	0	0	0	0	0
Discharge Coefficient:	0.60	**Elevation (ft)**	-	-	-	-	-	-	-	-	-	-
Orifice Equation Exponent:	0.50											
Top of Dam Overflow (ST)			2 Yr	5 Yr	10 Yr	25 Yr	50 Yr	100 Yr				
Elevation Top of Dam:	-NA-	**Peak Volume (ac-ft)**	2.33	0.00	2.33	0.00	0.00	6.07				
Length of Dam:	-NA-	**Peak Stage (ft)**	2,658.00	0.00	2,658.00	0.00	0.00	2,660.00				
Discharge Coefficient:	-NA-	**Peak Discharge (cfs)**	2.00	0.00	2.00	0.00	0.00	4.00				
Weir Coefficient:	-NA-											

Storage Basin ID:	**RET170**											
Spillway Characteristics (SS)			1	2	3	4	5	6	7	8	9	10
Spillway Crest Elevation:	-NA-	**Volume (ac-ft)**		2.8	6.0	9.6	13.8	18.6				
Spillway Length:	-NA-	**Discharge (cfs)**	0	0	0	0	0	10	0	0	0	0
Discharge Coefficient:	-NA-	**Elevation (ft)**	2,750.0	2,751.0	2,752.0	2,753.0	2,754.0	2,755.0	-	-	-	-
Weir Coefficient:	-NA-											
Low-Level Outlet (SL)			11	12	13	14	15	16	17	18	19	20
Centerline Elevation:	-NA-	**Volume (ac-ft)**	-	-	-	-	-	-	-	-	-	-
Cross-Section Area:	-NA-	**Discharge (cfs)**	0	0	0	0	0	0	0	0	0	0
Discharge Coefficient:	-NA-	**Elevation (ft)**	-	-	-	-	-	-	-	-	-	-
Orifice Equation Exponent:	-NA-											
Top of Dam Overflow (ST)			2 Yr	5 Yr	10 Yr	25 Yr	50 Yr	100 Yr				
Elevation Top of Dam:	-NA-	**Peak Volume (ac-ft)**	1.34	0.00	2.72	0.00	0.00	5.50				
Length of Dam:	-NA-	**Peak Stage (ft)**	2,750.48	0.00	2,750.98	0.00	0.00	2,751.86				
Discharge Coefficient:	-NA-	**Peak Discharge (cfs)**	0.00	0.00	0.00	0.00	0.00	0.00				
Weir Coefficient:	-NA-											

Flood Control District of Maricopa County
Drainage Design Management System
HEC-1 DIVERSIONS
Project Reference: SNGC PROP

6/13/2015

Diversion ID/ DT Card ID	Maximum Volume (ac-ft)	Maximum Diversion (cfs)		1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
DIV307			**Inflow (cfs)**		97	116	166	228	262	298	336	375	500
DTV307			**Diversion (cfs)**			4	23	50	66	83	102	121	188
DETE	-		**Inflow (cfs)**		10,000								
DTTE			**Diversion (cfs)**		10,000								
DETC	-		**Inflow (cfs)**		10,000								
DTTC			**Diversion (cfs)**		10,000								
DETB	1		**Inflow (cfs)**		10,000								
DTTB			**Diversion (cfs)**		10,000								
DETA	7		**Inflow (cfs)**		10,000								
DTTA			**Diversion (cfs)**		10,000								
DIV92			**Inflow (cfs)**		100	250							
DTT92			**Diversion (cfs)**			150							
DIV130			**Inflow (cfs)**		31	76	134	182	224	254			
DTT130			**Diversion (cfs)**		13	28	46	64	76	81			
DETD	-		**Inflow (cfs)**		10,000								
DTTD			**Diversion (cfs)**		10,000								
DET45	-		**Inflow (cfs)**		1,000								
DTT45			**Diversion (cfs)**		1,000								
DET164	1		**Inflow (cfs)**		10,000								
DTT164			**Diversion (cfs)**		10,000								

Diversion ID/ DT Card ID	Maximum Volume (ac-ft)	Maximum Diversion (cfs)		1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
DET260	-		**Inflow (cfs)**		1,000								
DTT260			**Diversion (cfs)**		1,000								
DET163	-		**Inflow (cfs)**		1,000								
DTT163			**Diversion (cfs)**		1,000								
DET15		6	**Inflow (cfs)**		1,000								
DTT15			**Diversion (cfs)**		1,000								

Post Developed Condition

HEC-1 Output

Post Developed Condition 100-year, 6-hour

HEC-1 Output

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*              JUN  1998                *
*            VERSION 4.1                *
*                                       *
*  RUN DATE   12JUN15  TIME  06:35:24   *
*                                       *
*****************************************
```

```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*         609 SECOND STREET             *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 756-1104              *
*                                       *
*****************************************
```

```
X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X        XXXXX X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX   XXXXX         XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM


```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  1           ID        Flood Control District of Maricopa County
  2           ID        SNGC PROP - Scottsdale National Golf Club Proposed
  3           ID        100 YEAR
  4           ID        6 Hour  Storm
  5           ID        Unit Hydrograph: S-Graph
  6           ID        Storm: Multiple
  7           ID        06/01/2015
  8           ID        WOOD/PATEL JCD
  9           ID            FILE NAME: SNGFT100.DAT
              *DIAGRAM
 10           IT      1  1JUN15       0    2000
 11           IO      5
 12           IN     15
              *
 13           JD  3.235  0.0001
 14           PC  0.000   0.008   0.016   0.025   0.033   0.041   0.050   0.058   0.066   0.074
 15           PC  0.087   0.099   0.118   0.138   0.216   0.377   0.834   0.911   0.931   0.950
 16           PC  0.962   0.972   0.983   0.991   1.000
 17           JD  3.216  0.5000
 18           PC  0.000   0.008   0.016   0.025   0.033   0.041   0.050   0.058   0.066   0.074
 19           PC  0.087   0.099   0.118   0.138   0.216   0.377   0.834   0.911   0.931   0.950
 20           PC  0.962   0.972   0.983   0.991   1.000
 21           JD  3.154     2.8
 22           PC  0.000   0.009   0.016   0.025   0.034   0.042   0.051   0.059   0.067   0.076
 23           PC  0.087   0.100   0.120   0.163   0.252   0.451   0.694   0.837   0.900   0.938
 24           PC  0.950   0.963   0.975   0.988   1.000
              *

 25           KK    005   BASIN
 26           BA  0.133
 27           LG   0.35    0.40    6.00    0.18       0
 28           UI      0      21      21      21      21      27      61      70      84     101
 29           UI    124     132     142     154     161     171     190     217     250     252
 30           UI    181     157     143     133     126     123     116     110     105     101
 31           UI     97      90      86      82      77      72      66      61      56      53
 32           UI     52      50      49      46      44      42      35      35      32      27
 33           UI     27      27      25      23      23      23      23      16      16      16
 34           UI     16      16      16      12      10      10      10      10      10      10
 35           UI     10      10      10       5       4       4       4       4       4       4
 36           UI      4       4       4       4       4       4       4       4       4       4
 37           UI      4       4       4       4       4       4       4       4       0       0
              *

 38           KK    025   BASIN
 39           BA  0.013
 40           LG   0.35    0.40    6.00    0.18       0
 41           UI      0       6      10      24      38      47      62      59      39      34
 42           UI     30      25      21      17      15      13      10       8       7       6
 43           UI      5       5       3       3       3       2       1       1       1       1
 44           UI      1       1       1       0       0       0       0       0       0       0
 45           UI      0       0       0       0       0       0       0       0       0       0
              *
```



```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 46           KK    030   BASIN
 47           BA  0.012
 48           LG   0.34    0.39    6.00    0.18       1
 49           UI      0       5       7      17      27      35      41      57      43      32
 50           UI     28      25      22      19      16      13      12      11       8       7
 51           UI      6       6       4       4       3       2       2       2       2       1
 52           UI      1       1       1       1       1       1       1       0       0       0
 53           UI      0       0       0       0       0       0       0       0       0       0
              *
```

```
 54          KK     035   BASIN
 55          BA   0.004
 56          LG    0.33    0.38    6.00    0.19       3
 57          UI       0       6      24      41      26      19      13       9       6       4
 58          UI       3       2       1       1       1       0       0       0       0       0
 59          UI       0       0       0       0       0       0       0       0       0       0
 60          UI       0       0       0       0       0       0       0       0       0       0
 61          UI       0       0       0       0       0       0       0       0       0       0
             *

 62          KK     040   BASIN
 63          BA   0.001
 64          LG    0.28    0.34    6.00    0.21      12
 65          UI       0      22      13       3       1       0       0       0       0       0
 66          UI       0       0       0       0       0       0       0       0       0       0
 67          UI       0       0       0       0       0       0       0       0       0       0
 68          UI       0       0       0       0       0       0       0       0       0       0
 69          UI       0       0       0       0       0       0       0       0       0       0
             *

 70          KK     CS1 COMBINE
 71          HC       5
             *

 72          KK     045   BASIN
 73          BA   0.005
 74          LG    0.27    0.30    6.00    0.24       5
 75          UI       0      32      94      53      11       3       0       0       0       0
 76          UI       0       0       0       0       0       0       0       0       0       0
 77          UI       0       0       0       0       0       0       0       0       0       0
 78          UI       0       0       0       0       0       0       0       0       0       0
 79          UI       0       0       0       0       0       0       0       0       0       0
             *

 80          KK   DET45  DIVERT
 81          DT   DIT45     0.2     0.0
 82          DI     0.0  1000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
 83          DQ     0.0  1000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
             *
```

1 HEC-1 INPUT PAGE 3

```
LINE        ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 84          KK     015   BASIN
 85          BA   0.010
 86          LG    0.24    0.25    6.00    0.26       8
 87          UI       0       7      28      42      61      86      61      43      27      13
 88          UI       8       4       2       2       0       0       0       0       0       0
 89          UI       0       0       0       0       0       0       0       0       0       0
 90          UI       0       0       0       0       0       0       0       0       0       0
 91          UI       0       0       0       0       0       0       0       0       0       0
             *

 92          KK   DET15  DIVERT
 93          DT   DIT15     0.0     6.0
 94          DI     0.0  1000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
 95          DQ     0.0  1000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
             *

 96          KK     050   BASIN
 97          BA   0.008
 98          LG    0.34    0.40    6.00    0.17       2
 99          UI       0       9      35      60      64      40      30      20      15      10
100          UI       8       5       4       3       1       1       1       1       0       0
101          UI       0       0       0       0       0       0       0       0       0       0
102          UI       0       0       0       0       0       0       0       0       0       0
103          UI       0       0       0       0       0       0       0       0       0       0
             *

104          KK     010   BASIN
105          BA   0.026
106          LG    0.34    0.39    6.00    0.18       2
107          UI       0       8       8      12      25      34      45      52      58      68
108          UI      87      74      54      47      43      40      36      33      30      27
109          UI      24      20      19      18      16      14      12      10      10       9
110          UI       8       8       6       6       6       4       4       4       4       4
111          UI       3       1       1       1       1       1       1       1       1       1
112          UI       1       1       1       1       0       0       0       0       0       0
             *

113          KK   CP010 COMBINE
114          HC       4
             *

115          KK    R60A   ROUTE
116          RS       2    FLOW
117          RC   0.035   0.025   0.035    2000  0.0220    0.00
118          RX    0.00    4.00    9.00   13.00   24.00   28.00   36.00   45.00
119          RY  2706.0 2705.00 2704.00 2703.00 2703.00 2704.00 2705.00 2706.00
             *

120          KK     020   BASIN
121          BA   0.038
122          LG    0.35    0.40    6.00    0.18       0
123          UI       0      16      23      58      92     115     139     188     127     101
124          UI      89      79      68      58      47      40      37      31      25      21
125          UI      18      16      13      13       8       8       8       6       3       3
```

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```
LINE        ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

126          UI       3       3       3       3       3       3       3       0       0       0
127          UI       0       0       0       0       0       0       0       0       0       0
             *
```

```
128          KK    R55B   ROUTE
129          RS       3    FLOW
130          RC   0.035   0.025   0.035    2343  0.0230    0.00
131          RX    0.00    9.00   18.00   33.00   52.00   60.00   68.00   73.00
132          RY 2741.0 2740.50 2740.00 2739.00 2739.00 2740.00 2740.50 2741.00
             *

133          KK     022   BASIN
134          BA   0.022
135          LG    0.35    0.40    6.00    0.18       1
136          UI       0      13      31      67      93     131     108      76      64      54
137          UI      43      33      29      23      17      14      11      10       7       6
138          UI       6       2       2       2       2       2       2       0       0       0
139          UI       0       0       0       0       0       0       0       0       0       0
140          UI       0       0       0       0       0       0       0       0       0       0
             *

141          KK   CP022 COMBINE
142          HC       2
             *

143          KK   DET22 STORAGE
144          KO
145          RS       1    STOR
146          SV            0.03    0.11    0.30    0.63    1.16    1.92
147          SQ            1.00    1.00    2.00    2.00    3.00  170.00
148          SE 2766.0 2767.00 2768.00 2769.00 2770.00 2771.00 2772.00
             *

149          KK    R55A   ROUTE
150          RS       3    FLOW
151          RC   0.035   0.025   0.035    1600  0.0230    0.00
152          RX    0.00    9.00   18.00   33.00   52.00   60.00   68.00   73.00
153          RY 2741.0 2740.50 2740.00 2739.00 2739.00 2740.00 2740.50 2741.00
             *

154          KK     055   BASIN
155          BA   0.028
156          LG    0.26    0.32    6.00    0.22      14
157          UI       0       8       8      15      28      41      52      60      66      81
158          UI     100      70      56      50      46      42      39      35      32      28
159          UI      24      21      20      19      17      14      12      11      10       9
160          UI       8       6       6       6       4       4       4       4       4       2
161          UI       2       2       2       2       2       2       2       2       2       2
162          UI       2       2       0       0       0       0       0       0       0       0
             *
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

163          KK   CP055 COMBINE
164          HC       2
             *

165          KK    R60B   ROUTE
166          RS       3    FLOW
167          RC   0.035   0.025   0.035    2450  0.0220    0.00
168          RX    0.00    4.00    9.00   13.00   24.00   28.00   36.00   45.00
169          RY 2706.0 2705.00 2704.00 2703.00 2703.00 2704.00 2705.00 2706.00
             *

170          KK     060   BASIN
171          BA   0.028
172          LG    0.32    0.37    6.00    0.19       3
173          UI       0       7       7       7      21      28      37      45      51      55
174          UI      63      78      83      55      48      43      41      37      35      32
175          UI      29      27      24      21      19      18      17      16      14      12
176          UI      11       9       9       8       8       7       6       6       6       5
177          UI       4       4       4       4       4       3       1       1       1       1
178          UI       1       1       1       1       1       1       1       1       1       1
179          UI       1       0       0       0       0       0       0       0       0       0
             *

180          KK   CP060 COMBINE
181          HC       3
             *

182          KK     070   BASIN
183          BA   0.017
184          LG    0.35    0.40    6.00    0.18       0
185          UI       0      10      25      54      74     106      80      59      49      41
186          UI      32      25      22      16      13      11       8       7       5       5
187          UI       3       2       2       2       2       2       2       0       0       0
188          UI       0       0       0       0       0       0       0       0       0       0
189          UI       0       0       0       0       0       0       0       0       0       0
             *

190          KK     R72   ROUTE
191          RS       4    FLOW
192          RC   0.035   0.025   0.035    1798  0.0210    0.00
193          RX    0.00   12.00   23.00   30.00   40.00   50.00   67.00   88.00
194          RY 2739.0 2737.00 2736.00 2735.00 2735.00 2736.00 2737.00 2739.00
             *

195          KK     072   BASIN
196          BA   0.030
197          LG    0.31    0.34    6.00    0.21       3
198          UI       0       9       9      18      33      42      49      55      63      72
199          UI      95     114     100      84      74      65      56      48      41      31
200          UI      20      16      15      12       9       9       3       3       3       3
201          UI       3       3       3       3       0       0       0       0       0       0
202          UI       0       0       0       0       0       0       0       0       0       0
             *
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  203     KK     065   BASIN
  204     BA   0.002
  205     LG    0.35    0.40    6.00    0.18       0
  206     UI       0       4      14      21      13       9       6       4       3       2
  207     UI       1       1       0       0       0       0       0       0       0       0
  208     UI       0       0       0       0       0       0       0       0       0       0
  209     UI       0       0       0       0       0       0       0       0       0       0
  210     UI       0       0       0       0       0       0       0       0       0       0
          *
  211     KK     R73   ROUTE
  212     RS       2    FLOW
  213     RC   0.035   0.025   0.035    1401  0.0260    0.00
  214     RX    0.00   56.00   65.00   74.00   78.00   84.00   89.00   99.00
  215     RY  2741.0 2740.00 2739.00 2738.00 2738.00 2739.00 2740.00 2743.00
          *
  216     KK     073   BASIN
  217     BA   0.021
  218     LG    0.28    0.30    6.00    0.24       5
  219     UI       0      10      21      45      58      72      96     128     100      80
  220     UI      63      49      30      18      15      10       5       3       3       3
  221     UI       3       0       0       0       0       0       0       0       0       0
  222     UI       0       0       0       0       0       0       0       0       0       0
  223     UI       0       0       0       0       0       0       0       0       0       0
          *
  224     KK   CP073 COMBINE
  225     HC       4
          *
  226     KK     R74   ROUTE
  227     RS       1    FLOW
  228     RC   0.035   0.025   0.035     540  0.0220    0.00
  229     RX    0.00    8.00   22.00   38.00   97.00  105.00  111.00  118.00
  230     RY  2731.0 2730.00 2728.00 2738.00 2727.00 2728.00 2729.00 2730.00
          *
  231     KK     074   BASIN
  232     BA   0.012
  233     LG    0.28    0.31    6.00    0.23       5
  234     UI       0      13      46      70     116      92      62      34      16       8
  235     UI       3       3       0       0       0       0       0       0       0       0
  236     UI       0       0       0       0       0       0       0       0       0       0
  237     UI       0       0       0       0       0       0       0       0       0       0
  238     UI       0       0       0       0       0       0       0       0       0       0
          *
  239     KK     075   BASIN
  240     BA   0.002
  241     LG    0.34    0.39    6.00    0.18       0
  242     UI       0      12      32      17       9       4       2       1       1       0
  243     UI       0       0       0       0       0       0       0       0       0       0
  244     UI       0       0       0       0       0       0       0       0       0       0
```



```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  245     UI       0       0       0       0       0       0       0       0       0       0
  246     UI       0       0       0       0       0       0       0       0       0       0
          *
  247     KK   CP075 COMBINE
  248     HC       3
          *
  249     KK   DET75 STORAGE
  250     KO
  251     RS       1    STOR
  252     SV            0.10    0.30    0.64    1.17    1.92
  253     SQ            6.00   17.00   32.00   43.00  250.00
  254     SE  2717.0 2718.00 2719.00 2720.00 2721.00 2722.00
          *
  255     KK    R78A   ROUTE
  256     RS       1    FLOW
  257     RC   0.035   0.025   0.035     700  0.0210    0.00
  258     RX    0.00   17.00   22.00   31.00   58.00   61.00   95.00  108.00
  259     RY  2712.0 2709.00 2707.00 2706.00 2706.00 2707.00 2710.00 2717.00
          *
  260     KK     077   BASIN
  261     BA   0.004
  262     LG    0.32    0.36    6.00    0.20       1
  263     UI       0       4      17      28      33      20      15      11       8       5
  264     UI       4       3       2       2       1       1       1       1       0       0
  265     UI       0       0       0       0       0       0       0       0       0       0
  266     UI       0       0       0       0       0       0       0       0       0       0
  267     UI       0       0       0       0       0       0       0       0       0       0
          *
  268     KK    R78B   ROUTE
  269     RS       1    FLOW
  270     RC   0.035   0.025   0.035     350  0.0310    0.00
  271     RX    0.00    7.00   17.00   23.00   25.00   46.00   82.00   92.00
  272     RY  2713.0 2710.00 2708.00 2707.00 2707.00 2708.00 2711.00 2712.00
          *
  273     KK   CP078 COMBINE
  274     HC       2
```

```
                *
275             KK     R78   ROUTE
276             RS       3    FLOW
277             RC   0.035   0.025   0.035    1450  0.0240    0.00
278             RX    0.00    7.00   17.00   23.00   25.00   46.00   82.00   92.00
279             RY  2713.0 2710.00 2708.00 2707.00 2707.00 2708.00 2711.00 2712.00
                *
1                                      HEC-1 INPUT                                    PAGE  8

LINE            ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

280             KK     078   BASIN
281             BA   0.017
282             LG    0.31    0.35    6.00    0.20       5
283             UI       0       5       5      10      18      24      27      30      35      40
284             UI      52      64      58      48      42      37      32      28      24      18
285             UI      12       9       8       7       5       5       2       2       2       2
286             UI       2       2       2       2       0       0       0       0       0       0
287             UI       0       0       0       0       0       0       0       0       0       0
                *
288             KK     081   BASIN
289             BA   0.005
290             LG    0.31    0.34    6.00    0.21       2
291             UI       0       6      21      32      52      37      24      11       6       2
292             UI       1       1       0       0       0       0       0       0       0       0
293             UI       0       0       0       0       0       0       0       0       0       0
294             UI       0       0       0       0       0       0       0       0       0       0
295             UI       0       0       0       0       0       0       0       0       0       0
                *
296             KK   DET81 STORAGE
297             KO
298             RS       1    STOR
299             SV            0.02    0.09    0.23
300             SQ            4.00    5.00    7.00
301             SE  2702.0 2703.00 2704.00 2705.00
                *
302             KK     R82   ROUTE
303             RD    1450  0.0220   0.013            CIRC   2.000
                *
304             KK     082   BASIN
305             BA   0.018
306             LG    0.30    0.36    6.00    0.20      10
307             UI       0       7       7      22      30      37      43      51      67      84
308             UI      70      58      50      41      34      27      17      12      11       7
309             UI       7       3       2       2       2       2       2       0       0       0
310             UI       0       0       0       0       0       0       0       0       0       0
311             UI       0       0       0       0       0       0       0       0       0       0
                *
312             KK   CP082 COMBINE
313             HC       4
                *
314             KK     105   BASIN
315             BA   0.012
316             LG    0.35    0.40    6.00    0.18       0
317             UI       0       4       4      12      19      27      31      36      48      41
318             UI      29      26      23      21      18      16      14      12      10      10
319             UI       9       7       6       5       5       4       3       3       3       2
320             UI       2       2       2       1       1       1       1       1       1       1
321             UI       1       1       1       0       0       0       0       0       0       0
                *
1                                      HEC-1 INPUT                                    PAGE  9

LINE            ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

322             KK     083   BASIN
323             BA   0.002
324             LG    0.27    0.40    6.00    0.16      25
325             UI       0      12      32      17       9       4       2       1       1       0
326             UI       0       0       0       0       0       0       0       0       0       0
327             UI       0       0       0       0       0       0       0       0       0       0
328             UI       0       0       0       0       0       0       0       0       0       0
329             UI       0       0       0       0       0       0       0       0       0       0
                *
330             KK   CP083 COMBINE
331             HC       2
                *
332             KK    R84A   ROUTE
333             RD     830  0.0300   0.013            CIRC   3.000
                *
334             KK     106   BASIN
335             BA   0.002
336             LG    0.20    0.35    6.76    0.12      48
337             UI       0      20      35      14       5       2       1       0       0       0
338             UI       0       0       0       0       0       0       0       0       0       0
339             UI       0       0       0       0       0       0       0       0       0       0
340             UI       0       0       0       0       0       0       0       0       0       0
341             UI       0       0       0       0       0       0       0       0       0       0
                *
342             KK     084   BASIN
343             BA   0.007
344             LG    0.26    0.39    6.00    0.17      28
345             UI       0       7      26      39      64      55      37      22      10       6
```

```
 346          UI        2        2        0        0        0        0        0        0        0        0
 347          UI        0        0        0        0        0        0        0        0        0        0
 348          UI        0        0        0        0        0        0        0        0        0        0
 349          UI        0        0        0        0        0        0        0        0        0        0
              *

 350          KK    CP084 COMBINE
 351          HC        3
              *

 352          KK     R304   ROUTE
 353          RS        1    FLOW
 354          RC    0.035    0.025    0.035      611   0.0250     0.00
 355          RX     0.00     8.00    15.00    29.00    33.00    42.00    48.00    52.00
 356          RY  2657.0 2656.00 2655.00 2654.00 2654.00 2655.00 2656.00 2657.00
              *
1                                          HEC-1 INPUT                                    PAGE 10

LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 357          KK      304   BASIN
 358          BA    0.003
 359          LG     0.25     0.15     7.00     0.19        5
 360          UI        0        6       17       31       31       18        7        4        1        1
 361          UI        0        0        0        0        0        0        0        0        0        0
 362          UI        0        0        0        0        0        0        0        0        0        0
 363          UI        0        0        0        0        0        0        0        0        0        0
 364          UI        0        0        0        0        0        0        0        0        0        0
              *

 365          KK    CP304 COMBINE
 366          HC        3
              *

 367          KK    R305B   ROUTE
 368          RS        1    FLOW
 369          RC    0.035    0.025    0.035      279   0.0220     0.00
 370          RX     0.00    22.00    30.00    37.00    50.00    60.00    80.00    94.00
 371          RY  2649.0 2648.00 2647.00 2646.00 2646.00 2647.00 2648.00 2649.00
              *

 372          KK      088   BASIN
 373          BA    0.003
 374          LG     0.30     0.25     7.27     0.12        6
 375          UI        0        7       21       38       28       14        5        2        1        0
 376          UI        0        0        0        0        0        0        0        0        0        0
 377          UI        0        0        0        0        0        0        0        0        0        0
 378          UI        0        0        0        0        0        0        0        0        0        0
 379          UI        0        0        0        0        0        0        0        0        0        0
              *

 380          KK    R305A   ROUTE
 381          RS        1    FLOW
 382          RC    0.035    0.025    0.035      415   0.0410     0.00
 383          RX     0.00    10.00    23.00    31.00    55.00    63.00    69.00    74.00
 384          RY  2650.0 2649.00 2648.00 2647.00 2647.00 2648.00 2649.00 2650.00
              *

 385          KK      305   BASIN
 386          BA    0.004
 387          LG     0.25     0.15     7.94     0.13        5
 388          UI        0       17       52       56       21        6        2        0        0        0
 389          UI        0        0        0        0        0        0        0        0        0        0
 390          UI        0        0        0        0        0        0        0        0        0        0
 391          UI        0        0        0        0        0        0        0        0        0        0
 392          UI        0        0        0        0        0        0        0        0        0        0
              *

 393          KK    CP305 COMBINE
 394          HC        3
              *
1                                          HEC-1 INPUT                                    PAGE 11

LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 395          KK     R306   ROUTE
 396          RS        1    FLOW
 397          RC    0.035    0.025    0.035      505   0.0180     0.00
 398          RX     0.00     5.00     9.00    13.00    18.00    27.00    43.00    58.00
 399          RY  2644.0 2643.00 2642.00 2641.00 2641.00 2642.00 2643.00 2644.00
              *

 400          KK      306   BASIN
 401          BA    0.004
 402          LG     0.23     0.17     7.94     0.12       15
 403          UI        0       11       32       56       34       14        5        2        0        0
 404          UI        0        0        0        0        0        0        0        0        0        0
 405          UI        0        0        0        0        0        0        0        0        0        0
 406          UI        0        0        0        0        0        0        0        0        0        0
 407          UI        0        0        0        0        0        0        0        0        0        0
              *

 408          KK    CP306 COMBINE
 409          HC        2
              *

 410          KK   DIV307  DIVERT
 411          DT   DTV307     0.0      0.0
 412          DI      0.0     97.0    116.0    166.0    228.0    262.0    298.0    336.0    375.0    500.0
 413          DQ      0.0      0.0      4.0     23.0     50.0     66.0     83.0    102.0    121.0    188.0
              *

 414          KK      300   BASIN
```

```
415          BA   0.004
416          LG    0.33    0.32    7.58    0.09       7
417          UI       0       8      24      45      40      23       9       4       1       0
418          UI       0       0       0       0       0       0       0       0       0       0
419          UI       0       0       0       0       0       0       0       0       0       0
420          UI       0       0       0       0       0       0       0       0       0       0
421          UI       0       0       0       0       0       0       0       0       0       0
             *

422          KK    DETE  DIVERT
423          DT    DTTE     0.1     0.0
424          DI     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
425          DQ     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
             *

426          KK    R301   ROUTE
427          RS       1    FLOW
428          RC   0.035   0.025   0.035     442  0.0410    0.00
429          RX    0.00    5.00   12.00   38.00   53.00   82.00  109.00  150.00
430          RY  2660.0 2659.00 2658.00 2656.00 2656.00 2657.00 2658.00 2660.00
             *
```

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```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

431          KK     301   BASIN
432          BA   0.007
433          LG    0.25    0.19    6.54    0.22       6
434          UI       0      33     103      92      32       8       0       0       0       0
435          UI       0       0       0       0       0       0       0       0       0       0
436          UI       0       0       0       0       0       0       0       0       0       0
437          UI       0       0       0       0       0       0       0       0       0       0
438          UI       0       0       0       0       0       0       0       0       0       0
             *

439          KK   CP301 COMBINE
440          HC       2
             *

441          KK    DETC  DIVERT
442          DT    DTTC     0.4     0.0
443          DI     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
444          DQ     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
             *

445          KK   R302A   ROUTE
446          RS       1    FLOW
447          RC   0.035   0.025   0.035     320  0.0280    0.00
448          RX    0.00   12.00   20.00   32.00   36.00   50.00   59.00   69.00
449          RY  2649.0 2648.00 2647.00 2646.50 2646.50 2647.00 2648.00 2649.00
             *

450          KK     303   BASIN
451          BA   0.006
452          LG    0.25    0.17    6.76    0.19       5
453          UI       0      11      35      63      61      36      15       7       2       2
454          UI       0       0       0       0       0       0       0       0       0       0
455          UI       0       0       0       0       0       0       0       0       0       0
456          UI       0       0       0       0       0       0       0       0       0       0
457          UI       0       0       0       0       0       0       0       0       0       0
             *

458          KK    DETD  DIVERT
459          DT    DTTD     0.1     0.0
460          DI     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
461          DQ     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
             *

462          KK   R302B   ROUTE
463          RS       1    FLOW
464          RC   0.035   0.025   0.035     276  0.0330    0.00
465          RX    0.00   14.00   30.00   52.00   62.00   87.00  100.00  115.00
466          RY  2652.0 2651.00 2650.00 2649.00 2649.00 2650.00 2651.00 2652.00
             *
```

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```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

467          KK     302   BASIN
468          BA   0.012
469          LG    0.24    0.18    6.76    0.20      10
470          UI       0      24      73     135     119      68      26      11       4       0
471          UI       0       0       0       0       0       0       0       0       0       0
472          UI       0       0       0       0       0       0       0       0       0       0
473          UI       0       0       0       0       0       0       0       0       0       0
474          UI       0       0       0       0       0       0       0       0       0       0
             *

475          KK   CP302 COMBINE
476          HC       3
             *

477          KK    DETB  DIVERT
478          DT    DTTB     0.5     0.0
479          DI     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
480          DQ     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
             *

481          KK     307   BASIN
482          BA   0.002
483          LG    0.25    0.15    7.94    0.13       5
484          UI       0      19      44      13       2       0       0       0       0       0
485          UI       0       0       0       0       0       0       0       0       0       0
```

```
 486          UI        0        0        0        0        0        0        0        0        0        0
 487          UI        0        0        0        0        0        0        0        0        0        0
 488          UI        0        0        0        0        0        0        0        0        0        0
              *

 489          KK      308    BASIN
 490          BA    0.006
 491          LG     0.25     0.15     7.58     0.14        5
 492          UI        0       23       70       87       37       11        3        0        0        0
 493          UI        0        0        0        0        0        0        0        0        0        0
 494          UI        0        0        0        0        0        0        0        0        0        0
 495          UI        0        0        0        0        0        0        0        0        0        0
 496          UI        0        0        0        0        0        0        0        0        0        0
              *

 497          KK  DIV307RETRIEVE
 498          DR  DTV307
              *

 499          KK    CP308 COMBINE
 500          HC        4
              *

 501          KK     DETA  DIVERT
 502          DT     DTTA      6.9      0.0
 503          DI      0.0 10000.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
 504          DQ      0.0 10000.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
              *
```

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```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 505          KK    CP310 COMBINE
 506          HC        2
              *

 507          KK      089    BASIN
 508          BA    0.001
 509          LG     0.33     0.38     6.00     0.19        1
 510          UI        0        7       16        8        4        2        1        0        0        0
 511          UI        0        0        0        0        0        0        0        0        0        0
 512          UI        0        0        0        0        0        0        0        0        0        0
 513          UI        0        0        0        0        0        0        0        0        0        0
 514          UI        0        0        0        0        0        0        0        0        0        0
              *

 515          KK      CS2 COMBINE
 516          HC        4
              *

 517          KK      120    BASIN
 518          BA    0.028
 519          LG     0.35     0.40     6.00     0.18        0
 520          UI        0       15       31       72      102      130      159      100       83       71
 521          UI       60       48       38       33       27       20       17       15       11       10
 522          UI        7        7        5        3        3        3        3        3        3        3
 523          UI        0        0        0        0        0        0        0        0        0        0
 524          UI        0        0        0        0        0        0        0        0        0        0
              *

 525          KK      R97    ROUTE
 526          RS        7     FLOW
 527          RC    0.035    0.025    0.035     4000   0.0210     0.00
 528          RX     0.00     7.00    27.00    43.00    47.00    50.00    55.00    95.00
 529          RY  2725.0 2724.00 2722.00 2721.00 2720.80 2721.00 2722.00 2725.00
              *

 530          KK      100    BASIN
 531          BA    0.017
 532          LG     0.31     0.34     6.00     0.21        4
 533          UI        0        4        4        5       15       18       22       25       27       31
 534          UI       35       42       54       56       47       41       36       32       28       25
 535          UI       22       19       14        9        8        7        6        4        4        3
 536          UI        1        1        1        1        1        1        1        1        1        0
 537          UI        0        0        0        0        0        0        0        0        0        0
              *

 538          KK      097    BASIN
 539          BA    0.050
 540          LG     0.31     0.36     6.00     0.20        4
 541          UI        0       10       10       10       15       34       40       48       52       57
 542          UI       62       67       75       81       95      115      134      121      105       94
 543          UI       86       80       72       65       60       52       48       42       33       25
 544          UI       18       18       17       17       11       10       10        9        3        3
 545          UI        3        3        3        3        3        3        3        3        3        3
 546          UI        0        0        0        0        0        0        0        0        0        0
              *
```

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```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 547          KK    CP097 COMBINE
 548          HC        3
              *

 549          KK      R91    ROUTE
 550          RS        2     FLOW
 551          RC    0.035    0.025    0.035     1080   0.0190     0.00
 552          RX     0.00     9.00    29.00    35.00    39.00    44.00    54.00    59.00
 553          RY  2685.0 2684.00 2683.00 2682.00 2681.30 2682.00 2683.00 2683.20
              *

 554          KK      091    BASIN
```

```
555          BA   0.009
556          LG    0.34    0.39    6.00    0.18       0
557          UI       0       4       7      16      21      25      31      44      48      37
558          UI      30      24      20      13       7       7       4       3       1       1
559          UI       1       1       1       0       0       0       0       0       0       0
560          UI       0       0       0       0       0       0       0       0       0       0
561          UI       0       0       0       0       0       0       0       0       0       0
             *

562          KK   CP091 COMBINE
563          HC       2
             *

564          KK   DIV92  DIVERT
565          DT   DTT92     0.0     0.0
566          DI     0.0   100.0   250.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
567          DQ     0.0     0.0   150.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
             *

568          KK   DIV92RETRIEVE
569          DR   DTT92
             *

570          KK    090   BASIN
571          BA   0.017
572          LG    0.17    0.40    6.00    0.15      58
573          UI       0      25      83     136     184     116      64      26      12       5
574          UI       5       0       0       0       0       0       0       0       0       0
575          UI       0       0       0       0       0       0       0       0       0       0
576          UI       0       0       0       0       0       0       0       0       0       0
577          UI       0       0       0       0       0       0       0       0       0       0
             *

578          KK   CP090 COMBINE
579          HC       2
             *
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

580          KK   DET92 STORAGE
581          KO
582          RS       1    STOR
583          SV            0.74    2.33    4.08    5.02    6.07
584          SE  2656.5 2657.00 2658.00 2659.00 2659.50 2660.00
585          SS  2659.7   50.00    2.80    1.50
586          SL  2656.4    0.44    0.60    0.50
             *

587          KK    CP91 COMBINE
588          HC       2
             *

589          KK     R92   ROUTE
590          RS       1    FLOW
591          RC   0.035   0.025   0.035     180  0.0210    0.00
592          RX    0.00   21.00   24.00   26.00   33.00   36.00   38.00   54.00
593          RY  2660.0 2659.00 2658.00 2657.00 2657.00 2658.00 2659.00 2660.00
             *

594          KK     092   BASIN
595          BA   0.004
596          LG    0.28    0.37    6.54    0.13      74
597          UI       0      50      89      13       0       0       0       0       0       0
598          UI       0       0       0       0       0       0       0       0       0       0
599          UI       0       0       0       0       0       0       0       0       0       0
600          UI       0       0       0       0       0       0       0       0       0       0
601          UI       0       0       0       0       0       0       0       0       0       0
             *

602          KK   CP092 COMBINE
603          HC       2
             *

604          KK   R132A   ROUTE
605          RS       3    FLOW
606          RC   0.035   0.025   0.035     550  0.0250    0.00
607          RX    0.00   30.00   50.00   70.00   80.00   90.00  110.00  120.00
608          RY  2645.0 2644.00 2643.00 2642.00 2642.00 2643.00 2645.00 2646.00
             *

609          KK     135   BASIN
610          BA   0.011
611          LG    0.35    0.40    6.00    0.18       0
612          UI       0       8      31      56      84      60      44      35      26      20
613          UI      16      11       9       6       5       4       3       2       2       2
614          UI       2       0       0       0       0       0       0       0       0       0
615          UI       0       0       0       0       0       0       0       0       0       0
616          UI       0       0       0       0       0       0       0       0       0       0
             *
```



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LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

617          KK    R112   ROUTE
618          RS       2    FLOW
619          RC   0.035   0.025   0.035    1100  0.0236    0.00
620          RX    0.00    7.00   27.00   43.00   47.00   50.00   55.00   95.00
621          RY  2725.0 2724.00 2722.00 2721.00 2720.80 2721.00 2722.00 2725.00
             *

622          KK     112   BASIN
623          BA   0.019
```

```
624          LG   0.35    0.40    6.00    0.18       0
625          UI      0       9      15      34      54      67      87      89      58      50
626          UI     44      38      32      25      22      19      16      12      11      10
627          UI      7       7       5       4       4       3       2       2       2       2
628          UI      2       2       2       2       0       0       0       0       0       0
629          UI      0       0       0       0       0       0       0       0       0       0
             *

630          KK   CP112 COMBINE
631          HC       2
             *

632          KK  DET112 STORAGE
633          KO
634          RS       1    STOR
635          SV            0.05    0.15    0.32    0.59    0.95    1.44
636          SQ            1.00    1.00    2.00    2.00    3.00   70.00
637          SE  2732.0 2733.00 2734.00 2735.00 2736.00 2737.00 2738.00
             *

638          KK    R111   ROUTE
639          RS      10    FLOW
640          RC   0.035   0.025   0.035    3800  0.0210    0.00
641          RX    0.00    7.00   27.00   43.00   47.00   50.00   55.00   95.00
642          RY  2725.0 2724.00 2722.00 2721.00 2720.80 2721.00 2722.00 2725.00
             *

643          KK     150   BASIN
644          BA   0.011
645          LG    0.29    0.33    6.00    0.22       5
646          UI       0       6      12      25      32      40      55      68      51      41
647          UI      32      24      13       9       6       5       2       2       2       2
648          UI       0       0       0       0       0       0       0       0       0       0
649          UI       0       0       0       0       0       0       0       0       0       0
650          UI       0       0       0       0       0       0       0       0       0       0
             *

651          KK     111   BASIN
652          BA   0.052
653          LG    0.27    0.25    6.00    0.22       7
654          UI       0      17      17      43      70      86      99     113     133     170
655          UI     217     189     157     137     116     100      84      68      44      30
656          UI      28      22      17      15       5       5       5       5       5       5
657          UI       5       0       0       0       0       0       0       0       0       0
658          UI       0       0       0       0       0       0       0       0       0       0
             *
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

659          KK   CP111 COMBINE
660          HC       3
             *

661          KK  DIV130  DIVERT
662          DT  DTT130     0.0     0.0
663          DI       0.0    31.0    76.0   134.0   182.0   224.0   254.0     0.0     0.0     0.0
664          DQ       0.0    13.0    28.0    46.0    64.0    76.0    81.0     0.0     0.0     0.0
             *

665          KK  DIV130RETRIEVE
666          DR  DTT130
             *

667          KK  DET130 STORAGE
668          KO
669          RS       1    STOR
670          SV            0.12    0.27    0.45    0.68    0.94    1.09    1.24
671          SQ            1.00    1.00    2.00    2.00    3.00   23.00   65.00
672          SE  2655.0 2656.00 2657.00 2658.00 2659.00 2660.00 2660.50 2661.00
             *

673          KK  COM130 COMBINE
674          HC       2
             *

675          KK   R130B   ROUTE
676          RS       1    FLOW
677          RC   0.035   0.025   0.035     500  0.0260    0.00
678          RX    0.00   20.00   26.00   29.00   31.00   34.00   40.00   60.00
679          RY  2649.0 2649.00 2647.00 2646.00 2646.00 2647.00 2649.00 2650.00
             *

680          KK     170   BASIN
681          BA   0.030
682          LG    0.27    0.31    6.00    0.19       5
683          UI       0      14      23      54      72      87     108     154     158     121
684          UI      99      80      63      40      24      21      14       9       4       4
685          UI       4       4       4       0       0       0       0       0       0       0
686          UI       0       0       0       0       0       0       0       0       0       0
687          UI       0       0       0       0       0       0       0       0       0       0
             *

688          KK     099   BASIN
689          BA   0.029
690          LG    0.27    0.29    6.00    0.24       6
691          UI       0      15      33      67      86     109     154     178     133     105
692          UI      82      59      31      25      15      10       5       5       5       5
693          UI       0       0       0       0       0       0       0       0       0       0
694          UI       0       0       0       0       0       0       0       0       0       0
695          UI       0       0       0       0       0       0       0       0       0       0
             *
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

696       KK     R99   ROUTE
697       RD     650  0.0050   0.013            CIRC   4.000
          *

698       KK   CP170 COMBINE
699       HC       2
          *

700       KK  RET170 STORAGE
701       KO
702       RS       1    STOR
703       SV            2.77    5.95    9.58   13.79   18.57
704       SQ                                           10.00
705       SE  2750.0 2751.00 2752.00 2753.00 2754.00 2755.00
          *

706       KK     200   BASIN
707       BA   0.005
708       LG    0.35    0.38    6.34    0.15       0
709       UI       0       2       2       7      10      11      14      17      24      23
710       UI      18      15      13      10       8       5       3       3       2       2
711       UI       1       1       1       1       1       1       0       0       0       0
712       UI       0       0       0       0       0       0       0       0       0       0
713       UI       0       0       0       0       0       0       0       0       0       0
          *

714       KK   R130C   ROUTE
715       RS       1    FLOW
716       RC   0.035   0.025   0.035     450  0.0260    0.00
717       RX    0.00   20.00   26.00   29.00   31.00   34.00   40.00   60.00
718       RY  2649.0 2649.00 2647.00 2646.00 2646.00 2647.00 2649.00 2650.00
          *

719       KK     130   BASIN
720       BA   0.006
721       LG    0.30    0.40    6.00    0.17      16
722       UI       0       6      22      33      55      47      32      19       9       5
723       UI       2       2       0       0       0       0       0       0       0       0
724       UI       0       0       0       0       0       0       0       0       0       0
725       UI       0       0       0       0       0       0       0       0       0       0
726       UI       0       0       0       0       0       0       0       0       0       0
          *

727       KK   CP130 COMBINE
728       HC       4
          *

729       KK   R132B   ROUTE
730       RS       1    FLOW
731       RC   0.035   0.025   0.035     300  0.0250    0.00
732       RX    0.00   30.00   50.00   70.00   80.00   90.00  110.00  120.00
733       RY  2645.0 2644.00 2643.00 2642.00 2642.00 2643.00 2645.00 2646.00
          *
```



```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

734       KK     132   BASIN
735       BA   0.009
736       LG    0.35    0.32    7.58    0.09       1
737       UI       0       5      11      25      35      46      50      32      27      23
738       UI      19      15      12      11       8       6       5       4       4       2
739       UI       2       2       1       1       1       1       1       1       1       0
740       UI       0       0       0       0       0       0       0       0       0       0
741       UI       0       0       0       0       0       0       0       0       0       0
          *

742       KK   CP132 COMBINE
743       HC       3
          *

744       KK     CS3 COMBINE
745       HC       2
          *

746       KK     162   BASIN
747       BA   0.010
748       LG    0.35    0.40    6.00    0.18       0
749       UI       0       5      11      25      35      45      57      36      30      26
750       UI      22      18      14      12      10       8       6       6       4       4
751       UI       3       3       2       1       1       1       1       1       1       1
752       UI       0       0       0       0       0       0       0       0       0       0
753       UI       0       0       0       0       0       0       0       0       0       0
          *

754       KK  DET162 STORAGE
755       KO
756       RS       1    STOR
757       SV            0.03    0.12    0.29    0.59    1.07
758       SQ            1.00    1.00    2.00    2.00    3.00
759       SE  2732.0 2733.00 2734.00 2735.00 2736.00 2737.00
          *

760       KK    R165   ROUTE
761       RS      12    FLOW
762       RC   0.035   0.025   0.035    1840  0.0050    0.00
763       RX    0.00   20.00   26.00   29.00   31.00   34.00   40.00   60.00
764       RY  2650.0 2651.00 2649.00 2648.00 2648.00 2649.00 2651.00 2650.00
          *

765       KK     165   BASIN
```

```
766          BA   0.023
767          LG    0.32    0.38    6.00    0.19       4
768          UI       0       8       8      20      31      39      44      51      60      79
769          UI      97      83      69      60      51      44      37      28      18      13
770          UI      13       9       8       5       2       2       2       2       2       2
771          UI       2       0       0       0       0       0       0       0       0       0
772          UI       0       0       0       0       0       0       0       0       0       0
             *
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

773          KK     164   BASIN
774          BA   0.012
775          LG    0.25    0.25    6.00    0.27       5
776          UI       0     151     268      39       0       0       0       0       0       0
777          UI       0       0       0       0       0       0       0       0       0       0
778          UI       0       0       0       0       0       0       0       0       0       0
779          UI       0       0       0       0       0       0       0       0       0       0
780          UI       0       0       0       0       0       0       0       0       0       0
             *

781          KK  DET164  DIVERT
782          DT  DTT164     0.9     0.0
783          DI     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
784          DQ     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
             *

785          KK    R164   ROUTE
786          RS       6    FLOW
787          RC   0.035   0.025   0.035    1400  0.0050    0.00
788          RX    0.00   20.00   26.00   29.00   31.00   34.00   40.00   60.00
789          RY  2650.0 2651.00 2649.00 2648.00 2648.00 2649.00 2651.00 2650.00
             *

790          KK   CP164 COMBINE
791          HC       3
             *

792          KK     163   BASIN
793          BA   0.006
794          LG    0.35    0.40    6.00    0.18       0
795          UI       0       8      26      41      64      43      27      11       6       2
796          UI       2       0       0       0       0       0       0       0       0       0
797          UI       0       0       0       0       0       0       0       0       0       0
798          UI       0       0       0       0       0       0       0       0       0       0
799          UI       0       0       0       0       0       0       0       0       0       0
             *

800          KK  DET163  DIVERT
801          DT  DTT163     0.3     0.0
802          DI     0.0  1000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
803          DQ     0.0  1000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
             *

804          KK    R163   ROUTE
805          RS       1    FLOW
806          RC   0.025   0.025   0.025     238  0.0420    0.00
807          RX    0.00    6.00   11.00   47.00   62.00   68.00   77.00   93.00
808          RY  2689.0 2688.00 2687.00 2687.30 2686.70 2687.00 2688.00 2689.00
             *
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

809          KK   CP165 COMBINE
810          HC       2
             *

811          KK     220   BASIN
812          BA   0.013
813          LG    0.35    0.40    6.00    0.18       0
814          UI       0       6      11      26      40      49      69      54      39      34
815          UI      29      25      20      16      15      12       9       8       7       5
816          UI       5       4       3       3       2       1       1       1       1       1
817          UI       1       1       0       0       0       0       0       0       0       0
818          UI       0       0       0       0       0       0       0       0       0       0
             *

819          KK     240   BASIN
820          BA   0.004
821          LG    0.35    0.40    6.00    0.18       0
822          UI       0      21      61      35      19       9       5       2       1       0
823          UI       0       0       0       0       0       0       0       0       0       0
824          UI       0       0       0       0       0       0       0       0       0       0
825          UI       0       0       0       0       0       0       0       0       0       0
826          UI       0       0       0       0       0       0       0       0       0       0
             *

827          KK     230   BASIN
828          BA   0.003
829          LG    0.35    0.40    6.00    0.18       0
830          UI       0      11      40      28      16       9       5       3       2       1
831          UI       1       0       0       0       0       0       0       0       0       0
832          UI       0       0       0       0       0       0       0       0       0       0
833          UI       0       0       0       0       0       0       0       0       0       0
834          UI       0       0       0       0       0       0       0       0       0       0
             *

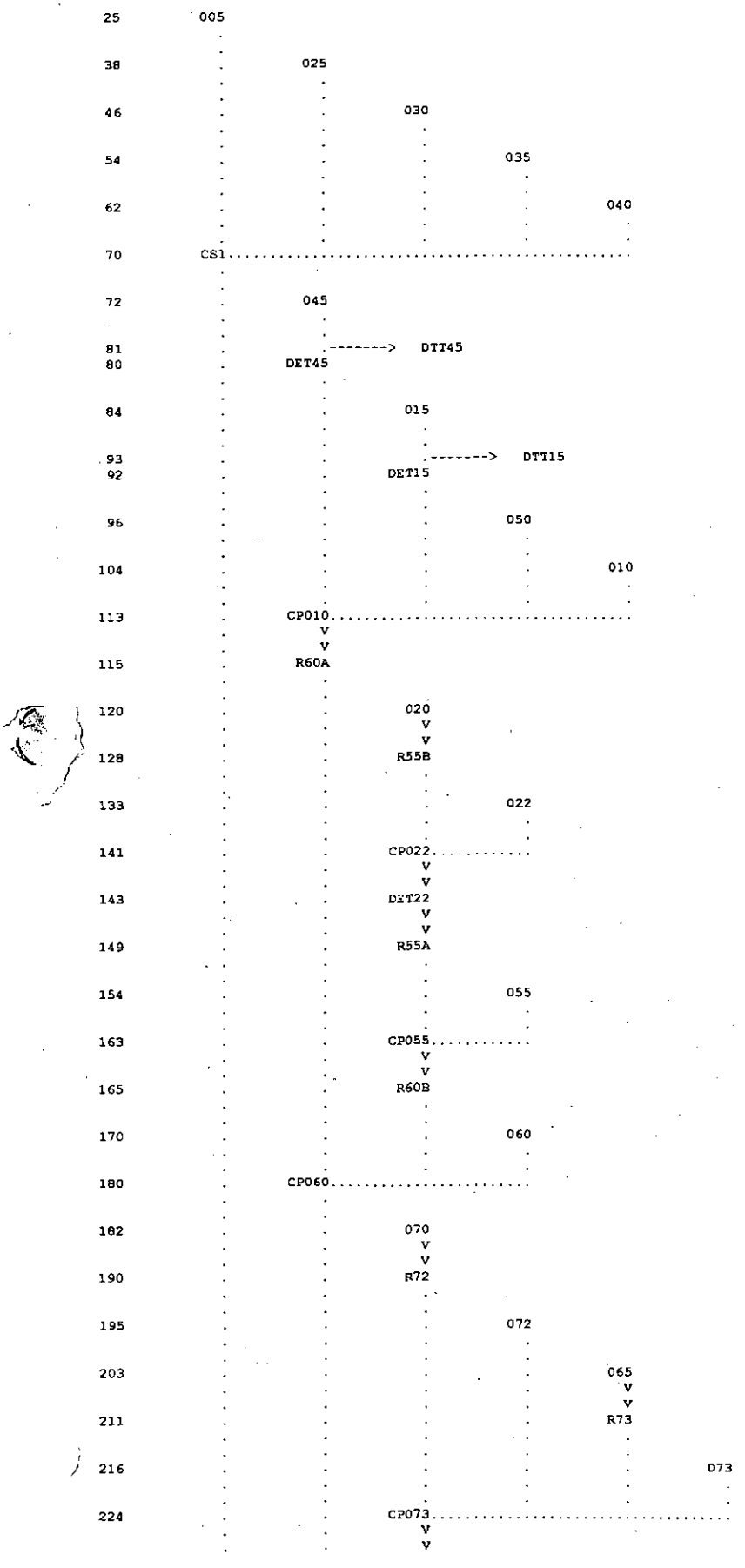
835          KK     210   BASIN
836          BA   0.009
837          LG    0.35    0.40    6.00    0.18       0
838          UI       0       6      15      31      42      60      39      31      26      21
```

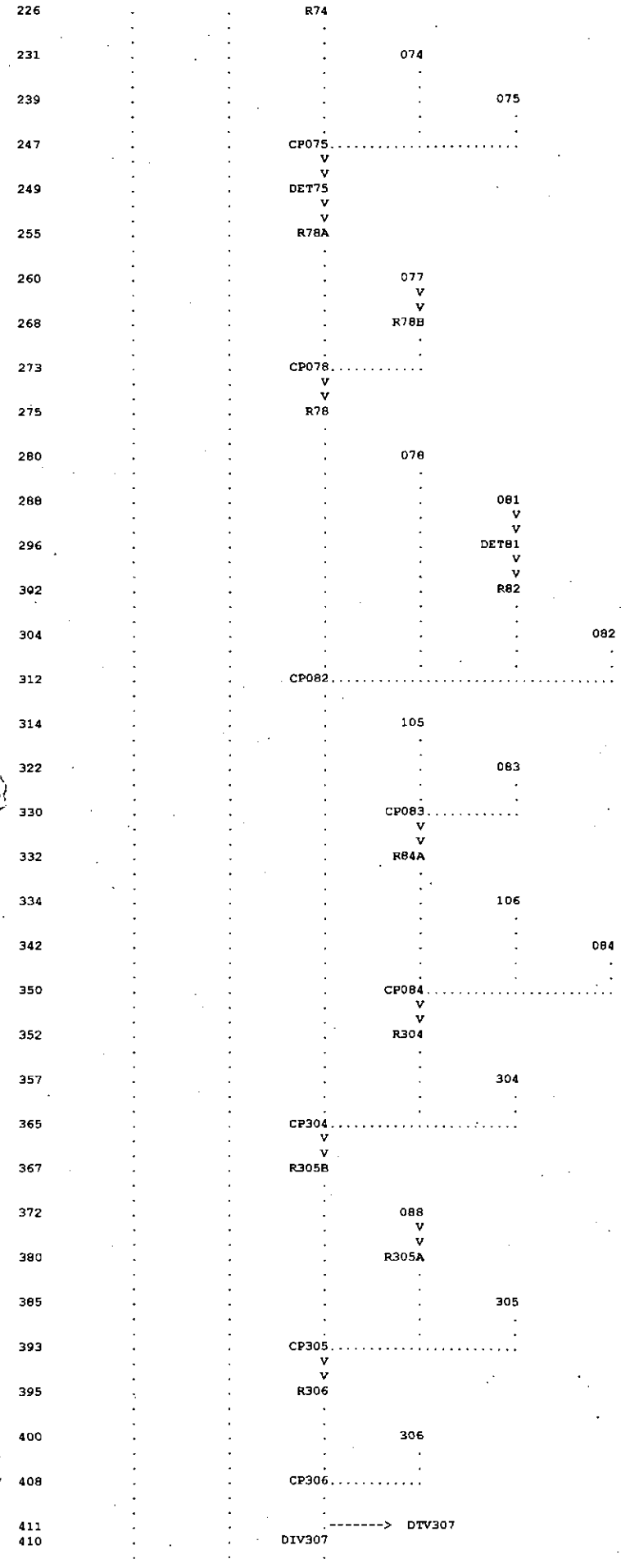
839		UI	16	13	11	8	6	5	4	3	3	2
840		UI	1	1	1	1	1	1	0	0	0	0
841		UI	0	0	0	0	0	0	0	0	0	0
842		UI	0	0	0	0	0	0	0	0	0	0
		*										
843		ZZ										

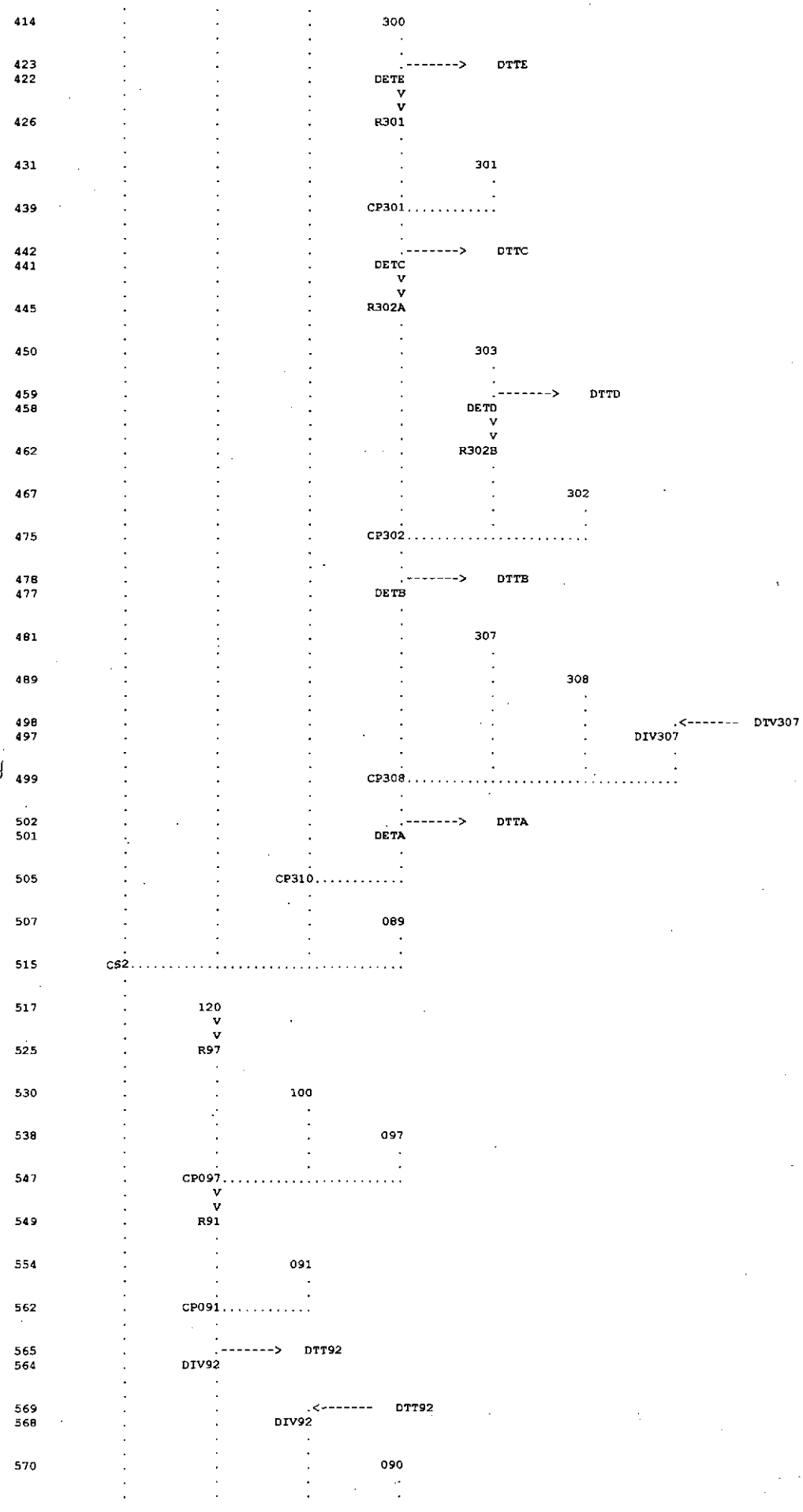
SCHEMATIC DIAGRAM OF STREAM NETWORK

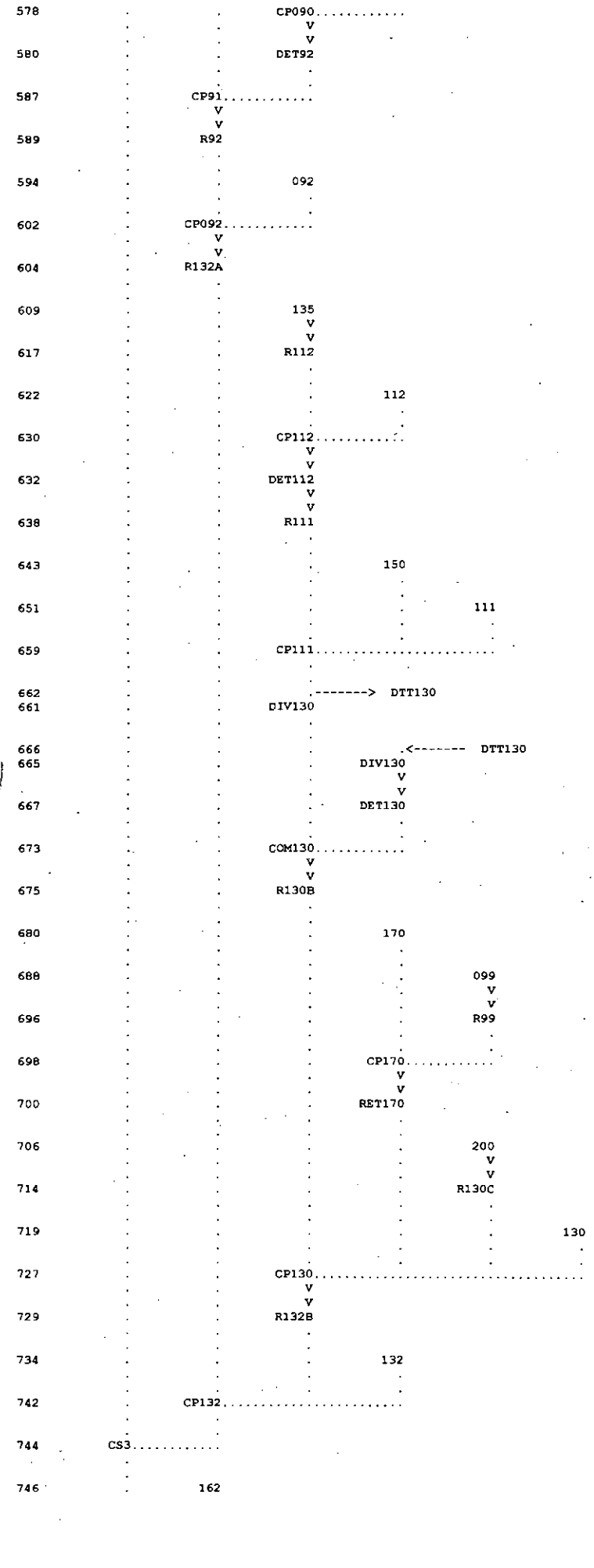
INPUT LINE NO.

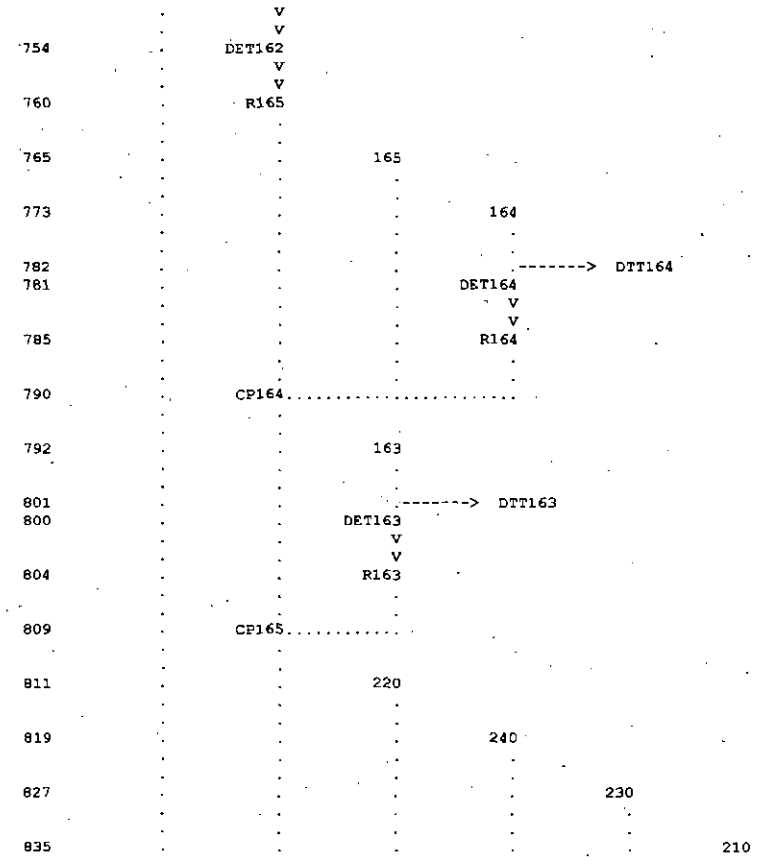
(V) ROUTING
(.) CONNECTOR
(---->) DIVERSION OR PUMP FLOW
(<----) RETURN OF DIVERTED OR PUMPED FLOW




226
R74
231
074
239
075
247
CP075
249
DET75
255
R78A
260
077
268
R78B
273
CP078
275
R78
280
078
288
081
296
DET81
302
R82
304
082
312
CP082
314
105
322
083
330
CP083
332
R84A
334
106
342
084
350
CP084
352
R304
357
304
365
CP304
367
R305B
372
088
380
R305A
385
305
393
CP305
395
R306
400
306
408
CP306
411
DTV307
410
DIV307


414 300
423 .-------> DTTE
422 DETE
V
V
426 R301
431 301
439 CP301
442 .-------> DTTC
441 DETC
V
V
445 R302A
450 303
459 .-------> DTTD
458 DETD
V
V
462 R302B
467 302
475 CP302
478 .-------> DTTB
477 DETB
481 307
489 308
498 .<------- DTV307
497 DIV307
499 CP308
502 .-------> DTTA
501 DETA
505 CP310
507 089
515 CS2
517 120
V
V
525 R97
530 100
538 097
547 CP097
V
V
549 R91
554 091
562 CP091
565 .-------> DTT92
564 DIV92
569 .<------- DTT92
568 DIV92
570 090


578 CP090
580 DET92
587 CP91
589 R92
594 092
602 CP092
604 R132A
609 135
617 R112
622 112
630 CP112
632 DET112
638 R111
643 150
651 111
659 CP111
662 DTT130
661 DIV130
666 DTT130
665 DIV130
667 DET130
673 COM130
675 R130B
680 170
688 099
696 R99
698 CP170
700 RET170
706 200
714 R130C
719 130
727 CP130
729 R132B
734 132
742 CP132
744 CS3
746 162



(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*              JUN  1998                *
*            VERSION 4.1                *
*                                       *
*  RUN DATE   12JUN15  TIME  06:35:24   *
*                                       *
*****************************************
```


```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*         609 SECOND STREET             *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 756-1104              *
*                                       *
*****************************************
```


Flood Control District of Maricopa County
SNGC PROP - Scottsdale National Golf Club Proposed
100 YEAR
6 Hour Storm
Unit Hydrograph: S-Graph
Storm: Multiple
06/01/2015
WOOD/PATEL JCD
FILE NAME: SNGFT100.DAT

```
11 IO        OUTPUT CONTROL VARIABLES
                 IPRNT          5  PRINT CONTROL
                 IPLOT          0  PLOT CONTROL
                 QSCAL          0.  HYDROGRAPH PLOT SCALE

   IT        HYDROGRAPH TIME DATA
                 NMIN           1  MINUTES IN COMPUTATION INTERVAL
                 IDATE      1JUN15  STARTING DATE
                 ITIME        0000  STARTING TIME
                   NQ         2000  NUMBER OF HYDROGRAPH ORDINATES
                NDDATE      2JUN15  ENDING DATE
                NDTIME        0919  ENDING TIME
                ICENT           19  CENTURY MARK

              COMPUTATION INTERVAL      .02 HOURS
                  TOTAL TIME BASE    33.32 HOURS

       ENGLISH UNITS
            DRAINAGE AREA          SQUARE MILES
            PRECIPITATION DEPTH    INCHES
            LENGTH, ELEVATION      FEET
            FLOW                   CUBIC FEET PER SECOND
            STORAGE VOLUME         ACRE-FEET
            SURFACE AREA           ACRES
            TEMPERATURE            DEGREES FAHRENHEIT

13 JD        INDEX STORM NO. 1
                 STRM         3.23  PRECIPITATION DEPTH
                 TRDA          .00  TRANSPOSITION DRAINAGE AREA

14 PI          PRECIPITATION PATTERN
               .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
```

```
      .00     .00     .00     .00     .00     .00     .00     .00     .00     .00
```

```
*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

           ***************
           *             *
296 KK     *     DET81   *       STORAGE
           *             *
           ***************

297 KO           OUTPUT CONTROL VARIABLES
                       IPRNT           5  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL           0.  HYDROGRAPH PLOT SCALE

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

           ***************
           *             *
580 KK     *     DET92   *       STORAGE
           *             *
           ***************

581 KO           OUTPUT CONTROL VARIABLES
                       IPRNT           5  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL           0.  HYDROGRAPH PLOT SCALE

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

           ***************
           *             *
632 KK     *    DET112   *       STORAGE
           *             *
           ***************

633 KO           OUTPUT CONTROL VARIABLES
                       IPRNT           5  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL           0.  HYDROGRAPH PLOT SCALE

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

           ***************
           *             *
667 KK     *    DET130   *       STORAGE
           *             *
           ***************

668 KO           OUTPUT CONTROL VARIABLES
                       IPRNT           5  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL           0.  HYDROGRAPH PLOT SCALE

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

           ***************
           *             *
700 KK     *    RET170   *       STORAGE
           *             *
           ***************

701 KO           OUTPUT CONTROL VARIABLES
                       IPRNT           5  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL           0.  HYDROGRAPH PLOT SCALE

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

           ***************
           *             *
754 KK     *    DET162   *       STORAGE
           *             *
           ***************

755 KO           OUTPUT CONTROL VARIABLES
                       IPRNT           5  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL           0.  HYDROGRAPH PLOT SCALE
```

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	005	240.	4.17	23.	6.	4.	.13		
HYDROGRAPH AT	025	39.	4.03	2.	1.	0.	.01		
HYDROGRAPH AT	030	35.	4.05	2.	1.	0.	.01		
HYDROGRAPH AT	035	13.	4.02	1.	0.	0.	.00		
HYDROGRAPH AT	040	3.	4.02	0.	0.	0.	.00		
5 COMBINED AT	CS1	288.	4.10	28.	7.	5.	.16		
HYDROGRAPH AT	045	17.	4.02	1.	0.	0.	.00		
DIVERSION TO	DTT45	16.	3.87	0.	0.	0.	.00		
HYDROGRAPH AT	DET45	17.	4.02	1.	0.	0.	.00		
HYDROGRAPH AT	015	33.	4.02	2.	0.	0.	.01		
DIVERSION TO	DTT15	6.	3.63	1.	0.	0.	.01		
HYDROGRAPH AT	DET15	27.	4.02	1.	0.	0.	.01		
HYDROGRAPH AT	050	26.	4.02	1.	0.	0.	.01		
HYDROGRAPH AT	010	66.	4.07	5.	1.	1.	.03		
4 COMBINED AT	CP010	132.	4.02	8.	2.	1.	.05		
ROUTED TO	R60A	126.	4.05	8.	2.	1.	.05		
HYDROGRAPH AT	020	111.	4.05	7.	2.	1.	.04		
ROUTED TO	R55B	105.	4.10	7.	2.	1.	.04		
HYDROGRAPH AT	022	69.	4.02	4.	1.	1.	.02		
2 COMBINED AT	CP022	163.	4.05	10.	3.	2.	.06		
ROUTED TO	DET22	143.	4.12	10.	3.	2.	.06		
ROUTED TO	R55A	139.	4.17	10.	3.	2.	.06		
HYDROGRAPH AT	055	74.	4.07	6.	1.	1.	.03		
2 COMBINED AT	CP055	199.	4.15	15.	4.	3.	.09		
ROUTED TO	R60B	191.	4.20	15.	4.	3.	.09		
HYDROGRAPH AT	060	68.	4.08	5.	1.	1.	.03		
3 COMBINED AT	CP060	316.	4.17	28.	7.	5.	.16		
HYDROGRAPH AT	070	53.	4.02	3.	1.	1.	.02		
ROUTED TO	R72	52.	4.08	3.	1.	1.	.02		
HYDROGRAPH AT	072	87.	4.07	5.	1.	1.	.03		
HYDROGRAPH AT	065	7.	4.02	0.	0.	0.	.00		
ROUTED TO	R73	6.	4.05	0.	0.	0.	.00		

+	HYDROGRAPH AT 073	68.	4.02	4.	1.	1.	.02
+	4 COMBINED AT CP073	209.	4.05	12.	3.	2.	.07
+	ROUTED TO R74	208.	4.07	12.	3.	2.	.07
+	HYDROGRAPH AT 074	40.	4.02	2.	1.	0.	.01
+	HYDROGRAPH AT 075	7.	4.02	0.	0.	0.	.00
+	3 COMBINED AT CP075	246.	4.03	15.	4.	3.	.08
+	ROUTED TO DET75	230.	4.08	15.	4.	3.	.08
+	ROUTED TO R78A	228.	4.10	15.	4.	3.	.08
+	HYDROGRAPH AT 077	13.	4.02	1.	0.	0.	.00
+	ROUTED TO R78B	13.	4.02	1.	0.	0.	.00
+	2 COMBINED AT CP078	235.	4.08	16.	4.	3.	.09
+	ROUTED TO R78	232.	4.13	16.	4.	3.	.09
+	HYDROGRAPH AT 078	50.	4.07	3.	1.	1.	.02
+	HYDROGRAPH AT 081	17.	4.02	1.	0.	0.	.00
+	ROUTED TO DET81	7.	4.08	1.	0.	0.	.00
+	ROUTED TO R82	7.	4.12	1.	0.	0.	.00
+	HYDROGRAPH AT 082	57.	4.05	3.	1.	1.	.02
+	4 COMBINED AT CP082	334.	4.10	23.	6.	4.	.13
+	HYDROGRAPH AT 105	33.	4.05	2.	1.	0.	.01
+	HYDROGRAPH AT 083	7.	4.02	0.	0.	0.	.00
+	2 COMBINED AT CP083	39.	4.02	3.	1.	0.	.01
+	ROUTED TO R84A	39.	4.03	3.	1.	0.	.01
+	HYDROGRAPH AT 106	7.	4.02	1.	0.	0.	.00
+	HYDROGRAPH AT 084	24.	4.02	2.	0.	0.	.01
+	3 COMBINED AT CP084	70.	4.02	5.	1.	1.	.02
+	ROUTED TO R304	68.	4.03	5.	1.	1.	.02
+	HYDROGRAPH AT 304	11.	4.02	1.	0.	0.	.00
+	3 COMBINED AT CP304	388.	4.08	28.	7.	5.	.15
+	ROUTED TO R305B	388.	4.10	28.	7.	5.	.15
+	HYDROGRAPH AT 088	11.	4.02	1.	0.	0.	.00
+	ROUTED TO R305A	11.	4.02	1.	0.	0.	.00
+	HYDROGRAPH AT 305	14.	4.02	1.	0.	0.	.00
+	3 COMBINED AT CP305	395.	4.10	30.	7.	5.	.16
+	ROUTED TO R306	393.	4.10	30.	7.	5.	.16
+	HYDROGRAPH AT 306	14.	4.02	1.	0.	0.	.00

+	2 COMBINED AT	CP306	395.	4.10	31.	8.	6.	.16
+	DIVERSION TO	DTV307	132.	4.10	6.	1.	1.	.16
+	HYDROGRAPH AT	DIV307	263.	4.10	25.	6.	5.	.16
+	HYDROGRAPH AT	300	14.	4.02	1.	0.	0.	.00
+	DIVERSION TO	DTTE	6.	3.80	0.	0.	0.	.00
+	HYDROGRAPH AT	DETE	14.	4.02	1.	0.	0.	.00
+	ROUTED TO	R301	14.	4.02	1.	0.	0.	.00
+	HYDROGRAPH AT	301	24.	4.02	1.	0.	0.	.01
+	2 COMBINED AT	CP301	38.	4.02	2.	1.	0.	.01
+	DIVERSION TO	DTTC	35.	3.88	1.	0.	0.	.01
+	HYDROGRAPH AT	DETC	38.	4.02	1.	0.	0.	.01
+	ROUTED TO	R302A	38.	4.02	1.	0.	0.	.01
+	HYDROGRAPH AT	303	21.	4.02	1.	0.	0.	.01
+	DIVERSION TO	DTTD	6.	3.72	0.	0.	0.	.01
+	HYDROGRAPH AT	DETD	21.	4.02	1.	0.	0.	.01
+	ROUTED TO	R302B	21.	4.02	1.	0.	0.	.01
+	HYDROGRAPH AT	302	41.	4.02	3.	1.	0.	.01
+	3 COMBINED AT	CP302	100.	4.02	5.	1.	1.	.03
+	DIVERSION TO	DTTB	53.	3.85	1.	0.	0.	.03
+	HYDROGRAPH AT	DETB	100.	4.02	4.	1.	1.	.03
+	HYDROGRAPH AT	307	7.	4.02	0.	0.	0.	.00
+	HYDROGRAPH AT	308	21.	4.02	1.	0.	0.	.01
+	HYDROGRAPH AT	DIV307	132.	4.10	6.	1.	1.	.16
+	4 COMBINED AT	CP308	218.	4.03	11.	3.	2.	.04
+	DIVERSION TO	DTTA	218.	4.03	11.	3.	2.	.04
+	HYDROGRAPH AT	DETA	0.	.00	0.	0.	0.	.04
+	2 COMBINED AT	CP310	263.	4.10	25.	6.	5.	.20
+	HYDROGRAPH AT	089	3.	4.02	0.	0.	0.	.00
+	4 COMBINED AT	CS2	832.	4.15	80.	20.	15.	.53
+	HYDROGRAPH AT	120	86.	4.03	5.	1.	1.	.03
+	ROUTED TO	R97	79.	4.15	5.	1.	1.	.03
+	HYDROGRAPH AT	100	47.	4.10	3.	1.	1.	.02
+	HYDROGRAPH AT	097	120.	4.15	9.	2.	2.	.05
+	3 COMBINED AT	CP097	243.	4.13	17.	4.	3.	.09
+	ROUTED TO	R91	241.	4.17	17.	4.	3.	.09

+	HYDROGRAPH AT	091	29.	4.02	2.	0.	0.	.01
+	2 COMBINED AT	CP091	253.	4.15	18.	5.	3.	.10
+	DIVERSION TO	DTT92	153.	4.15	7.	2.	1.	.10
+	HYDROGRAPH AT	DIV92	100.	3.95	12.	3.	2.	.10
+	HYDROGRAPH AT	DIV92	153.	4.15	7.	2.	1.	.10
+	HYDROGRAPH AT	090	62.	4.02	5.	1.	1.	.02
+	2 COMBINED AT	CP090	163.	4.13	11.	3.	2.	.02
+	ROUTED TO	DET92	4.	4.38	4.	3.	2.	.02
+	2 COMBINED AT	CP91	104.	4.38	15.	5.	4.	.12
+	ROUTED TO	R92	104.	4.38	15.	5.	4.	.12
+	HYDROGRAPH AT	092	14.	4.02	1.	0.	0.	.00
+	2 COMBINED AT	CP092	117.	3.97	16.	6.	4.	.13
+	ROUTED TO	R132A	116.	4.00	16.	6.	4.	.13
+	HYDROGRAPH AT	135	36.	4.02	2.	0.	0.	.01
+	ROUTED TO	R112	35.	4.05	2.	0.	0.	.01
+	HYDROGRAPH AT	112	57.	4.03	3.	1.	1.	.02
+	2 COMBINED AT	CP112	92.	4.03	5.	1.	1.	.03
+	ROUTED TO	DET112	66.	4.12	5.	1.	1.	.03
+	ROUTED TO	R111	59.	4.28	5.	1.	1.	.03
+	HYDROGRAPH AT	150	36.	4.02	2.	1.	0.	.01
+	HYDROGRAPH AT	111	161.	4.05	10.	3.	2.	.05
+	3 COMBINED AT	CP111	196.	4.05	17.	4.	3.	.09
+	DIVERSION TO	DTT130	68.	4.05	6.	2.	1.	.09
+	HYDROGRAPH AT	DIV130	128.	4.05	11.	3.	2.	.09
+	HYDROGRAPH AT	DIV130	68.	4.05	6.	2.	1.	.09
+	ROUTED TO	DET130	56.	4.13	5.	2.	1.	.09
+	2 COMBINED AT	COM130	169.	4.10	16.	4.	3.	.09
+	ROUTED TO	R130B	169.	4.10	16.	4.	3.	.09
+	HYDROGRAPH AT	170	99.	4.02	6.	1.	1.	.03
+	HYDROGRAPH AT	099	95.	4.02	5.	1.	1.	.03
+	ROUTED TO	R99	95.	4.03	5.	1.	1.	.03
+	2 COMBINED AT	CP170	193.	4.03	11.	3.	2.	.06
+	ROUTED TO	RET170	0.	.00	0.	0.	0.	.06
+	HYDROGRAPH AT	200	16.	4.05	1.	0.	0.	.00
+	ROUTED TO	R130C	16.	4.05	1.	0.	0.	.00

+	HYDROGRAPH AT	130	21.	4.02	1.	0.	0.	.01
+	4 COMBINED AT	CP130	192.	4.08	18.	5.	4.	.16
+	ROUTED TO	R132B	191.	4.10	18.	5.	4.	.16
+	HYDROGRAPH AT	132	30.	4.02	2.	0.	0.	.01
+	3 COMBINED AT	CP132	318.	4.08	36.	11.	8.	.30
+	2 COMBINED AT	CS3	1012.	4.12	112.	30.	22.	.83
+	HYDROGRAPH AT	162	31.	4.03	2.	0.	0.	.01
+	ROUTED TO	DET162	2.	4.35	2.	0.	0.	.01
+	ROUTED TO	R165	2.	4.55	2.	0.	0.	.01
+	HYDROGRAPH AT	165	70.	4.05	4.	1.	1.	.02
+	HYDROGRAPH AT	164	40.	4.02	2.	1.	0.	.01
+	DIVERSION TO	DTT164	40.	3.98	2.	0.	0.	.01
+	HYDROGRAPH AT	DET164	40.	4.02	0.	0.	0.	.01
+	ROUTED TO	R164	12.	4.12	0.	0.	0.	.01
+	3 COMBINED AT	CP164	76.	4.10	6.	2.	1.	.05
+	HYDROGRAPH AT	163	20.	4.02	1.	0.	0.	.01
+	DIVERSION TO	DTT163	20.	3.95	1.	0.	0.	.01
+	HYDROGRAPH AT	DET163	20.	4.02	0.	0.	0.	.01
+	ROUTED TO	R163	19.	4.03	0.	0.	0.	.01
+	2 COMBINED AT	CP165	89.	4.05	6.	2.	1.	.05
+	HYDROGRAPH AT	220	39.	4.03	2.	1.	0.	.01
+	HYDROGRAPH AT	240	13.	4.02	1.	0.	0.	.00
+	HYDROGRAPH AT	230	10.	4.02	1.	0.	0.	.00
+	HYDROGRAPH AT	210	29.	4.02	2.	0.	0.	.01

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT (MIN)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	INTERPOLATED TO COMPUTATION INTERVAL DT (MIN)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)
FOR STORM = 1 STORM AREA (SQ MI) = .00									
R82	MANE	1.00	6.96	247.00	1.65	1.00	6.96	247.00	1.65

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4404E+00 EXCESS= .0000E+00 OUTFLOW= .4404E+00 BASIN STORAGE= .1318E-03 PERCENT ERROR= .0

FOR STORM = 2 STORM AREA (SQ MI) = .50									
R82	MANE	1.00	6.93	247.00	1.64	1.00	6.93	247.00	1.64

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4363E+00 EXCESS= .0000E+00 OUTFLOW= .4363E+00 BASIN STORAGE= .1304E-03 PERCENT ERROR= .0

FOR STORM = 3 STORM AREA (SQ MI) = 2.80									
R82	MANE	1.00	5.01	248.00	1.35	1.00	5.01	248.00	1.35

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3604E+00 EXCESS= .0000E+00 OUTFLOW= .3604E+00 BASIN STORAGE= .1295E-03 PERCENT ERROR= .0

FOR STORM = 1 STORM AREA (SQ MI) = .00									
R84A	MANE	.79	39.00	242.11	1.69	1.00	38.94	242.00	1.69

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1258E+01 EXCESS= .0000E+00 OUTFLOW= .1258E+01 BASIN STORAGE= .7129E-04 PERCENT ERROR= .0

FOR STORM = 2 STORM AREA (SQ MI) = .50									
R84A	MANE	.79	38.64	241.67	1.67	1.00	38.62	242.00	1.67

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1247E+01 EXCESS= .0000E+00 OUTFLOW= .1247E+01 BASIN STORAGE= .8047E-04 PERCENT ERROR= .0

FOR STORM = 3 STORM AREA (SQ MI) = 2.80									
R84A	MANE	.91	19.64	242.32	1.40	1.00	19.61	242.00	1.40

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1043E+01 EXCESS= .0000E+00 OUTFLOW= .1043E+01 BASIN STORAGE= .8771E-04 PERCENT ERROR= .0

FOR STORM = 1 STORM AREA (SQ MI) = .00									
R99	MANE	1.00	95.36	242.00	1.73	1.00	95.36	242.00	1.73

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2675E+01 EXCESS= .0000E+00 OUTFLOW= .2671E+01 BASIN STORAGE= .9851E-04 PERCENT ERROR= .2

FOR STORM = 2 STORM AREA (SQ MI) = .50									
R99	MANE	1.00	94.69	242.00	1.71	1.00	94.69	242.00	1.71

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2651E+01 EXCESS= .0000E+00 OUTFLOW= .2647E+01 BASIN STORAGE= .9806E-04 PERCENT ERROR= .2

FOR STORM = 3 STORM AREA (SQ MI) = 2.80									
R99	MANE	1.00	44.20	242.00	1.43	1.00	44.20	242.00	1.43

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2216E+01 EXCESS= .0000E+00 OUTFLOW= .2215E+01 BASIN STORAGE= .1221E-03 PERCENT ERROR= .0

*** NORMAL END OF HEC-1 ***

Post Developed Condition 10-year, 6-hour

HEC-1 Output

```
1*************************************
*                                   *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*              JUN  1998            *
*           VERSION 4.1             *
*                                   *
*  RUN DATE   12JUN15  TIME  06:35:33   *
*                                   *
*************************************
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*************************************
*                                   *
*    U.S. ARMY CORPS OF ENGINEERS     *
*    HYDROLOGIC ENGINEERING CENTER    *
*          609 SECOND STREET          *
*       DAVIS, CALIFORNIA 95616       *
*           (916) 756-1104            *
*                                   *
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X     X  XXXXXXX   XXXXX           X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X        XXXXX X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX   XXXXX         XXX
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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM


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LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

    1         ID        Flood Control District of Maricopa County
    2         ID        SNGC PROP - Scottsdale National Golf Club Proposed
    3         ID        10 YEAR
    4         ID        6 Hour  Storm
    5         ID        Unit Hydrograph: S-Graph
    6         ID        Storm: Multiple
    7         ID        06/01/2015
    8         ID        WOOD/PATEL JCD
    9         ID            FILE NAME: SNGCFT10.DAT
              *DIAGRAM
   10         IT       1  1JUN15       0    2000
   11         IO       5
   12         IN      15
              *
   13         JD   2.135  0.0001
   14         PC   0.000   0.008   0.016   0.025   0.033   0.041   0.050   0.058   0.066   0.074
   15         PC   0.087   0.099   0.118   0.138   0.216   0.377   0.834   0.911   0.931   0.950
   16         PC   0.962   0.972   0.983   0.991   1.000
   17         JD   2.122  0.5000
   18         PC   0.000   0.008   0.016   0.025   0.033   0.041   0.050   0.058   0.066   0.074
   19         PC   0.087   0.099   0.118   0.138   0.216   0.377   0.834   0.911   0.931   0.950
   20         PC   0.962   0.972   0.983   0.991   1.000
   21         JD   2.082     2.8
   22         PC   0.000   0.009   0.016   0.025   0.034   0.042   0.051   0.059   0.067   0.076
   23         PC   0.087   0.100   0.120   0.163   0.252   0.451   0.694   0.837   0.900   0.938
   24         PC   0.950   0.963   0.975   0.988   1.000
              *

   25         KK     005   BASIN
   26         BA   0.133
   27         LG    0.35    0.40    6.00    0.18       0
   28         UI       0      21      21      21      21      27      61      70      84     101
   29         UI     124     132     142     154     161     171     190     217     250     252
   30         UI     181     157     143     133     126     123     116     110     105     101
   31         UI      97      90      86      82      77      72      66      61      56      53
   32         UI      52      50      49      46      44      42      35      35      32      27
   33         UI      27      27      25      23      23      23      23      16      16      16
   34         UI      16      16      16      12      10      10      10      10      10      10
   35         UI      10      10      10       5       4       4       4       4       4       4
   36         UI       4       4       4       4       4       4       4       4       4       4
   37         UI       4       4       4       4       4       4       4       4       0       0
              *

   38         KK     025   BASIN
   39         BA   0.013
   40         LG    0.35    0.40    6.00    0.18       0
   41         UI       0       6      10      24      38      47      62      59      39      34
   42         UI      30      25      21      17      15      13      10       8       7       6
   43         UI       5       5       3       3       3       2       1       1       1       1
   44         UI       1       1       1       0       0       0       0       0       0       0
   45         UI       0       0       0       0       0       0       0       0       0       0
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LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

   46         KK     030   BASIN
   47         BA   0.012
   48         LG    0.34    0.39    6.00    0.18       1
   49         UI       0       5       7      17      27      35      41      57      43      32
   50         UI      28      25      22      19      16      13      12      11       8       7
   51         UI       6       6       4       4       3       2       2       2       2       1
   52         UI       1       1       1       1       1       1       1       0       0       0
   53         UI       0       0       0       0       0       0       0       0       0       0
              *
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   54          KK     035   BASIN
   55          BA   0.004
   56          LG    0.33    0.38    6.00    0.19       3
   57          UI       0       6      24      41      26      19      13       9       6       4
   58          UI       3       2       1       1       1       0       0       0       0       0
   59          UI       0       0       0       0       0       0       0       0       0       0
   60          UI       0       0       0       0       0       0       0       0       0       0
   61          UI       0       0       0       0       0       0       0       0       0       0
               *

   62          KK     040   BASIN
   63          BA   0.001
   64          LG    0.28    0.34    6.00    0.21      12
   65          UI       0      22      13       3       1       0       0       0       0       0
   66          UI       0       0       0       0       0       0       0       0       0       0
   67          UI       0       0       0       0       0       0       0       0       0       0
   68          UI       0       0       0       0       0       0       0       0       0       0
   69          UI       0       0       0       0       0       0       0       0       0       0
               *

   70          KK     CS1 COMBINE
   71          HC       5
               *

   72          KK     045   BASIN
   73          BA   0.005
   74          LG    0.27    0.30    6.00    0.24       5
   75          UI       0      32      94      53      11       3       0       0       0       0
   76          UI       0       0       0       0       0       0       0       0       0       0
   77          UI       0       0       0       0       0       0       0       0       0       0
   78          UI       0       0       0       0       0       0       0       0       0       0
   79          UI       0       0       0       0       0       0       0       0       0       0
               *

   80          KK   DET45  DIVERT
   81          DT   DTT45     0.2     0.0
   82          DI     0.0  1000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
   83          DQ     0.0  1000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
               *

1                                        HEC-1 INPUT                                        PAGE  3

  LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

   84          KK     015   BASIN
   85          BA   0.010
   86          LG    0.24    0.25    6.00    0.26       8
   87          UI       0       7      28      42      61      86      61      43      27      13
   88          UI       8       4       2       2       0       0       0       0       0       0
   89          UI       0       0       0       0       0       0       0       0       0       0
   90          UI       0       0       0       0       0       0       0       0       0       0
   91          UI       0       0       0       0       0       0       0       0       0       0
               *

   92          KK   DET15  DIVERT
   93          DT   DTT15     0.0     6.0
   94          DI     0.0  1000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
   95          DQ     0.0  1000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
               *

   96          KK     050   BASIN
   97          BA   0.008
   98          LG    0.34    0.40    6.00    0.17       2
   99          UI       0       9      35      60      64      40      30      20      15      10
  100          UI       8       5       4       3       1       1       1       1       0       0
  101          UI       0       0       0       0       0       0       0       0       0       0
  102          UI       0       0       0       0       0       0       0       0       0       0
  103          UI       0       0       0       0       0       0       0       0       0       0
               *

  104          KK     010   BASIN
  105          BA   0.026
  106          LG    0.34    0.39    6.00    0.18       2
  107          UI       0       8       8      12      25      34      45      52      58      68
  108          UI      87      74      54      47      43      40      36      33      30      27
  109          UI      24      20      19      18      16      14      12      10      10       9
  110          UI       8       8       6       6       6       4       4       4       4       4
  111          UI       3       1       1       1       1       1       1       1       1       1
  112          UI       1       1       1       1       0       0       0       0       0       0
               *

  113          KK   CP010 COMBINE
  114          HC       4
               *

  115          KK    R60A   ROUTE
  116          RS       3    FLOW
  117          RC   0.035   0.025   0.035    2000  0.0220    0.00
  118          RX    0.00    4.00    9.00   13.00   24.00   28.00   36.00   45.00
  119          RY  2706.0 2705.00 2704.00 2703.00 2703.00 2704.00 2705.00 2706.00
               *

  120          KK     020   BASIN
  121          BA   0.038
  122          LG    0.35    0.40    6.00    0.18       0
  123          UI       0      16      23      58      92     115     139     188     127     101
  124          UI      89      79      68      58      47      40      37      31      25      21
  125          UI      18      16      13      13       8       8       8       6       3       3

1                                        HEC-1 INPUT                                        PAGE  4

  LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  126          UI       3       3       3       3       3       3       3       0       0       0
  127          UI       0       0       0       0       0       0       0       0       0       0
               *
```

```
128          KK    R55B   ROUTE
129          RS       5    FLOW
130          RC   0.035   0.025   0.035    2343   0.0230    0.00
131          RX    0.00    9.00   18.00   33.00    52.00   60.00   68.00   73.00
132          RY  2741.0 2740.50 2740.00 2739.00 2739.00 2740.00 2740.50 2741.00
             *
133          KK     022   BASIN
134          BA   0.022
135          LG    0.35    0.40    6.00    0.18       1
136          UI       0      13      31      67      93     131     108      76      64      54
137          UI      43      33      29      23      17      14      11      10       7       6
138          UI       6       2       2       2       2       2       2       0       0       0
139          UI       0       0       0       0       0       0       0       0       0       0
140          UI       0       0       0       0       0       0       0       0       0       0
             *
141          KK   CP022 COMBINE
142          HC       2
             *
143          KK   DET22 STORAGE
144          KO
145          RS       1    STOR
146          SV            0.03    0.11    0.30    0.63    1.16    1.92
147          SQ            1.00    1.00    2.00    2.00    3.00  170.00
148          SE  2766.0 2767.00 2768.00 2769.00 2770.00 2771.00 2772.00
             *
149          KK    R55A   ROUTE
150          RS       5    FLOW
151          RC   0.035   0.025   0.035    1600   0.0230    0.00
152          RX    0.00    9.00   18.00   33.00    52.00   60.00   68.00   73.00
153          RY  2741.0 2740.50 2740.00 2739.00 2739.00 2740.00 2740.50 2741.00
             *
154          KK     055   BASIN
155          BA   0.028
156          LG    0.26    0.32    6.00    0.22      14
157          UI       0       8       8      15      28      41      52      60      66      81
158          UI     100      70      56      50      46      42      39      35      32      28
159          UI      24      21      20      19      17      14      12      11      10       9
160          UI       8       6       6       6       4       4       4       4       4       2
161          UI       2       2       2       2       2       2       2       2       2       2
162          UI       2       2       0       0       0       0       0       0       0       0
             *
```



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LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

163          KK   CP055 COMBINE
164          HC       2
             *
165          KK    R60B   ROUTE
166          RS       6    FLOW
167          RC   0.035   0.025   0.035    2450   0.0220    0.00
168          RX    0.00    4.00    9.00   13.00    24.00   28.00   36.00   45.00
169          RY  2706.0 2705.00 2704.00 2703.00 2703.00 2704.00 2705.00 2706.00
             *
170          KK     060   BASIN
171          BA   0.028
172          LG    0.32    0.37    6.00    0.19       3
173          UI       0       7       7       7      21      28      37      45      51      55
174          UI      63      78      83      55      48      43      41      37      35      32
175          UI      29      27      24      21      19      18      17      16      14      12
176          UI      11       9       9       8       8       7       6       6       6       5
177          UI       4       4       4       4       4       3       1       1       1       1
178          UI       1       1       1       1       1       1       1       1       1       1
179          UI       1       0       0       0       0       0       0       0       0       0
             *
180          KK   CP060 COMBINE
181          HC       3
             *
182          KK     070   BASIN
183          BA   0.017
184          LG    0.35    0.40    6.00    0.18       0
185          UI       0      10      25      54      74     106      80      59      49      41
186          UI      32      25      22      16      13      11       8       7       5       5
187          UI       3       2       2       2       2       2       2       0       0       0
188          UI       0       0       0       0       0       0       0       0       0       0
189          UI       0       0       0       0       0       0       0       0       0       0
             *
190          KK     R72   ROUTE
191          RS       3    FLOW
192          RC   0.035   0.025   0.035    1798   0.0210    0.00
193          RX    0.00   12.00   23.00   30.00    40.00   50.00   67.00   88.00
194          RY  2739.0 2737.00 2736.00 2735.00 2735.00 2736.00 2737.00 2739.00
             *
195          KK     072   BASIN
196          BA   0.030
197          LG    0.31    0.34    6.00    0.21       3
198          UI       0       9       9      18      33      42      49      55      63      72
199          UI      95     114     100      84      74      65      56      48      41      31
200          UI      20      16      15      12       9       9       3       3       3       3
201          UI       3       3       3       3       0       0       0       0       0       0
202          UI       0       0       0       0       0       0       0       0       0       0
             *
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  203     KK     065   BASIN
  204     BA   0.002
  205     LG    0.35    0.40    6.00    0.18       0
  206     UI       0       4      14      21      13       9       6       4       3       2
  207     UI       1       1       0       0       0       0       0       0       0       0
  208     UI       0       0       0       0       0       0       0       0       0       0
  209     UI       0       0       0       0       0       0       0       0       0       0
  210     UI       0       0       0       0       0       0       0       0       0       0
          *

  211     KK     R73   ROUTE
  212     RS       4    FLOW
  213     RC   0.035   0.025   0.035    1401  0.0260    0.00
  214     RX    0.00   56.00   65.00   74.00   78.00   84.00   89.00   99.00
  215     RY  2741.0 2740.00 2739.00 2738.00 2738.00 2739.00 2740.00 2743.00
          *

  216     KK     073   BASIN
  217     BA   0.021
  218     LG    0.28    0.30    6.00    0.24       5
  219     UI       0      10      21      45      58      72      96     128     100      80
  220     UI      63      49      30      18      15      10       5       3       3       3
  221     UI       3       0       0       0       0       0       0       0       0       0
  222     UI       0       0       0       0       0       0       0       0       0       0
  223     UI       0       0       0       0       0       0       0       0       0       0
          *

  224     KK   CP073 COMBINE
  225     HC       4
          *

  226     KK     R74   ROUTE
  227     RS       1    FLOW
  228     RC   0.035   0.025   0.035     540  0.0220    0.00
  229     RX    0.00    8.00   22.00   38.00   87.00  105.00  111.00  118.00
  230     RY  2731.0 2730.00 2728.00 2738.00 2727.00 2728.00 2729.00 2730.00
          *

  231     KK     074   BASIN
  232     BA   0.012
  233     LG    0.28    0.31    6.00    0.23       5
  234     UI       0      13      46      70     116      92      62      34      16       8
  235     UI       3       3       0       0       0       0       0       0       0       0
  236     UI       0       0       0       0       0       0       0       0       0       0
  237     UI       0       0       0       0       0       0       0       0       0       0
  238     UI       0       0       0       0       0       0       0       0       0       0
          *

  239     KK     075   BASIN
  240     BA   0.002
  241     LG    0.34    0.39    6.00    0.18       0
  242     UI       0      12      32      17       9       4       2       1       1       0
  243     UI       0       0       0       0       0       0       0       0       0       0
  244     UI       0       0       0       0       0       0       0       0       0       0

1                                   HEC-1 INPUT                                   PAGE 7

LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  245     UI       0       0       0       0       0       0       0       0       0       0
  246     UI       0       0       0       0       0       0       0       0       0       0
          *

  247     KK   CP075 COMBINE
  248     HC       3
          *

  249     KK   DET75 STORAGE
  250     KO
  251     RS       1    STOR
  252     SV            0.10    0.30    0.64    1.17    1.92
  253     SQ            6.00   17.00   32.00   43.00  250.00
  254     SE  2717.0 2718.00 2719.00 2720.00 2721.00 2722.00
          *

  255     KK    R78A   ROUTE
  256     RS       1    FLOW
  257     RC   0.035   0.025   0.035     700  0.0210    0.00
  258     RX    0.00   17.00   22.00   31.00   58.00   61.00   95.00  108.00
  259     RY  2712.0 2709.00 2707.00 2706.00 2706.00 2707.00 2710.00 2717.00
          *

  260     KK     077   BASIN
  261     BA   0.004
  262     LG    0.32    0.36    6.00    0.20       1
  263     UI       0       4      17      28      33      20      15      11       8       5
  264     UI       4       3       2       2       1       1       1       1       0       0
  265     UI       0       0       0       0       0       0       0       0       0       0
  266     UI       0       0       0       0       0       0       0       0       0       0
  267     UI       0       0       0       0       0       0       0       0       0       0
          *

  268     KK    R78B   ROUTE
  269     RS       1    FLOW
  270     RC   0.035   0.025   0.035     350  0.0310    0.00
  271     RX    0.00    7.00   17.00   23.00   25.00   46.00   82.00   92.00
  272     RY  2713.0 2710.00 2708.00 2707.00 2707.00 2708.00 2711.00 2712.00
          *

  273     KK   CP078 COMBINE
  274     HC       2
```

```
                *
 275            KK     R78   ROUTE
 276            RS       3    FLOW
 277            RC   0.035   0.025   0.035    1450  0.0240    0.00
 278            RX    0.00    7.00   17.00   23.00   25.00   46.00   82.00   92.00
 279            RY  2713.0 2710.00 2708.00 2707.00 2707.00 2708.00 2711.00 2712.00
                *
1                                    HEC-1 INPUT                                    PAGE  8

LINE            ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 280            KK     078   BASIN
 281            BA   0.017
 282            LG    0.31    0.35    6.00    0.20       5
 283            UI       0       5       5      10      18      24      27      30      35      40
 284            UI      52      64      58      48      42      37      32      28      24      18
 285            UI      12       9       8       7       5       5       2       2       2       2
 286            UI       2       2       2       2       0       0       0       0       0       0
 287            UI       0       0       0       0       0       0       0       0       0       0
                *
 288            KK     081   BASIN
 289            BA   0.005
 290            LG    0.31    0.34    6.00    0.21       2
 291            UI       0       6      21      32      52      37      24      11       6       2
 292            UI       1       1       0       0       0       0       0       0       0       0
 293            UI       0       0       0       0       0       0       0       0       0       0
 294            UI       0       0       0       0       0       0       0       0       0       0
 295            UI       0       0       0       0       0       0       0       0       0       0
                *
 296            KK   DET81 STORAGE
 297            KO
 298            RS       1    STOR
 299            SV            0.02    0.09    0.23
 300            SQ           4.00    5.00    7.00
 301            SE  2702.0 2703.00 2704.00 2705.00
                *
 302            KK     R82   ROUTE
 303            RD    1450  0.0220   0.013            CIRC   2.000
                *
 304            KK     082   BASIN
 305            BA   0.018
 306            LG    0.30    0.36    6.00    0.20      10
 307            UI       0       7       7      22      30      37      43      51      67      84
 308            UI      70      58      50      41      34      27      17      12      11       7
 309            UI       7       3       2       2       2       2       2       0       0       0
 310            UI       0       0       0       0       0       0       0       0       0       0
 311            UI       0       0       0       0       0       0       0       0       0       0
                *
 312            KK   CP082 COMBINE
 313            HC       4
                *
 314            KK     105   BASIN
 315            BA   0.012
 316            LG    0.35    0.40    6.00    0.18       0
 317            UI       0       4       4      12      19      27      31      36      48      41
 318            UI      29      26      23      21      18      16      14      12      10      10
 319            UI       9       7       6       5       5       4       3       3       3       2
 320            UI       2       2       2       1       1       1       1       1       1       1
 321            UI       1       1       1       0       0       0       0       0       0       0
                *
1                                    HEC-1 INPUT                                    PAGE  9

LINE            ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 322            KK     083   BASIN
 323            BA   0.002
 324            LG    0.27    0.40    6.00    0.16      25
 325            UI       0      12      32      17       9       4       2       1       1       0
 326            UI       0       0       0       0       0       0       0       0       0       0
 327            UI       0       0       0       0       0       0       0       0       0       0
 328            UI       0       0       0       0       0       0       0       0       0       0
 329            UI       0       0       0       0       0       0       0       0       0       0
                *
 330            KK   CP083 COMBINE
 331            HC       2
                *
 332            KK    R84A   ROUTE
 333            RD     830  0.0300   0.013            CIRC   3.000
                *
 334            KK     106   BASIN
 335            BA   0.002
 336            LG    0.20    0.35    6.76    0.12      48
 337            UI       0      20      35      14       5       2       1       0       0       0
 338            UI       0       0       0       0       0       0       0       0       0       0
 339            UI       0       0       0       0       0       0       0       0       0       0
 340            UI       0       0       0       0       0       0       0       0       0       0
 341            UI       0       0       0       0       0       0       0       0       0       0
                *
 342            KK     084   BASIN
 343            BA   0.007
 344            LG    0.26    0.39    6.00    0.17      28
 345            UI       0       7      26      39      64      55      37      22      10       6
```

```
 346          UI        2        2        0        0        0        0        0        0        0        0
 347          UI        0        0        0        0        0        0        0        0        0        0
 348          UI        0        0        0        0        0        0        0        0        0        0
 349          UI        0        0        0        0        0        0        0        0        0        0
              *

 350          KK    CP084 COMBINE
 351          HC        3
              *

 352          KK     R304    ROUTE
 353          RS        1     FLOW
 354          RC    0.035    0.025    0.035      611   0.0250     0.00
 355          RX     0.00     8.00    15.00    29.00    33.00    42.00    48.00    52.00
 356          RY  2657.0 2656.00 2655.00 2654.00 2654.00 2655.00 2656.00 2657.00
              *
1                                        HEC-1 INPUT                                    PAGE 10

LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 357          KK      304    BASIN
 358          BA    0.003
 359          LG     0.25     0.15     7.00     0.19        5
 360          UI        0        6       17       31       31       18        7        4        1        1
 361          UI        0        0        0        0        0        0        0        0        0        0
 362          UI        0        0        0        0        0        0        0        0        0        0
 363          UI        0        0        0        0        0        0        0        0        0        0
 364          UI        0        0        0        0        0        0        0        0        0        0
              *

 365          KK    CP304 COMBINE
 366          HC        3
              *

 367          KK    R305B    ROUTE
 368          RS        1     FLOW
 369          RC    0.035    0.025    0.035      279   0.0220     0.00
 370          RX     0.00    22.00    30.00    37.00    50.00    60.00    80.00    94.00
 371          RY  2649.0 2648.00 2647.00 2646.00 2646.00 2647.00 2648.00 2649.00
              *

 372          KK      088    BASIN
 373          BA    0.003
 374          LG     0.30     0.25     7.27     0.12        6
 375          UI        0        7       21       38       28       14        5        2        1        0
 376          UI        0        0        0        0        0        0        0        0        0        0
 377          UI        0        0        0        0        0        0        0        0        0        0
 378          UI        0        0        0        0        0        0        0        0        0        0
 379          UI        0        0        0        0        0        0        0        0        0        0
              *

 380          KK    R305A    ROUTE
 381          RS        1     FLOW
 382          RC    0.035    0.025    0.035      415   0.0410     0.00
 383          RX     0.00    10.00    23.00    31.00    55.00    63.00    69.00    74.00
 384          RY  2650.0 2649.00 2648.00 2647.00 2647.00 2648.00 2649.00 2650.00
              *

 385          KK      305    BASIN
 386          BA    0.004
 387          LG     0.25     0.15     7.94     0.13        5
 388          UI        0       17       52       56       21        6        2        0        0        0
 389          UI        0        0        0        0        0        0        0        0        0        0
 390          UI        0        0        0        0        0        0        0        0        0        0
 391          UI        0        0        0        0        0        0        0        0        0        0
 392          UI        0        0        0        0        0        0        0        0        0        0
              *

 393          KK    CP305 COMBINE
 394          HC        3
              *
1                                        HEC-1 INPUT                                    PAGE 11

LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 395          KK     R306    ROUTE
 396          RS        1     FLOW
 397          RC    0.035    0.025    0.035      505   0.0180     0.00
 398          RX     0.00     5.00     9.00    13.00    18.00    27.00    43.00    58.00
 399          RY  2644.0 2643.00 2642.00 2641.00 2641.00 2642.00 2643.00 2644.00
              *

 400          KK      306    BASIN
 401          BA    0.004
 402          LG     0.23     0.17     7.94     0.12       15
 403          UI        0       11       32       56       34       14        5        2        0        0
 404          UI        0        0        0        0        0        0        0        0        0        0
 405          UI        0        0        0        0        0        0        0        0        0        0
 406          UI        0        0        0        0        0        0        0        0        0        0
 407          UI        0        0        0        0        0        0        0        0        0        0
              *

 408          KK    CP306 COMBINE
 409          HC        2
              *

 410          KK   DIV307  DIVERT
 411          DT   DTV307     0.0      0.0
 412          DI       0.0     97.0    116.0    166.0    228.0    262.0    298.0    336.0    375.0    500.0
 413          DQ       0.0      0.0      4.0     23.0     50.0     66.0     83.0    102.0    121.0    188.0
              *

 414          KK      300    BASIN
```

```
415          BA   0.004
416          LG    0.33    0.32    7.58    0.09       7
417          UI       0       8      24      45      40      23       9       4       1       0
418          UI       0       0       0       0       0       0       0       0       0       0
419          UI       0       0       0       0       0       0       0       0       0       0
420          UI       0       0       0       0       0       0       0       0       0       0
421          UI       0       0       0       0       0       0       0       0       0       0
             *

422          KK    DETE  DIVERT
423          DT    DTTE     0.1     0.0
424          DI     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
425          DQ     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
             *

426          KK    R301   ROUTE
427          RS       1    FLOW
428          RC   0.035   0.025   0.035     442  0.0410    0.00
429          RX    0.00    5.00   12.00   38.00   53.00   82.00  109.00  150.00
430          RY  2660.0 2659.00 2658.00 2656.00 2656.00 2657.00 2658.00 2660.00
             *
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1 HEC-1 INPUT PAGE 12

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LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

431          KK     301   BASIN
432          BA   0.007
433          LG    0.25    0.19    6.54    0.22       6
434          UI       0      33     103      92      32       8       0       0       0       0
435          UI       0       0       0       0       0       0       0       0       0       0
436          UI       0       0       0       0       0       0       0       0       0       0
437          UI       0       0       0       0       0       0       0       0       0       0
438          UI       0       0       0       0       0       0       0       0       0       0
             *

439          KK   CP301 COMBINE
440          HC       2
             *

441          KK    DETC  DIVERT
442          DT    DTTC     0.4     0.0
443          DI     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
444          DQ     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
             *

445          KK   R302A   ROUTE
446          RS       2    FLOW
447          RC   0.035   0.025   0.035     320  0.0280    0.00
448          RX    0.00   12.00   20.00   32.00   36.00   50.00   59.00   69.00
449          RY  2649.0 2648.00 2647.00 2646.50 2646.50 2647.00 2648.00 2649.00
             *

450          KK     303   BASIN
451          BA   0.006
452          LG    0.25    0.17    6.76    0.19       5
453          UI       0      11      35      63      61      36      15       7       2       2
454          UI       0       0       0       0       0       0       0       0       0       0
455          UI       0       0       0       0       0       0       0       0       0       0
456          UI       0       0       0       0       0       0       0       0       0       0
457          UI       0       0       0       0       0       0       0       0       0       0
             *

458          KK    DETD  DIVERT
459          DT    DTTD     0.1     0.0
460          DI     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
461          DQ     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
             *

462          KK   R302B   ROUTE
463          RS       1    FLOW
464          RC   0.035   0.025   0.035     276  0.0330    0.00
465          RX    0.00   14.00   30.00   52.00   62.00   87.00  100.00  115.00
466          RY  2652.0 2651.00 2650.00 2649.00 2649.00 2650.00 2651.00 2652.00
             *
```

1 HEC-1 INPUT PAGE 13

```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

467          KK     302   BASIN
468          BA   0.012
469          LG    0.24    0.18    6.76    0.20      10
470          UI       0      24      73     135     119      68      26      11       4       0
471          UI       0       0       0       0       0       0       0       0       0       0
472          UI       0       0       0       0       0       0       0       0       0       0
473          UI       0       0       0       0       0       0       0       0       0       0
474          UI       0       0       0       0       0       0       0       0       0       0
             *

475          KK   CP302 COMBINE
476          HC       3
             *

477          KK    DETB  DIVERT
478          DT    DTTB     0.5     0.0
479          DI     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
480          DQ     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
             *

481          KK     307   BASIN
482          BA   0.002
483          LG    0.25    0.15    7.94    0.13       5
484          UI       0      19      44      13       2       0       0       0       0       0
485          UI       0       0       0       0       0       0       0       0       0       0
```

```
486          UI        0        0        0        0        0        0        0        0        0        0
487          UI        0        0        0        0        0        0        0        0        0        0
488          UI        0        0        0        0        0        0        0        0        0        0
             *

489          KK      308    BASIN
490          BA    0.006
491          LG     0.25     0.15     7.56     0.14        5
492          UI        0       23       70       87       37       11        3        0        0        0
493          UI        0        0        0        0        0        0        0        0        0        0
494          UI        0        0        0        0        0        0        0        0        0        0
495          UI        0        0        0        0        0        0        0        0        0        0
496          UI        0        0        0        0        0        0        0        0        0        0
             *

497          KK  DIV307RETRIEVE
498          DR  DTV307
             *

499          KK    CP308 COMBINE
500          HC        4
             *

501          KK     DETA  DIVERT
502          DT     DTTA      6.9      0.0
503          DI      0.0  10000.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
504          DQ      0.0  10000.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
             *
1                                        HEC-1 INPUT                                          PAGE 14

LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

505          KK    CP310 COMBINE
506          HC        2
             *

507          KK      089    BASIN
508          BA    0.001
509          LG     0.33     0.38     6.00     0.19        1
510          UI        0        7       16        8        4        2        1        0        0        0
511          UI        0        0        0        0        0        0        0        0        0        0
512          UI        0        0        0        0        0        0        0        0        0        0
513          UI        0        0        0        0        0        0        0        0        0        0
514          UI        0        0        0        0        0        0        0        0        0        0
             *

515          KK      CS2 COMBINE
516          HC        4
             *

517          KK      120    BASIN
518          BA    0.028
519          LG     0.35     0.40     6.00     0.18        0
520          UI        0       15       31       72      102      130      159      100       83       71
521          UI       60       48       38       33       27       20       17       15       11       10
522          UI        7        7        5        3        3        3        3        3        3        3
523          UI        0        0        0        0        0        0        0        0        0        0
524          UI        0        0        0        0        0        0        0        0        0        0
             *

525          KK      R97    ROUTE
526          RS        9     FLOW
527          RC    0.035    0.025    0.035     4000   0.0210     0.00
528          RX     0.00     7.00    27.00    43.00    47.00    50.00    55.00    95.00
529          RY  2725.0  2724.00  2722.00  2721.00  2720.80  2721.00  2722.00  2725.00
             *

530          KK      100    BASIN
531          BA    0.017
532          LG     0.31     0.34     6.00     0.21        4
533          UI        0        4        4        5       15       18       22       25       27       31
534          UI       35       42       54       56       47       41       36       32       28       25
535          UI       22       19       14        9        8        7        6        4        4        3
536          UI        1        1        1        1        1        1        1        1        1        0
537          UI        0        0        0        0        0        0        0        0        0        0
             *

538          KK      097    BASIN
539          BA    0.050
540          LG     0.31     0.36     6.00     0.20        4
541          UI        0       10       10       10       15       34       40       48       52       57
542          UI       62       67       75       81       95      115      134      121      105       94
543          UI       86       80       72       65       60       52       48       42       33       25
544          UI       18       18       17       17       11       10       10        9        3        3
545          UI        3        3        3        3        3        3        3        3        3        3
546          UI        0        0        0        0        0        0        0        0        0        0
             *
1                                        HEC-1 INPUT                                          PAGE 15

LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

547          KK    CP097 COMBINE
548          HC        3
             *

549          KK      R91    ROUTE
550          RS        2     FLOW
551          RC    0.035    0.025    0.035     1080   0.0190     0.00
552          RX     0.00     9.00    29.00    35.00    39.00    44.00    54.00    59.00
553          RY  2685.0  2684.00  2683.00  2682.00  2681.30  2682.00  2683.00  2683.20
             *

554          KK      091    BASIN
```

```
555          BA   0.009
556          LG    0.34    0.39    6.00    0.18       0
557          UI       0       4       7      16      21      25      31      44      48      37
558          UI      30      24      20      13       7       7       4       3       1       1
559          UI       1       1       1       0       0       0       0       0       0       0
560          UI       0       0       0       0       0       0       0       0       0       0
561          UI       0       0       0       0       0       0       0       0       0       0
             *

562          KK   CP091 COMBINE
563          HC       2
             *

564          KK   DIV92  DIVERT
565          DT   DTT92     0.0     0.0
566          DI     0.0   100.0   250.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
567          DQ     0.0     0.0   150.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
             *

568          KK   DIV92RETRIEVE
569          DR   DTT92
             *

570          KK     090   BASIN
571          BA   0.017
572          LG    0.17    0.40    6.00    0.15      58
573          UI       0      25      83     136     184     116      64      26      12       5
574          UI       5       0       0       0       0       0       0       0       0       0
575          UI       0       0       0       0       0       0       0       0       0       0
576          UI       0       0       0       0       0       0       0       0       0       0
577          UI       0       0       0       0       0       0       0       0       0       0
             *

578          KK   CP090 COMBINE
579          HC       2
             *
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

580          KK   DET92 STORAGE
581          KO
582          RS       1    STOR
583          SV            0.74    2.33    4.08    5.02    6.07
584          SE  2656.5 2657.00 2658.00 2659.00 2659.50 2660.00
585          SS  2659.7   50.00    2.80    1.50
586          SL  2656.4    0.44    0.60    0.50
             *

587          KK    CP91 COMBINE
588          HC       2
             *

589          KK     R92   ROUTE
590          RS       4    FLOW
591          RC   0.035   0.025   0.035     180  0.0210    0.00
592          RX    0.00   21.00   24.00   26.00   33.00   36.00   38.00   54.00
593          RY  2660.0 2659.00 2658.00 2657.00 2657.00 2658.00 2659.00 2660.00
             *

594          KK     092   BASIN
595          BA   0.004
596          LG    0.28    0.37    6.54    0.13      24
597          UI       0      50      89      13       0       0       0       0       0       0
598          UI       0       0       0       0       0       0       0       0       0       0
599          UI       0       0       0       0       0       0       0       0       0       0
600          UI       0       0       0       0       0       0       0       0       0       0
601          UI       0       0       0       0       0       0       0       0       0       0
             *

602          KK   CP092 COMBINE
603          HC       2
             *

604          KK   R132A   ROUTE
605          RS       2    FLOW
606          RC   0.035   0.025   0.035     550  0.0250    0.00
607          RX    0.00   30.00   50.00   70.00   80.00   90.00  110.00  120.00
608          RY  2645.0 2644.00 2643.00 2642.00 2642.00 2643.00 2645.00 2646.00
             *

609          KK     135   BASIN
610          BA   0.011
611          LG    0.35    0.40    6.00    0.18       0
612          UI       0       8      31      56      84      60      44      35      26      20
613          UI      16      11       9       6       5       4       3       2       2       2
614          UI       2       0       0       0       0       0       0       0       0       0
615          UI       0       0       0       0       0       0       0       0       0       0
616          UI       0       0       0       0       0       0       0       0       0       0
             *
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

617          KK     R112   ROUTE
618          RS       2    FLOW
619          RC   0.035   0.025   0.035    1100  0.0236    0.00
620          RX    0.00    7.00   27.00   43.00   47.00   50.00   55.00   95.00
621          RY  2725.0 2724.00 2722.00 2721.00 2720.80 2721.00 2722.00 2725.00
             *

622          KK     112   BASIN
623          BA   0.019
```

```
624          LG    0.35    0.40    6.00    0.18       0
625          UI       0       9      15      34      54      67      87      89      58      50
626          UI      44      38      32      25      22      19      16      12      11      10
627          UI       7       7       5       4       4       3       2       2       2       2
628          UI       2       2       2       2       0       0       0       0       0       0
629          UI       0       0       0       0       0       0       0       0       0       0
             *

630          KK   CP112 COMBINE
631          HC       2
             *

632          KK  DET112 STORAGE
633          KO
634          RS       1    STOR
635          SV            0.05    0.15    0.32    0.59    0.95    1.44
636          SQ            1.00    1.00    2.00    2.00    3.00   70.00
637          SE  2732.0 2733.00 2734.00 2735.00 2736.00 2737.00 2738.00
             *

638          KK    R111   ROUTE
639          RS      17    FLOW
640          RC   0.035   0.025   0.035    3800  0.0210    0.00
641          RX    0.00    7.00   27.00   43.00   47.00   50.00   55.00   95.00
642          RY  2725.0 2724.00 2722.00 2721.00 2720.80 2721.00 2722.00 2725.00
             *

643          KK     150   BASIN
644          BA   0.011
645          LG    0.29    0.33    6.00    0.22       5
646          UI       0       6      12      25      32      40      55      68      51      41
647          UI      32      24      13       9       6       5       2       2       2       2
648          UI       0       0       0       0       0       0       0       0       0       0
649          UI       0       0       0       0       0       0       0       0       0       0
650          UI       0       0       0       0       0       0       0       0       0       0
             *

651          KK     111   BASIN
652          BA   0.052
653          LG    0.27    0.25    6.00    0.22       7
654          UI       0      17      17      43      70      86      99     113     133     170
655          UI     217     189     157     137     116     100      84      68      44      30
656          UI      28      22      17      15       5       5       5       5       5       5
657          UI       5       0       0       0       0       0       0       0       0       0
658          UI       0       0       0       0       0       0       0       0       0       0
             *
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

659          KK   CP111 COMBINE
660          HC       3
             *

661          KK  DIV130  DIVERT
662          DT  DTT130     0.0     0.0
663          DI     0.0    31.0    76.0   134.0   182.0   224.0   254.0     0.0     0.0     0.0
664          DQ     0.0    13.0    28.0    46.0    64.0    76.0    81.0     0.0     0.0     0.0
             *

665          KK  DIV130RETRIEVE
666          DR  DTT130
             *

667          KK  DET130 STORAGE
668          KO
669          RS       1    STOR
670          SV            0.12    0.27    0.45    0.68    0.94    1.09    1.24
671          SQ            1.00    1.00    2.00    2.00    3.00   23.00   65.00
672          SE  2655.0 2656.00 2657.00 2658.00 2659.00 2660.00 2660.50 2661.00
             *

673          KK  COM130 COMBINE
674          HC       2
             *

675          KK   R130B   ROUTE
676          RS       1    FLOW
677          RC   0.035   0.025   0.035     500  0.0260    0.00
678          RX    0.00   20.00   26.00   29.00   31.00   34.00   40.00   60.00
679          RY  2649.0 2649.00 2647.00 2646.00 2646.00 2647.00 2649.00 2650.00
             *

680          KK     170   BASIN
681          BA   0.030
682          LG    0.27    0.31    6.00    0.19       5
683          UI       0      14      23      54      72      87     108     154     158     121
684          UI      99      80      63      40      24      21      14       9       4       4
685          UI       4       4       4       0       0       0       0       0       0       0
686          UI       0       0       0       0       0       0       0       0       0       0
687          UI       0       0       0       0       0       0       0       0       0       0
             *

688          KK     099   BASIN
689          BA   0.029
690          LG    0.27    0.29    6.00    0.24       6
691          UI       0      15      33      67      86     109     154     178     133     105
692          UI      82      59      31      25      15      10       5       5       5       5
693          UI       0       0       0       0       0       0       0       0       0       0
694          UI       0       0       0       0       0       0       0       0       0       0
695          UI       0       0       0       0       0       0       0       0       0       0
             *
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 696      KK     R99   ROUTE
 697      RD     650  0.0050   0.013            CIRC   4.000
          *

 698      KK   CP170 COMBINE
 699      HC       2
          *

 700      KK  RET170 STORAGE
 701      KO
 702      RS       1    STOR
 703      SV            2.77    5.95    9.58   13.79   18.57
 704      SQ                                    10.00
 705      SE  2750.0 2751.00 2752.00 2753.00 2754.00 2755.00
          *

 706      KK     200   BASIN
 707      BA   0.005
 708      LG    0.35    0.38    6.34    0.15       0
 709      UI       0       2       2       7      10      11      14      17      24      23
 710      UI      18      15      13      10       8       5       3       3       2       2
 711      UI       1       1       1       1       1       1       0       0       0       0
 712      UI       0       0       0       0       0       0       0       0       0       0
 713      UI       0       0       0       0       0       0       0       0       0       0
          *

 714      KK   R130C   ROUTE
 715      RS       1    FLOW
 716      RC   0.035   0.025   0.035     450  0.0260    0.00
 717      RX    0.00   20.00   26.00   29.00   31.00   34.00   40.00   60.00
 718      RY  2649.0 2649.00 2647.00 2646.00 2646.00 2647.00 2649.00 2650.00
          *

 719      KK     130   BASIN
 720      BA   0.006
 721      LG    0.30    0.40    6.00    0.17      16
 722      UI       0       6      22      33      55      47      32      19       9       5
 723      UI       2       2       0       0       0       0       0       0       0       0
 724      UI       0       0       0       0       0       0       0       0       0       0
 725      UI       0       0       0       0       0       0       0       0       0       0
 726      UI       0       0       0       0       0       0       0       0       0       0
          *

 727      KK   CP130 COMBINE
 728      HC       4
          *

 729      KK   R132B   ROUTE
 730      RS       1    FLOW
 731      RC   0.035   0.025   0.035     300  0.0250    0.00
 732      RX    0.00   30.00   50.00   70.00   80.00   90.00  110.00  120.00
 733      RY  2645.0 2644.00 2643.00 2642.00 2642.00 2643.00 2645.00 2646.00
          *
```



```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 734      KK     132   BASIN
 735      BA   0.009
 736      LG    0.35    0.32    7.58    0.09       1
 737      UI       0       5      11      25      35      46      50      32      27      23
 738      UI      19      15      12      11       8       6       5       4       4       2
 739      UI       2       2       1       1       1       1       1       1       1       0
 740      UI       0       0       0       0       0       0       0       0       0       0
 741      UI       0       0       0       0       0       0       0       0       0       0
          *

 742      KK   CP132 COMBINE
 743      HC       3
          *

 744      KK     CS3 COMBINE
 745      HC       2
          *

 746      KK     162   BASIN
 747      BA   0.010
 748      LG    0.35    0.40    6.00    0.18       0
 749      UI       0       5      11      25      35      45      57      36      30      26
 750      UI      22      18      14      12      10       8       6       6       4       4
 751      UI       3       3       2       1       1       1       1       1       1       1
 752      UI       0       0       0       0       0       0       0       0       0       0
 753      UI       0       0       0       0       0       0       0       0       0       0
          *

 754      KK  DET162 STORAGE
 755      KO
 756      RS       1    STOR
 757      SV            0.03    0.12    0.29    0.59    1.07
 758      SQ            1.00    1.00    2.00    2.00    3.00
 759      SE  2732.0 2733.00 2734.00 2735.00 2736.00 2737.00
          *

 760      KK    R165   ROUTE
 761      RS      19    FLOW
 762      RC   0.035   0.025   0.035    1840  0.0050    0.00
 763      RX    0.00   20.00   26.00   29.00   31.00   34.00   40.00   60.00
 764      RY  2650.0 2651.00 2649.00 2648.00 2648.00 2649.00 2651.00 2650.00
          *

 765      KK     165   BASIN
```

```
766          BA   0.023
767          LG    0.32    0.38    6.00    0.19       4
768          UI       0       8       8      20      31      39      44      51      60      79
769          UI      97      83      69      60      51      44      37      28      18      13
770          UI      13       9       8       5       2       2       2       2       2       2
771          UI       2       0       0       0       0       0       0       0       0       0
772          UI       0       0       0       0       0       0       0       0       0       0
             *
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

773          KK     164   BASIN
774          BA   0.012
775          LG    0.25    0.25    6.00    0.27       5
776          UI       0     151     268      39       0       0       0       0       0       0
777          UI       0       0       0       0       0       0       0       0       0       0
778          UI       0       0       0       0       0       0       0       0       0       0
779          UI       0       0       0       0       0       0       0       0       0       0
780          UI       0       0       0       0       0       0       0       0       0       0
             *

781          KK  DET164  DIVERT
782          DT  DTT164     0.9     0.0
783          DI     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
784          DQ     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
             *

785          KK    R164   ROUTE
786          RS       1    FLOW
787          RC   0.035   0.025   0.035    1400  0.0050    0.00
788          RX    0.00   20.00   26.00   29.00   31.00   34.00   40.00   60.00
789          RY  2650.0 2651.00 2649.00 2648.00 2648.00 2649.00 2651.00 2650.00
             *

790          KK   CP164 COMBINE
791          HC       3
             *

792          KK     163   BASIN
793          BA   0.006
794          LG    0.35    0.40    6.00    0.18       0
795          UI       0       8      26      41      64      43      27      11       6       2
796          UI       2       0       0       0       0       0       0       0       0       0
797          UI       0       0       0       0       0       0       0       0       0       0
798          UI       0       0       0       0       0       0       0       0       0       0
799          UI       0       0       0       0       0       0       0       0       0       0
             *

800          KK  DET163  DIVERT
801          DT  DTT163     0.3     0.0
802          DI     0.0  1000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
803          DQ     0.0  1000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
             *

804          KK    R163   ROUTE
805          RS       1    FLOW
806          RC   0.025   0.025   0.025     238  0.0420    0.00
807          RX    0.00    6.00   11.00   47.00   62.00   68.00   77.00   93.00
808          RY  2689.0 2688.00 2687.00 2687.30 2686.70 2687.00 2688.00 2689.00
             *
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

809          KK   CP165 COMBINE
810          HC       2
             *

811          KK     220   BASIN
812          BA   0.013
813          LG    0.35    0.40    6.00    0.18       0
814          UI       0       6      11      26      40      49      69      54      39      34
815          UI      29      25      20      16      15      12       9       8       7       5
816          UI       5       4       3       3       2       1       1       1       1       1
817          UI       1       1       0       0       0       0       0       0       0       0
818          UI       0       0       0       0       0       0       0       0       0       0
             *

819          KK     240   BASIN
820          BA   0.004
821          LG    0.35    0.40    6.00    0.18       0
822          UI       0      21      61      35      19       9       5       2       1       0
823          UI       0       0       0       0       0       0       0       0       0       0
824          UI       0       0       0       0       0       0       0       0       0       0
825          UI       0       0       0       0       0       0       0       0       0       0
826          UI       0       0       0       0       0       0       0       0       0       0
             *

827          KK     230   BASIN
828          BA   0.003
829          LG    0.35    0.40    6.00    0.18       0
830          UI       0      11      40      28      16       9       5       3       2       1
831          UI       1       0       0       0       0       0       0       0       0       0
832          UI       0       0       0       0       0       0       0       0       0       0
833          UI       0       0       0       0       0       0       0       0       0       0
834          UI       0       0       0       0       0       0       0       0       0       0
             *

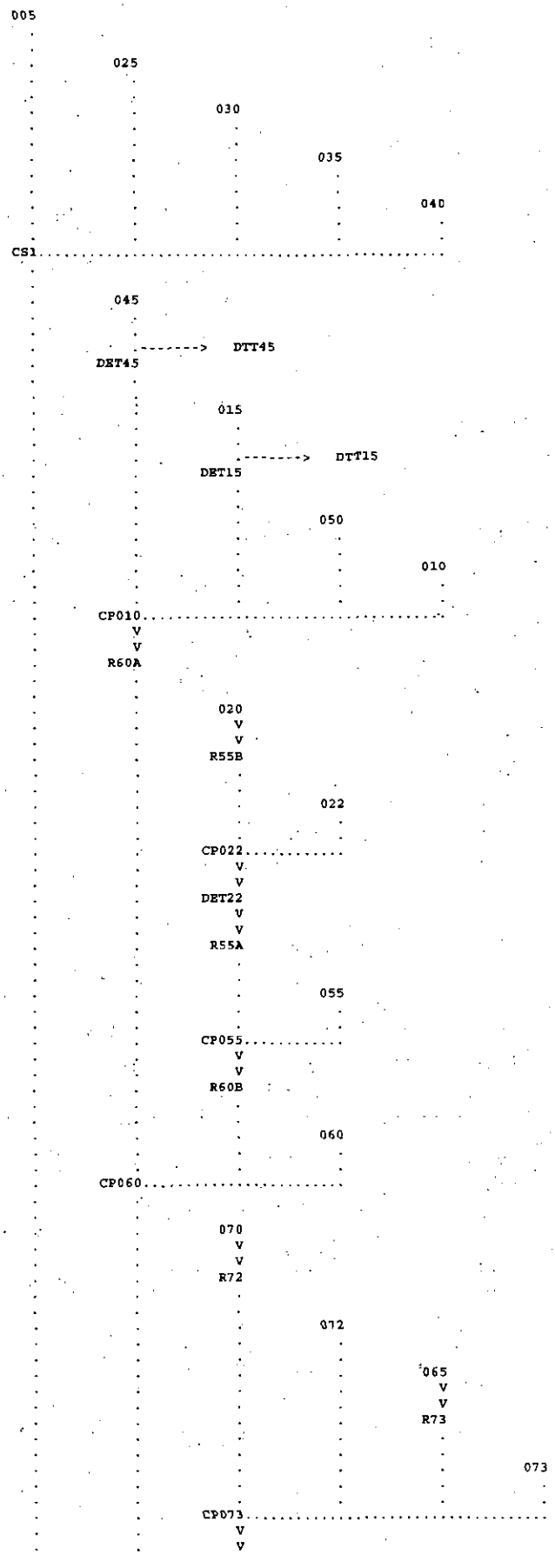
835          KK     210   BASIN
836          BA   0.009
837          LG    0.35    0.40    6.00    0.18       0
838          UI       0       6      15      31      42      60      39      31      26      21
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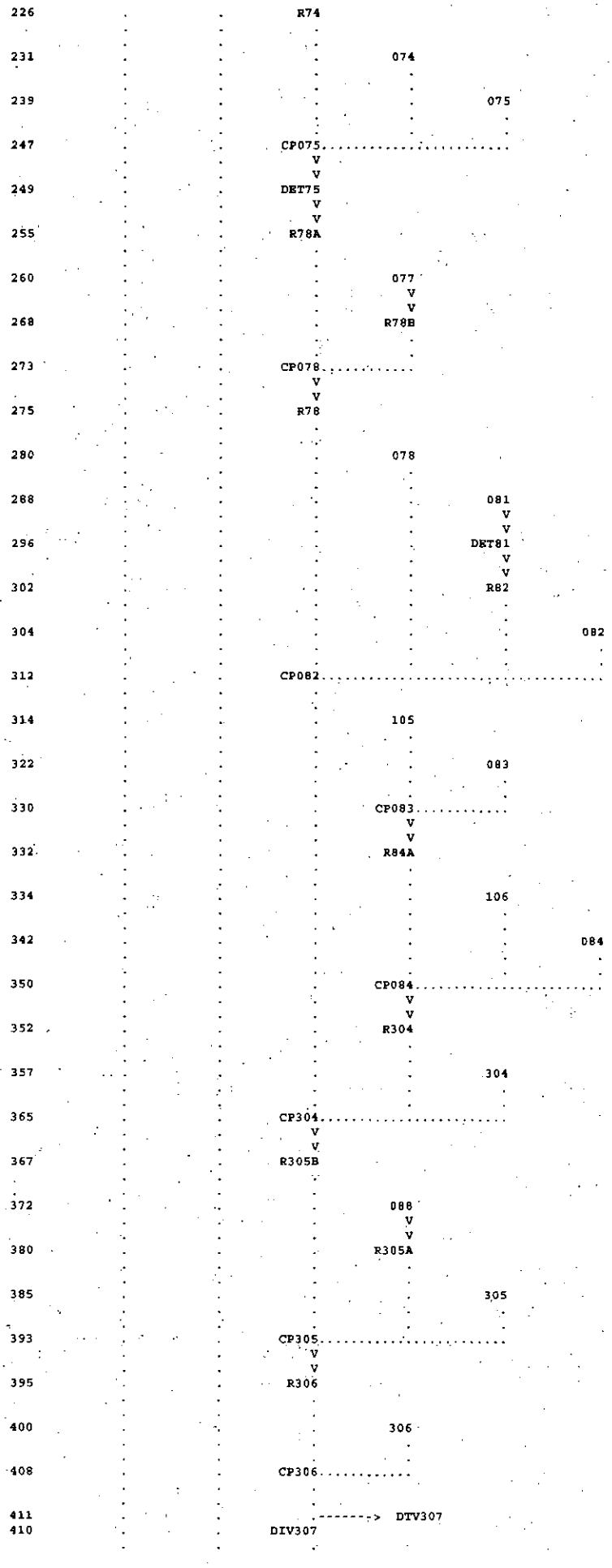
839	UI	16	13	11	8	6	5	4	3	3	2
840	UI	1	1	1	1	1	1	0	0	0	0
841	UI	0	0	0	0	0	0	0	0	0	0
842	UI	0	0	0	0	0	0	0	0	0	0
	*										
843	ZZ										

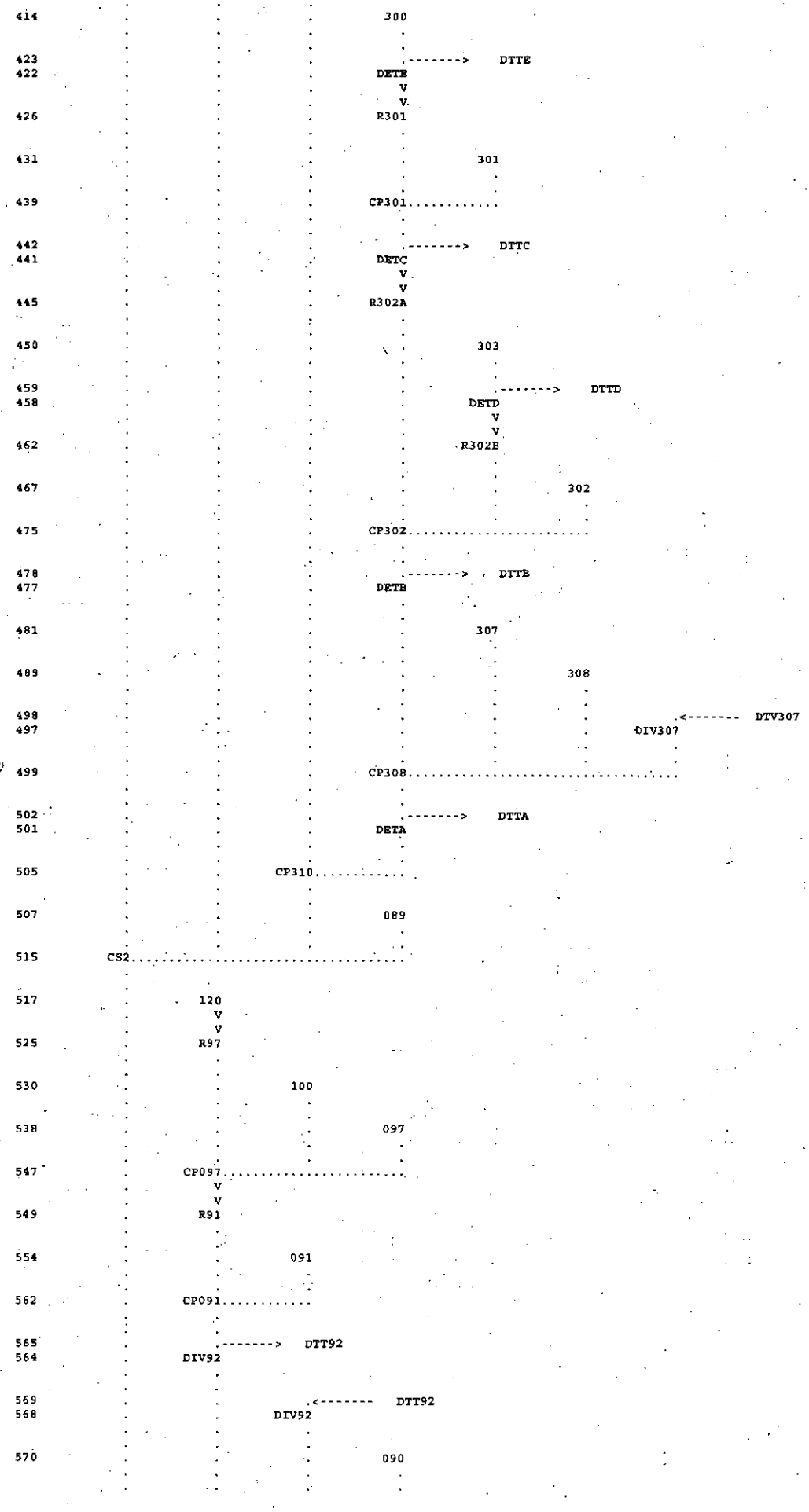
SCHEMATIC DIAGRAM OF STREAM NETWORK

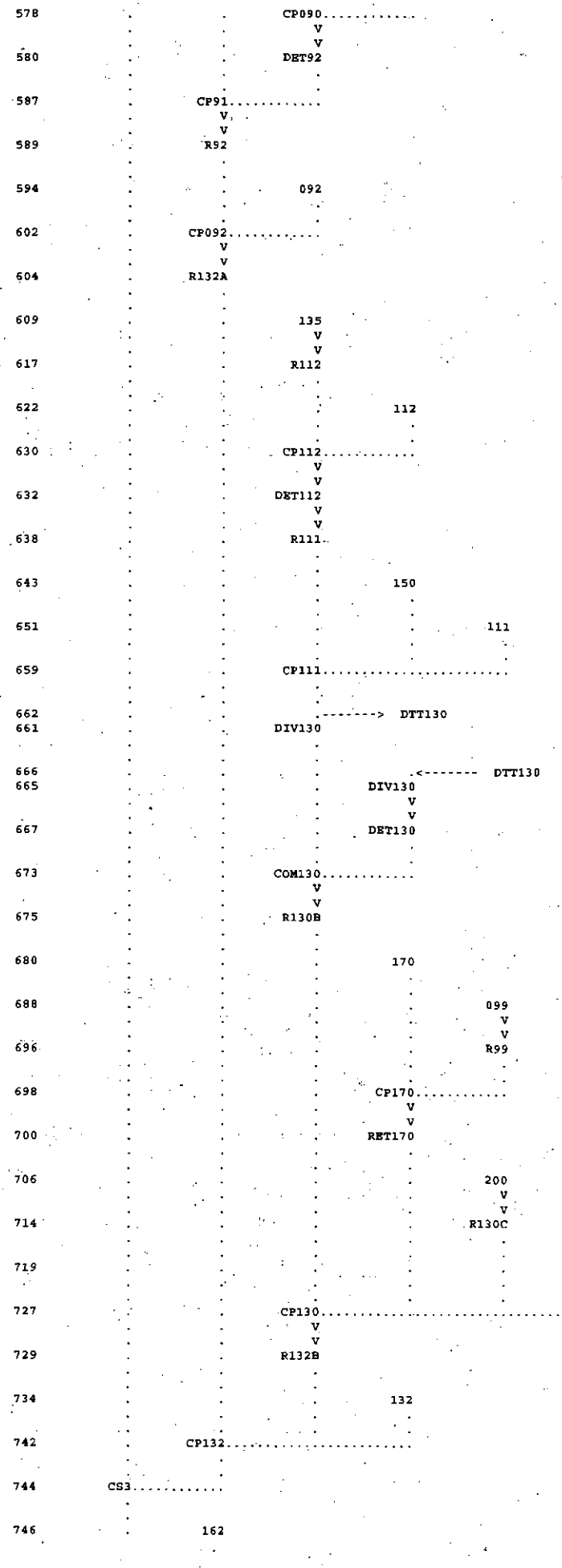
INPUT LINE NO.

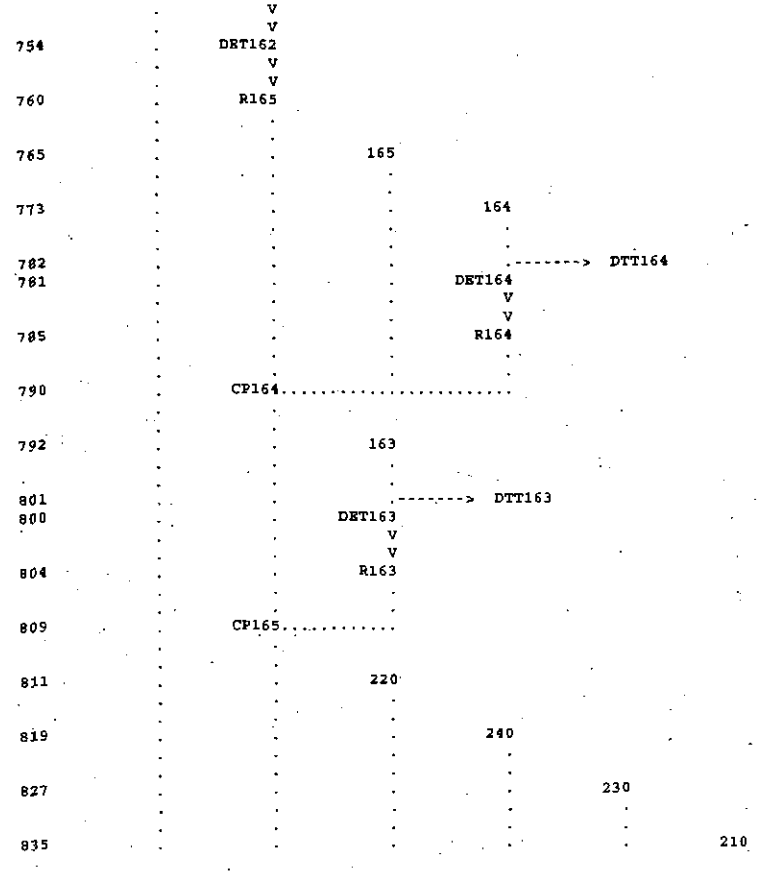
(V) ROUTING (.) CONNECTOR (---->) DIVERSION OR PUMP FLOW (<----) RETURN OF DIVERTED OR PUMPED FLOW




226
R74
231
074
239
075
247
CP075
249
DET75
255
R78A
260
077
268
R78B
273
CP078
275
R78
280
078
288
081
296
DET81
302
R82
304
082
312
CP082
314
105
322
083
330
CP083
332
R84A
334
106
342
084
350
CP084
352
R304
357
304
365
CP304
367
R305B
372
088
380
R305A
385
305
393
CP305
395
R306
400
306
408
CP306
411
DTV307
410
DIV307


414 300
423 .-------> DTTE
422 DETE
V
V
426 R301
431 301
439 CP301
442 .-------> DTTC
441 DETC
V
V
445 R302A
450 303
459 .-------> DTTD
458 DETD
V
V
462 R302B
467 302
475 CP302
478 .-------> DTTB
477 DETB
481 307
489 308
498 .<------- DTV307
497 DIV307
499 CP308
502 .-------> DTTA
501 DETA
505 CP310
507 089
515 CS2
517 120
V
V
525 R97
530 100
538 097
547 CP097
V
V
549 R91
554 091
562 CP091
565 .-------> DTT92
564 DIV92
569 .<------- DTT92
568 DIV92
570 090


578
CP090
580
DET92
587
CP91
589
R92
594
092
602
CP092
604
R132A
609
135
617
R112
622
112
630
CP112
632
DET112
638
R111
643
150
651
111
659
CP111
662
DTT130
661
DIV130
666
DTT130
665
DIV130
667
DET130
673
COM130
675
R130B
680
170
688
099
696
R99
698
CP170
700
RET170
706
200
714
R130C
719
130
727
CP130
729
R132B
734
132
742
CP132
744
CS3
746
162



(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
1*****************************************
*                                       *
*  PLOOD HYDROGRAPH PACKAGE  (HEC-1)    *
*              JUN  1998                *
*           VERSION 4.1                 *
*                                       *
*  RUN DATE   12JUN15  TIME  06:35:33   *
*                                       *
*****************************************
```


U.S. ARMY CORPS OF ENGINEERS
HYDROLOGIC ENGINEERING CENTER
609 SECOND STREET
DAVIS, CALIFORNIA 95616
(916) 756-1104

Flood Control District of Maricopa County
SNGC PROP - Scottsdale National Golf Club Proposed
10 YEAR
6 Hour Storm
Unit Hydrograph: S-Graph
Storm: Multiple
06/01/2015
WOOD/PATEL JCD
FILE NAME: SNGCPUT2.DAT

```
11 IO          OUTPUT CONTROL VARIABLES
                  IPRNT         5  PRINT CONTROL
                  IPLOT         0  PLOT CONTROL
                  QSCAL         0.  HYDROGRAPH PLOT SCALE

   IT          HYDROGRAPH TIME DATA
                  NMIN          1  MINUTES IN COMPUTATION INTERVAL
                  IDATE      1JUN15  STARTING DATE
                  ITIME        0000  STARTING TIME
                  NQ           2000  NUMBER OF HYDROGRAPH ORDINATES
                  NDDATE     2JUN15  ENDING DATE
                  NDTIME       0919  ENDING TIME
                  ICENT          19  CENTURY MARK

               COMPUTATION INTERVAL      .02 HOURS
                   TOTAL TIME BASE    33.32 HOURS

        ENGLISH UNITS
             DRAINAGE AREA          SQUARE MILES
             PRECIPITATION DEPTH    INCHES
             LENGTH, ELEVATION      FEET
             FLOW                   CUBIC FEET PER SECOND
             STORAGE VOLUME         ACRE-FEET
             SURFACE AREA           ACRES
             TEMPERATURE            DEGREES FAHRENHEIT

13 JD          INDEX STORM NO. 1
                  STRM        2.13  PRECIPITATION DEPTH
                  TRDA         .00  TRANSPOSITION DRAINAGE AREA

14 PI            PRECIPITATION PATTERN
                 .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
```

```
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
```

```
*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

          **************
          *            *
296 KK    *    DET81   *      STORAGE
          *            *
          **************

297 KO         OUTPUT CONTROL VARIABLES
                    IPRNT           5  PRINT CONTROL
                    IPLOT           0  PLOT CONTROL
                    QSCAL          0.  HYDROGRAPH PLOT SCALE

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

          **************
          *            *
580 KK    *    DET92   *      STORAGE
          *            *
          **************

581 KO         OUTPUT CONTROL VARIABLES
                    IPRNT           5  PRINT CONTROL
                    IPLOT           0  PLOT CONTROL
                    QSCAL          0.  HYDROGRAPH PLOT SCALE

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

          **************
          *            *
632 KK    *    DET112  *      STORAGE
          *            *
          **************

633 KO         OUTPUT CONTROL VARIABLES
                    IPRNT           5  PRINT CONTROL
                    IPLOT           0  PLOT CONTROL
                    QSCAL          0.  HYDROGRAPH PLOT SCALE

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

          **************
          *            *
667 KK    *    DET130  *      STORAGE
          *            *
          **************

668 KO         OUTPUT CONTROL VARIABLES
                    IPRNT           5  PRINT CONTROL
                    IPLOT           0  PLOT CONTROL
                    QSCAL          0.  HYDROGRAPH PLOT SCALE

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

          **************
          *            *
700 KK    *    RET170  *      STORAGE
          *            *
          **************

701 KO         OUTPUT CONTROL VARIABLES
                    IPRNT           5  PRINT CONTROL
                    IPLOT           0  PLOT CONTROL
                    QSCAL          0.  HYDROGRAPH PLOT SCALE

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

          **************
          *            *
754 KK    *    DET162  *      STORAGE
          *            *
          **************

755 KO         OUTPUT CONTROL VARIABLES
                    IPRNT           5  PRINT CONTROL
                    IPLOT           0  PLOT CONTROL
                    QSCAL          0.  HYDROGRAPH PLOT SCALE
```

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
+	HYDROGRAPH AT	005	125.	4.18	11.	3.	2.	.13		
+	HYDROGRAPH AT	025	22.	4.03	1.	0.	0.	.01		
+	HYDROGRAPH AT	030	20.	4.05	1.	0.	0.	.01		
+	HYDROGRAPH AT	035	8.	4.02	0.	0.	0.	.00		
+	HYDROGRAPH AT	040	2.	4.02	0.	0.	0.	.00		
+	5 COMBINED AT	CS1	149.	4.10	13.	3.	2.	.16		
+	HYDROGRAPH AT	045	10.	4.02	0.	0.	0.	.00		
+	DIVERSION TO	DTT45	10.	4.02	0.	0.	0.	.00		
+	HYDROGRAPH AT	DET45	7.	4.03	0.	0.	0.	.00		
+	HYDROGRAPH AT	015	20.	4.02	1.	0.	0.	.01		
+	DIVERSION TO	DTT15	6.	3.83	0.	0.	0.	.01		
+	HYDROGRAPH AT	DET15	14.	4.02	1.	0.	0.	.01		
+	HYDROGRAPH AT	050	16.	4.02	1.	0.	0.	.01		
+	HYDROGRAPH AT	010	37.	4.08	2.	1.	0.	.03		
+	4 COMBINED AT	CP010	69.	4.03	3.	1.	1.	.05		
+	ROUTED TO	R60A	62.	4.08	3.	1.	1.	.05		
+	HYDROGRAPH AT	020	63.	4.05	3.	1.	1.	.04		
+	ROUTED TO	R55B	59.	4.13	3.	1.	1.	.04		
+	HYDROGRAPH AT	022	40.	4.03	2.	0.	0.	.02		
+	2 COMBINED AT	CP022	87.	4.07	5.	1.	1.	.06		
+	ROUTED TO	DET22	53.	4.20	4.	1.	1.	.06		
+	ROUTED TO	R55A	49.	4.28	4.	1.	1.	.06		
+	HYDROGRAPH AT	055	43.	4.07	3.	1.	1.	.03		
+	2 COMBINED AT	CP055	65.	4.27	7.	2.	1.	.09		
+	ROUTED TO	R60B	61.	4.37	7.	2.	1.	.09		
+	HYDROGRAPH AT	060	37.	4.10	2.	1.	0.	.03		
+	3 COMBINED AT	CP060	136.	4.10	13.	3.	2.	.16		
+	HYDROGRAPH AT	070	31.	4.03	1.	0.	0.	.02		
+	ROUTED TO	R72	29.	4.08	1.	0.	0.	.02		
+	HYDROGRAPH AT	072	50.	4.07	3.	1.	0.	.03		
+	HYDROGRAPH AT	065	4.	4.02	0.	0.	0.	.00		
+	ROUTED TO	R73	4.	4.08	0.	0.	0.	.00		

HYDROGRAPH AT	073	40.	4.02	2.	0.	0.	.02
4 COMBINED AT	CP073	118.	4.07	6.	1.	1.	.07
ROUTED TO	R74	117.	4.08	6.	1.	1.	.07
HYDROGRAPH AT	074	24.	4.02	1.	0.	0.	.01
HYDROGRAPH AT	075	4.	4.02	0.	0.	0.	.00
3 COMBINED AT	CP075	136.	4.05	7.	2.	1.	.08
ROUTED TO	DET75	108.	4.13	7.	2.	1.	.08
ROUTED TO	R78A	102.	4.17	7.	2.	1.	.08
HYDROGRAPH AT	077	8.	4.02	0.	0.	0.	.00
ROUTED TO	R78B	8.	4.03	0.	0.	0.	.00
2 COMBINED AT	CP078	103.	4.17	7.	2.	1.	.09
ROUTED TO	R78	99.	4.20	7.	2.	1.	.09
HYDROGRAPH AT	078	28.	4.08	2.	0.	0.	.02
HYDROGRAPH AT	081	10.	4.02	0.	0.	0.	.00
ROUTED TO	DET81	5.	4.08	0.	0.	0.	.00
ROUTED TO	R82	5.	4.12	0.	0.	0.	.00
HYDROGRAPH AT	082	33.	4.05	2.	0.	0.	.02
4 COMBINED AT	CP082	136.	4.18	11.	3.	2.	.13
HYDROGRAPH AT	105	18.	4.05	1.	0.	0.	.01
HYDROGRAPH AT	083	4.	4.02	0.	0.	0.	.00
2 COMBINED AT	CP083	22.	4.02	1.	0.	0.	.01
ROUTED TO	R84A	22.	4.03	1.	0.	0.	.01
HYDROGRAPH AT	106	5.	4.02	0.	0.	0.	.00
HYDROGRAPH AT	084	15.	4.02	1.	0.	0.	.01
3 COMBINED AT	CP084	41.	4.02	2.	1.	0.	.02
ROUTED TO	R304	40.	4.03	2.	1.	0.	.02
HYDROGRAPH AT	304	6.	4.02	0.	0.	0.	.00
3 COMBINED AT	CP304	152.	4.18	14.	3.	2.	.15
ROUTED TO	R305B	151.	4.18	14.	3.	2.	.15
HYDROGRAPH AT	088	7.	4.02	0.	0.	0.	.00
ROUTED TO	R305A	6.	4.02	0.	0.	0.	.00
HYDROGRAPH AT	305	9.	4.02	0.	0.	0.	.00
3 COMBINED AT	CP305	152.	4.18	15.	4.	3.	.16
ROUTED TO	R306	151.	4.20	15.	4.	3.	.16
HYDROGRAPH AT	306	9.	4.02	1.	0.	0.	.00

2 COMBINED AT	CP306	154.	4.05	15.	4.	3.	.16
DIVERSION TO	DTV307	18.	4.05	1.	0.	0.	.16
HYDROGRAPH AT	DIV307	135.	4.05	14.	4.	3.	.16
HYDROGRAPH AT	300	9.	4.02	0.	0.	0.	.00
DIVERSION TO	DTTE	9.	3.90	0.	0.	0.	.00
HYDROGRAPH AT	DETE	9.	4.02	0.	0.	0.	.00
ROUTED TO	R301	8.	4.03	0.	0.	0.	.00
HYDROGRAPH AT	301	15.	4.02	1.	0.	0.	.01
2 COMBINED AT	CP301	23.	4.02	1.	0.	0.	.01
DIVERSION TO	DTTC	23.	4.02	1.	0.	0.	.01
HYDROGRAPH AT	DETC	14.	4.05	0.	0.	0.	.01
ROUTED TO	R302A	9.	4.08	0.	0.	0.	.01
HYDROGRAPH AT	303	13.	4.02	1.	0.	0.	.01
DIVERSION TO	DTTD	11.	3.85	0.	0.	0.	.01
HYDROGRAPH AT	DETD	13.	4.02	0.	0.	0.	.01
ROUTED TO	R302B	13.	4.02	0.	0.	0.	.01
HYDROGRAPH AT	302	26.	4.02	1.	0.	0.	.01
3 COMBINED AT	CP302	38.	4.02	2.	0.	0.	.03
DIVERSION TO	DTTB	38.	3.95	1.	0.	0.	.03
HYDROGRAPH AT	DETB	38.	4.02	1.	0.	0.	.03
HYDROGRAPH AT	307	5.	4.02	0.	0.	0.	.00
HYDROGRAPH AT	308	13.	4.02	1.	0.	0.	.01
HYDROGRAPH AT	DIV307	18.	4.05	1.	0.	0.	.16
4 COMBINED AT	CP308	71.	4.02	3.	1.	0.	.04
DIVERSION TO	DTTA	71.	4.02	3.	1.	0.	.04
HYDROGRAPH AT	DETA	0.	.00	0.	0.	0.	.04
2 COMBINED AT	CP310	135.	4.05	14.	4.	3.	.20
HYDROGRAPH AT	089	2.	4.02	0.	0.	0.	.00
4 COMBINED AT	CS2	408.	4.10	39.	10.	7.	.53
HYDROGRAPH AT	120	49.	4.03	2.	1.	0.	.03
ROUTED TO	R97	44.	4.18	2.	1.	0.	.03
HYDROGRAPH AT	100	26.	4.10	1.	0.	0.	.02
HYDROGRAPH AT	097	67.	4.17	4.	1.	1.	.05
3 COMBINED AT	CP097	133.	4.17	8.	2.	1.	.09
ROUTED TO	R91	131.	4.20	8.	2.	1.	.09

+	HYDROGRAPH AT	091	17.	4.03	1.	0.	0.	.01
+	2 COMBINED AT	CP091	135.	4.18	9.	2.	2.	.10
+	DIVERSION TO	DTT92	35.	4.18	1.	0.	0.	.10
+	HYDROGRAPH AT	DIV92	100.	4.10	8.	2.	1.	.10
+	HYDROGRAPH AT	DIV92	35.	4.18	1.	0.	0.	.10
+	HYDROGRAPH AT	090	39.	4.02	3.	1.	1.	.02
+	2 COMBINED AT	CP090	39.	4.02	4.	1.	1.	.02
+	ROUTED TO	DET92	2.	4.32	2.	1.	1.	.02
+	2 COMBINED AT	CP91	102.	4.28	10.	3.	2.	.12
+	ROUTED TO	R92	102.	4.10	10.	3.	2.	.12
+	HYDROGRAPH AT	092	9.	4.02	0.	0.	0.	.00
+	2 COMBINED AT	CP092	103.	4.10	10.	3.	3.	.13
+	ROUTED TO	R132A	103.	4.27	10.	3.	3.	.13
+	HYDROGRAPH AT	135	21.	4.02	1.	0.	0.	.01
+	ROUTED TO	R112	20.	4.05	1.	0.	0.	.01
+	HYDROGRAPH AT	112	32.	4.03	2.	0.	0.	.02
+	2 COMBINED AT	CP112	52.	4.05	2.	1.	0.	.03
+	ROUTED TO	DET112	11.	4.23	2.	1.	0.	.03
+	ROUTED TO	R111	9.	4.52	2.	1.	0.	.03
+	HYDROGRAPH AT	150	21.	4.02	1.	0.	0.	.01
+	HYDROGRAPH AT	111	95.	4.07	5.	1.	1.	.05
+	3 COMBINED AT	CP111	115.	4.05	8.	2.	2.	.09
+	DIVERSION TO	DTT130	40.	4.05	3.	1.	1.	.09
+	HYDROGRAPH AT	DIV130	75.	4.05	5.	1.	1.	.09
+	HYDROGRAPH AT	DIV130	40.	4.05	3.	1.	1.	.09
+	ROUTED TO	DET130	6.	4.30	2.	1.	1.	.09
+	2 COMBINED AT	COM130	77.	4.05	7.	2.	2.	.09
+	ROUTED TO	R130B	77.	4.07	7.	2.	2.	.09
+	HYDROGRAPH AT	170	59.	4.03	3.	1.	1.	.03
+	HYDROGRAPH AT	099	56.	4.02	3.	1.	0.	.03
+	ROUTED TO	R99	56.	4.03	3.	1.	0.	.03
+	2 COMBINED AT	CP170	115.	4.03	5.	1.	1.	.06
+	ROUTED TO	RET170	0.	.00	0.	0.	0.	.06
+	HYDROGRAPH AT	200	9.	4.05	0.	0.	0.	.00
+	ROUTED TO	R130C	9.	4.07	0.	0.	0.	.00

	HYDROGRAPH AT						
+	130	12.	4.02	1.	0.	0.	.01
	4 COMBINED AT						
+	CP130	96.	4.05	8.	2.	2.	.16
	ROUTED TO						
+	R132B	96.	4.07	8.	2.	2.	.16
	HYDROGRAPH AT						
+	132	18.	4.03	1.	0.	0.	.01
	3 COMBINED AT						
+	CP132	196.	4.10	19.	6.	4.	.30
	2 COMBINED AT						
+	CS3	522.	4.10	54.	15.	11.	.83
	HYDROGRAPH AT						
+	162	18.	4.03	1.	0.	0.	.01
	ROUTED TO						
+	DET162	2.	4.12	1.	0.	0.	.01
	ROUTED TO						
+	R165	2.	4.45	1.	0.	0.	.01
	HYDROGRAPH AT						
+	165	40.	4.07	2.	0.	0.	.02
	HYDROGRAPH AT						
+	164	24.	4.02	1.	0.	0.	.01
	DIVERSION TO						
+	DTT164	24.	4.02	1.	0.	0.	.01
	HYDROGRAPH AT						
+	DET164	0.	.00	0.	0.	0.	.01
	ROUTED TO						
+	R164	0.	.00	0.	0.	0.	.01
	3 COMBINED AT						
+	CP164	40.	4.07	3.	1.	1.	.05
	HYDROGRAPH AT						
+	163	12.	4.02	0.	0.	0.	.01
	DIVERSION TO						
+	DTT163	12.	4.02	0.	0.	0.	.01
	HYDROGRAPH AT						
+	DET163	0.	.00	0.	0.	0.	.01
	ROUTED TO						
+	R163	0.	.00	0.	0.	0.	.01
	2 COMBINED AT						
+	CP165	40.	4.07	3.	1.	1.	.05
	HYDROGRAPH AT						
+	220	22.	4.03	1.	0.	0.	.01
	HYDROGRAPH AT						
+	240	8.	4.02	0.	0.	0.	.00
	HYDROGRAPH AT						
+	230	6.	4.02	0.	0.	0.	.00
	HYDROGRAPH AT						
+	210	16.	4.02	1.	0.	0.	.01

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	INTERPOLATED TO COMPUTATION INTERVAL DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
FOR STORM = 1 STORM AREA (SQ MI) = .00									
R82	MANE	1.00	5.14	247.00	.78	1.00	5.14	247.00	.78

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2087E+00 EXCESS= .0000E+00 OUTFLOW= .2087E+00 BASIN STORAGE= .1311E-03 PERCENT ERROR= -.1

FOR STORM = 2 STORM AREA (SQ MI) = .50									
R82	MANE	1.00	5.11	247.00	.77	1.00	5.11	247.00	.77

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2064E+00 EXCESS= .0000E+00 OUTFLOW= .2064E+00 BASIN STORAGE= .1299E-03 PERCENT ERROR= -.1

FOR STORM = 3 STORM AREA (SQ MI) = 2.80									
R82	MANE	1.00	3.76	245.00	.52	1.00	3.76	245.00	.52

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1395E+00 EXCESS= .0000E+00 OUTFLOW= .1395E+00 BASIN STORAGE= .1302E-03 PERCENT ERROR= -.1

FOR STORM = 1 STORM AREA (SQ MI) = .00									
R84A	MANE	.89	21.83	242.53	.81	1.00	21.75	242.00	.81

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6011E+00 EXCESS= .0000E+00 OUTFLOW= .6011E+00 BASIN STORAGE= .6920E-04 PERCENT ERROR= .0

FOR STORM = 2 STORM AREA (SQ MI) = .50									
R84A	MANE	.89	21.66	242.12	.80	1.00	21.60	242.00	.80

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5945E+00 EXCESS= .0000E+00 OUTFLOW= .5946E+00 BASIN STORAGE= .7387E-04 PERCENT ERROR= .0

FOR STORM = 3 STORM AREA (SQ MI) = 2.80									
R84A	MANE	1.00	9.42	243.00	.55	1.00	9.42	243.00	.55

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4109E+00 EXCESS= .0000E+00 OUTFLOW= .4109E+00 BASIN STORAGE= .6302E-04 PERCENT ERROR= .0

FOR STORM = 1 STORM AREA (SQ MI) = .00									
R99	MANE	1.00	56.21	242.00	.85	1.00	56.21	242.00	.85

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1318E+01 EXCESS= .0000E+00 OUTFLOW= .1315E+01 BASIN STORAGE= .9887E-04 PERCENT ERROR= .2

FOR STORM = 2 STORM AREA (SQ MI) = .50									
R99	MANE	1.00	55.72	242.00	.84	1.00	55.72	242.00	.84

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1304E+01 EXCESS= .0000E+00 OUTFLOW= .1302E+01 BASIN STORAGE= .9841E-04 PERCENT ERROR= .2

FOR STORM = 3 STORM AREA (SQ MI) = 2.80									
R99	MANE	1.00	22.84	243.00	.60	1.00	22.84	243.00	.60

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9331E+00 EXCESS= .0000E+00 OUTFLOW= .9327E+00 BASIN STORAGE= .1216E-03 PERCENT ERROR= .0

*** NORMAL END OF HEC-1 ***

Post Developed Condition 2-year, 6-hour

HEC-1 Output

```
1*************************************
*                                   *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             JUN  1998             *
*           VERSION 4.1             *
*                                   *
*  RUN DATE   12JUN15  TIME  06:35:41   *
*                                   *
*************************************
```

```
*************************************
*                                   *
*    U.S. ARMY CORPS OF ENGINEERS     *
*    HYDROLOGIC ENGINEERING CENTER    *
*         609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616       *
*           (916) 756-1104            *
*                                   *
*************************************
```

```
X     X  XXXXXXX   XXXXX           X
X     X  X        X     X         XX
X     X  X        X                X
XXXXXXX  XXXX     X        XXXXX   X
X     X  X        X                X
X     X  X        X     X          X
X     X  XXXXXXX   XXXXX          XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -ANSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT PAGE 1

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
    1         ID        Flood Control District of Maricopa County
    2         ID        SNGC PROP - Scottsdale National Golf Club Proposed
    3         ID        2 YEAR
    4         ID        6 Hour  Storm
    5         ID        Unit Hydrograph: S-Graph
    6         ID        Storm: Multiple
    7         ID        06/01/2015
    8         ID        WOOD/PATEL JCD
    9         ID            FILE NAME: SNGCPUT2.DAT
              *DIAGRAM
   10         IT       1  1JUN15       0    2000
   11         IO       5
   12         IN      15
              *
   13         JD   1.442  0.0001
   14         PC   0.000   0.008   0.016   0.025   0.033   0.041   0.050   0.058   0.066   0.074
   15         PC   0.087   0.099   0.118   0.138   0.216   0.377   0.834   0.911   0.931   0.950
   16         PC   0.962   0.972   0.983   0.991   1.000
   17         JD   1.433  0.5000
   18         PC   0.000   0.008   0.016   0.025   0.033   0.041   0.050   0.058   0.066   0.074
   19         PC   0.087   0.099   0.118   0.138   0.216   0.377   0.834   0.911   0.931   0.950
   20         PC   0.962   0.972   0.983   0.991   1.000
   21         JD   1.406     2.8
   22         PC   0.000   0.009   0.016   0.025   0.034   0.042   0.051   0.059   0.067   0.076
   23         PC   0.087   0.100   0.120   0.163   0.252   0.451   0.694   0.837   0.900   0.938
   24         PC   0.950   0.963   0.975   0.988   1.000
              *

   25         KK     005   BASIN
   26         BA   0.133
   27         LG    0.35    0.40    6.00    0.18       0
   28         UI       0      21      21      21      21      27      61      70      84     101
   29         UI     124     132     142     154     161     171     190     217     250     252
   30         UI     181     157     143     133     126     123     116     110     105     101
   31         UI      97      90      86      82      77      72      66      61      56      53
   32         UI      52      50      49      46      44      42      35      35      32      27
   33         UI      27      27      25      23      23      23      23      15      16      16
   34         UI      16      16      16      12      10      10      10      10      10      10
   35         UI      10      10      10       5       4       4       4       4       4       4
   36         UI       4       4       4       4       4       4       4       4       4       4
   37         UI       4       4       4       4       4       4       4       4       0       0
              *

   38         KK     025   BASIN
   39         BA   0.013
   40         LG    0.35    0.40    6.00    0.18       0
   41         UI       0       6      10      24      38      47      62      59      39      34
   42         UI      30      25      21      17      15      13      10       8       7       6
   43         UI       5       5       3       3       3       2       1       1       1       1
   44         UI       1       1       1       0       0       0       0       0       0       0
   45         UI       0       0       0       0       0       0       0       0       0       0
              *
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1 HEC-1 INPUT PAGE 2

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LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

   46         KK     030   BASIN
   47         BA   0.012
   48         LG    0.34    0.39    6.00    0.18       1
   49         UI       0       5       7      17      27      35      41      57      43      32
   50         UI      28      25      22      19      16      13      12      11       8       7
   51         UI       6       6       4       4       3       2       2       2       2       1
   52         UI       1       1       1       1       1       1       1       0       0       0
   53         UI       0       0       0       0       0       0       0       0       0       0
              *
```

```
  54          KK     035   BASIN
  55          BA   0.004
  56          LG    0.33    0.38    6.00    0.19       3
  57          UI       0       6      24      41      26      19      13       9       6       4
  58          UI       3       2       1       1       1       0       0       0       0       0
  59          UI       0       0       0       0       0       0       0       0       0       0
  60          UI       0       0       0       0       0       0       0       0       0       0
  61          UI       0       0       0       0       0       0       0       0       0       0
              *

  62          KK     040   BASIN
  63          BA   0.001
  64          LG    0.28    0.34    6.00    0.21      12
  65          UI       0      22      13       3       1       0       0       0       0       0
  66          UI       0       0       0       0       0       0       0       0       0       0
  67          UI       0       0       0       0       0       0       0       0       0       0
  68          UI       0       0       0       0       0       0       0       0       0       0
  69          UI       0       0       0       0       0       0       0       0       0       0
              *

  70          KK     CS1 COMBINE
  71          HC       5
              *

  72          KK     045   BASIN
  73          BA   0.005
  74          LG    0.27    0.30    6.00    0.24       5
  75          UI       0      32      94      53      11       3       0       0       0       0
  76          UI       0       0       0       0       0       0       0       0       0       0
  77          UI       0       0       0       0       0       0       0       0       0       0
  78          UI       0       0       0       0       0       0       0       0       0       0
  79          UI       0       0       0       0       0       0       0       0       0       0
              *

  80          KK   DET45  DIVERT
  81          DT   DTT45     0.2     0.0
  82          DI     0.0  1000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
  83          DQ     0.0  1000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
              *
1                                        HEC-1 INPUT                                        PAGE  3

LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  84          KK     015   BASIN
  85          BA   0.010
  86          LG    0.24    0.25    6.00    0.26       8
  87          UI       0       7      28      42      61      86      61      43      27      13
  88          UI       8       4       2       2       0       0       0       0       0       0
  89          UI       0       0       0       0       0       0       0       0       0       0
  90          UI       0       0       0       0       0       0       0       0       0       0
  91          UI       0       0       0       0       0       0       0       0       0       0
              *

  92          KK   DET15  DIVERT
  93          DT   DTT15     0.0     6.0
  94          DI     0.0  1000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
  95          DQ     0.0  1000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
              *

  96          KK     050   BASIN
  97          BA   0.008
  98          LG    0.34    0.40    6.00    0.17       2
  99          UI       0       9      35      60      64      40      30      20      15      10
 100          UI       8       5       4       3       1       1       1       1       0       0
 101          UI       0       0       0       0       0       0       0       0       0       0
 102          UI       0       0       0       0       0       0       0       0       0       0
 103          UI       0       0       0       0       0       0       0       0       0       0
              *

 104          KK     010   BASIN
 105          BA   0.026
 106          LG    0.34    0.39    6.00    0.18       2
 107          UI       0       8       8      12      25      34      45      52      58      68
 108          UI      87      74      54      47      43      40      36      33      30      27
 109          UI      24      20      19      18      16      14      12      10      10       9
 110          UI       8       8       6       6       6       4       4       4       4       4
 111          UI       3       1       1       1       1       1       1       1       1       1
 112          UI       1       1       1       1       0       0       0       0       0       0
              *

 113          KK   CP010 COMBINE
 114          HC       4
              *

 115          KK    R60A   ROUTE
 116          RS       5    FLOW
 117          RC   0.035   0.025   0.035    2000  0.0220    0.00
 118          RX    0.00    4.00    9.00   13.00   24.00   28.00   36.00   45.00
 119          RY  2706.0 2705.00 2704.00 2703.00 2703.00 2704.00 2705.00 2706.00
              *

 120          KK     020   BASIN
 121          BA   0.038
 122          LG    0.35    0.40    6.00    0.18       0
 123          UI       0      16      23      58      92     115     139     188     127     101
 124          UI      89      79      68      58      47      40      37      31      25      21
 125          UI      18      16      13      13       8       8       8       6       3       3
                                         HEC-1 INPUT                                        PAGE  4

LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 126          UI       3       3       3       3       3       3       3       0       0       0
 127          UI       0       0       0       0       0       0       0       0       0       0
              *
```

```
128          KK    R55B   ROUTE
129          RS       7    FLOW
130          RC   0.035   0.025   0.035    2343  0.0230    0.00
131          RX    0.00    9.00   18.00   33.00   52.00   60.00   68.00   73.00
132          RY  2741.0 2740.50 2740.00 2739.00 2739.00 2740.00 2740.50 2741.00
             *

133          KK     022   BASIN
134          BA   0.022
135          LG    0.35    0.40    6.00    0.18       1
136          UI       0      13      31      67      93     131     108      76      64      54
137          UI      43      33      29      23      17      14      11      10       7       6
138          UI       6       2       2       2       2       2       2       0       0       0
139          UI       0       0       0       0       0       0       0       0       0       0
140          UI       0       0       0       0       0       0       0       0       0       0
             *

141          KK   CP022 COMBINE
142          HC       2
             *

143          KK   DET22 STORAGE
144          KO
145          RS       1    STOR
146          SV            0.03    0.11    0.30    0.63    1.16    1.92
147          SQ            1.00    1.00    2.00    2.00    3.00  170.00
148          SE  2766.0 2767.00 2768.00 2769.00 2770.00 2771.00 2772.00
             *

149          KK    R55A   ROUTE
150          RS      12    FLOW
151          RC   0.035   0.025   0.035    1600  0.0230    0.00
152          RX    0.00    9.00   18.00   33.00   52.00   60.00   68.00   73.00
153          RY  2741.0 2740.50 2740.00 2739.00 2739.00 2740.00 2740.50 2741.00
             *

154          KK     055   BASIN
155          BA   0.028
156          LG    0.26    0.32    6.00    0.22      14
157          UI       0       8       8      15      28      41      52      60      66      81
158          UI     100      70      56      50      46      42      39      35      32      28
159          UI      24      21      20      19      17      14      12      11      10       9
160          UI       8       6       6       6       4       4       4       4       4       2
161          UI       2       2       2       2       2       2       2       2       2       2
162          UI       2       2       0       0       0       0       0       0       0       0
             *
```



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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

163          KK   CP055 COMBINE
164          HC       2
             *

165          KK    R60B   ROUTE
166          RS       6    FLOW
167          RC   0.035   0.025   0.035    2450  0.0220    0.00
168          RX    0.00    4.00    9.00   13.00   24.00   28.00   36.00   45.00
169          RY  2706.0 2705.00 2704.00 2703.00 2703.00 2704.00 2705.00 2706.00
             *

170          KK     060   BASIN
171          BA   0.028
172          LG    0.32    0.37    6.00    0.19       3
173          UI       0       7       7       7      21      28      37      45      51      55
174          UI      63      78      83      55      48      43      41      37      35      32
175          UI      29      27      24      21      19      18      17      16      14      12
176          UI      11       9       9       8       8       7       6       6       6       5
177          UI       4       4       4       4       4       3       1       1       1       1
178          UI       1       1       1       1       1       1       1       1       1       1
179          UI       1       0       0       0       0       0       0       0       0       0
             *

180          KK   CP060 COMBINE
181          HC       3
             *

182          KK     070   BASIN
183          BA   0.017
184          LG    0.35    0.40    6.00    0.18       0
185          UI       0      10      25      54      74     106      80      59      49      41
186          UI      32      25      22      16      13      11       8       7       5       5
187          UI       3       2       2       2       2       2       2       0       0       0
188          UI       0       0       0       0       0       0       0       0       0       0
189          UI       0       0       0       0       0       0       0       0       0       0
             *

190          KK     R72   ROUTE
191          RS       5    FLOW
192          RC   0.035   0.025   0.035    1798  0.0210    0.00
193          RX    0.00   12.00   23.00   30.00   40.00   50.00   67.00   88.00
194          RY  2739.0 2737.00 2736.00 2735.00 2735.00 2736.00 2737.00 2739.00
             *

195          KK     072   BASIN
196          BA   0.030
197          LG    0.31    0.34    6.00    0.21       3
198          UI       0       9       9      18      33      42      49      55      63      72
199          UI      95     114     100      84      74      65      56      48      41      31
200          UI      20      16      15      12       9       9       3       3       3       3
201          UI       3       3       3       3       0       0       0       0       0       0
202          UI       0       0       0       0       0       0       0       0       0       0
             *
```

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LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  203     KK     065   BASIN
  204     BA   0.002
  205     LG    0.35    0.40    6.00    0.18       0
  206     UI       0       4      14      21      13       9       6       4       3       2
  207     UI       1       1       0       0       0       0       0       0       0       0
  208     UI       0       0       0       0       0       0       0       0       0       0
  209     UI       0       0       0       0       0       0       0       0       0       0
  210     UI       0       0       0       0       0       0       0       0       0       0
          *

  211     KK     R73   ROUTE
  212     RS       5    FLOW
  213     RC   0.035   0.025   0.035    1401  0.0260    0.00
  214     RX    0.00   56.00   65.00   74.00   78.00   84.00   89.00   99.00
  215     RY  2741.0 2740.00 2739.00 2738.00 2738.00 2739.00 2740.00 2743.00
          *

  216     KK     073   BASIN
  217     BA   0.021
  218     LG    0.28    0.30    6.00    0.24       5
  219     UI       0      10      21      45      58      72      96     128     100      80
  220     UI      63      49      30      18      15      10       5       3       3       3
  221     UI       3       0       0       0       0       0       0       0       0       0
  222     UI       0       0       0       0       0       0       0       0       0       0
  223     UI       0       0       0       0       0       0       0       0       0       0
          *

  224     KK   CP073 COMBINE
  225     HC       4
          *

  226     KK     R74   ROUTE
  227     RS       1    FLOW
  228     RC   0.035   0.025   0.035     540  0.0220    0.00
  229     RX    0.00    8.00   22.00   38.00   97.00  105.00  111.00  118.00
  230     RY  2731.0 2730.00 2728.00 2738.00 2727.00 2728.00 2729.00 2730.00
          *

  231     KK     074   BASIN
  232     BA   0.012
  233     LG    0.28    0.31    6.00    0.23       5
  234     UI       0      13      46      70     116      92      62      34      16       8
  235     UI       3       3       0       0       0       0       0       0       0       0
  236     UI       0       0       0       0       0       0       0       0       0       0
  237     UI       0       0       0       0       0       0       0       0       0       0
  238     UI       0       0       0       0       0       0       0       0       0       0
          *

  239     KK     075   BASIN
  240     BA   0.002
  241     LG    0.34    0.39    6.00    0.18       0
  242     UI       0      12      32      17       9       4       2       1       1       0
  243     UI       0       0       0       0       0       0       0       0       0       0
  244     UI       0       0       0       0       0       0       0       0       0       0
```



```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  245     UI       0       0       0       0       0       0       0       0       0       0
  246     UI       0       0       0       0       0       0       0       0       0       0
          *

  247     KK   CP075 COMBINE
  248     HC       3
          *

  249     KK   DET75 STORAGE
  250     KO
  251     RS       1    STOR
  252     SV            0.10    0.30    0.64    1.17    1.92
  253     SQ            6.00   17.00   32.00   43.00  250.00
  254     SE  2717.0 2718.00 2719.00 2720.00 2721.00 2722.00
          *

  255     KK    R78A   ROUTE
  256     RS       2    FLOW
  257     RC   0.035   0.025   0.035     700  0.0210    0.00
  258     RX    0.00   17.00   22.00   31.00   58.00   61.00   95.00  108.00
  259     RY  2712.0 2709.00 2707.00 2706.00 2706.00 2707.00 2710.00 2717.00
          *

  260     KK     077   BASIN
  261     BA   0.004
  262     LG    0.32    0.36    6.00    0.20       1
  263     UI       0       4      17      28      33      20      15      11       8       5
  264     UI       4       3       2       2       1       1       1       1       0       0
  265     UI       0       0       0       0       0       0       0       0       0       0
  266     UI       0       0       0       0       0       0       0       0       0       0
  267     UI       0       0       0       0       0       0       0       0       0       0
          *

  268     KK    R78B   ROUTE
  269     RS       1    FLOW
  270     RC   0.035   0.025   0.035     350  0.0310    0.00
  271     RX    0.00    7.00   17.00   23.00   25.00   46.00   82.00   92.00
  272     RY  2713.0 2710.00 2708.00 2707.00 2707.00 2708.00 2711.00 2712.00
          *

  273     KK   CP078 COMBINE
  274     HC       2
```

```
                *
  275           KK     R78   ROUTE
  276           RS       4    FLOW
  277           RC   0.035   0.025   0.035    1450  0.0240    0.00
  278           RX    0.00    7.00   17.00   23.00   25.00   46.00   82.00   92.00
  279           RY  2713.0 2710.00 2708.00 2707.00 2707.00 2708.00 2711.00 2712.00
                *
1                                       HEC-1 INPUT                                                 PAGE  8

 LINE           ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  280           KK     078   BASIN
  281           BA   0.017
  282           LG    0.31    0.35    6.00    0.20       5
  283           UI       0       5       5      10      18      24      27      30      35      40
  284           UI      52      64      58      48      42      37      32      28      24      18
  285           UI      12       9       8       7       5       5       2       2       2       2
  286           UI       2       2       2       2       0       0       0       0       0       0
  287           UI       0       0       0       0       0       0       0       0       0       0
                *
  288           KK     081   BASIN
  289           BA   0.005
  290           LG    0.31    0.34    6.00    0.21       2
  291           UI       0       6      21      32      52      37      24      11       6       2
  292           UI       1       1       0       0       0       0       0       0       0       0
  293           UI       0       0       0       0       0       0       0       0       0       0
  294           UI       0       0       0       0       0       0       0       0       0       0
  295           UI       0       0       0       0       0       0       0       0       0       0
                *
  296           KK   DET81 STORAGE
  297           KO
  298           RS       1    STOR
  299           SV            0.02    0.09    0.23
  300           SQ            4.00    5.00    7.00
  301           SE  2702.0 2703.00 2704.00 2705.00
                *
  302           KK     R82   ROUTE
  303           RD    1450  0.0220   0.013            CIRC   2.000
                *
  304           KK     082   BASIN
  305           BA   0.018
  306           LG    0.30    0.36    6.00    0.20      10
  307           UI       0       7       7      22      30      37      43      51      67      84
  308           UI      70      58      50      41      34      27      17      12      11       7
  309           UI       7       3       2       2       2       2       2       0       0       0
  310           UI       0       0       0       0       0       0       0       0       0       0
  311           UI       0       0       0       0       0       0       0       0       0       0
                *
  312           KK   CP082 COMBINE
  313           HC       4
                *
  314           KK     105   BASIN
  315           BA   0.012
  316           LG    0.35    0.40    6.00    0.18       0
  317           UI       0       4       4      12      19      27      31      36      48      41
  318           UI      29      26      23      21      18      16      14      12      10      10
  319           UI       9       7       6       5       5       4       3       3       3       2
  320           UI       2       2       2       1       1       1       1       1       1       1
  321           UI       1       1       1       0       0       0       0       0       0       0
                *
1                                       HEC-1 INPUT                                                 PAGE  9

 LINE           ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  322           KK     083   BASIN
  323           BA   0.002
  324           LG    0.27    0.40    6.00    0.16      25
  325           UI       0      12      32      17       9       4       2       1       1       0
  326           UI       0       0       0       0       0       0       0       0       0       0
  327           UI       0       0       0       0       0       0       0       0       0       0
  328           UI       0       0       0       0       0       0       0       0       0       0
  329           UI       0       0       0       0       0       0       0       0       0       0
                *
  330           KK   CP083 COMBINE
  331           HC       2
                *
  332           KK    R84A   ROUTE
  333           RD     830  0.0300   0.013            CIRC   3.000
                *
  334           KK     106   BASIN
  335           BA   0.002
  336           LG    0.20    0.35    6.76    0.12      48
  337           UI       0      20      35      14       5       2       1       0       0       0
  338           UI       0       0       0       0       0       0       0       0       0       0
  339           UI       0       0       0       0       0       0       0       0       0       0
  340           UI       0       0       0       0       0       0       0       0       0       0
  341           UI       0       0       0       0       0       0       0       0       0       0
                *
  342           KK     084   BASIN
  343           BA   0.007
  344           LG    0.26    0.39    6.00    0.17      28
  345           UI       0       7      26      39      64      55      37      22      10       6
```

```
 346          UI        2        2        0        0        0        0        0        0        0        0
 347          UI        0        0        0        0        0        0        0        0        0        0
 348          UI        0        0        0        0        0        0        0        0        0        0
 349          UI        0        0        0        0        0        0        0        0        0        0
              *

 350          KK    CP084 COMBINE
 351          HC        3
              *

 352          KK     R304    ROUTE
 353          RS        1     FLOW
 354          RC    0.035    0.025    0.035      611   0.0250     0.00
 355          RX     0.00     8.00    15.00    29.00    33.00    42.00    48.00    52.00
 356          RY  2657.0 2656.00 2655.00 2654.00 2654.00 2655.00 2656.00 2657.00
              *
1                                        HEC-1 INPUT                                    PAGE 10

LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 357          KK      304    BASIN
 358          BA    0.003
 359          LG     0.25     0.15     7.00     0.19        5
 360          UI        0        6       17       31       31       18        7        4        1        1
 361          UI        0        0        0        0        0        0        0        0        0        0
 362          UI        0        0        0        0        0        0        0        0        0        0
 363          UI        0        0        0        0        0        0        0        0        0        0
 364          UI        0        0        0        0        0        0        0        0        0        0
              *

 365          KK    CP304 COMBINE
 366          HC        3
              *

 367          KK    R305B    ROUTE
 368          RS        1     FLOW
 369          RC    0.035    0.025    0.035      279   0.0220     0.00
 370          RX     0.00    22.00    30.00    37.00    50.00    60.00    80.00    94.00
 371          RY  2649.0 2648.00 2647.00 2646.00 2646.00 2647.00 2648.00 2649.00
              *

 372          KK      088    BASIN
 373          BA    0.003
 374          LG     0.30     0.25     7.27     0.12        6
 375          UI        0        7       21       38       28       14        5        2        1        0
 376          UI        0        0        0        0        0        0        0        0        0        0
 377          UI        0        0        0        0        0        0        0        0        0        0
 378          UI        0        0        0        0        0        0        0        0        0        0
 379          UI        0        0        0        0        0        0        0        0        0        0
              *

 380          KK    R305A    ROUTE
 381          RS        1     FLOW
 382          RC    0.035    0.025    0.035      415   0.0410     0.00
 383          RX     0.00    10.00    23.00    31.00    55.00    63.00    69.00    74.00
 384          RY  2650.0 2649.00 2648.00 2647.00 2647.00 2648.00 2649.00 2650.00
              *

 385          KK      305    BASIN
 386          BA    0.004
 387          LG     0.25     0.15     7.94     0.13        5
 388          UI        0       17       52       56       21        6        2        0        0        0
 389          UI        0        0        0        0        0        0        0        0        0        0
 390          UI        0        0        0        0        0        0        0        0        0        0
 391          UI        0        0        0        0        0        0        0        0        0        0
 392          UI        0        0        0        0        0        0        0        0        0        0
              *

 393          KK    CP305 COMBINE
 394          HC        3
              *
1                                        HEC-1 INPUT                                    PAGE 11

LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 395          KK     R306    ROUTE
 396          RS        2     FLOW
 397          RC    0.035    0.025    0.035      505   0.0180     0.00
 398          RX     0.00     5.00     9.00    13.00    18.00    27.00    43.00    58.00
 399          RY  2644.0 2643.00 2642.00 2641.00 2641.00 2642.00 2643.00 2644.00
              *

 400          KK      306    BASIN
 401          BA    0.004
 402          LG     0.23     0.17     7.94     0.12       15
 403          UI        0       11       32       56       34       14        5        2        0        0
 404          UI        0        0        0        0        0        0        0        0        0        0
 405          UI        0        0        0        0        0        0        0        0        0        0
 406          UI        0        0        0        0        0        0        0        0        0        0
 407          UI        0        0        0        0        0        0        0        0        0        0
              *

 408          KK    CP306 COMBINE
 409          HC        2
              *

 410          KK   DIV307  DIVERT
 411          DT   DTV307      0.0      0.0
 412          DI      0.0     97.0    116.0    166.0    228.0    262.0    298.0    336.0    375.0    500.0
 413          DQ      0.0      0.0      4.0     23.0     50.0     66.0     83.0    102.0    121.0    188.0
              *

 414          KK      300    BASIN
```

```
415          BA   0.004
416          LG    0.33    0.32    7.58    0.09       7
417          UI       0       8      24      45      40      23       9       4       1       0
418          UI       0       0       0       0       0       0       0       0       0       0
419          UI       0       0       0       0       0       0       0       0       0       0
420          UI       0       0       0       0       0       0       0       0       0       0
421          UI       0       0       0       0       0       0       0       0       0       0
             *

422          KK    DETE  DIVERT
423          DT    DTTE     0.1     0.0
424          DI     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
425          DQ     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
             *

426          KK    R301   ROUTE
427          RS       1    FLOW
428          RC   0.035   0.025   0.035     442  0.0410    0.00
429          RX    0.00    5.00   12.00   38.00   53.00   82.00  109.00  150.00
430          RY  2660.0 2659.00 2658.00 2656.00 2656.00 2657.00 2658.00 2660.00
             *
```

1 HEC-1 INPUT PAGE 12

```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

431          KK     301   BASIN
432          BA   0.007
433          LG    0.25    0.19    6.54    0.22       6
434          UI       0      33     103      92      32       8       0       0       0       0
435          UI       0       0       0       0       0       0       0       0       0       0
436          UI       0       0       0       0       0       0       0       0       0       0
437          UI       0       0       0       0       0       0       0       0       0       0
438          UI       0       0       0       0       0       0       0       0       0       0
             *

439          KK   CP301 COMBINE
440          HC       2
             *

441          KK    DETC  DIVERT
442          DT    DTTC     0.4     0.0
443          DI     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
444          DQ     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
             *

445          KK   R302A   ROUTE
446          RS       1    FLOW
447          RC   0.035   0.025   0.035     320  0.0280    0.00
448          RX    0.00   12.00   20.00   32.00   36.00   50.00   59.00   69.00
449          RY  2649.0 2648.00 2647.00 2646.50 2646.50 2647.00 2648.00 2649.00
             *

450          KK     303   BASIN
451          BA   0.006
452          LG    0.25    0.17    6.76    0.19       5
453          UI       0      11      35      63      61      36      15       7       2       2
454          UI       0       0       0       0       0       0       0       0       0       0
455          UI       0       0       0       0       0       0       0       0       0       0
456          UI       0       0       0       0       0       0       0       0       0       0
457          UI       0       0       0       0       0       0       0       0       0       0
             *

458          KK    DETD  DIVERT
459          DT    DTTD     0.1     0.0
460          DI     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
461          DQ     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
             *

462          KK   R302B   ROUTE
463          RS       1    FLOW
464          RC   0.035   0.025   0.035     276  0.0330    0.00
465          RX    0.00   14.00   30.00   52.00   62.00   87.00  100.00  115.00
466          RY  2652.0 2651.00 2650.00 2649.00 2649.00 2650.00 2651.00 2652.00
             *
```

1 HEC-1 INPUT PAGE 13

```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

467          KK     302   BASIN
468          BA   0.012
469          LG    0.24    0.18    6.76    0.20      10
470          UI       0      24      73     135     119      68      26      11       4       0
471          UI       0       0       0       0       0       0       0       0       0       0
472          UI       0       0       0       0       0       0       0       0       0       0
473          UI       0       0       0       0       0       0       0       0       0       0
474          UI       0       0       0       0       0       0       0       0       0       0
             *

475          KK   CP302 COMBINE
476          HC       3
             *

477          KK    DETB  DIVERT
478          DT    DTTB     0.5     0.0
479          DI     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
480          DQ     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
             *

481          KK     307   BASIN
482          BA   0.002
483          LG    0.25    0.15    7.94    0.13       5
484          UI       0      19      44      13       2       0       0       0       0       0
485          UI       0       0       0       0       0       0       0       0       0       0
```

```
 486          UI       0       0       0       0       0       0       0       0       0       0
 487          UI       0       0       0       0       0       0       0       0       0       0
 488          UI       0       0       0       0       0       0       0       0       0       0
              *

 489          KK     308   BASIN
 490          BA   0.006
 491          LG    0.25    0.15    7.58    0.14       5
 492          UI       0      23      70      87      37      11       3       0       0       0
 493          UI       0       0       0       0       0       0       0       0       0       0
 494          UI       0       0       0       0       0       0       0       0       0       0
 495          UI       0       0       0       0       0       0       0       0       0       0
 496          UI       0       0       0       0       0       0       0       0       0       0
              *

 497          KK  DIV307RETRIEVE
 498          DR  DTV307
              *

 499          KK   CP308 COMBINE
 500          HC       4
              *

 501          KK    DETA  DIVERT
 502          DT    DTTA     6.9     0.0
 503          DI     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
 504          DQ     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
              *
1                                    HEC-1 INPUT                                        PAGE 14

LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 505          KK   CP310 COMBINE
 506          HC       2
              *

 507          KK     089   BASIN
 508          BA   0.001
 509          LG    0.33    0.38    6.00    0.19       1
 510          UI       0       7      16       8       4       2       1       0       0       0
 511          UI       0       0       0       0       0       0       0       0       0       0
 512          UI       0       0       0       0       0       0       0       0       0       0
 513          UI       0       0       0       0       0       0       0       0       0       0
 514          UI       0       0       0       0       0       0       0       0       0       0
              *

 515          KK     CS2 COMBINE
 516          HC       4
              *

 517          KK     120   BASIN
 518          BA   0.028
 519          LG    0.35    0.40    6.00    0.18       0
 520          UI       0      15      31      72     102     130     159     100      83      71
 521          UI      60      48      38      33      27      20      17      15      11      10
 522          UI       7       7       5       3       3       3       3       3       3       3
 523          UI       0       0       0       0       0       0       0       0       0       0
 524          UI       0       0       0       0       0       0       0       0       0       0
              *

 525          KK     R97   ROUTE
 526          RS      11    FLOW
 527          RC   0.035   0.025   0.035    4000  0.0210    0.00
 528          RX    0.00    7.00   27.00   43.00   47.00   50.00   55.00   95.00
 529          RY  2725.0 2724.00 2722.00 2721.00 2720.80 2721.00 2722.00 2725.00
              *

 530          KK     100   BASIN
 531          BA   0.017
 532          LG    0.31    0.34    6.00    0.21       4
 533          UI       0       4       4       5      15      18      22      25      27      31
 534          UI      35      42      54      56      47      41      36      32      28      25
 535          UI      22      19      14       9       8       7       6       4       4       3
 536          UI       1       1       1       1       1       1       1       1       1       0
 537          UI       0       0       0       0       0       0       0       0       0       0
              *

 538          KK     097   BASIN
 539          BA   0.050
 540          LG    0.31    0.36    6.00    0.20       4
 541          UI       0      10      10      10      15      34      40      48      52      57
 542          UI      62      67      75      81      95     115     134     121     105      94
 543          UI      86      80      72      65      60      52      48      42      33      25
 544          UI      18      18      17      17      11      10      10       9       3       3
 545          UI       3       3       3       3       3       3       3       3       3       3
 546          UI       0       0       0       0       0       0       0       0       0       0
              *
1                                    HEC-1 INPUT                                        PAGE 15

LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 547          KK   CP097 COMBINE
 548          HC       3
              *

 549          KK     R91   ROUTE
 550          RS       3    FLOW
 551          RC   0.035   0.025   0.035    1080  0.0190    0.00
 552          RX    0.00    9.00   29.00   35.00   39.00   44.00   54.00   59.00
 553          RY  2685.0 2684.00 2683.00 2682.00 2681.30 2682.00 2683.00 2683.20
              *

 554          KK     091   BASIN
```

```
555          BA   0.009
556          LG    0.34    0.39    6.00    0.18       0
557          UI       0       4       7      16      21      25      31      44      48      37
558          UI      30      24      20      13       7       7       4       3       1       1
559          UI       1       1       1       0       0       0       0       0       0       0
560          UI       0       0       0       0       0       0       0       0       0       0
561          UI       0       0       0       0       0       0       0       0       0       0
             *

562          KK   CP091 COMBINE
563          HC       2
             *

564          KK   DIV92  DIVERT
565          DT   DTT92     0.0     0.0
566          DI     0.0   100.0   250.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
567          DQ     0.0     0.0   150.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
             *

568          KK   DIV92RETRIEVE
569          DR   DTT92
             *

570          KK     090   BASIN
571          BA   0.017
572          LG    0.17    0.40    6.00    0.15      58
573          UI       0      25      83     136     184     116      64      26      12       5
574          UI       5       0       0       0       0       0       0       0       0       0
575          UI       0       0       0       0       0       0       0       0       0       0
576          UI       0       0       0       0       0       0       0       0       0       0
577          UI       0       0       0       0       0       0       0       0       0       0
             *

578          KK   CP090 COMBINE
579          HC       2
             *
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

580          KK   DET92 STORAGE
581          KO
582          RS       1    STOR
583          SV             0.74    2.33    4.08    5.02    6.07
584          SE  2656.5 2657.00 2658.00 2659.00 2659.50 2660.00
585          SS  2659.7   50.00    2.80    1.50
586          SL  2656.4    0.44    0.60    0.50
             *

587          KK    CP91 COMBINE
588          HC       2
             *

589          KK     R92   ROUTE
590          RS       1    FLOW
591          RC   0.035   0.025   0.035     180  0.0210    0.00
592          RX    0.00   21.00   24.00   26.00   33.00   36.00   38.00   54.00
593          RY  2660.0 2659.00 2658.00 2657.00 2657.00 2658.00 2659.00 2660.00
             *

594          KK     092   BASIN
595          BA   0.004
596          LG    0.28    0.37    6.54    0.13      24
597          UI       0      50      89      13       0       0       0       0       0       0
598          UI       0       0       0       0       0       0       0       0       0       0
599          UI       0       0       0       0       0       0       0       0       0       0
600          UI       0       0       0       0       0       0       0       0       0       0
601          UI       0       0       0       0       0       0       0       0       0       0
             *

602          KK   CP092 COMBINE
603          HC       2
             *

604          KK   R132A   ROUTE
605          RS       1    FLOW
606          RC   0.035   0.025   0.035     550  0.0250    0.00
607          RX    0.00   30.00   50.00   70.00   80.00   90.00  110.00  120.00
608          RY  2645.0 2644.00 2643.00 2642.00 2642.00 2643.00 2645.00 2646.00
             *

609          KK     135   BASIN
610          BA   0.011
611          LG    0.35    0.40    6.00    0.18       0
612          UI       0       8      31      56      84      60      44      35      26      20
613          UI      16      11       9       6       5       4       3       2       2       2
614          UI       2       0       0       0       0       0       0       0       0       0
615          UI       0       0       0       0       0       0       0       0       0       0
616          UI       0       0       0       0       0       0       0       0       0       0
             *
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

617          KK    R112   ROUTE
618          RS       3    FLOW
619          RC   0.035   0.025   0.035    1100  0.0236    0.00
620          RX    0.00    7.00   27.00   43.00   47.00   50.00   55.00   95.00
621          RY  2725.0 2724.00 2722.00 2721.00 2720.80 2721.00 2722.00 2725.00
             *

622          KK     112   BASIN
623          BA   0.019
```

```
624          LG    0.35    0.40    6.00    0.18       0
625          UI       0       9      15      34      54      67      87      89      58      50
626          UI      44      38      32      25      22      19      16      12      11      10
627          UI       7       7       5       4       4       3       2       2       2       2
628          UI       2       2       2       2       0       0       0       0       0       0
629          UI       0       0       0       0       0       0       0       0       0       0
             *

630          KK   CP112 COMBINE
631          HC       2
             *

632          KK  DET112 STORAGE
633          KO
634          RS       1    STOR
635          SV            0.05    0.15    0.32    0.59    0.95    1.44
636          SQ            1.00    1.00    2.00    2.00    3.00   70.00
637          SE  2732.0 2733.00 2734.00 2735.00 2736.00 2737.00 2738.00
             *

638          KK    R111   ROUTE
639          RS      30    FLOW
640          RC   0.035   0.025   0.035    3800  0.0210    0.00
641          RX    0.00    7.00   27.00   43.00   47.00   50.00   55.00   95.00
642          RY  2725.0 2724.00 2722.00 2721.00 2720.80 2721.00 2722.00 2725.00
             *

643          KK     150   BASIN
644          BA   0.011
645          LG    0.29    0.33    6.00    0.22       5
646          UI       0       6      12      25      32      40      55      68      51      41
647          UI      32      24      13       9       6       5       2       2       2       2
648          UI       0       0       0       0       0       0       0       0       0       0
649          UI       0       0       0       0       0       0       0       0       0       0
650          UI       0       0       0       0       0       0       0       0       0       0
             *

651          KK     111   BASIN
652          BA   0.052
653          LG   0.27    0.25    6.00    0.22       7
654          UI       0      17      17      43      70      86      99     113     133     170
655          UI     217     189     157     137     116     100      84      68      44      30
656          UI      28      22      17      15       5       5       5       5       5       5
657          UI       5       0       0       0       0       0       0       0       0       0
658          UI       0       0       0       0       0       0       0       0       0       0
             *
```



```
LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

659          KK   CP111 COMBINE
660          HC       3
             *

661          KK  DIV130  DIVERT
662          DT  DTT130     0.0     0.0
663          DI     0.0    31.0    76.0   134.0   182.0   224.0   254.0     0.0     0.0     0.0
664          DQ     0.0    13.0    28.0    46.0    64.0    76.0    81.0     0.0     0.0     0.0
             *

665          KK  DIV130RETRIEVE
666          DR  DTT130
             *

667          KK  DET130 STORAGE
668          KO
669          RS       1    STOR
670          SV            0.12    0.27    0.45    0.68    0.94    1.09    1.24
671          SQ            1.00    1.00    2.00    2.00    3.00   23.00   65.00
672          SE  2655.0 2656.00 2657.00 2658.00 2659.00 2660.00 2660.50 2661.00
             *

673          KK  COM130 COMBINE
674          HC       2
             *

675          KK   R130B   ROUTE
676          RS       1    FLOW
677          RC   0.035   0.025   0.035     500  0.0260    0.00
678          RX    0.00   20.00   26.00   29.00   31.00   34.00   40.00   60.00
679          RY  2649.0 2649.00 2647.00 2646.00 2646.00 2647.00 2649.00 2650.00
             *

680          KK     170   BASIN
681          BA   0.030
682          LG    0.27    0.31    6.00    0.19       5
683          UI       0      14      23      54      72      87     108     154     158     121
684          UI      99      80      63      40      24      21      14       9       4       4
685          UI       4       4       4       0       0       0       0       0       0       0
686          UI       0       0       0       0       0       0       0       0       0       0
687          UI       0       0       0       0       0       0       0       0       0       0
             *

688          KK     099   BASIN
689          BA   0.029
690          LG    0.27    0.29    6.00    0.24       6
691          UI       0      15      33      67      86     109     154     178     133     105
692          UI      82      59      31      25      15      10       5       5       5       5
693          UI       0       0       0       0       0       0       0       0       0       0
694          UI       0       0       0       0       0       0       0       0       0       0
695          UI       0       0       0       0       0       0       0       0       0       0
             *
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 696      KK     R99   ROUTE
 697      RD     650  0.0050   0.013            CIRC   4.000
          *

 698      KK   CP170 COMBINE
 699      HC       2
          *

 700      KK  RET170 STORAGE
 701      KO
 702      RS       1    STOR
 703      SV            2.77    5.95    9.58   13.79   18.57
 704      SQ                                           10.00
 705      SE  2750.0 2751.00 2752.00 2753.00 2754.00 2755.00
          *

 706      KK     200   BASIN
 707      BA   0.005
 708      LG    0.35    0.38    6.34    0.15       0
 709      UI       0       2       2       7      10      11      14      17      24      23
 710      UI      18      15      13      10       8       5       3       3       2       2
 711      UI       1       1       1       1       1       1       0       0       0       0
 712      UI       0       0       0       0       0       0       0       0       0       0
 713      UI       0       0       0       0       0       0       0       0       0       0
          *

 714      KK   R130C   ROUTE
 715      RS       2    FLOW
 716      RC   0.035   0.025   0.035     450  0.0260    0.00
 717      RX    0.00   20.00   26.00   29.00   31.00   34.00   40.00   60.00
 718      RY  2649.0 2649.00 2647.00 2646.00 2646.00 2647.00 2649.00 2650.00
          *

 719      KK     130   BASIN
 720      BA   0.006
 721      LG    0.30    0.40    6.00    0.17      16
 722      UI       0       6      22      33      55      47      32      19       9       5
 723      UI       2       2       0       0       0       0       0       0       0       0
 724      UI       0       0       0       0       0       0       0       0       0       0
 725      UI       0       0       0       0       0       0       0       0       0       0
 726      UI       0       0       0       0       0       0       0       0       0       0
          *

 727      KK   CP130 COMBINE
 728      HC       4
          *

 729      KK   R132B   ROUTE
 730      RS       1    FLOW
 731      RC   0.035   0.025   0.035     300  0.0250    0.00
 732      RX    0.00   30.00   50.00   70.00   80.00   90.00  110.00  120.00
 733      RY  2645.0 2644.00 2643.00 2642.00 2642.00 2643.00 2645.00 2646.00
          *
1                                  HEC-1 INPUT                                  PAGE 20
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 734      KK     132   BASIN
 735      BA   0.009
 736      LG    0.35    0.32    7.58    0.09       1
 737      UI       0       5      11      25      35      46      50      32      27      23
 738      UI      19      15      12      11       8       6       5       4       4       2
 739      UI       2       2       1       1       1       1       1       1       1       0
 740      UI       0       0       0       0       0       0       0       0       0       0
 741      UI       0       0       0       0       0       0       0       0       0       0
          *

 742      KK   CP132 COMBINE
 743      HC       3
          *

 744      KK     CS3 COMBINE
 745      HC       2
          *

 746      KK     162   BASIN
 747      BA   0.010
 748      LG    0.35    0.40    6.00    0.18       0
 749      UI       0       5      11      25      35      45      57      36      30      26
 750      UI      22      18      14      12      10       8       6       6       4       4
 751      UI       3       3       2       1       1       1       1       1       1       1
 752      UI       0       0       0       0       0       0       0       0       0       0
 753      UI       0       0       0       0       0       0       0       0       0       0
          *

 754      KK  DET162 STORAGE
 755      KO
 756      RS       1    STOR
 757      SV            0.03    0.12    0.29    0.59    1.07
 758      SQ            1.00    1.00    2.00    2.00    3.00
 759      SE  2732.0 2733.00 2734.00 2735.00 2736.00 2737.00
          *

 760      KK    R165   ROUTE
 761      RS      17    FLOW
 762      RC   0.035   0.025   0.035    1840  0.0050    0.00
 763      RX    0.00   20.00   26.00   29.00   31.00   34.00   40.00   60.00
 764      RY  2650.0 2651.00 2649.00 2648.00 2648.00 2649.00 2651.00 2650.00
          *

 765      KK     165   BASIN
```

```
766          BA   0.023
767          LG    0.32    0.38    6.00    0.19       4
768          UI       0       8       8      20      31      39      44      51      60      79
769          UI      97      83      69      60      51      44      37      28      18      13
770          UI      13       9       8       5       2       2       2       2       2       2
771          UI       2       0       0       0       0       0       0       0       0       0
772          UI       0       0       0       0       0       0       0       0       0       0
             *
```



```
LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

773          KK     164   BASIN
774          BA   0.012
775          LG    0.25    0.25    6.00    0.27       5
776          UI       0     151     268      39       0       0       0       0       0       0
777          UI       0       0       0       0       0       0       0       0       0       0
778          UI       0       0       0       0       0       0       0       0       0       0
779          UI       0       0       0       0       0       0       0       0       0       0
780          UI       0       0       0       0       0       0       0       0       0       0
             *

781          KK  DET164  DIVERT
782          DT  DTT164     0.9     0.0
783          DI     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
784          DQ     0.0 10000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
             *

785          KK    R164   ROUTE
786          RS       1    FLOW
787          RC   0.035   0.025   0.035    1400  0.0050    0.00
788          RX    0.00   20.00   26.00   29.00   31.00   34.00   40.00   60.00
789          RY  2650.0 2651.00 2649.00 2648.00 2648.00 2649.00 2651.00 2650.00
             *

790          KK   CP164 COMBINE
791          HC       3
             *

792          KK     163   BASIN
793          BA   0.006
794          LG    0.35    0.40    6.00    0.18       0
795          UI       0       8      26      41      64      43      27      11       6       2
796          UI       2       0       0       0       0       0       0       0       0       0
797          UI       0       0       0       0       0       0       0       0       0       0
798          UI       0       0       0       0       0       0       0       0       0       0
799          UI       0       0       0       0       0       0       0       0       0       0
             *

800          KK  DET163  DIVERT
801          DT  DTT163     0.3     0.0
802          DI     0.0  1000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
803          DQ     0.0  1000.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0     0.0
             *

804          KK    R163   ROUTE
805          RS       1    FLOW
806          RC   0.025   0.025   0.025     238  0.0420    0.00
807          RX    0.00    6.00   11.00   47.00   62.00   68.00   77.00   93.00
808          RY  2689.0 2688.00 2687.00 2687.30 2686.70 2687.00 2688.00 2689.00
             *
```



```
LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

809          KK   CP165 COMBINE
810          HC       2
             *

811          KK     220   BASIN
812          BA   0.013
813          LG    0.35    0.40    6.00    0.18       0
814          UI       0       6      11      26      40      49      69      54      39      34
815          UI      29      25      20      16      15      12       9       8       7       5
816          UI       5       4       3       3       2       1       1       1       1       1
817          UI       1       1       0       0       0       0       0       0       0       0
818          UI       0       0       0       0       0       0       0       0       0       0
             *

819          KK     240   BASIN
820          BA   0.004
821          LG    0.35    0.40    6.00    0.18       0
822          UI       0      21      61      35      19       9       5       2       1       0
823          UI       0       0       0       0       0       0       0       0       0       0
824          UI       0       0       0       0       0       0       0       0       0       0
825          UI       0       0       0       0       0       0       0       0       0       0
826          UI       0       0       0       0       0       0       0       0       0       0
             *

827          KK     230   BASIN
828          BA   0.003
829          LG    0.35    0.40    6.00    0.18       0
830          UI       0      11      40      28      16       9       5       3       2       1
831          UI       1       0       0       0       0       0       0       0       0       0
832          UI       0       0       0       0       0       0       0       0       0       0
833          UI       0       0       0       0       0       0       0       0       0       0
834          UI       0       0       0       0       0       0       0       0       0       0
             *

835          KK     210   BASIN
836          BA   0.009
837          LG    0.35    0.40    6.00    0.18       0
838          UI       0       6      15      31      42      60      39      31      26      21
```

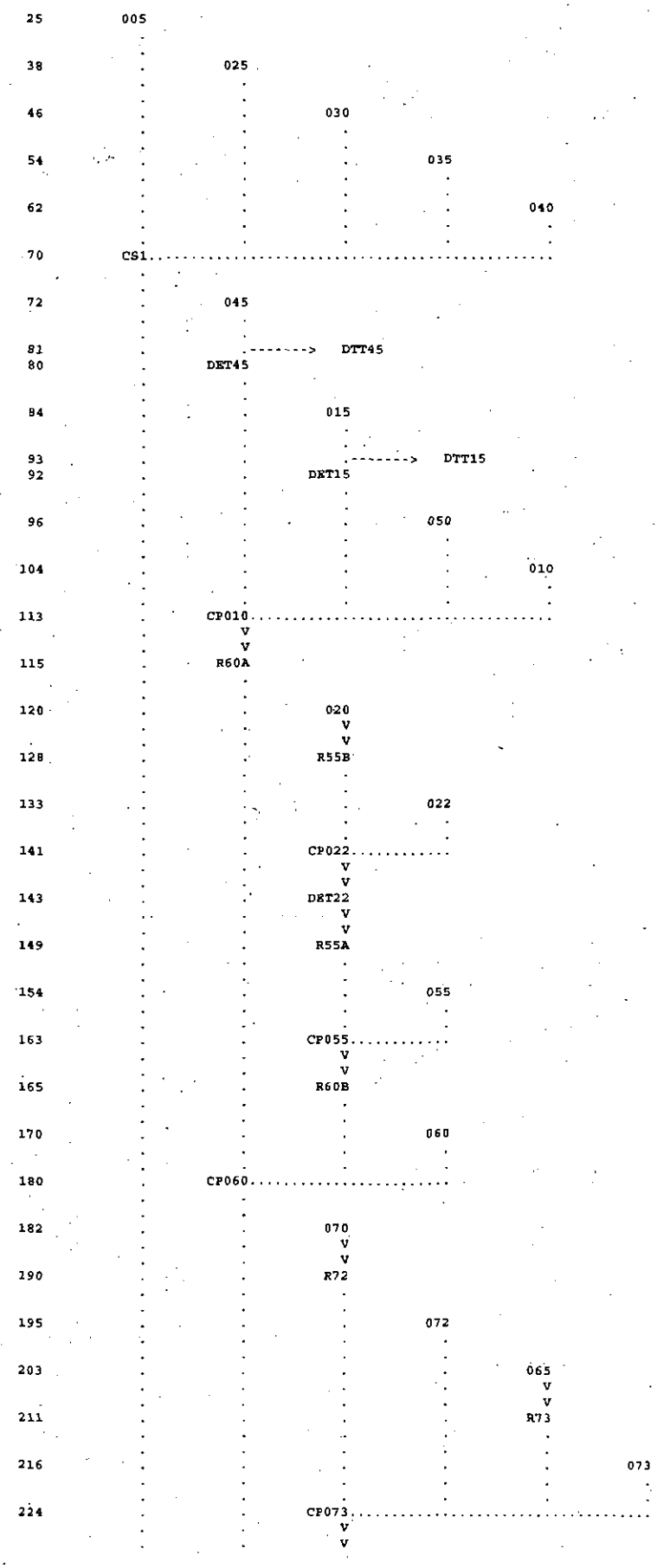
839		UI	16	13	11	8	6	5	4	3	3	2
840		UI	1	1	1	1	1	1	0	0	0	0
841		UI	0	0	0	0	0	0	0	0	0	0
842		UI	0	0	0	0	0	0	0	0	0	0
		*										
843		ZZ										

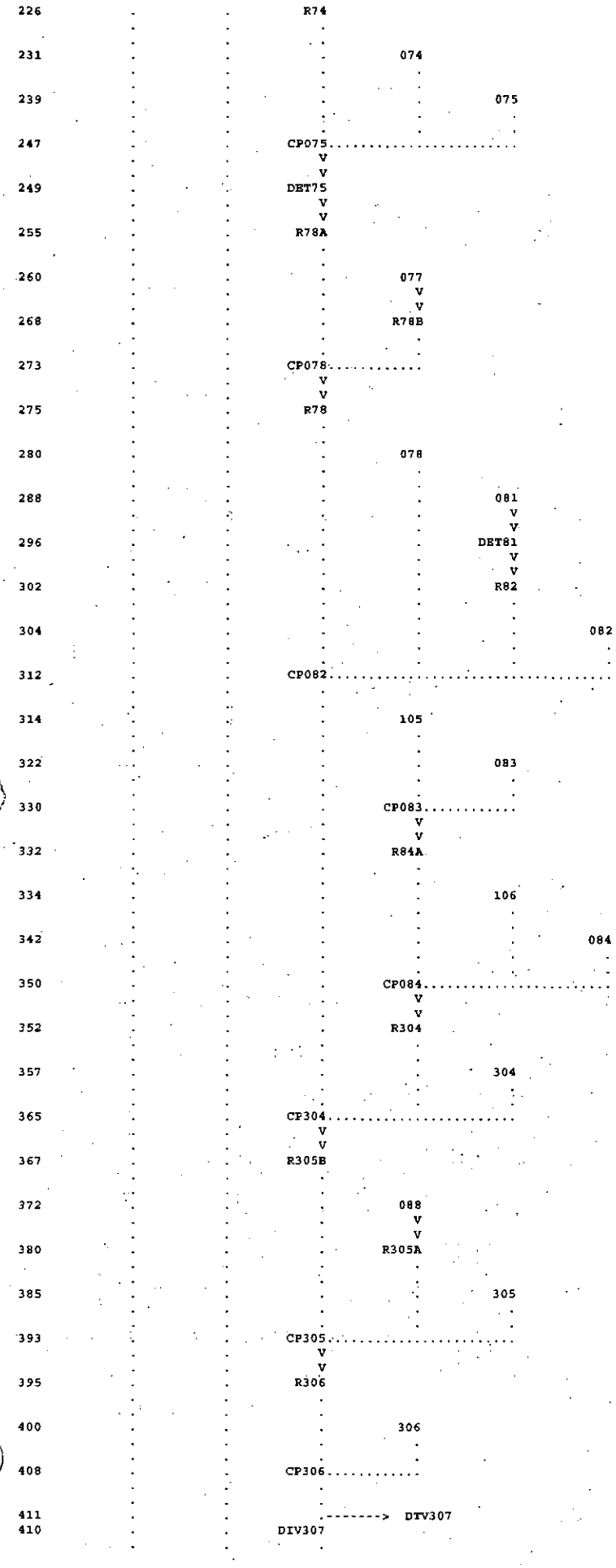
SCHEMATIC DIAGRAM OF STREAM NETWORK

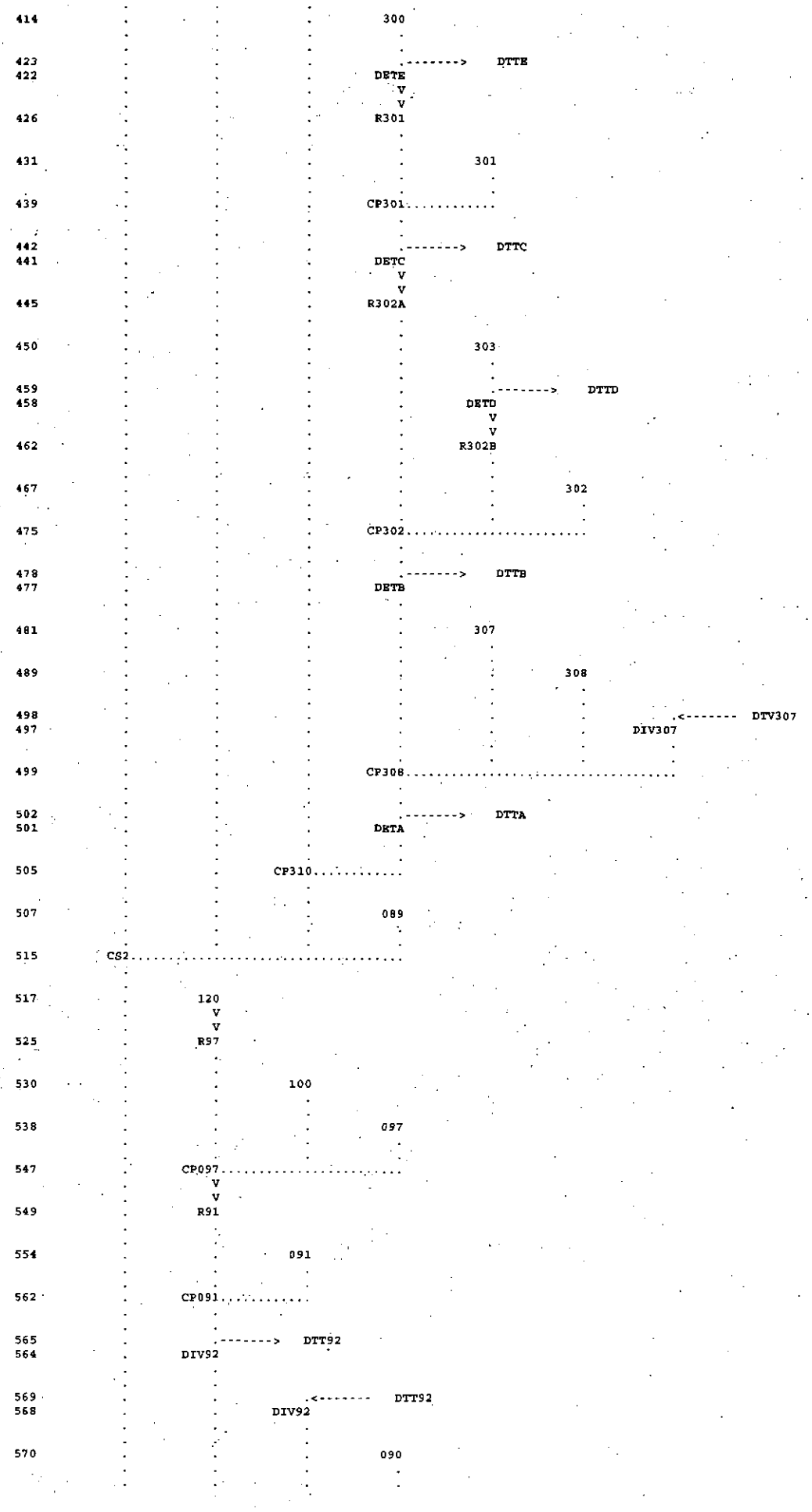
INPUT LINE NO.

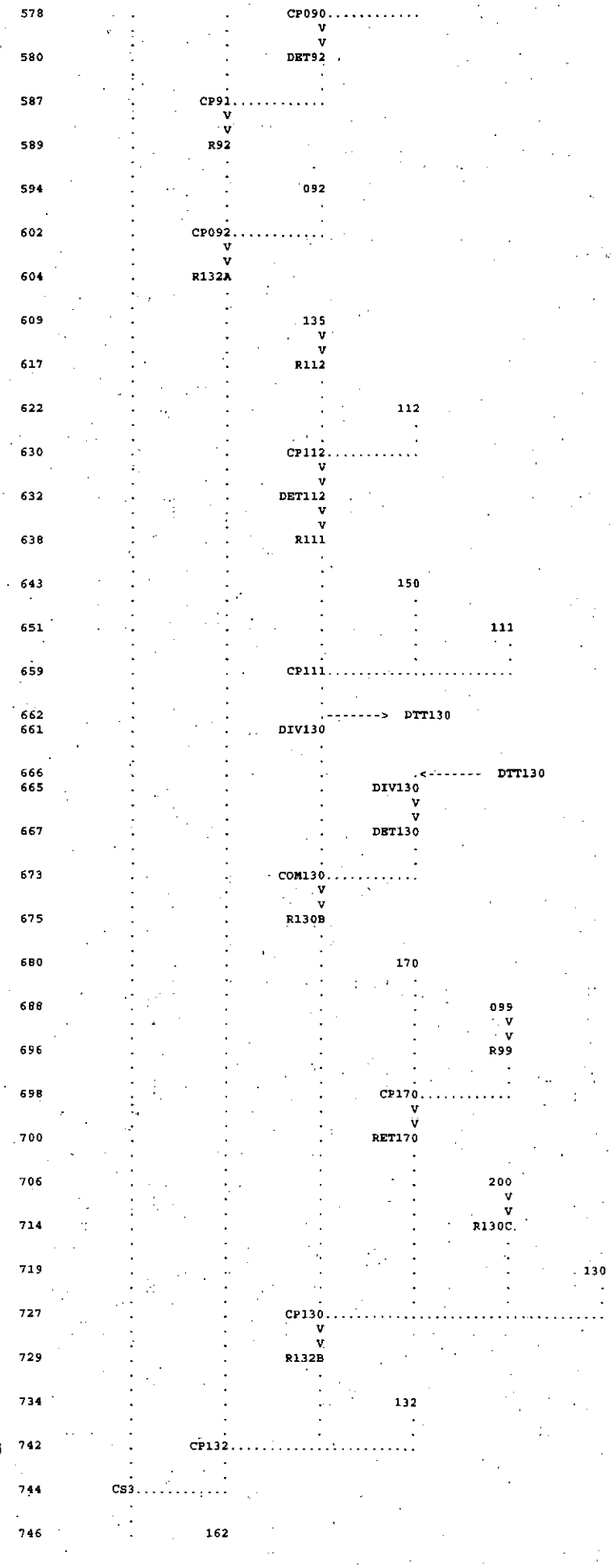
(V) ROUTING (---->) DIVERSION OR PUMP FLOW

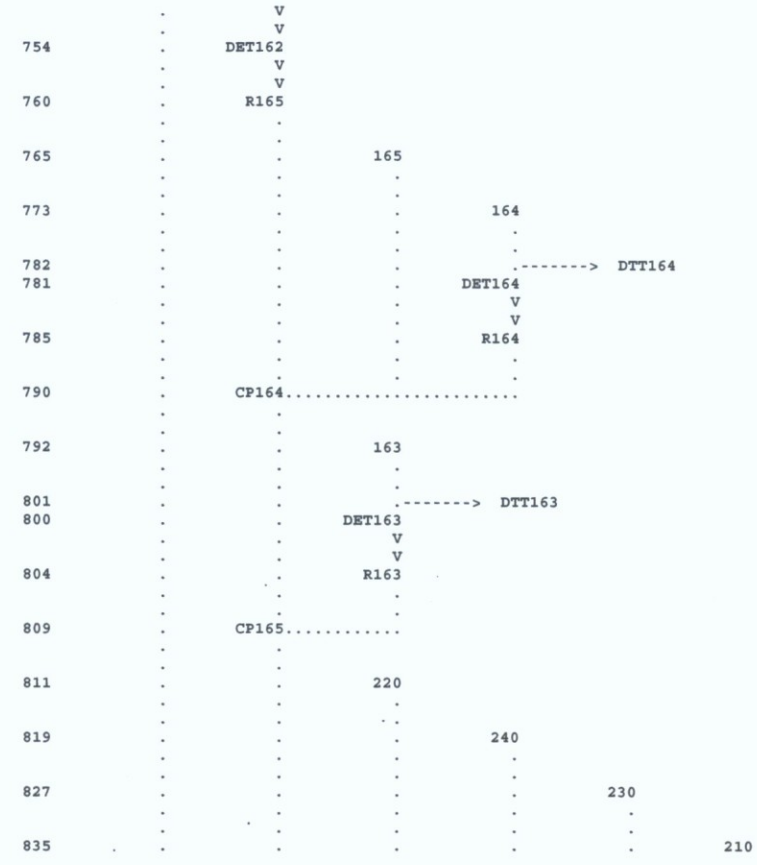
(.) CONNECTOR (<----) RETURN OF DIVERTED OR PUMPED FLOW




226
R74
231
074
239
075
247
CP075
249
DET75
255
R78A
260
077
268
R78B
273
CP078
275
R78
280
078
288
081
296
DET81
302
R82
304
082
312
CP082
314
105
322
083
330
CP083
332
R84A
334
106
342
084
350
CP084
352
R304
357
304
365
CP304
367
R305B
372
088
380
R305A
385
305
393
CP305
395
R306
400
306
408
CP306
411
DIV307
410
DIV307


414 300
423 .-------> DTTE
422 DETE
V
V
426 R301
431 301
439 CP301
442 .-------> DTTC
441 DETC
V
V
445 R302A
450 303
459 .-------> DTTD
458 DETD
V
V
462 R302B
467 302
475 CP302
478 .-------> DTTB
477 DETB
481 307
489 308
498 .<------- DTV307
497 DIV307
499 CP308
502 .-------> DTTA
501 DETA
505 CP310
507 089
515 CS2
517 120
V
V
525 R97
530 100
538 097
547 CP097
V
V
549 R91
554 091
562 CP091
565 .-------> DTT92
564 DIV92
569 .<------- DTT92
568 DIV92
570 090


578 CP090
580 DET92
587 CP91
589 R92
594 092
602 CP092
604 R132A
609 135
617 R112
622 112
630 CP112
632 DET112
638 R111
643 150
651 111
659 CP111
662 DTT130
661 DIV130
666 DTT130
665 DIV130
667 DET130
673 COM130
675 R130B
680 170
688 099
696 R99
698 CP170
700 RET170
706 200
714 R130C
719 130
727 CP130
729 R132B
734 132
742 CP132
744 CS3
746 162



(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
1*************************************
*                                   *
*  FLOOD HYDROGRAPH PACKAGE (HEC-1) *
*            JUN 1998               *
*         VERSION 4.1               *
*                                   *
* RUN DATE  12JUN15  TIME 06:35:41  *
*                                   *
*************************************
```


```
*************************************
*                                   *
*   U.S. ARMY CORPS OF ENGINEERS    *
*   HYDROLOGIC ENGINEERING CENTER   *
*        609 SECOND STREET          *
*     DAVIS, CALIFORNIA 95616       *
*         (916) 756-1104            *
*                                   *
*************************************
```


Flood Control District of Maricopa County
SNGC PROP - Scottsdale National Golf Club Proposed
2 YEAR
6 Hour Storm
Unit Hydrograph: S-Graph
Storm: Multiple
06/01/2015
WOOD/PATEL JCD
FILE NAME: SNGCPT10.DAT

```
11 IO          OUTPUT CONTROL VARIABLES
                    IPRNT          5  PRINT CONTROL
                    IPLOT          0  PLOT CONTROL
                    QSCAL          0.  HYDROGRAPH PLOT SCALE

   IT          HYDROGRAPH TIME DATA
                    NMIN           1  MINUTES IN COMPUTATION INTERVAL
                    IDATE      1JUN15  STARTING DATE
                    ITIME        0000  STARTING TIME
                      NQ         2000  NUMBER OF HYDROGRAPH ORDINATES
                   NDDATE      2JUN15  ENDING DATE
                   NDTIME        0919  ENDING TIME
                   ICENT           19  CENTURY MARK

                 COMPUTATION INTERVAL       .02 HOURS
                     TOTAL TIME BASE    33.32 HOURS

          ENGLISH UNITS
               DRAINAGE AREA          SQUARE MILES
               PRECIPITATION DEPTH    INCHES
               LENGTH, ELEVATION      FEET
               FLOW                   CUBIC FEET PER SECOND
               STORAGE VOLUME         ACRE-FEET
               SURFACE AREA           ACRES
               TEMPERATURE            DEGREES FAHRENHEIT

13 JD            INDEX STORM NO. 1
                      STRM        1.44  PRECIPITATION DEPTH
                      TRDA         .00  TRANSPOSITION DRAINAGE AREA

14 PI              PRECIPITATION PATTERN
                    .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
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                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
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*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

          **************
          *            *
296 KK    *     DET81  *      STORAGE
          *            *
          **************

297 KO          OUTPUT CONTROL VARIABLES
                     IPRNT           5  PRINT CONTROL
                     IPLOT           0  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

          **************
          *            *
580 KK    *     DET92  *      STORAGE
          *            *
          **************

581 KO          OUTPUT CONTROL VARIABLES
                     IPRNT           5  PRINT CONTROL
                     IPLOT           0  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

          **************
          *            *
632 KK    *    DET112  *      STORAGE
          *            *
          **************

633 KO          OUTPUT CONTROL VARIABLES
                     IPRNT           5  PRINT CONTROL
                     IPLOT           0  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

          **************
          *            *
667 KK    *    DET130  *      STORAGE
          *            *
          **************

668 KO          OUTPUT CONTROL VARIABLES
                     IPRNT           5  PRINT CONTROL
                     IPLOT           0  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

          **************
          *            *
700 KK    *    RET170  *      STORAGE
          *            *
          **************

701 KO          OUTPUT CONTROL VARIABLES
                     IPRNT           5  PRINT CONTROL
                     IPLOT           0  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

          **************
          *            *
754 KK    *    DET162  *      STORAGE
          *            *
          **************

755 KO          OUTPUT CONTROL VARIABLES
                     IPRNT           5  PRINT CONTROL
                     IPLOT           0  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE
```

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD			BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
				6-HOUR	24-HOUR	72-HOUR			
HYDROGRAPH AT	005	54.	4.20	4.	1.	1.	.13		
HYDROGRAPH AT	025	10.	4.05	0.	0.	0.	.01		
HYDROGRAPH AT	030	9.	4.05	0.	0.	0.	.01		
HYDROGRAPH AT	035	4.	4.02	0.	0.	0.	.00		
HYDROGRAPH AT	040	1.	4.02	0.	0.	0.	.00		
5 COMBINED AT	CS1	62.	4.15	5.	1.	1.	.16		
HYDROGRAPH AT	045	5.	4.02	0.	0.	0.	.00		
DIVERSION TO	DIT45	5.	4.02	0.	0.	0.	.00		
HYDROGRAPH AT	DET45	0.	.00	0.	0.	0.	.00		
HYDROGRAPH AT	015	11.	4.02	0.	0.	0.	.01		
DIVERSION TO	DIT15	6.	3.87	0.	0.	0.	.01		
HYDROGRAPH AT	DET15	5.	4.02	0.	0.	0.	.01		
HYDROGRAPH AT	050	8.	4.02	0.	0.	0.	.01		
HYDROGRAPH AT	010	17.	4.10	1.	0.	0.	.03		
4 COMBINED AT	CP010	27.	4.03	1.	0.	0.	.05		
ROUTED TO	R60A	25.	4.12	1.	0.	0.	.05		
HYDROGRAPH AT	020	29.	4.05	1.	0.	0.	.04		
ROUTED TO	R55B	26.	4.17	1.	0.	0.	.04		
HYDROGRAPH AT	022	19.	4.03	1.	0.	0.	.02		
2 COMBINED AT	CP022	32.	4.13	2.	1.	0.	.06		
ROUTED TO	DET22	2.	4.68	2.	1.	0.	.06		
ROUTED TO	R55A	2.	4.88	2.	1.	0.	.06		
HYDROGRAPH AT	055	22.	4.08	2.	0.	0.	.03		
2 COMBINED AT	CP055	23.	4.08	3.	1.	1.	.09		
ROUTED TO	R60B	21.	4.18	3.	1.	1.	.09		
HYDROGRAPH AT	060	17.	4.10	1.	0.	0.	.03		
3 COMBINED AT	CP060	61.	4.13	6.	2.	1.	.16		
HYDROGRAPH AT	070	15.	4.03	1.	0.	0.	.02		
ROUTED TO	R72	13.	4.12	1.	0.	0.	.02		
HYDROGRAPH AT	072	23.	4.08	1.	0.	0.	.03		
HYDROGRAPH AT	065	2.	4.02	0.	0.	0.	.00		
ROUTED TO	R73	2.	4.10	0.	0.	0.	.00		

+	HYDROGRAPH AT	073	20.	4.03	1.	0.	0.	.02
+	4 COMBINED AT	CP073	54.	4.08	3.	1.	0.	.07
+	ROUTED TO	R74	53.	4.10	3.	1.	0.	.07
+	HYDROGRAPH AT	074	12.	4.02	1.	0.	0.	.01
+	HYDROGRAPH AT	075	2.	4.02	0.	0.	0.	.00
+	3 COMBINED AT	CP075	59.	4.07	3.	1.	1.	.08
+	ROUTED TO	DET75	33.	4.20	3.	1.	1.	.08
+	ROUTED TO	R78A	33.	4.23	3.	1.	1.	.08
+	HYDROGRAPH AT	077	4.	4.02	0.	0.	0.	.00
+	ROUTED TO	R78B	4.	4.03	0.	0.	0.	.00
+	2 COMBINED AT	CP078	33.	4.23	3.	1.	1.	.09
+	ROUTED TO	R78	33.	4.30	3.	1.	1.	.09
+	HYDROGRAPH AT	078	14.	4.08	1.	0.	0.	.02
+	HYDROGRAPH AT	081	5.	4.02	0.	0.	0.	.00
+	ROUTED TO	DET81	4.	4.05	0.	0.	0.	.00
+	ROUTED TO	R82	4.	4.10	0.	0.	0.	.00
+	HYDROGRAPH AT	082	16.	4.07	1.	0.	0.	.02
+	4 COMBINED AT	CP082	53.	4.13	5.	1.	1.	.13
+	HYDROGRAPH AT	105	8.	4.07	0.	0.	0.	.01
+	HYDROGRAPH AT	083	3.	4.02	0.	0.	0.	.00
+	2 COMBINED AT	CP083	10.	4.03	1.	0.	0.	.01
+	ROUTED TO	R84A	10.	4.05	1.	0.	0.	.01
+	HYDROGRAPH AT	106	3.	4.02	0.	0.	0.	.00
+	HYDROGRAPH AT	084	9.	4.02	1.	0.	0.	.01
+	3 COMBINED AT	CP084	21.	4.02	1.	0.	0.	.02
+	ROUTED TO	R304	20.	4.03	1.	0.	0.	.02
+	HYDROGRAPH AT	304	4.	4.02	0.	0.	0.	.00
+	3 COMBINED AT	CP304	69.	4.07	7.	2.	1.	.15
+	ROUTED TO	R305B	69.	4.08	7.	2.	1.	.15
+	HYDROGRAPH AT	088	4.	4.02	0.	0.	0.	.00
+	ROUTED TO	R305A	4.	4.02	0.	0.	0.	.00
+	HYDROGRAPH AT	305	5.	4.02	0.	0.	0.	.00
+	3 COMBINED AT	CP305	73.	4.05	7.	2.	1.	.16
+	ROUTED TO	R306	72.	4.08	7.	2.	1.	.16
+	HYDROGRAPH AT	306	6.	4.02	0.	0.	0.	.00

+	2 COMBINED AT CP306	74.	4.07	7.	2.	1.	.16
+	DIVERSION TO DTV307	0.	.00	0.	0.	0.	.16
+	HYDROGRAPH AT DIV307	74.	4.07	7.	2.	1.	.16
+	HYDROGRAPH AT 300	5.	4.02	0.	0.	0.	.00
+	DIVERSION TO DTTE	5.	4.02	0.	0.	0.	.00
+	HYDROGRAPH AT DETE	3.	4.07	0.	0.	0.	.00
+	ROUTED TO R301	1.	4.08	0.	0.	0.	.00
+	HYDROGRAPH AT 301	8.	4.02	0.	0.	0.	.01
+	2 COMBINED AT CP301	8.	4.02	0.	0.	0.	.01
+	DIVERSION TO DTTC	8.	4.02	0.	0.	0.	.01
+	HYDROGRAPH AT DETC	0.	.00	0.	0.	0.	.01
+	ROUTED TO R302A	0.	.00	0.	0.	0.	.01
+	HYDROGRAPH AT 303	8.	4.02	0.	0.	0.	.01
+	DIVERSION TO DTTD	7.	3.95	0.	0.	0.	.01
+	HYDROGRAPH AT DETD	8.	4.02	0.	0.	0.	.01
+	ROUTED TO R302B	7.	4.03	0.	0.	0.	.01
+	HYDROGRAPH AT 302	15.	4.02	1.	0.	0.	.01
+	3 COMBINED AT CP302	21.	4.03	1.	0.	0.	.03
+	DIVERSION TO DTTB	21.	4.03	1.	0.	0.	.03
+	HYDROGRAPH AT DETB	0.	.00	0.	0.	0.	.03
+	HYDROGRAPH AT 307	3.	4.02	0.	0.	0.	.00
+	HYDROGRAPH AT 308	8.	4.02	0.	0.	0.	.01
+	HYDROGRAPH AT DIV307	0.	.00	0.	0.	0.	.16
+	4 COMBINED AT CP308	11.	4.02	0.	0.	0.	.04
+	DIVERSION TO DTTA	11.	4.02	0.	0.	0.	.04
+	HYDROGRAPH AT DETA	0.	.00	0.	0.	0.	.04
+	2 COMBINED AT CP310	74.	4.07	7.	2.	1.	.20
+	HYDROGRAPH AT 089	1.	4.02	0.	0.	0.	.00
+	4 COMBINED AT CS2	186.	4.12	18.	5.	3.	.53
+	HYDROGRAPH AT 120	23.	4.05	1.	0.	0.	.03
+	ROUTED TO R97	19.	4.23	1.	0.	0.	.03
+	HYDROGRAPH AT 100	12.	4.12	1.	0.	0.	.02
+	HYDROGRAPH AT 097	31.	4.18	2.	1.	0.	.05
+	3 COMBINED AT CP097	58.	4.20	4.	1.	1.	.09
+	ROUTED TO R91	57.	4.25	4.	1.	1.	.09

+	HYDROGRAPH AT	091	8.	4.05	0.	0.	0.	.01
+	2 COMBINED AT	CP091	57.	4.25	4.	1.	1.	.10
+	DIVERSION TO	DTT92	0.	.00	0.	0.	0.	.10
+	HYDROGRAPH AT	DIV92	57.	4.25	4.	1.	1.	.10
+	HYDROGRAPH AT	DIV92	0.	.00	0.	0.	0.	.10
+	HYDROGRAPH AT	090	25.	4.02	2.	0.	0.	.02
+	2 COMBINED AT	CP090	25.	4.02	2.	0.	0.	.02
+	ROUTED TO	DET92	2.	4.33	1.	1.	1.	.02
+	2 COMBINED AT	CP91	59.	4.25	5.	2.	1.	.12
+	ROUTED TO	R92	59.	4.25	5.	2.	1.	.12
+	HYDROGRAPH AT	092	5.	4.02	0.	0.	0.	.00
+	2 COMBINED AT	CP092	59.	4.25	5.	2.	2.	.13
+	ROUTED TO	R132A	58.	4.27	5.	2.	2.	.13
+	HYDROGRAPH AT	135	10.	4.03	0.	0.	0.	.01
+	ROUTED TO	R112	9.	4.08	0.	0.	0.	.01
+	HYDROGRAPH AT	112	15.	4.05	1.	0.	0.	.02
+	2 COMBINED AT	CP112	24.	4.07	1.	0.	0.	.03
+	ROUTED TO	DET112	2.	4.12	1.	0.	0.	.03
+	ROUTED TO	R111	2.	4.60	1.	0.	0.	.03
+	HYDROGRAPH AT	150	10.	4.03	0.	0.	0.	.01
+	HYDROGRAPH AT	111	50.	4.07	3.	1.	0.	.05
+	3 COMBINED AT	CP111	60.	4.07	4.	1.	1.	.09
+	DIVERSION TO	DTT130	23.	4.07	2.	0.	0.	.09
+	HYDROGRAPH AT	DIV130	37.	4.07	2.	1.	0.	.09
+	HYDROGRAPH AT	DIV130	23.	4.07	2.	0.	0.	.09
+	ROUTED TO	DET130	2.	4.18	1.	0.	0.	.09
+	2 COMBINED AT	COM130	38.	4.07	4.	1.	1.	.09
+	ROUTED TO	R130B	38.	4.08	4.	1.	1.	.09
+	HYDROGRAPH AT	170	31.	4.05	1.	0.	0.	.03
+	HYDROGRAPH AT	099	29.	4.03	1.	0.	0.	.03
+	ROUTED TO	R99	28.	4.05	1.	0.	0.	.03
+	2 COMBINED AT	CP170	59.	4.05	3.	1.	0.	.06
+	ROUTED TO	RET170	0.	.00	0.	0.	0.	.06
+	HYDROGRAPH AT	200	5.	4.05	0.	0.	0.	.00
+	ROUTED TO	R130C	4.	4.08	0.	0.	0.	.00

+	HYDROGRAPH AT 130	7.	4.02	0.	0.	0.	.01
+	4 COMBINED AT CP130	47.	4.07	4.	1.	1.	.16
+	ROUTED TO R132B	47.	4.07	4.	1.	1.	.16
+	HYDROGRAPH AT 132	10.	4.03	0.	0.	0.	.01
+	3 COMBINED AT CP132	88.	4.10	10.	3.	2.	.30
+	2 COMBINED AT CS3	216.	4.12	23.	6.	5.	.83
+	HYDROGRAPH AT 162	8.	4.05	0.	0.	0.	.01
+	ROUTED TO DET162	1.	4.23	0.	0.	0.	.01
+	ROUTED TO R165	1.	4.52	0.	0.	0.	.01
+	HYDROGRAPH AT 165	19.	4.08	1.	0.	0.	.02
+	HYDROGRAPH AT 164	13.	4.02	1.	0.	0.	.01
+	DIVERSION TO DTT164	13.	4.02	1.	0.	0.	.01
+	HYDROGRAPH AT DET164	0.	.00	0.	0.	0.	.01
+	ROUTED TO R164	0.	.00	0.	0.	0.	.01
+	3 COMBINED AT CP164	19.	4.08	1.	0.	0.	.05
+	HYDROGRAPH AT 163	6.	4.02	0.	0.	0.	.01
+	DIVERSION TO DTT163	6.	4.02	0.	0.	0.	.01
+	HYDROGRAPH AT DET163	0.	.00	0.	0.	0.	.01
+	ROUTED TO R163	0.	.00	0.	0.	0.	.01
+	2 COMBINED AT CP165	19.	4.08	1.	0.	0.	.05
+	HYDROGRAPH AT 220	10.	4.05	0.	0.	0.	.01
+	HYDROGRAPH AT 240	4.	4.02	0.	0.	0.	.00
+	HYDROGRAPH AT 230	3.	4.02	0.	0.	0.	.00
+	HYDROGRAPH AT 210	8.	4.03	0.	0.	0.	.01

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	INTERPOLATED TO COMPUTATION INTERVAL DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
FOR STORM = 1 STORM AREA (SQ MI) = .00									
R82	MANE	1.00	4.07	246.00	.35	1.00	4.07	246.00	.35
CONTINUITY SUMMARY (AC-FT) - INFLOW= .9461E-01 EXCESS= .0000E+00 OUTFLOW= .9461E-01 BASIN STORAGE= .1331E-03 PERCENT ERROR= -.1									
FOR STORM = 2 STORM AREA (SQ MI) = .50									
R82	MANE	1.00	4.06	246.00	.35	1.00	4.06	246.00	.35
CONTINUITY SUMMARY (AC-FT) - INFLOW= .9303E-01 EXCESS= .0000E+00 OUTFLOW= .9302E-01 BASIN STORAGE= .1319E-03 PERCENT ERROR= -.1									
FOR STORM = 3 STORM AREA (SQ MI) = 2.80									
R82	MANE	1.00	1.05	247.00	.09	1.00	1.05	247.00	.09
CONTINUITY SUMMARY (AC-FT) - INFLOW= .2391E-01 EXCESS= .0000E+00 OUTFLOW= .2389E-01 BASIN STORAGE= .1313E-03 PERCENT ERROR= -.5									
FOR STORM = 1 STORM AREA (SQ MI) = .00									
R84A	MANE	1.00	10.09	243.00	.36	1.00	10.09	243.00	.36
CONTINUITY SUMMARY (AC-FT) - INFLOW= .2713E+00 EXCESS= .0000E+00 OUTFLOW= .2714E+00 BASIN STORAGE= .7812E-04 PERCENT ERROR= .0									
FOR STORM = 2 STORM AREA (SQ MI) = .50									
R84A	MANE	1.00	9.93	243.00	.36	1.00	9.93	243.00	.36
CONTINUITY SUMMARY (AC-FT) - INFLOW= .2667E+00 EXCESS= .0000E+00 OUTFLOW= .2667E+00 BASIN STORAGE= .7773E-04 PERCENT ERROR= .0									
FOR STORM = 3 STORM AREA (SQ MI) = 2.80									
R84A	MANE	1.00	2.12	243.00	.11	1.00	2.12	243.00	.11
CONTINUITY SUMMARY (AC-FT) - INFLOW= .8244E-01 EXCESS= .0000E+00 OUTFLOW= .8244E-01 BASIN STORAGE= .7070E-04 PERCENT ERROR= -.1									
FOR STORM = 1 STORM AREA (SQ MI) = .00									
R99	MANE	1.00	28.66	243.00	.42	1.00	28.66	243.00	.42
CONTINUITY SUMMARY (AC-FT) - INFLOW= .6456E+00 EXCESS= .0000E+00 OUTFLOW= .6446E+00 BASIN STORAGE= .9871E-04 PERCENT ERROR= .1									
FOR STORM = 2 STORM AREA (SQ MI) = .50									
R99	MANE	1.00	28.28	243.00	.41	1.00	28.28	243.00	.41
CONTINUITY SUMMARY (AC-FT) - INFLOW= .6365E+00 EXCESS= .0000E+00 OUTFLOW= .6356E+00 BASIN STORAGE= .9823E-04 PERCENT ERROR= .1									
FOR STORM = 3 STORM AREA (SQ MI) = 2.80									
R99	MANE	1.00	7.56	244.00	.15	1.00	7.56	244.00	.15
CONTINUITY SUMMARY (AC-FT) - INFLOW= .2398E+00 EXCESS= .0000E+00 OUTFLOW= .2396E+00 BASIN STORAGE= .1219E-03 PERCENT ERROR= .0									

*** NORMAL END OF HEC-1 ***

Pre- versus Post-Flow Summary

WOOD/PATEL

CIVIL ENGINEERS * HYDROLOGISTS * LAND SURVEYORS * CONSTRUCTION MANAGERS

PRE VERSUS POST FLOW SUMMARY

Description: Flow Summary
Project: **Scottsdale National Golf Club**
Reference: *Drainage Design Manual for Maricopa County, Arizona - Hydrology Policies Manual Chapter 4 Grading & Drainage*, January 2010.

Date: 6/13/2015

HEC-1 ID	100-yr, 6-hr Existing Condition Peak Flow (cfs)	100-yr, 6-hr Post Developed Condition Peak Flow (cfs)	10-yr, 6-hr Existing Condition Peak Flow (cfs)	10-yr, 6-hr Post Developed Condition Peak Flow (cfs)	2-yr, 6-hr Existing Condition Peak Flow (cfs)	2-yr, 6-hr Post Developed Condition Peak Flow (cfs)
005	240	240	125	125	54	54
025	39	39	22	22	10	10
030	38	35	21	20	10	9
035	13	13	8	8	4	4
040	10	3	6	2	3	1
CP'060	382	316	201	136	79	61
CP310	269	263	165	135	80	74
CP092	341	117	176	103	68	59
CP130	233	192	115	96	50	47
CP132	582	318	297	196	119	88
CP165	134	89	73	40	32	19
210	29	29	16	16	8	8
220	40	39	23	22	11	10
230	10	10	6	6	3	3
240	13	13	8	8	4	4

Rational Method Calculations for Casitas Area

Site I-D-F Curve

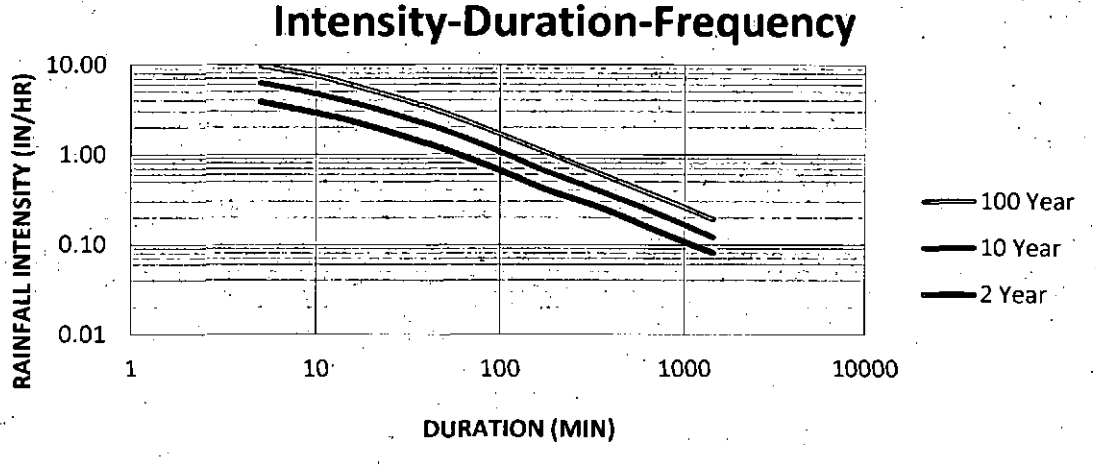
Description: Rational Method Inputs and Results
Date: June 13, 2015
Project : Wickenburg Ranch Miners Pass - Phase 1
Location : Town of Wickenburg, Yavapai County, Arizona
Reference: Drainage Design Manual for Yavapai County, Vol. I, Hydrology, November 2009

RAINFALL DEPTHS, INCHES

Duration	Average Reccurence Interval (years)					
	2	5	10	25	50	100
5-min	0.318	0.428	0.511	0.621	0.704	0.787
10-min	0.484	0.652	0.778	0.945	1.071	1.198
15-min	0.600	0.808	0.965	1.171	1.328	1.485
30-min	0.808	1.088	1.299	1.578	1.788	1.999
60-min	1.000	1.346	1.608	1.952	2.213	2.474
2-hr	1.141	1.513	1.798	2.183	2.474	2.775
3-hr	1.212	1.577	1.868	2.272	2.593	2.923
6-hr	1.442	1.827	2.135	2.559	2.891	3.235
12-hr	1.734	2.175	2.526	3.001	3.368	3.744
24-hr	2.121	2.765	3.290	4.036	4.642	5.287

RAINFALL INTENSITY, INCHES/HOUR

Duration minutes	Frequency, years					
	2	5	10	25	50	100
5	3.82	5.14	6.13	7.45	8.45	9.44
10	2.90	3.91	4.67	5.67	6.43	7.19
15	2.40	3.23	3.86	4.68	5.31	5.94
30	1.62	2.18	2.60	3.16	3.58	4.00
60	1.00	1.35	1.61	1.95	2.21	2.47
120	0.57	0.76	0.90	1.09	1.24	1.39
180	0.40	0.53	0.62	0.76	0.86	0.97
360	0.24	0.30	0.36	0.43	0.48	0.54
720	0.14	0.18	0.21	0.25	0.28	0.31
1440	0.09	0.12	0.14	0.17	0.19	0.22



Rational Method Summary

Description: Rational Method Inputs and Results
Date: 06/13/15
Location: Scottsdale National Golf Club, Scottsdale Arizona

Existing Watersheds

Drainage ID	Drainage Area (sq.ft)	Drainage Area (acres)	Longest Watercourse (ft)	Top Elev. (ft)	Bottom Elev. (ft)	Basin Slope (ft/ft)	Land Use Description	Watershed Resistance Coefficient "K_b"	Runoff[1] Coefficient 10YR	Runoff[1] Coefficient 100YR	10 YR Intensity "i" (in/hr)	100 YR Intensity "i" (in/hr)	**Post Q10 (cfs)**	Post Q10 Tc (min)	**Post Q100 (cfs)**	Post Q100 Tc (min)
DA A	56447	1.30	350	2720	2700.0	0.057	Casita Development	0.078	0.38	0.47	6.13	9.40	**3.0**	5.0	**5.7**	5.0
DA B	79580	1.83	400	2720	2694.0	0.065	Casita Development	0.076	0.35	0.44	6.13	9.40	**3.9**	5.0	**7.6**	5.0
DA C	139420	3.20	260	2715	2684.0	0.119	Casita Development	0.073	0.37	0.46	6.13	9.40	**7.3**	5.0	**13.8**	5.0
DA D	158574	3.64	550	2715	2669.0	0.084	Casita Development	0.072	0.45	0.56	6.13	9.40	**10.0**	4.3	**19.2**	5.0
DA E	40000	0.92	400	2705	2686.0	0.048	Casita Development	0.080	0.50	0.63	6.13	9.40	**2.8**	4.6	**5.4**	5.0
DA F	48600	1.12	220	2686	2677.5	0.039	Casita Development	0.079	0.51	0.64	6.13	9.40	**3.5**	3.6	**6.7**	5.0
DA G	56590	1.30	320	2682	2673.0	0.028	Casita Development	0.078	0.51	0.64	6.13	9.40	**4.1**	4.8	**7.8**	5.0
DA H	73307	1.68	210	2679	2671.5	0.036	Casita Development	0.077	0.51	0.64	6.13	9.40	**5.3**	3.5	**10.1**	5.0

Required Retention Volume Calculations

Detention Volume Required

Description: Calculation of Detention Retention Volume Using the Rational Method
Date: 11/18/14
Location: Scottsdale National Golf Club
Reference: Drainage Design Manual for Maricopa County, Vol. I, Hydrology
City of Scottsdale, *Design Standards and Policies Manual Chapter 4 Grading & Drainage*,

Known Values: Design storm: 100-yr, 2-hr
Rainfall, D: 2.775 inches

Calc. Values: V=(P/12)*A*C

Where: V = Retention Volume Required
C = Runoff Coefficient
P = Precipitation amount=100-year 2 hour rainfall
A = Area of Watershed Contributing

Concentration Point (CP)	Contributing Sub-Basins	Area (SF)	Area (ac)	Land Use	Weighted Runoff Coefficient	100-Year, 2-Hour Volume (ac-ft)
CP010	010, 015 & 045	352569	8.09	GOLF COURSE	0.30	0.56
	010, 015 & 045	68494	1.57	DESERT LANDSCAPING	0.44	0.16
	010, 015 & 045	20961	0.48	IMPERVIOUS	0.90	0.10
Total CP010			***10.14***			***0.82***
CP055	055	332219	7.63	GOLF COURSE	0.30	0.53
	055	54000	1.24	DESERT LANDSCAPING	0.44	0.13
	055	20122	0.46	IMPERVIOUS	0.90	0.10
Total CP055			***9.33***			***0.76***
CP310	310	1941881	44.58	GOLF COURSE	0.30	3.09
	310	621834	14.28	DESERT LANDSCAPING	0.44	1.45
	310	269297	6.18	IMPERVIOUS	0.90	1.29
Total CP310			***65.04***			***5.83***
CP092	92	585232	13.44	GOLF COURSE	0.30	0.93
	92	813056	18.67	DESERT LANDSCAPING	0.44	1.90
	92	336355	7.72	IMPERVIOUS	0.90	1.61
Total CP092			***39.83***			***4.44***
CP130	130	1545490	35.48	GOLF COURSE	0.30	2.46
	130	1164810	26.74	DESERT LANDSCAPING	0.44	2.72
	130	215298	4.94	IMPERVIOUS	0.90	1.03
Total CP130			***67.16***			***6.21***

Provided Retention Volume Calculations

Detention Basin Capacity

Description: Existing Detention Basin Capacity
Project: **Scottsdale National Golf Club**
Reference: *Drainage Design Manual for Maricopa County, Arizona - Hydrology*
City of Scottsdale, *Design Standards and Policies Manual Chapter 4 Grading & Drainage*, January 2010.

Date: 6/13/2015

Basin IDs	Bottom Contour Area	Top Contour Area (sq.ft.)	Bottom Elevation (ft)	Top Elevation	Volume Provided	Volume Provided
DET A	87,175	95,588	2,635.0	2,636	**2.10**	**6.87**
	95,588	103,913	2,636.0	2,637	**2.29**	
	103,913	112,343	2,637.0	2,638	**2.48**	
DET B	503	3,764	2,641.0	2,642	**0.05**	**0.46**
	3,764	8,495	2,642.0	2,643	**0.14**	
	8,495	15,231	2,643.0	2,644	**0.27**	
DET C	1,506	3,898	2,646.0	2,647	**0.06**	**0.45**
	3,898	7,793	2,647.0	2,648	**0.13**	
	7,793	14,992	2,648.0	2,649	**0.26**	
DET D	538	3,758	2,648.0	2,649	**0.05**	**0.05**
DET E	696	2,527	2,661.0	2,662	**0.04**	**0.13**
	2,527	5,450	2,662.0	2,663	**0.09**	
					TOTAL =	**7.96**

Detention Basin Capacity

Description: Proposed Detention Basin Capacities
Project: **Scottsdale National Golf Club**
Reference: *Drainage Design Manual for Maricopa County, Arizona - Hydrology*
City of Scottsdale, *Design Standards and Policies Manual Chapter 4 Grading & Drainage*, January 2010.

Date: 6/13/2015

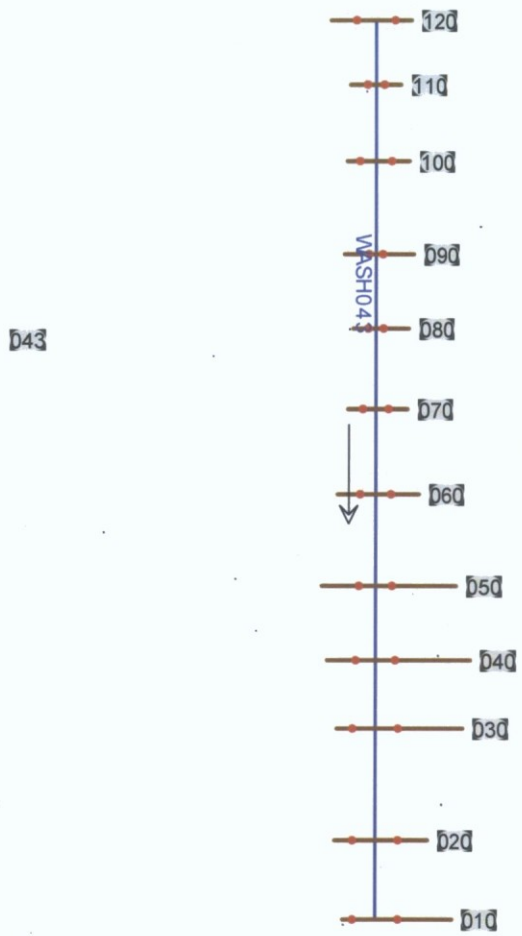
Basin IDs	Bottom Contour Area	Top Contour Area (sq.ft.)	Bottom Elevation (ft)	Top Elevation	Volume Provided	Volume Provided
	4,912	5,965	2,655.0	2,656	0.12	
	5,965	7,077	2,656.0	2,657	0.15	
DET 130	7,077	8,611	2,657.0	2,658	0.18	
	8,611	10,417	2,658.0	2,659	0.22	1.24
	10,417	12,190	2,659.0	2,660	0.26	
(ONLY USED 1.09 AF)	12,190	13,116	2,660.0	2,660.5	0.15	
(Basin Weir Outlet @ 2660)	13,116	14,163	2,660.5	2,661	0.16	
	53,854	56,140	2,656.5	2,657	0.63	
DET 92	56,140	60,820	2,657.0	2,658	1.34	4.19
	60,820	65,642	2,658.0	2,659	1.45	
	65,642	68,107	2,659.0	2,659.5	0.77	
(Basin Weir Inlet @ 2659.5)	68,107	82,584	2,659.5	2,660.0	0.86	
	8,938	9,936	2,656.5	2,657	0.11	
DET 92A	9,936	12,080	2,657.0	2,658	0.25	0.83
	12,080	14,420	2,658.0	2,659	0.30	
(Max Ponding @ 2659.5)	14,420	15,662	2,659.0	2,659.5	0.17	
	15,662	16,954	2,659.5	2,660.0	0.19	
	600	1,779	2,665.0	2,666	0.03	
DET 90	1,779	3,371	2,666.0	2,667	0.06	0.19
	3,371	5,578	2,667.0	2,668	0.10	
	258	2,285	2,732.0	2,733	0.03	
	2,285	5,136	2,733.0	2,734	0.09	
DET 162 - Online	5,136	10,016	2,734.0	2,735	0.17	1.07
	10,016	16,439	2,735.0	2,736	0.30	
	16,439	25,667	2,736.0	2,737	0.48	
	130	1,892	2,766.0	2,767	0.02	
DET 22 - Online	1,892	5,336	2,767.0	2,768	0.08	1.91
	5,336	10,862	2,768.0	2,769	0.19	
	10,862	18,271	2,769.0	2,770	0.33	
(ONLY USED 1.15 AF)	18,271	27,502	2,770.0	2,771	0.53	
(Basin Weir Outlet @ 2771)	27,502	38,552	2,771.0	2,772	0.76	
DET 45 - Online	2,627	4,000	2,726.0	2,727	0.08	0.19
	4,000	5,494	2,727.0	2,728	0.11	
	505	2,405	2,733.0	2,734	0.03	
DET 10	2,405	5,993	2,734.0	2,735	0.10	0.59
	5,993	9,582	2,735.0	2,736	0.18	
	9,582	14,720	2,736.0	2,737	0.28	
	111,158	129,951	2,750.0	2,751	2.77	
RET 70 - LAKE	129,951	147,085	2,751.0	2,752	3.18	18.57
	147,085	169,324	2,752.0	2,753	3.63	
(ONLY USED 6 AF)	169,324	197,060	2,753.0	2,754	4.21	
	197,060	219,672	2,754.0	2,755	4.78	
	1,553	1,792	2,710.0	2,711	0.04	
DET 164	1,792	10,638	2,711.0	2,712	0.14	0.86
	10,638	12,210	2,712.0	2,713	0.26	
	12,210	24,308	2,713.0	2,714	0.42	
	2,347	3,396	2,695.0	2,696	0.07	
DET 163	3,396	4,573	2,696.0	2,697	0.09	0.28
	4,573	5,876	2,697.0	2,698	0.12	
	1,131	3,152	2,732.0	2,733	0.05	
DET 112- Online	3,152	5,836	2,733.0	2,734	0.10	1.44
	5,836	8,935	2,734.0	2,735	0.17	
	8,935	13,284	2,735.0	2,736	0.26	
(ONLY USED 1.14 AF)	13,284	18,284	2,736.0	2,737.0	0.36	
(Basin Weir Outlet @ 2737.35)	18,284	25,331	2,737.0	2,738.0	0.50	
	2,228	6,547	2,718.0	2,719	0.10	
DET 75	6,547	11,103	2,719.0	2,720	0.20	1.92
	11,103	18,245	2,720.0	2,721	0.34	
(NO DETENTION STORAGE USED)	18,245	27,637	2,721.0	2,722	0.53	
(DRAIN TIME < 12 HRS)	27,637	37,705	2,722.0	2,723	0.75	
					Total	15.6
			Including Existing Retention Volumes		TOTAL	23.5

APPENDIX C

HYDRAULICS

Existing Condition Wash HEC-RAS Outputs

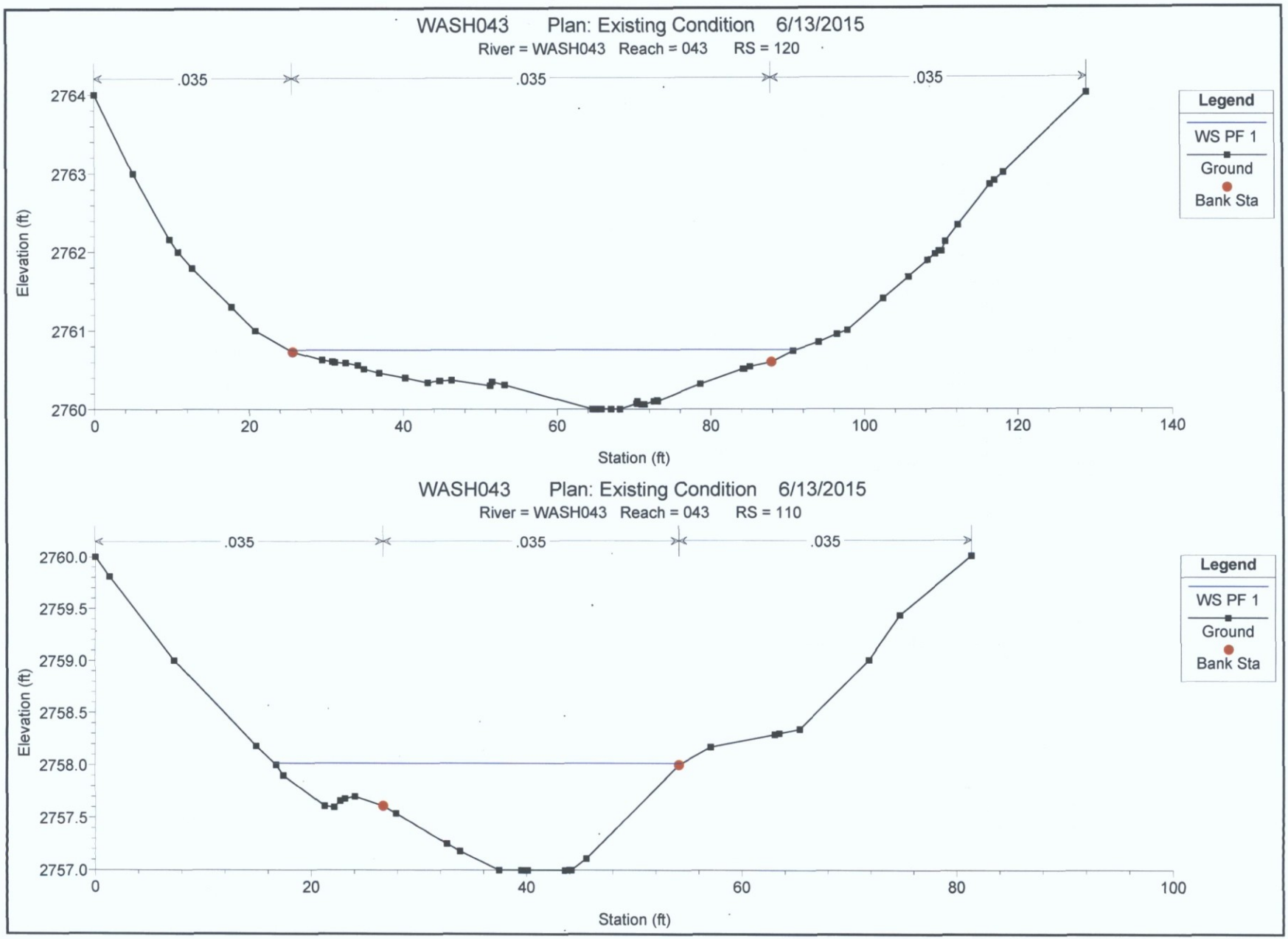
EXISTING WASH 043 HEC-RAS

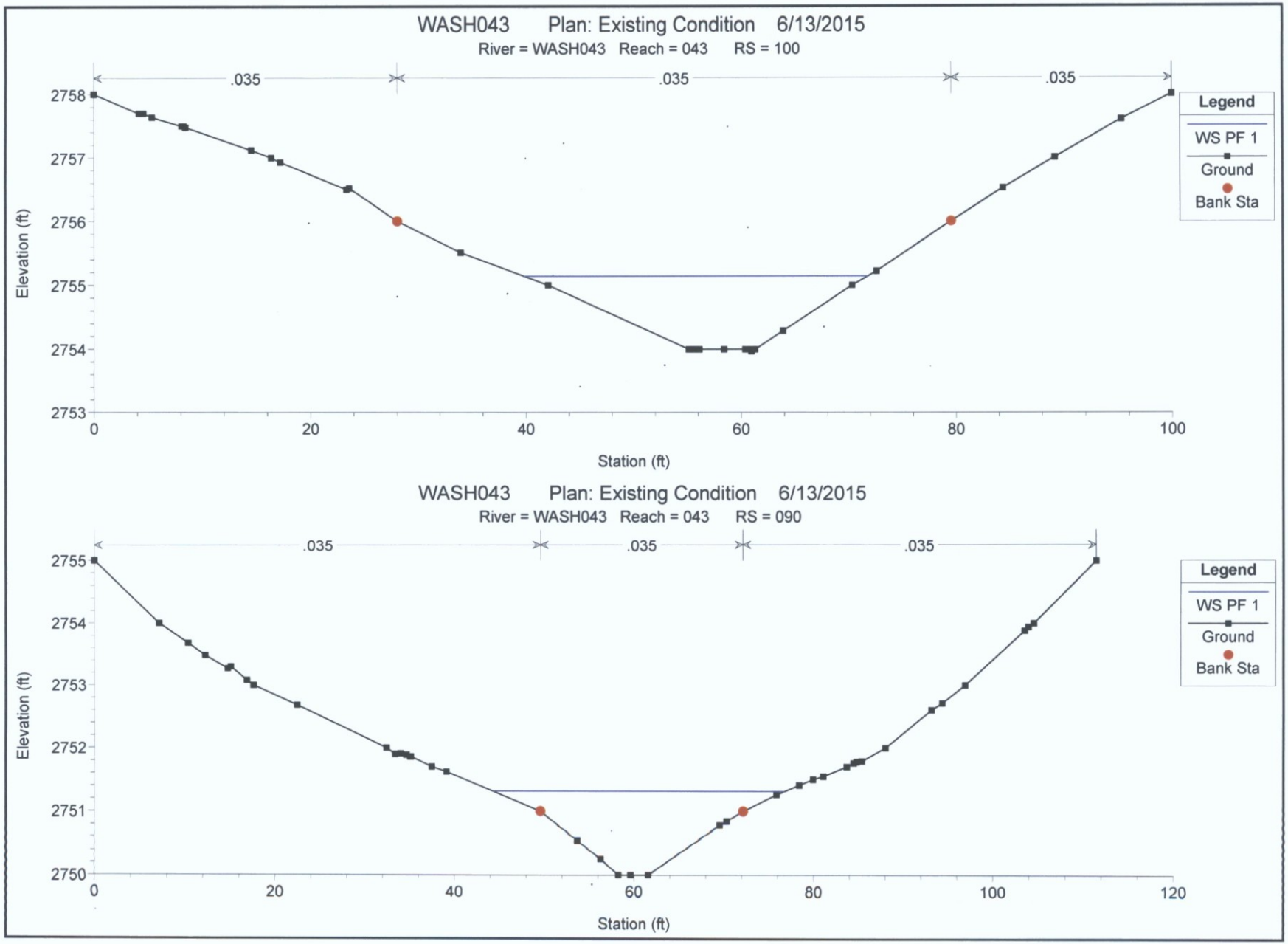


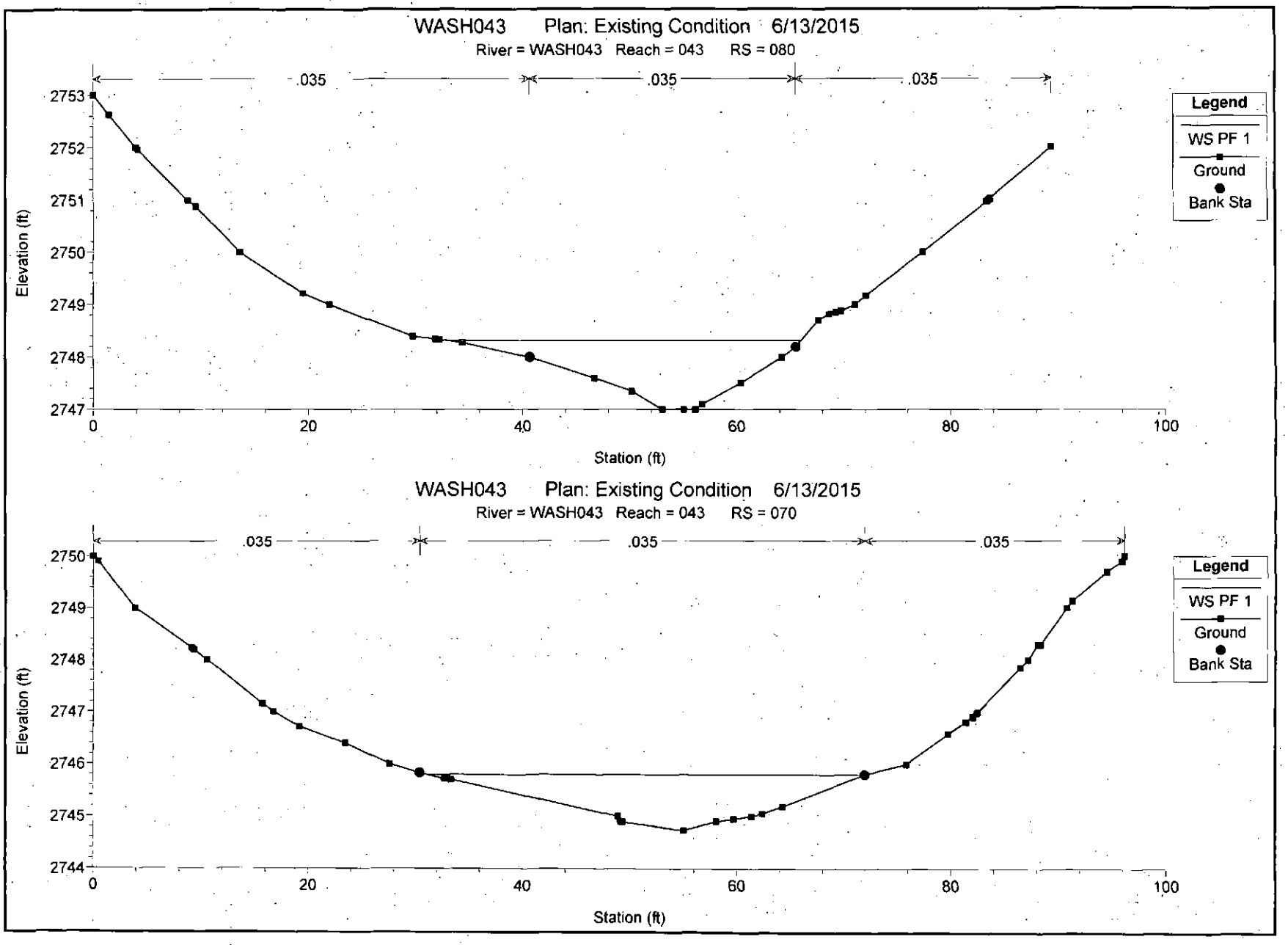
matic data outside default extents (see View/Set Schematic Plot Extents...)
e XS's are Geo-Referenced (Geo-Ref user entered XS Geo-Ref interpolated XS Non Geo-Ref user entered XS Non Geo-Ref interpolated XS)

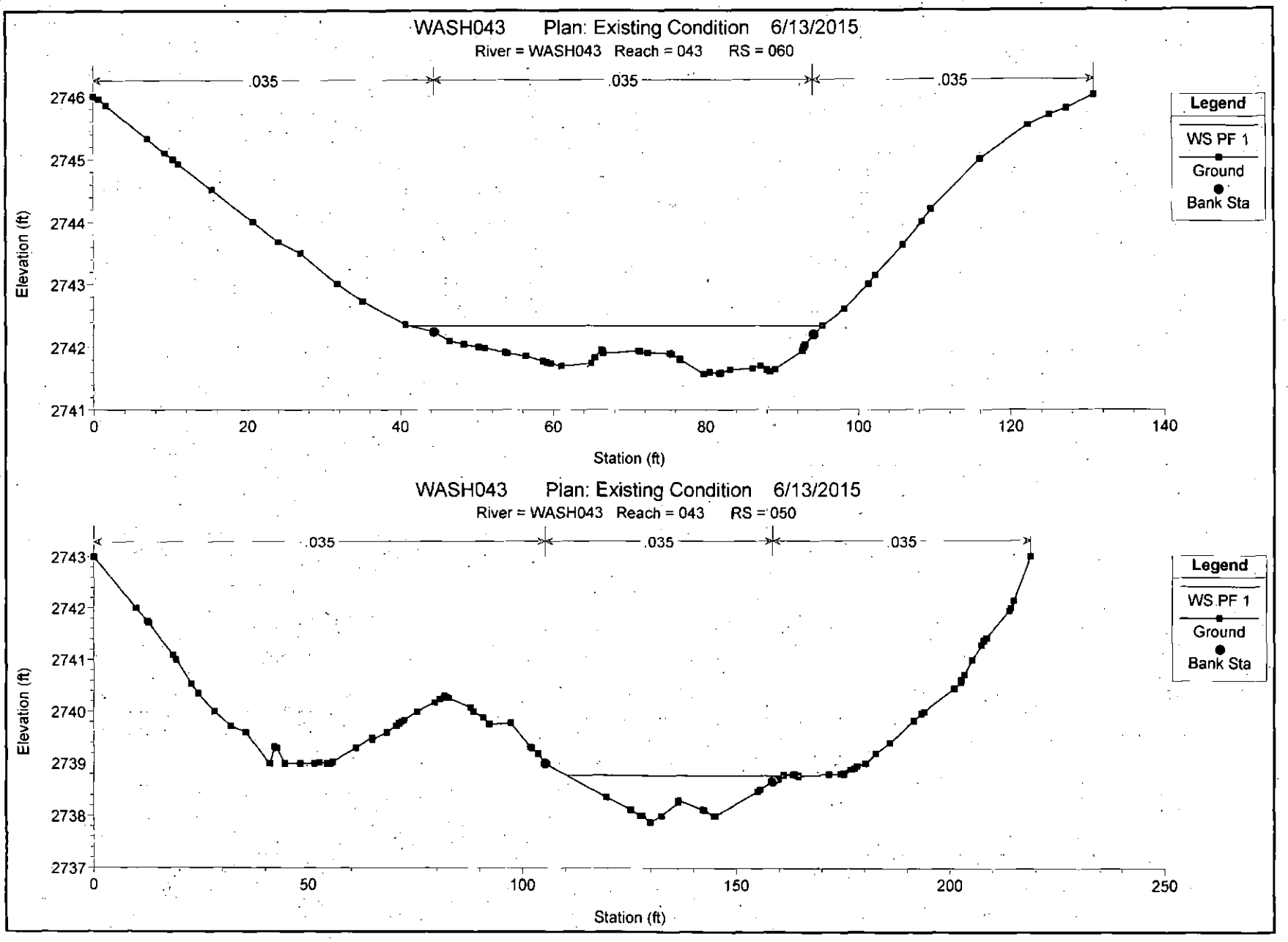
HEC-RAS Plan: 043 River: WASH043 Reach: 043 Profile: PF 1

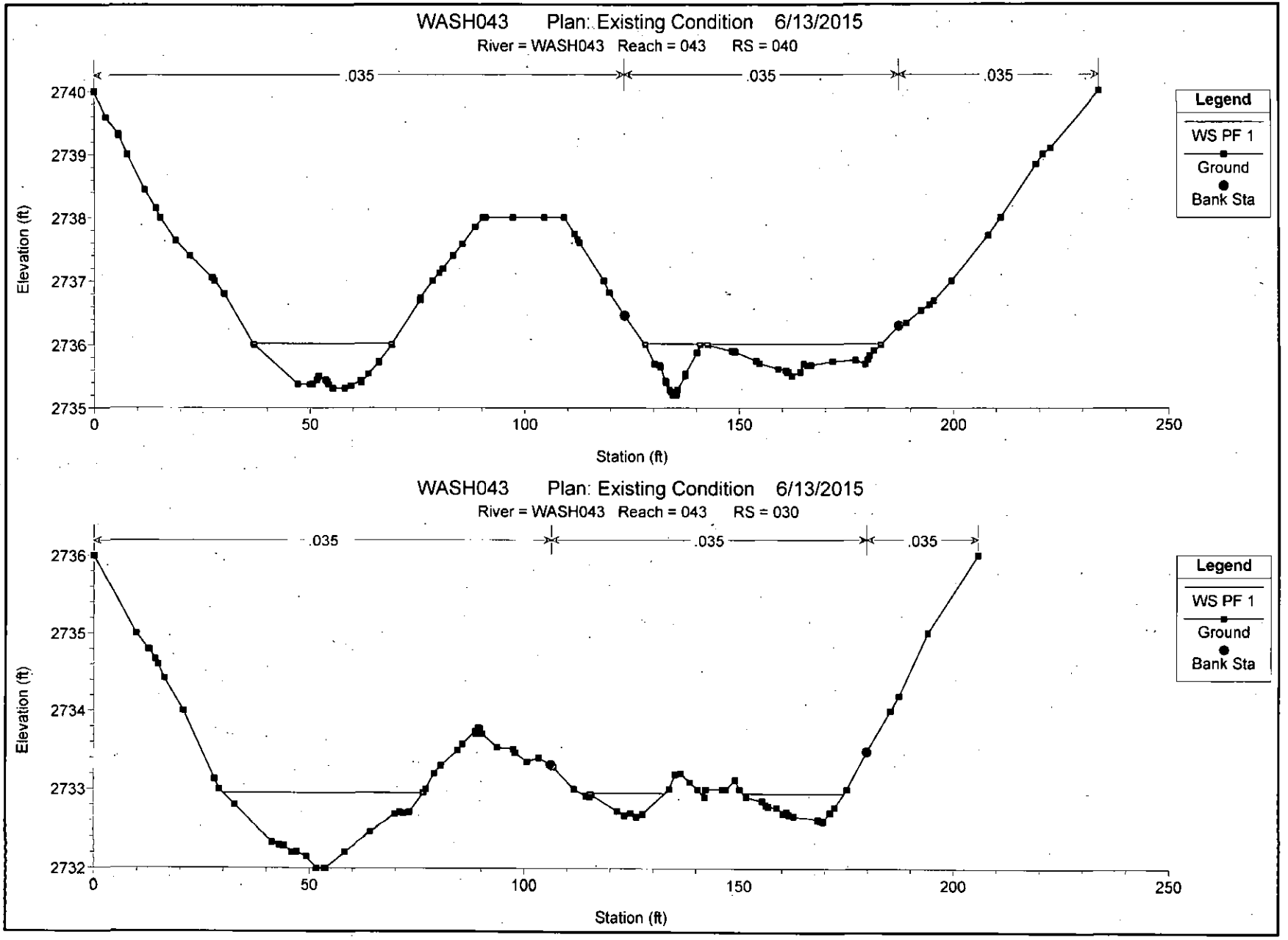
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
043	120	PF 1	100.00	2760.00	2760.75	2760.75	2760.97	0.024024	3.74	26.92	65.96	1.01
043	110	PF 1	100.00	2757.00	2758.01	2758.01	2758.33	0.018471	4.64	22.89	37.80	0.96
043	100	PF 1	100.00	2753.97	2755.14	2755.14	2755.48	0.020899	4.69	21.34	31.87	1.01
043	090	PF 1	100.00	2750.00	2751.31	2751.31	2751.68	0.016412	4.95	21.22	32.39	0.93
043	080	PF 1	100.00	2747.00	2748.31	2748.30	2748.68	0.017438	4.87	21.32	32.76	0.95
043	070	PF 1	100.00	2744.73	2745.79	2745.79	2746.09	0.022188	4.33	23.10	40.72	1.01
043	060	PF 1	100.00	2741.57	2742.34	2742.34	2742.59	0.022207	3.99	25.21	53.93	0.99
043	050	PF 1	100.00	2737.88	2738.77	2738.77	2739.03	0.022581	4.07	24.71	53.05	1.00
043	040	PF 1	100.00	2735.20	2736.02	2736.02	2736.19	0.021614	2.72	31.06	87.71	0.89
043	030	PF 1	100.00	2732.60	2732.95	2732.95	2733.13	0.017353	1.77	31.73	90.04	0.74
043	020	PF 1	100.00	2728.50	2729.20	2729.18	2729.41	0.022068	3.70	27.03	60.09	0.97
043	010	PF 1	100.00	2725.70	2726.50	2726.47	2726.68	0.020009	3.42	29.28	68.12	0.92

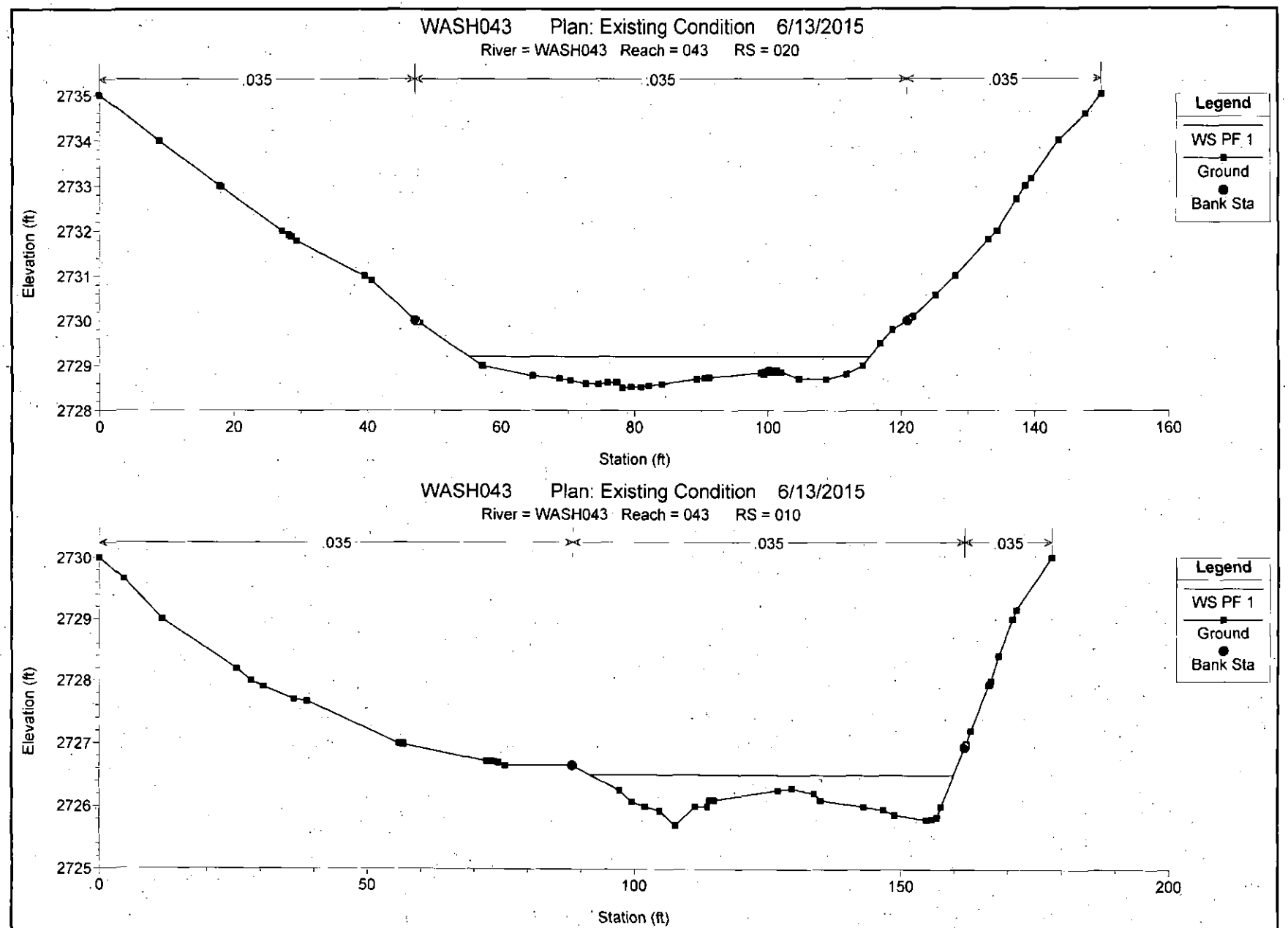

WASH043 Plan: Existing Condition 6/13/2015
River = WASH043 Reach = 043 RS = 120
.035
.035
.035
Elevation (ft)
2764
2763
2762
2761
2760
0
20
40
60
80
100
120
140
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
WASH043 Plan: Existing Condition 6/13/2015
River = WASH043 Reach = 043 RS = 110
.035
.035
.035
Elevation (ft)
2760.0
2759.5
2759.0
2758.5
2758.0
2757.5
2757.0
0
20
40
60
80
100
Station (ft)
Legend
WS PF 1
Ground
Bank Sta

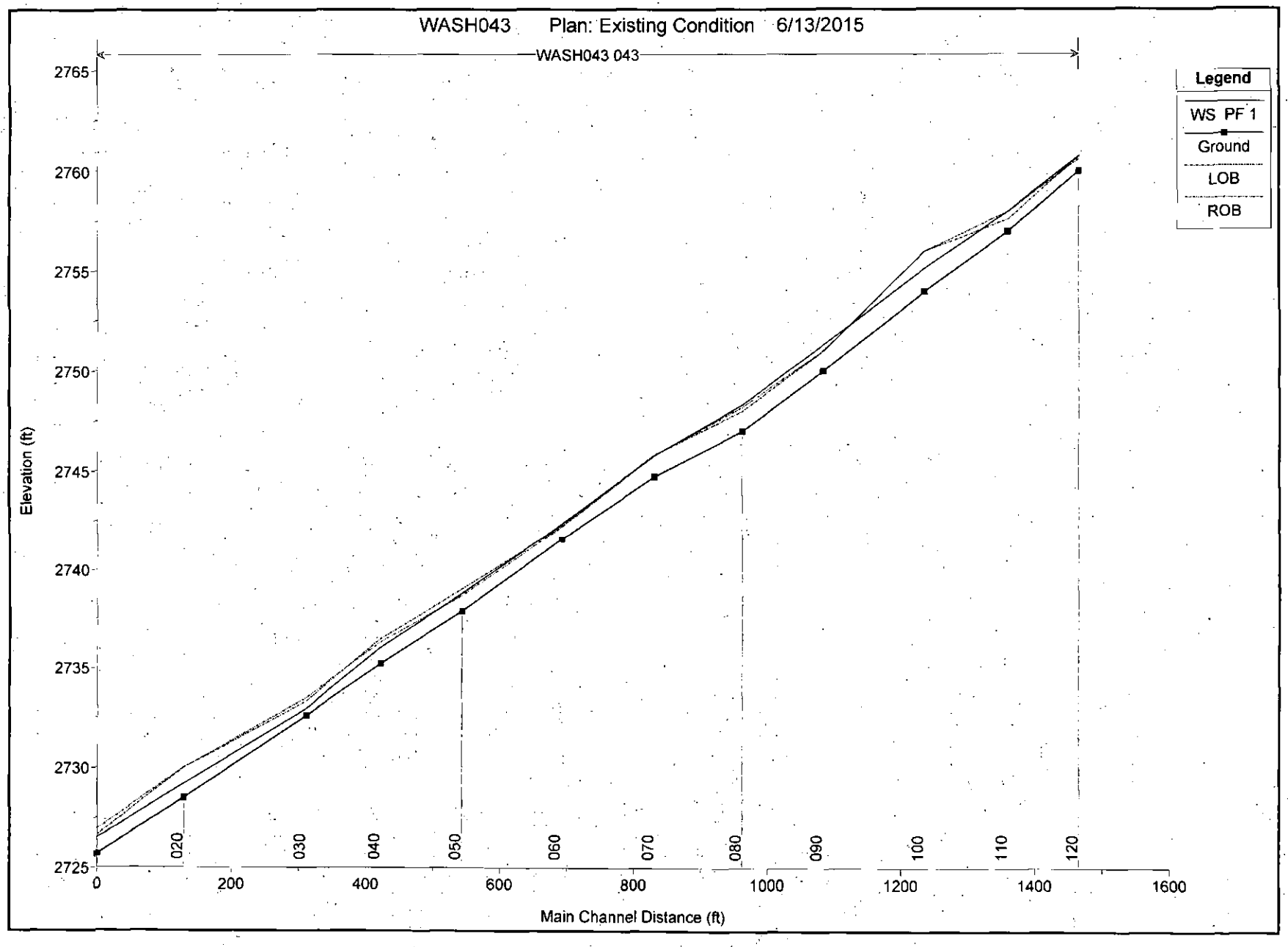

WASH043 Plan: Existing Condition 6/13/2015
River = WASH043 Reach = 043 RS = 100
.035
.035
.035
2758
2757
2756
2755
2754
2753
Elevation (ft)
0
20
40
60
80
100
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
WASH043 Plan: Existing Condition 6/13/2015
River = WASH043 Reach = 043 RS = 090
.035
.035
.035
2755
2754
2753
2752
2751
2750
Elevation (ft)
0
20
40
60
80
100
120
Station (ft)
Legend
WS PF 1
Ground
Bank Sta


WASH043 Plan: Existing Condition 6/13/2015
River = WASH043 Reach = 043 RS = 080
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
WASH043 Plan: Existing Condition 6/13/2015
River = WASH043 Reach = 043 RS = 070
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

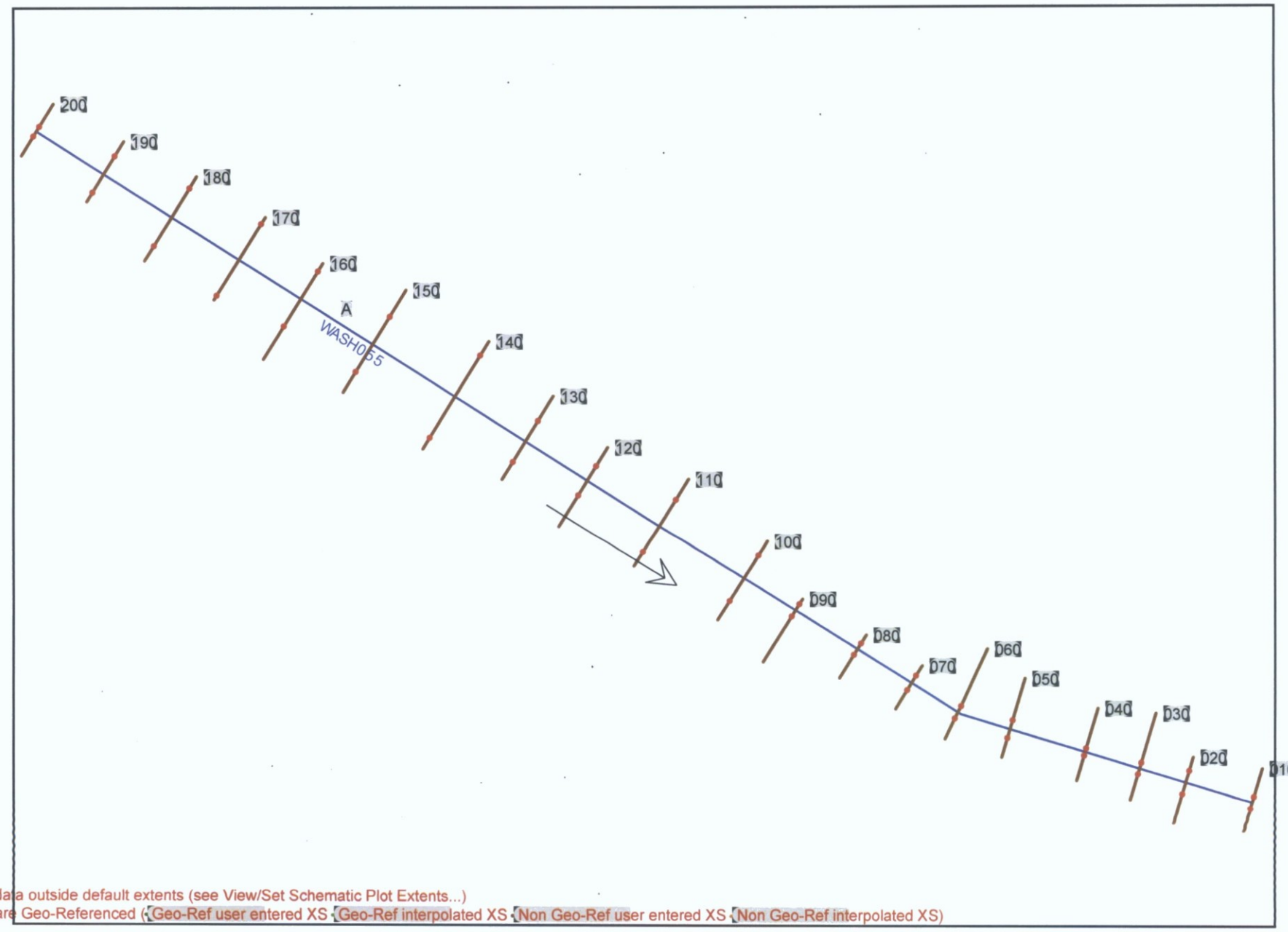

WASH043 Plan: Existing Condition 6/13/2015
River = WASH043 Reach = 043 RS = 060
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2746
2745
2744
2743
2742
2741
0
20
40
60
80
100
120
140
Station (ft)
WASH043 Plan: Existing Condition 6/13/2015
River = WASH043 Reach = 043 RS = 050
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2743
2742
2741
2740
2739
2738
2737
0
50
100
150
200
250
Station (ft)


WASH043 Plan: Existing Condition 6/13/2015
River = WASH043 Reach = 043 RS = 040
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2740
2739
2738
2737
2736
2735
0
50
100
150
200
250
WASH043 Plan: Existing Condition 6/13/2015
River = WASH043 Reach = 043 RS = 030
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2736
2735
2734
2733
2732
0
50
100
150
200
250


WASH043 Plan: Existing Condition 6/13/2015
River = WASH043 Reach = 043 RS = 020
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2735
2734
2733
2732
2731
2730
2729
2728
0
20
40
60
80
100
120
140
160
Station (ft)
WASH043 Plan: Existing Condition 6/13/2015
River = WASH043 Reach = 043 RS = 010
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2730
2729
2728
2727
2726
2725
0
50
100
150
200
Station (ft)


WASH043 Plan: Existing Condition 6/13/2015
WASH043 043
Legend
WS PF 1
Ground
LOB
ROB
Elevation (ft)
2765
2760
2755
2750
2745
2740
2735
2730
2725
020
030
040
050
060
070
080
090
100
110
120
0
200
400
600
800
1000
1200
1400
1600
Main Channel Distance (ft)

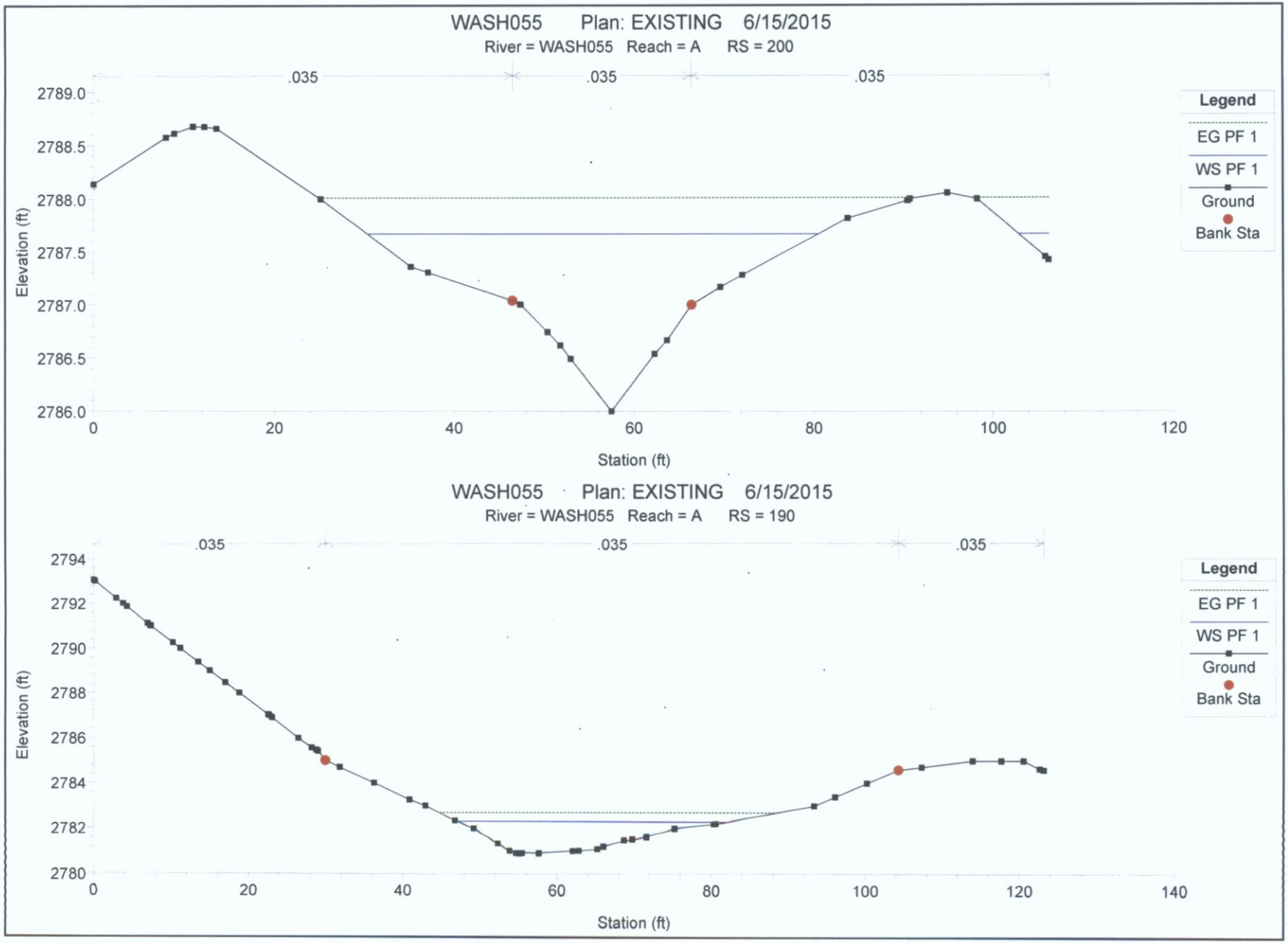
EXISTING WASH 055 HEC-RAS

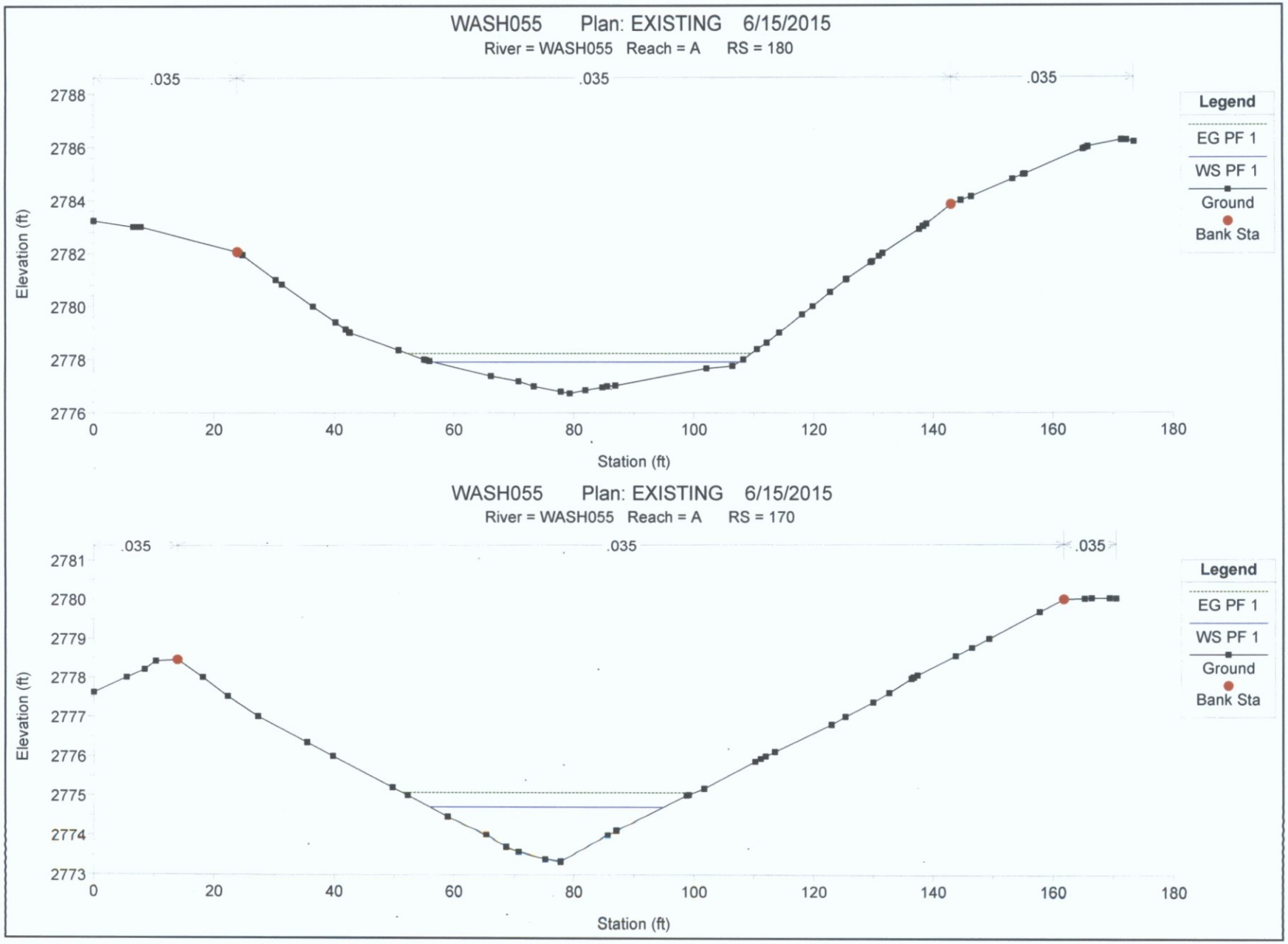


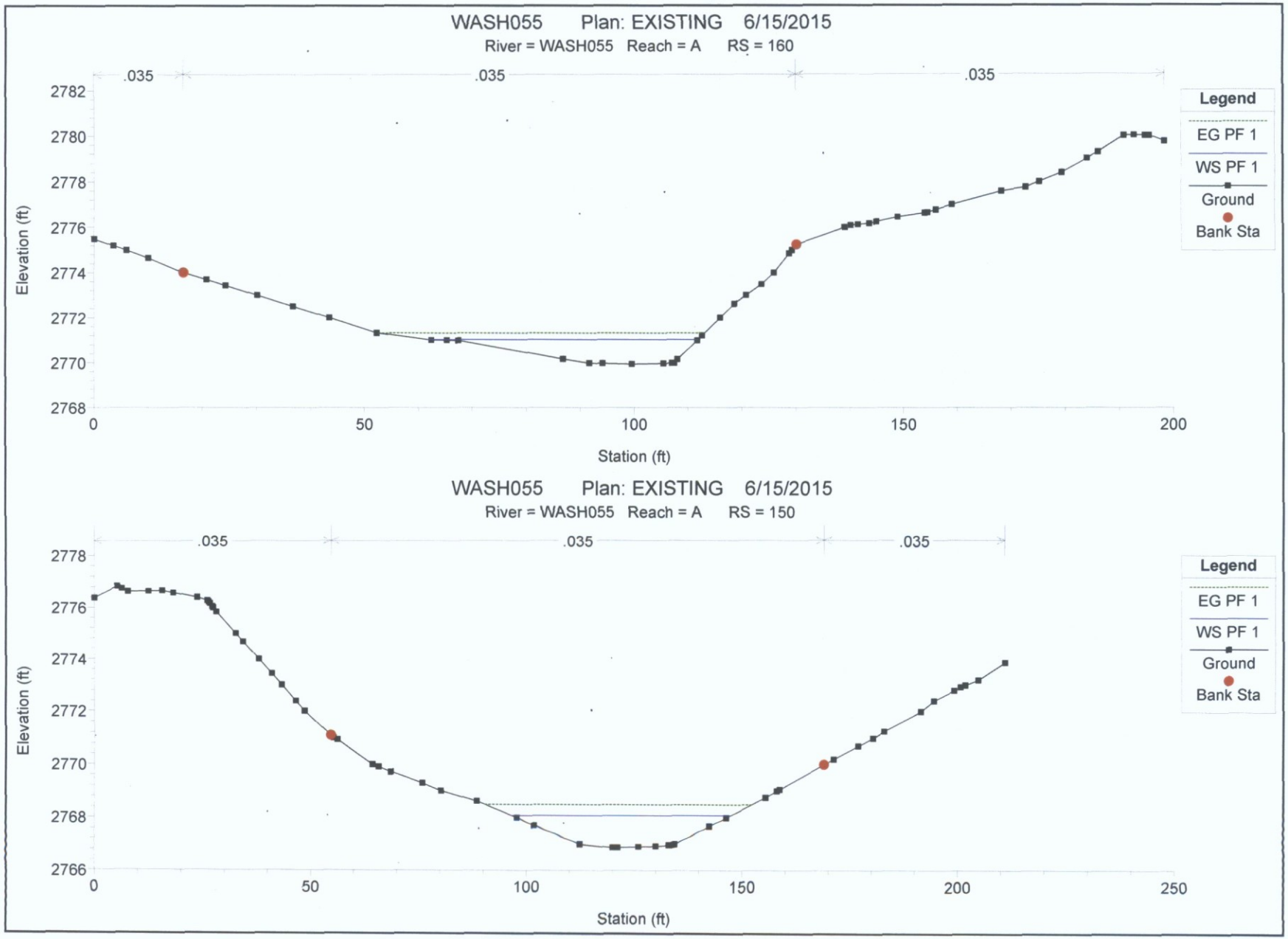
me schematic data outside default extents (see View/Set Schematic Plot Extents...)
ne of the XS's are Geo-Referenced (Geo-Ref user entered XS Geo-Ref interpolated XS Non Geo-Ref user entered XS Non Geo-Ref interpolated XS)

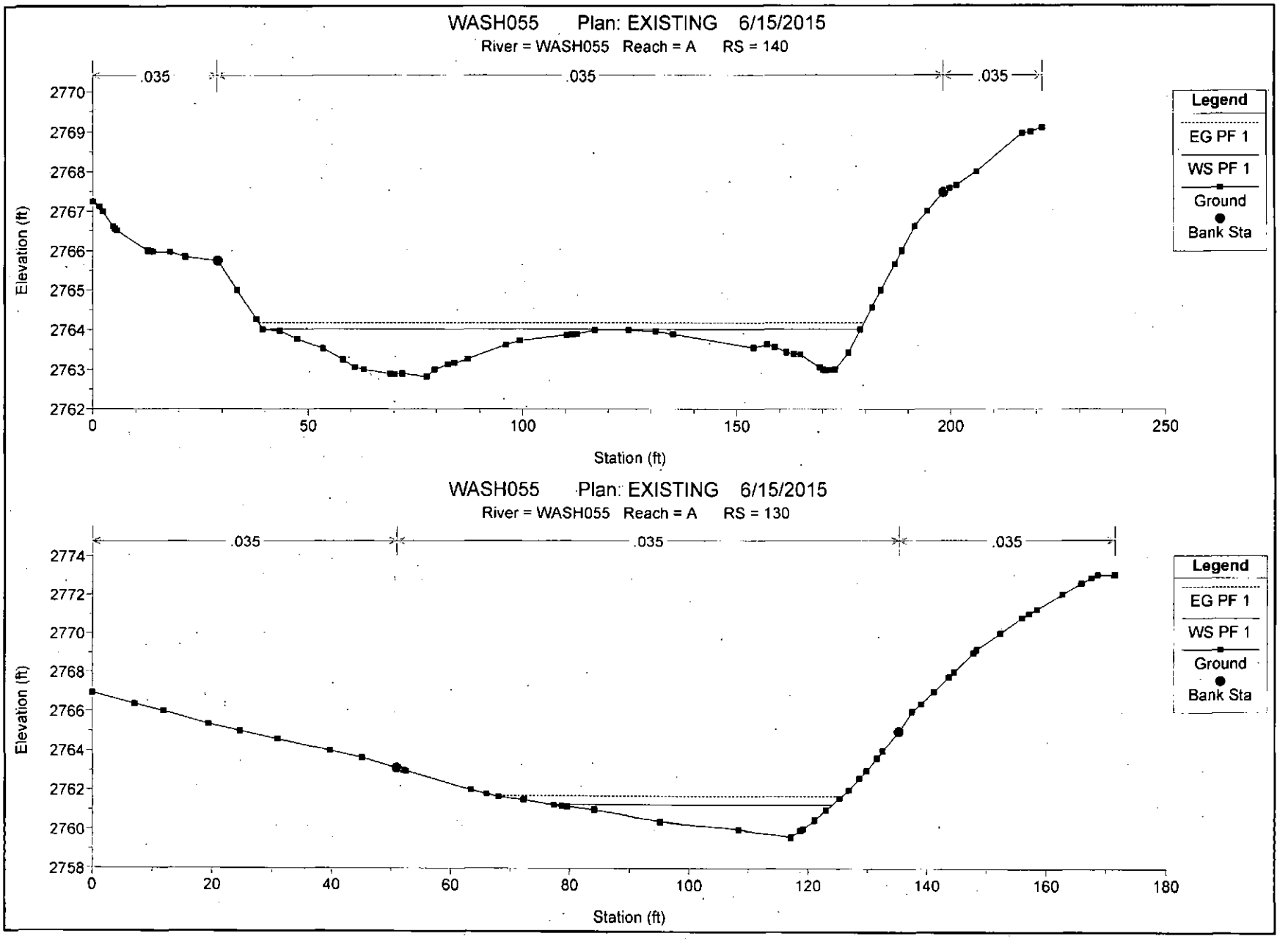
HEC-RAS Plan: 055 River: WASH055 Reach: A Profile: PF 1

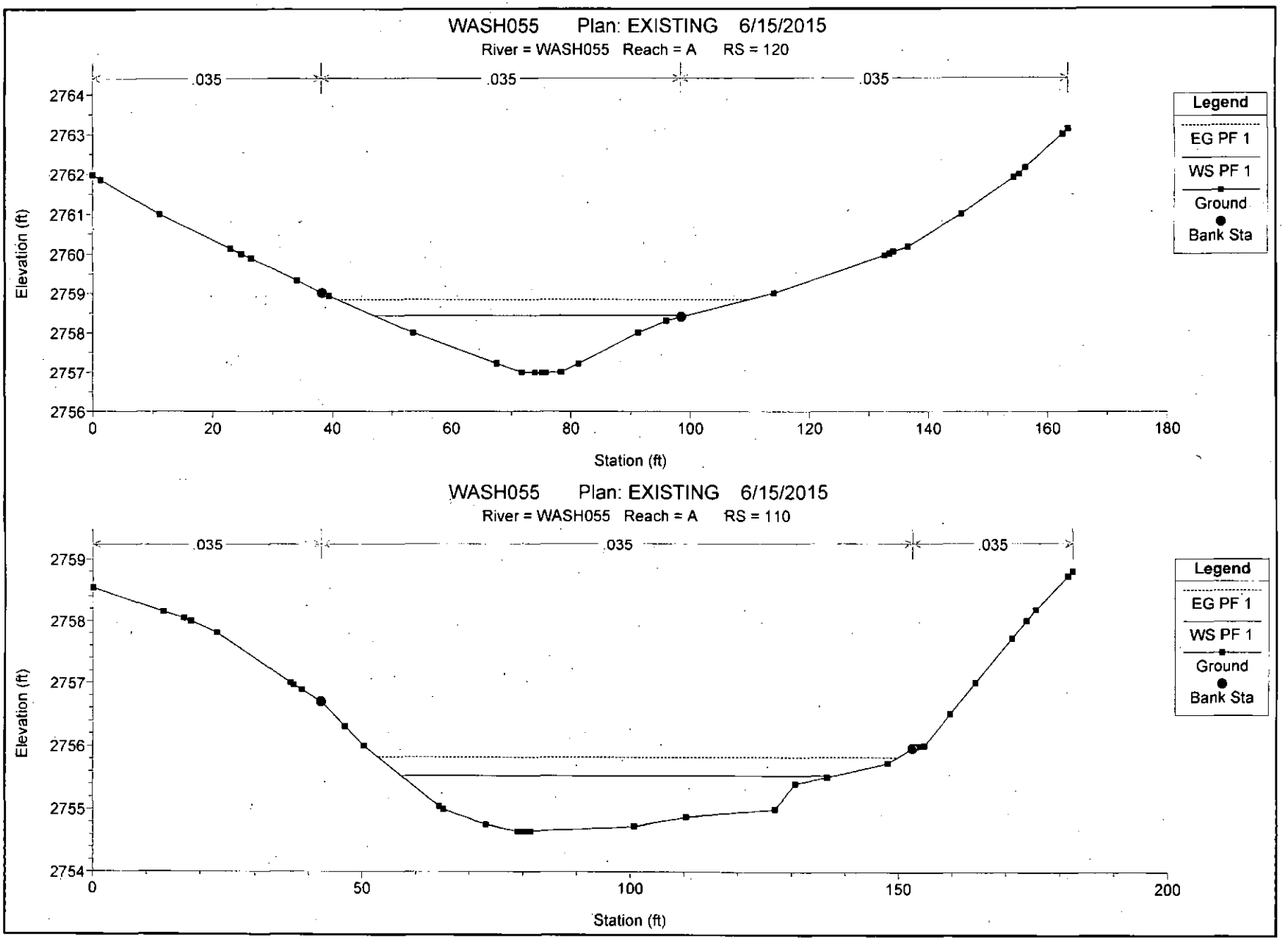
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
A	200	PF 1	140.00	2786.00	2787.67	2787.67	2788.01	0.012131	5.07	33.69	53.59	0.84
A	190	PF 1	140.00	2780.90	2782.29	2782.29	2782.69	0.019821	5.07	27.60	35.11	1.01
A	180	PF 1	140.00	2776.74	2777.91	2777.91	2778.22	0.021825	4.50	31.10	51.07	1.02
A	170	PF 1	140.00	2773.33	2774.70	2774.70	2775.07	0.020169	4.90	28.57	38.90	1.01
A	160	PF 1	140.00	2769.96	2771.05	2770.98	2771.33	0.017944	4.27	32.79	50.28	0.93
A	150	PF 1	211.00	2766.88	2768.08	2768.08	2768.49	0.019519	5.14	41.02	50.70	1.01
A	140	PF 1	211.00	2762.82	2764.02	2763.90	2764.17	0.014371	3.13	67.40	139.57	0.79
A	130	PF 1	211.00	2759.60	2761.26	2761.26	2761.69	0.019496	5.29	39.89	47.08	1.01
A	120	PF 1	211.00	2756.99	2758.43	2758.42	2758.83	0.019457	5.10	41.34	52.31	1.00
A	110	PF 1	211.00	2754.65	2755.53	2755.51	2755.82	0.020019	4.31	49.00	80.67	0.97
A	100	PF 1	211.00	2750.65	2751.88	2751.88	2752.25	0.020318	4.87	43.31	59.79	1.01
A	090	PF 1	211.00	2747.58	2749.28	2749.28	2749.74	0.014425	5.76	41.30	47.28	0.92
A	080	PF 1	211.00	2744.57	2746.34	2746.34	2746.87	0.013582	6.02	38.35	40.10	0.91
A	070	PF 1	211.00	2742.00	2743.51	2743.51	2744.07	0.017065	6.05	35.19	32.59	0.99
A	060	PF 1	211.00	2740.10	2742.03	2742.03	2742.45	0.011487	5.52	45.09	58.27	0.84
A	050	PF 1	211.00	2738.45	2740.07	2740.07	2740.45	0.012890	5.19	47.38	72.35	0.86
A	040	PF 1	211.00	2735.80	2737.75	2737.75	2738.08	0.009980	5.63	54.09	75.38	0.79
A	030	PF 1	211.00	2733.52	2735.68	2735.68	2736.07	0.008831	5.38	49.10	64.09	0.75
A	020	PF 1	211.00	2732.00	2733.16	2733.16	2733.61	0.018380	5.39	39.38	45.88	1.00
A	010	PF 1	211.00	2728.98	2730.66	2730.66	2731.05	0.011609	5.53	46.65	60.59	0.84

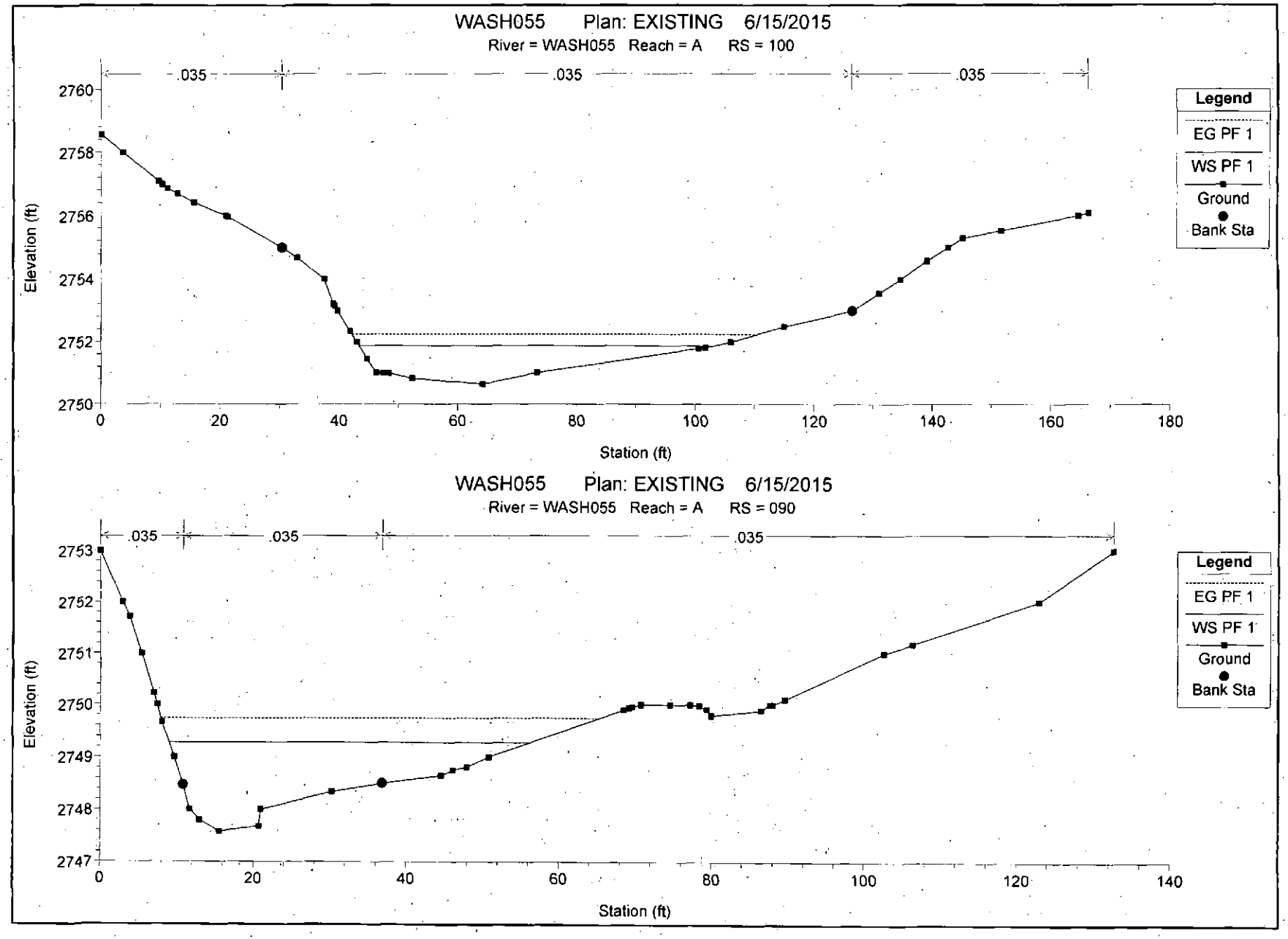

WASH055 Plan: EXISTING 6/15/2015
River = WASH055 Reach = A RS = 200
.035
.035
.035
2789.0
2788.5
2788.0
2787.5
2787.0
2786.5
2786.0
Elevation (ft)
0
20
40
60
80
100
120
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
WASH055 Plan: EXISTING 6/15/2015
River = WASH055 Reach = A RS = 190
.035
.035
.035
2794
2792
2790
2788
2786
2784
2782
2780
Elevation (ft)
0
20
40
60
80
100
120
140
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

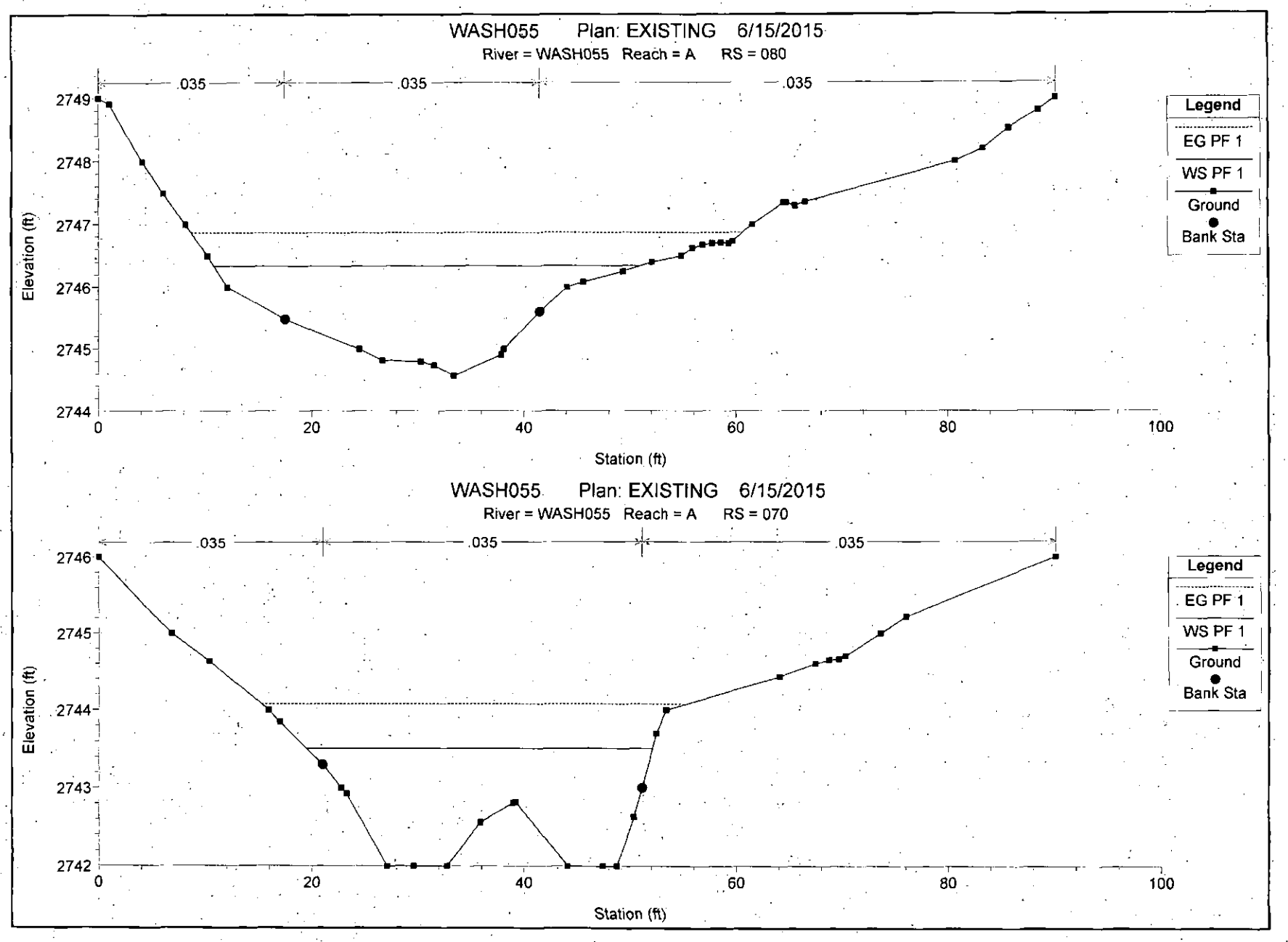

WASH055 Plan: EXISTING 6/15/2015
River = WASH055 Reach = A RS = 180
.035
.035
.035
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
WASH055 Plan: EXISTING 6/15/2015
River = WASH055 Reach = A RS = 170
.035
.035
.035
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

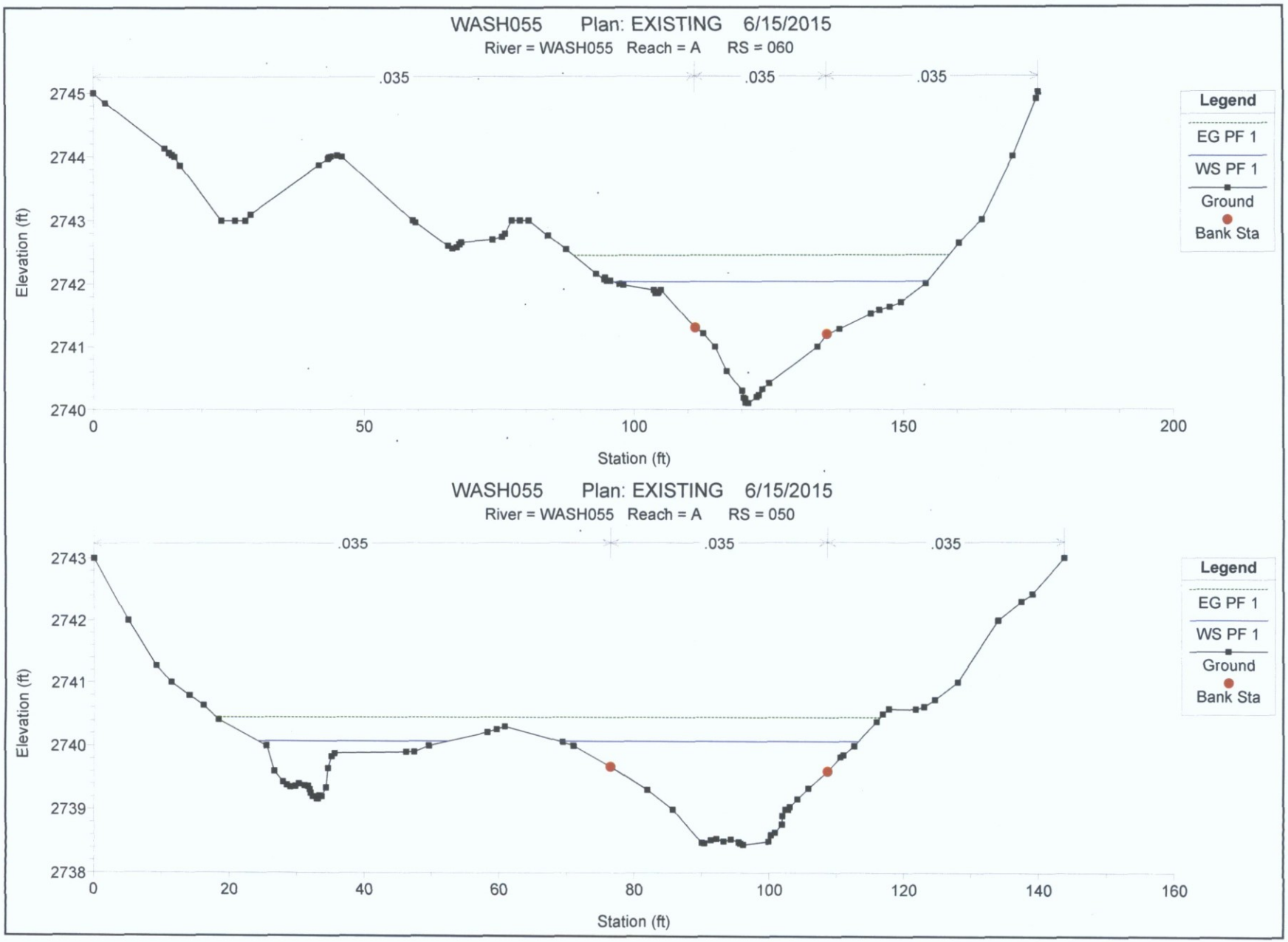

WASH055 Plan: EXISTING 6/15/2015
River = WASH055 Reach = A RS = 160
.035
.035
.035
2782
2780
2778
2776
2774
2772
2770
2768
Elevation (ft)
0
50
100
150
200
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
WASH055 Plan: EXISTING 6/15/2015
River = WASH055 Reach = A RS = 150
.035
.035
.035
2778
2776
2774
2772
2770
2768
2766
Elevation (ft)
0
50
100
150
200
250
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

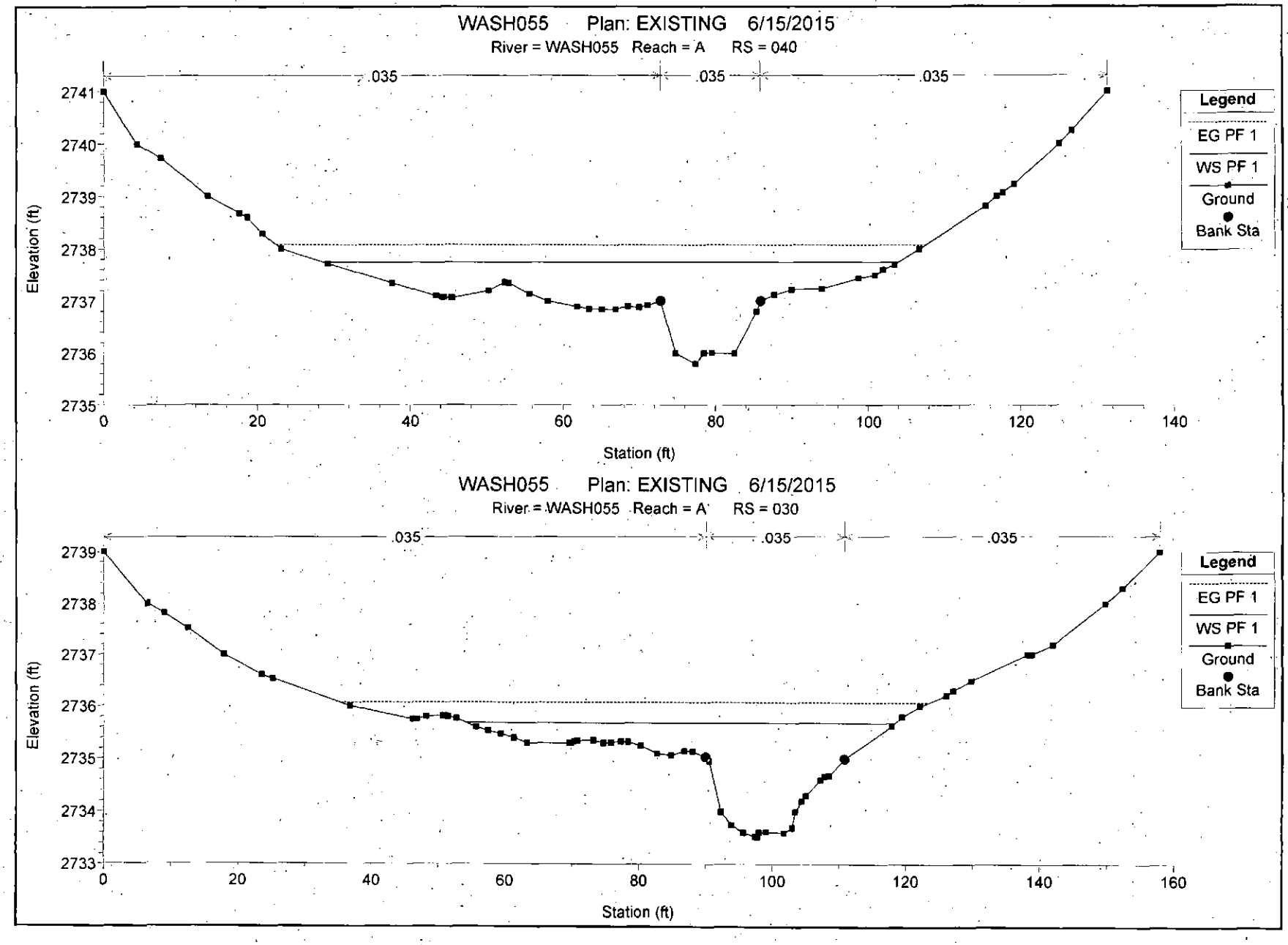

WASH055 Plan: EXISTING 6/15/2015
River = WASH055 Reach = A RS = 140
.035
.035
.035
Elevation (ft)
2770
2769
2768
2767
2766
2765
2764
2763
2762
0
50
100
150
200
250
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
WASH055 Plan: EXISTING 6/15/2015
River = WASH055 Reach = A RS = 130
.035
.035
.035
Elevation (ft)
2774
2772
2770
2768
2766
2764
2762
2760
2758
0
20
40
60
80
100
120
140
160
180
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

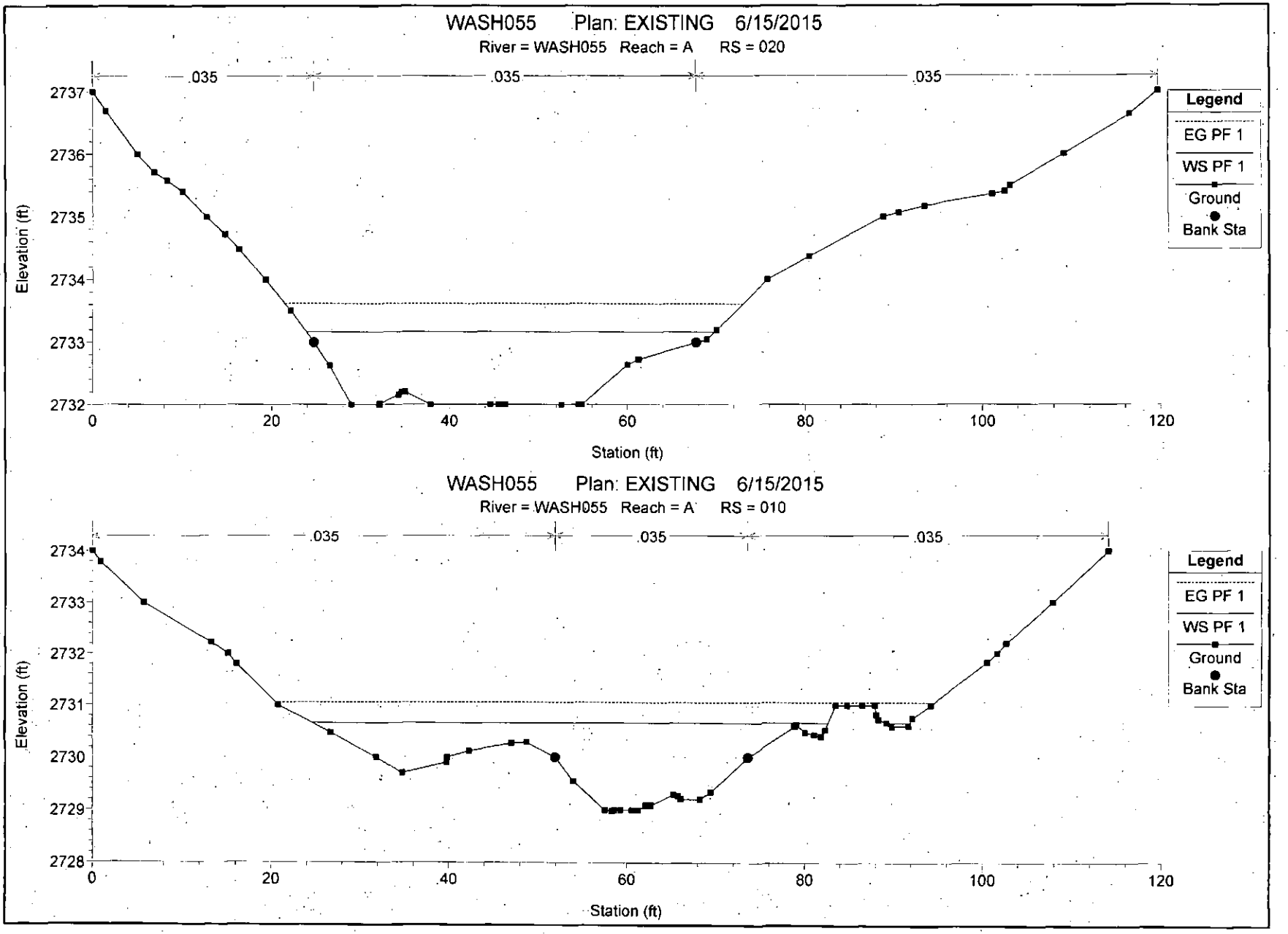

WASH055 Plan: EXISTING 6/15/2015
River = WASH055 Reach = A RS = 120
.035
.035
.035
Elevation (ft)
2764
2763
2762
2761
2760
2759
2758
2757
2756
0
20
40
60
80
100
120
140
160
180
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
WASH055 Plan: EXISTING 6/15/2015
River = WASH055 Reach = A RS = 110
.035
.035
.035
Elevation (ft)
2759
2758
2757
2756
2755
2754
0
50
100
150
200
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

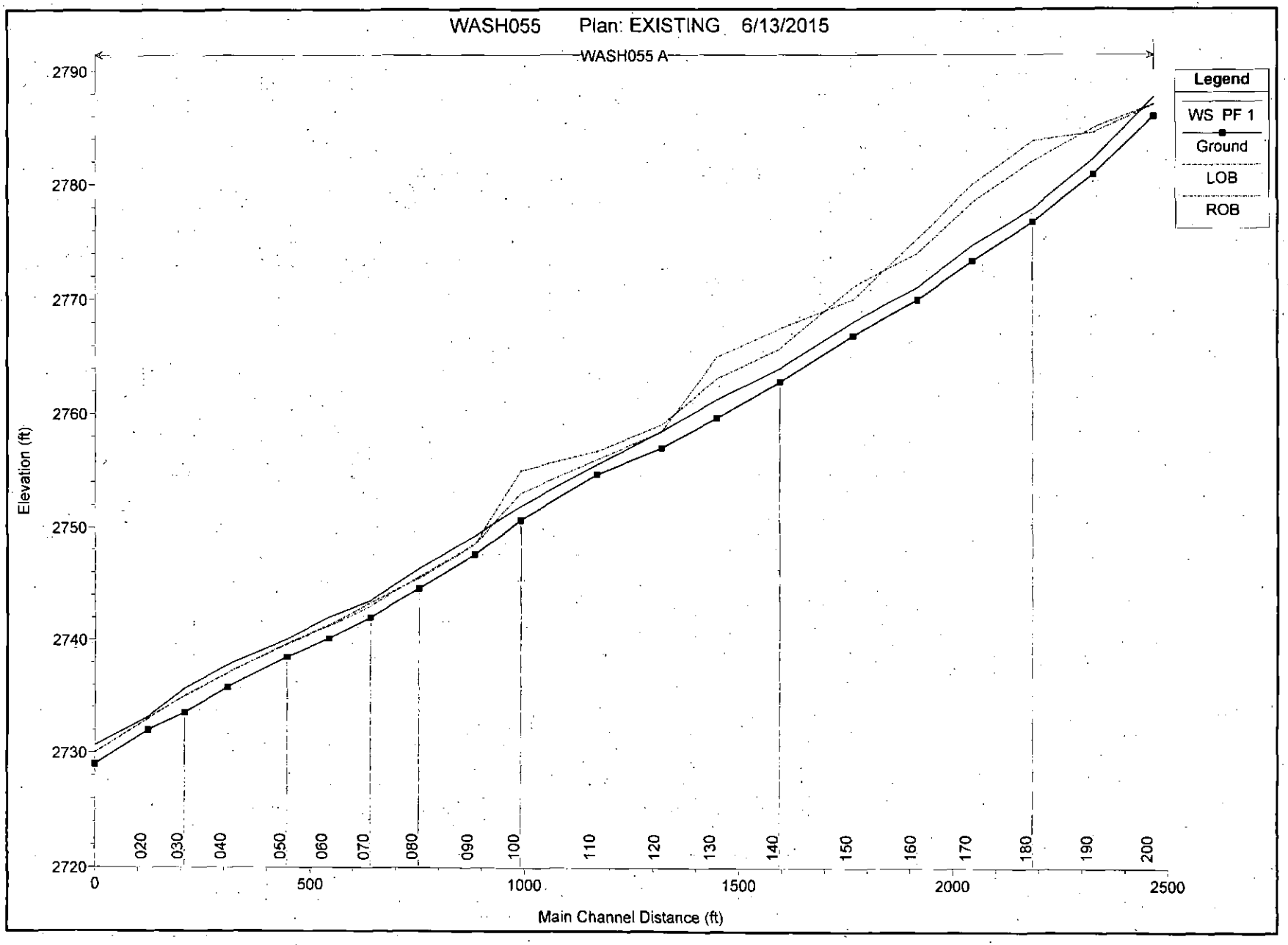

WASH055 Plan: EXISTING 6/15/2015
River = WASH055 Reach = A RS = 100
.035
.035
.035
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
WASH055 Plan: EXISTING 6/15/2015
River = WASH055 Reach = A RS = 090
.035
.035
.035
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


WASH055 Plan: EXISTING 6/15/2015
River = WASH055 Reach = A RS = 080
.035
.035
.035
2749
2748
2747
2746
2745
2744
Elevation (ft)
0
20
40
60
80
100
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
WASH055 Plan: EXISTING 6/15/2015
River = WASH055 Reach = A RS = 070
.035
.035
.035
2746
2745
2744
2743
2742
Elevation (ft)
0
20
40
60
80
100
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

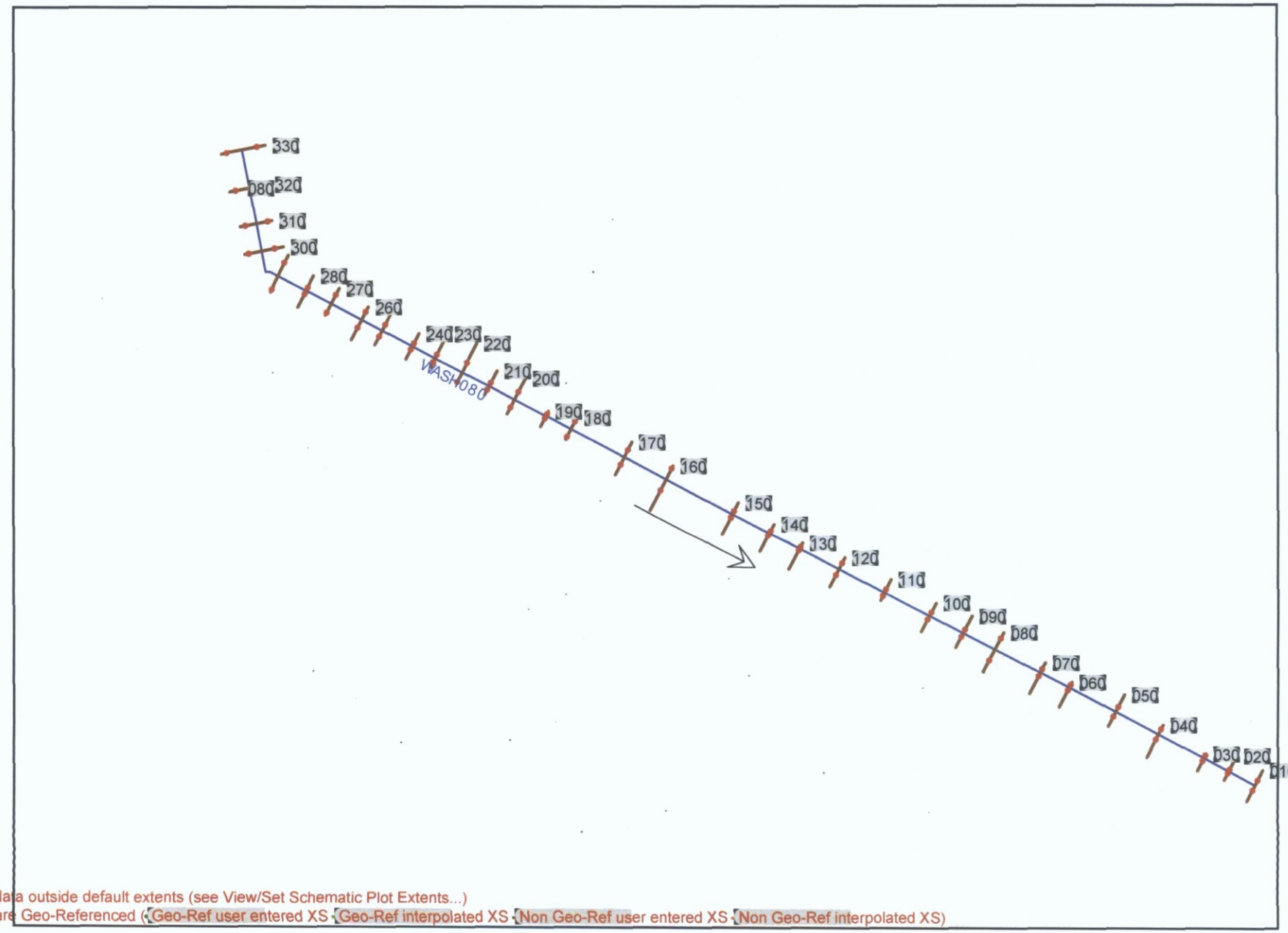

WASH055 Plan: EXISTING 6/15/2015
River = WASH055 Reach = A RS = 060
.035
.035
.035
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
2745
2744
2743
2742
2741
2740
0
50
100
150
200
Station (ft)
WASH055 Plan: EXISTING 6/15/2015
River = WASH055 Reach = A RS = 050
.035
.035
.035
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
2743
2742
2741
2740
2739
2738
0
20
40
60
80
100
120
140
160
Station (ft)


WASH055 Plan: EXISTING 6/15/2015
River = WASH055 Reach = A RS = 040
.035
.035
.035
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
2741
2740
2739
2738
2737
2736
2735
0
20
40
60
80
100
120
140
Station (ft)
WASH055 Plan: EXISTING 6/15/2015
River = WASH055 Reach = A RS = 030
.035
.035
.035
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
2739
2738
2737
2736
2735
2734
2733
0
20
40
60
80
100
120
140
160
Station (ft)


WASH055 Plan: EXISTING 6/15/2015
River = WASH055 Reach = A RS = 020
.035
.035
.035
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2737
2736
2735
2734
2733
2732
0
20
40
60
80
100
120
WASH055 Plan: EXISTING 6/15/2015
River = WASH055 Reach = A RS = 010
.035
.035
.035
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2734
2733
2732
2731
2730
2729
2728
0
20
40
60
80
100
120


WASH055 Plan: EXISTING 6/13/2015
WASH055 A
Legend
WS PF 1
Ground
LOB
ROB
Elevation (ft)
2790
2780
2770
2760
2750
2740
2730
2720
020
030
040
050
060
070
080
090
100
110
120
130
140
150
160
170
180
190
200
0
500
1000
1500
2000
2500
Main Channel Distance (ft)

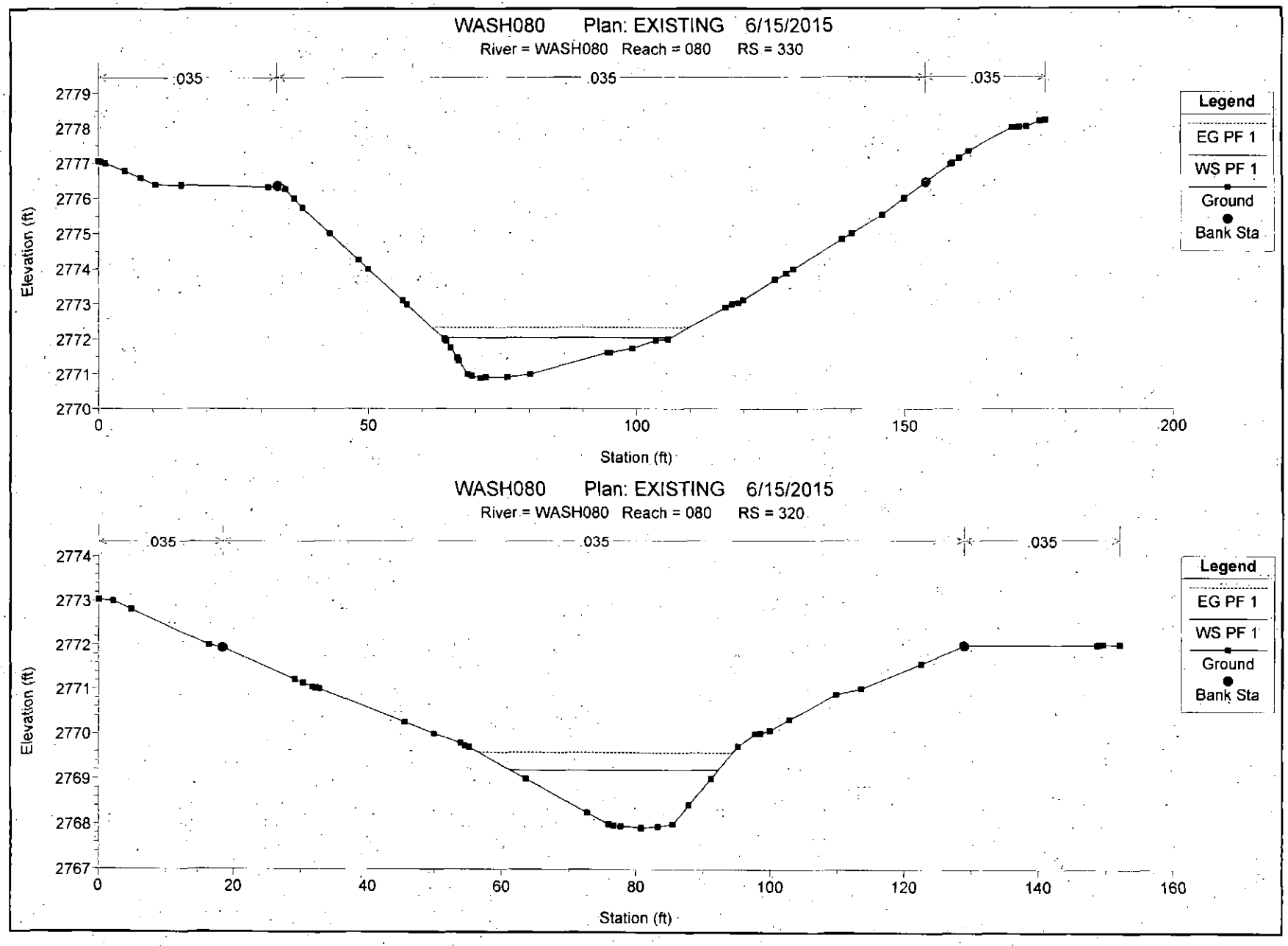
EXISTING WASH 080 HEC-RAS

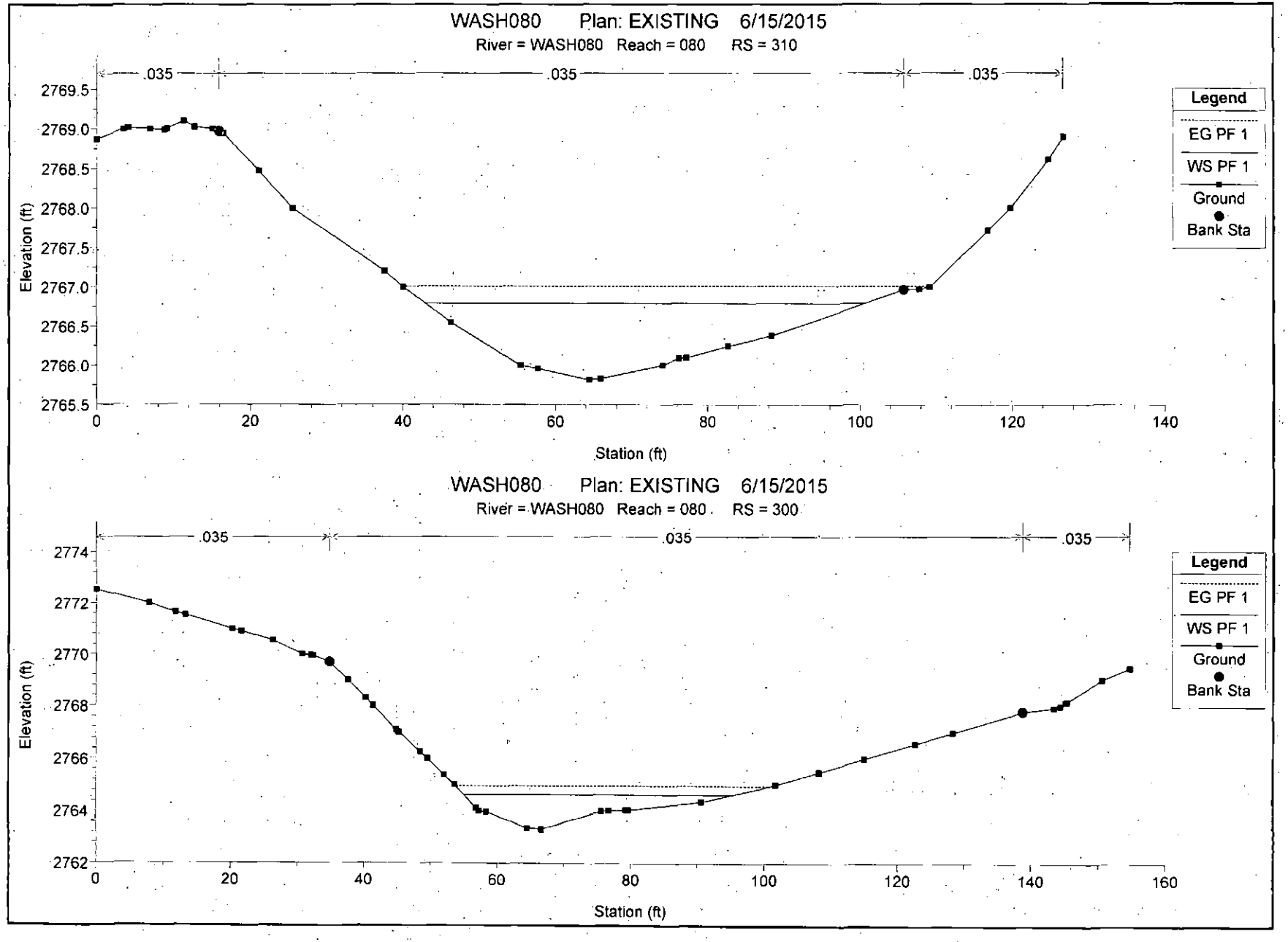


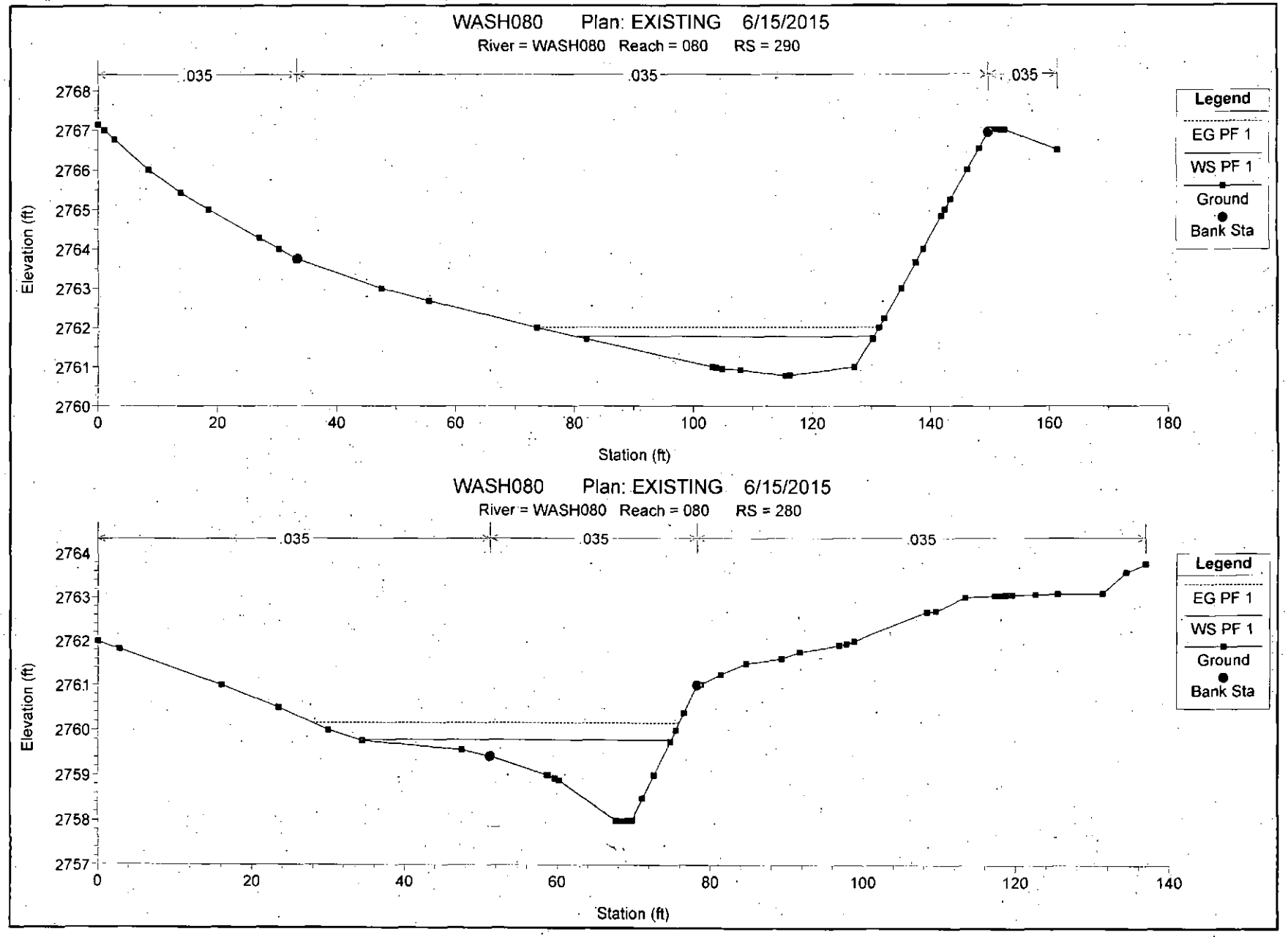
me schematic data outside default extents (see View/Set Schematic Plot Extents...)
ne of the XS's are Geo-Referenced (Geo-Ref user entered XS Geo-Ref interpolated XS Non Geo-Ref user entered XS Non Geo-Ref interpolated XS)

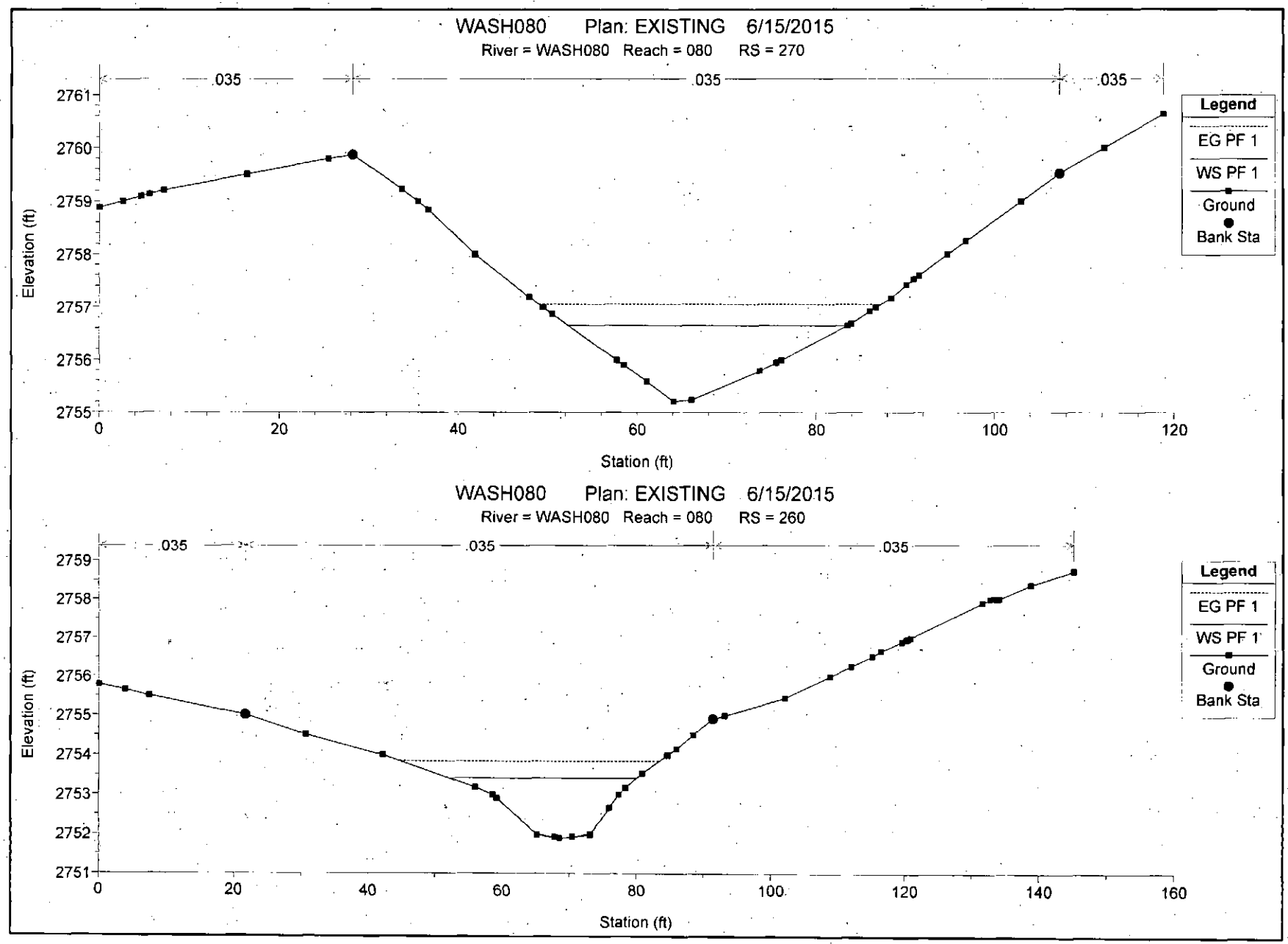
HEC-RAS Plan: 080 River: WASH080 Reach: 080 Profile: PF 1

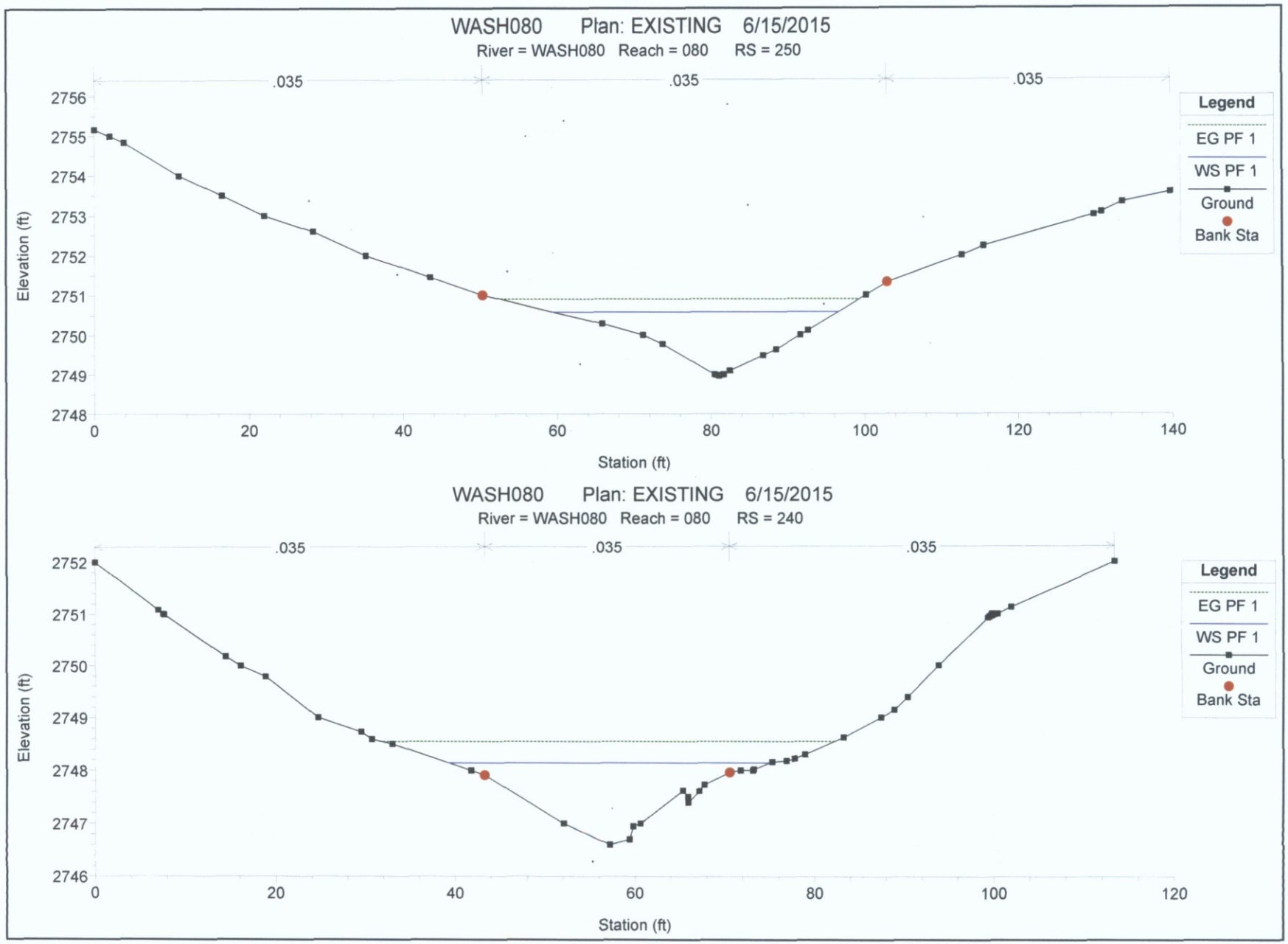
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
080	330	PF 1	123.00	2770.89	2772.05	2772.01	2772.34	0.017561	4.31	28.55	42.46	0.93
080	320	PF 1	123.00	2767.92	2769.19	2769.18	2769.58	0.018734	4.98	24.70	30.97	0.98
080	310	PF 1	123.00	2765.82	2766.79	2766.73	2767.01	0.016999	3.78	32.54	57.62	0.89
080	300	PF 1	123.00	2763.31	2764.62	2764.62	2764.96	0.021333	4.67	26.34	40.15	1.02
080	290	PF 1	123.00	2760.78	2761.78	2761.71	2762.01	0.015504	3.88	31.74	50.45	0.86
080	280	PF 1	123.00	2757.99	2759.78	2759.78	2760.16	0.013935	4.99	26.56	40.74	0.88
080	270	PF 1	123.00	2755.21	2756.66	2756.66	2757.06	0.019947	5.06	24.32	31.26	1.01
080	260	PF 1	123.00	2751.91	2753.42	2753.42	2753.85	0.019351	5.23	23.52	27.98	1.01
080	250	PF 1	123.00	2748.96	2750.59	2750.52	2750.90	0.016693	4.47	27.51	37.23	0.92
080	240	PF 1	123.00	2746.60	2748.14	2748.14	2748.54	0.017724	5.12	24.73	35.65	0.97
080	230	PF 1	123.00	2745.00	2746.29		2746.46	0.010423	3.62	37.81	61.66	0.73
080	220	PF 1	123.00	2742.73	2743.95	2743.95	2744.23	0.022272	4.41	29.24	54.39	1.02
080	210	PF 1	123.00	2740.00	2741.11	2741.11	2741.50	0.019433	5.02	24.62	33.66	1.00
080	200	PF 1	173.00	2737.00	2738.80	2738.71	2739.06	0.014748	4.05	42.73	60.99	0.85
080	190	PF 1	173.00	2735.00	2736.71	2736.71	2737.14	0.012453	5.64	35.70	42.20	0.87
080	180	PF 1	196.00	2733.00	2734.11	2734.07	2734.40	0.018192	4.33	45.29	70.20	0.94
080	170	PF 1	196.00	2728.00	2729.44	2729.44	2729.79	0.020803	4.76	41.15	59.77	1.01
080	160	PF 1	196.00	2724.23	2724.99	2724.99	2725.24	0.026711	4.11	49.59	123.59	1.07
080	150	PF 1	207.00	2717.54	2719.39	2719.39	2719.72	0.010006	4.90	51.73	83.67	0.77
080	140	PF 1	207.00	2714.00	2715.71	2715.71	2716.04	0.011856	5.23	50.95	75.91	0.84
080	130	PF 1	234.00	2711.05	2712.76	2712.76	2713.16	0.015206	5.97	49.12	61.04	0.95
080	120	PF 1	234.00	2707.00	2708.35	2708.35	2708.77	0.019214	5.20	45.43	57.26	1.00
080	110	PF 1	234.00	2702.50	2704.44	2704.44	2704.86	0.014749	5.56	47.07	54.47	0.92
080	100	PF 1	260.00	2698.80	2700.26	2700.26	2700.64	0.013679	5.36	56.94	77.56	0.89
080	090	PF 1	260.00	2695.00	2696.77	2696.77	2697.08	0.017204	5.06	61.38	97.65	0.95
080	080	PF 1	260.00	2691.90	2693.25	2693.25	2693.51	0.019948	4.15	66.50	136.50	0.96
080	070	PF 1	260.00	2687.00	2688.70	2688.70	2689.15	0.012537	5.62	52.29	62.98	0.87
080	060	PF 1	260.00	2683.40	2685.81	2685.81	2686.22	0.009640	5.60	58.81	73.15	0.79
080	050	PF 1	260.00	2678.00	2680.10	2680.10	2680.62	0.017358	5.77	45.23	46.78	0.99
080	040	PF 1	260.00	2673.90	2675.68	2675.68	2676.24	0.017764	5.99	43.38	39.27	1.00
080	030	PF 1	260.00	2669.20	2671.00	2671.00	2671.55	0.014723	6.35	47.55	52.32	0.95
080	020	PF 1	260.00	2666.00	2667.84	2667.84	2668.21	0.014020	5.88	58.78	79.79	0.92
080	010	PF 1	350.00	2662.99	2664.47	2664.47	2664.84	0.014187	5.34	77.24	107.72	0.90

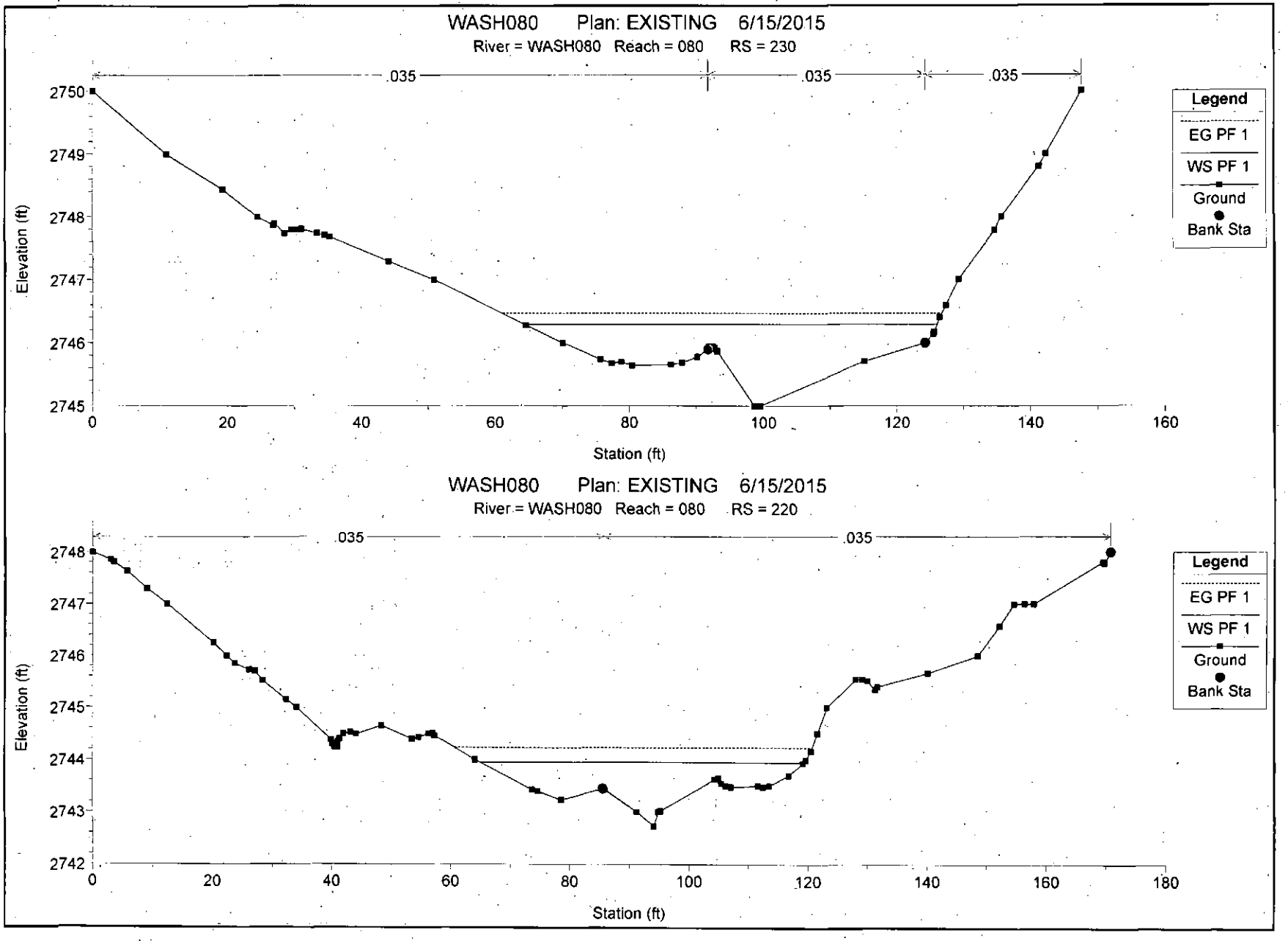

WASH080 Plan: EXISTING 6/15/2015
River = WASH080 Reach = 080 RS = 330
.035
.035
.035
Elevation (ft)
2779
2778
2777
2776
2775
2774
2773
2772
2771
2770
0
50
100
150
200
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
WASH080 Plan: EXISTING 6/15/2015
River = WASH080 Reach = 080 RS = 320
.035
.035
.035
Elevation (ft)
2774
2773
2772
2771
2770
2769
2768
2767
0
20
40
60
80
100
120
140
160
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

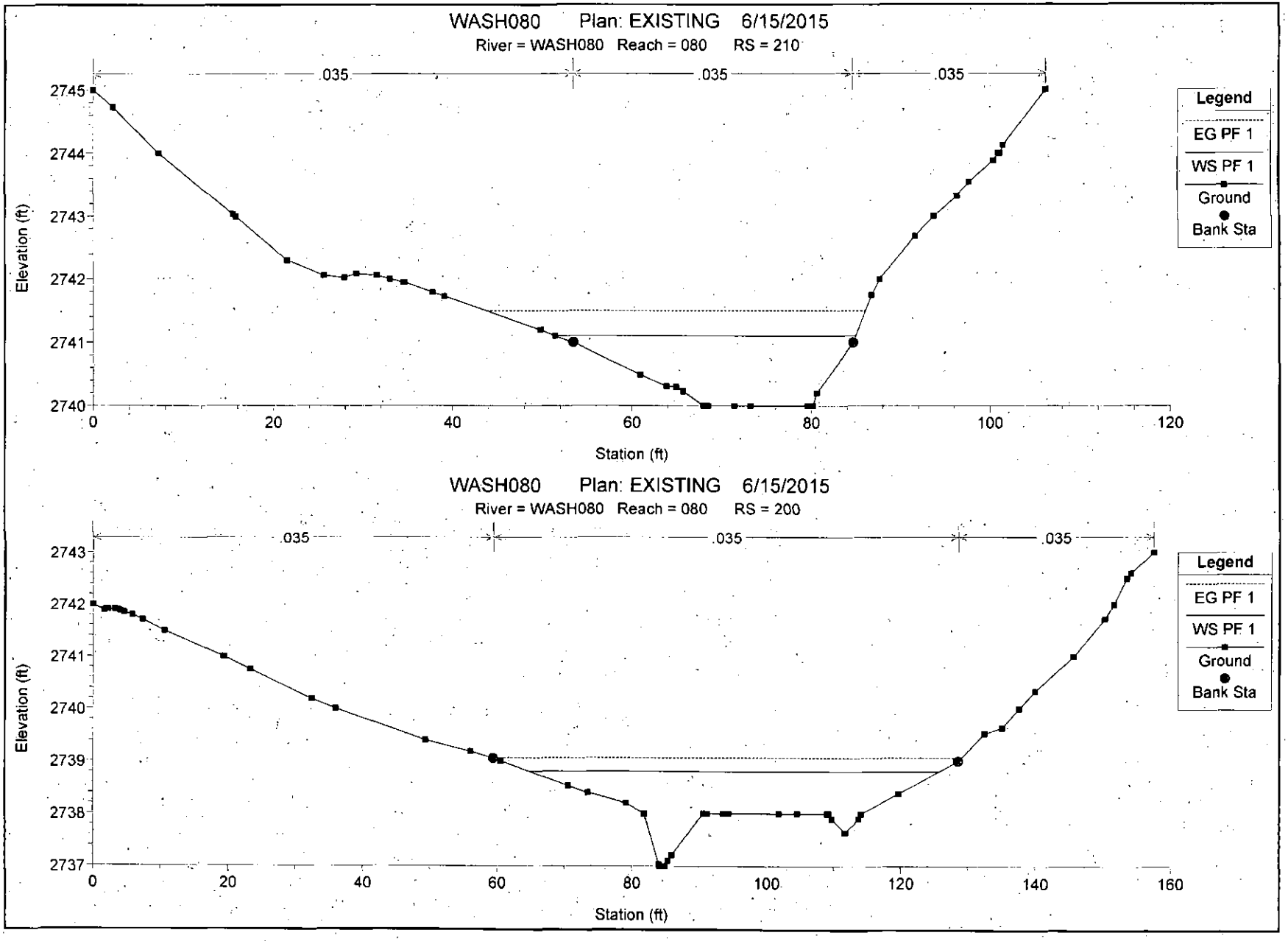

WASH080 Plan: EXISTING 6/15/2015
River = WASH080 Reach = 080 RS = 310
.035
.035
.035
Elevation (ft)
2769.5
2769.0
2768.5
2768.0
2767.5
2767.0
2766.5
2766.0
2765.5
0
20
40
60
80
100
120
140
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
WASH080 Plan: EXISTING 6/15/2015
River = WASH080 Reach = 080 RS = 300
.035
.035
.035
Elevation (ft)
2774
2772
2770
2768
2766
2764
2762
0
20
40
60
80
100
120
140
160
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

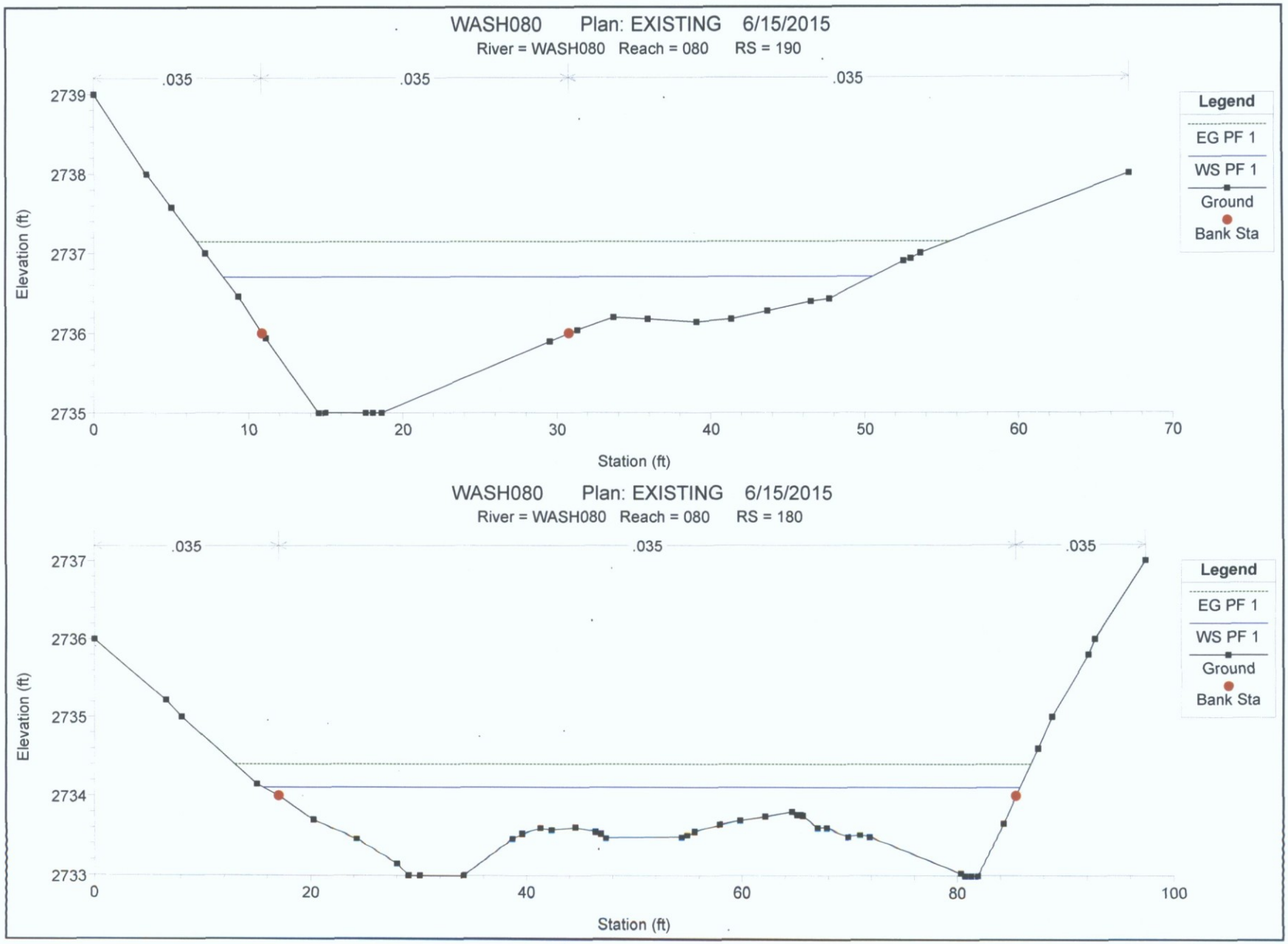

WASH080 Plan: EXISTING 6/15/2015
River = WASH080 Reach = 080 RS = 290
.035
.035
.035
Elevation (ft)
2768
2767
2766
2765
2764
2763
2762
2761
2760
0
20
40
60
80
100
120
140
160
180
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
WASH080 Plan: EXISTING 6/15/2015
River = WASH080 Reach = 080 RS = 280
.035
.035
.035
Elevation (ft)
2764
2763
2762
2761
2760
2759
2758
2757
0
20
40
60
80
100
120
140
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

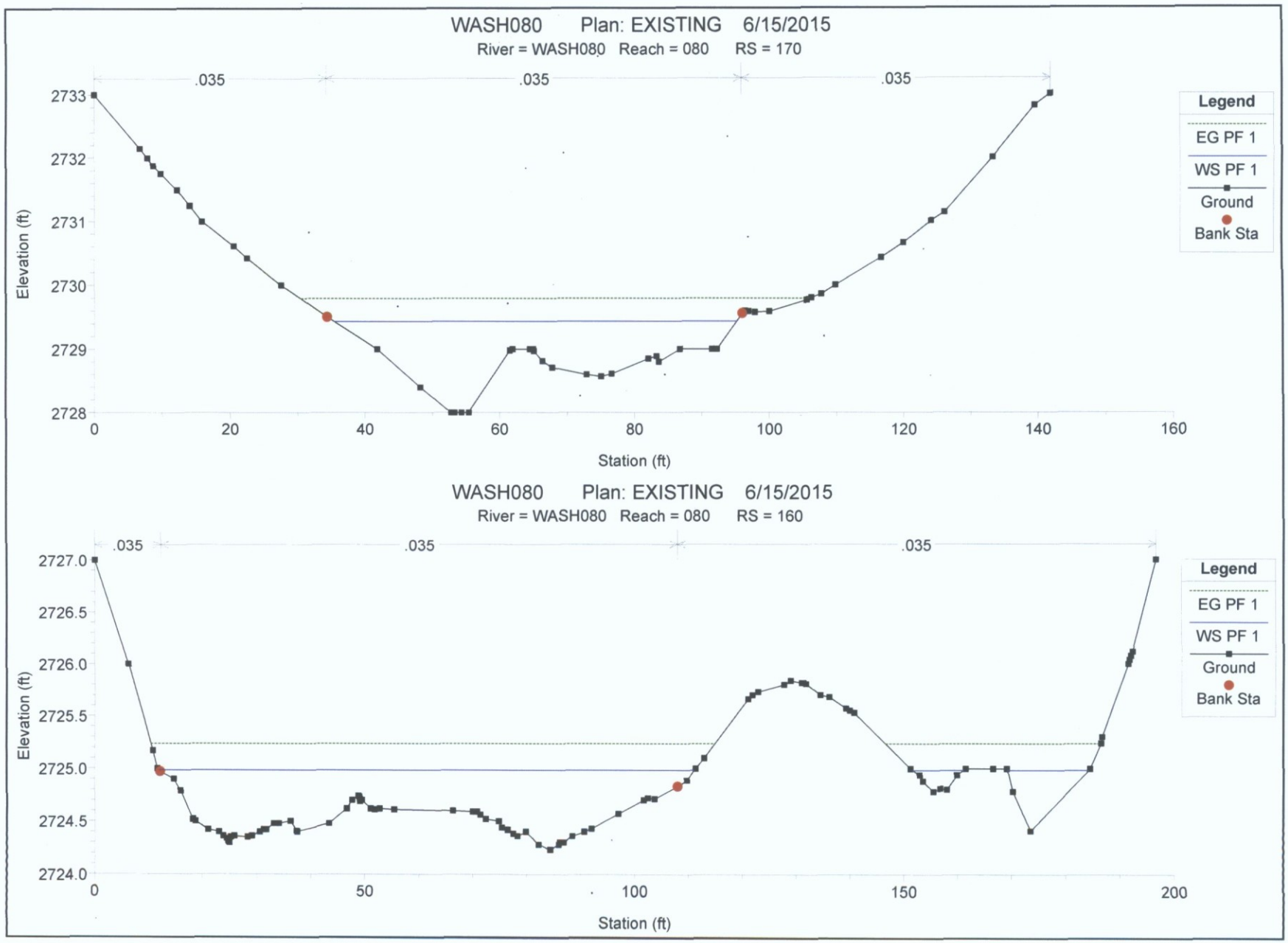

WASH080 Plan: EXISTING 6/15/2015
River = WASH080 Reach = 080 RS = 270
.035
.035
.035
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
WASH080 Plan: EXISTING 6/15/2015
River = WASH080 Reach = 080 RS = 260
.035
.035
.035
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

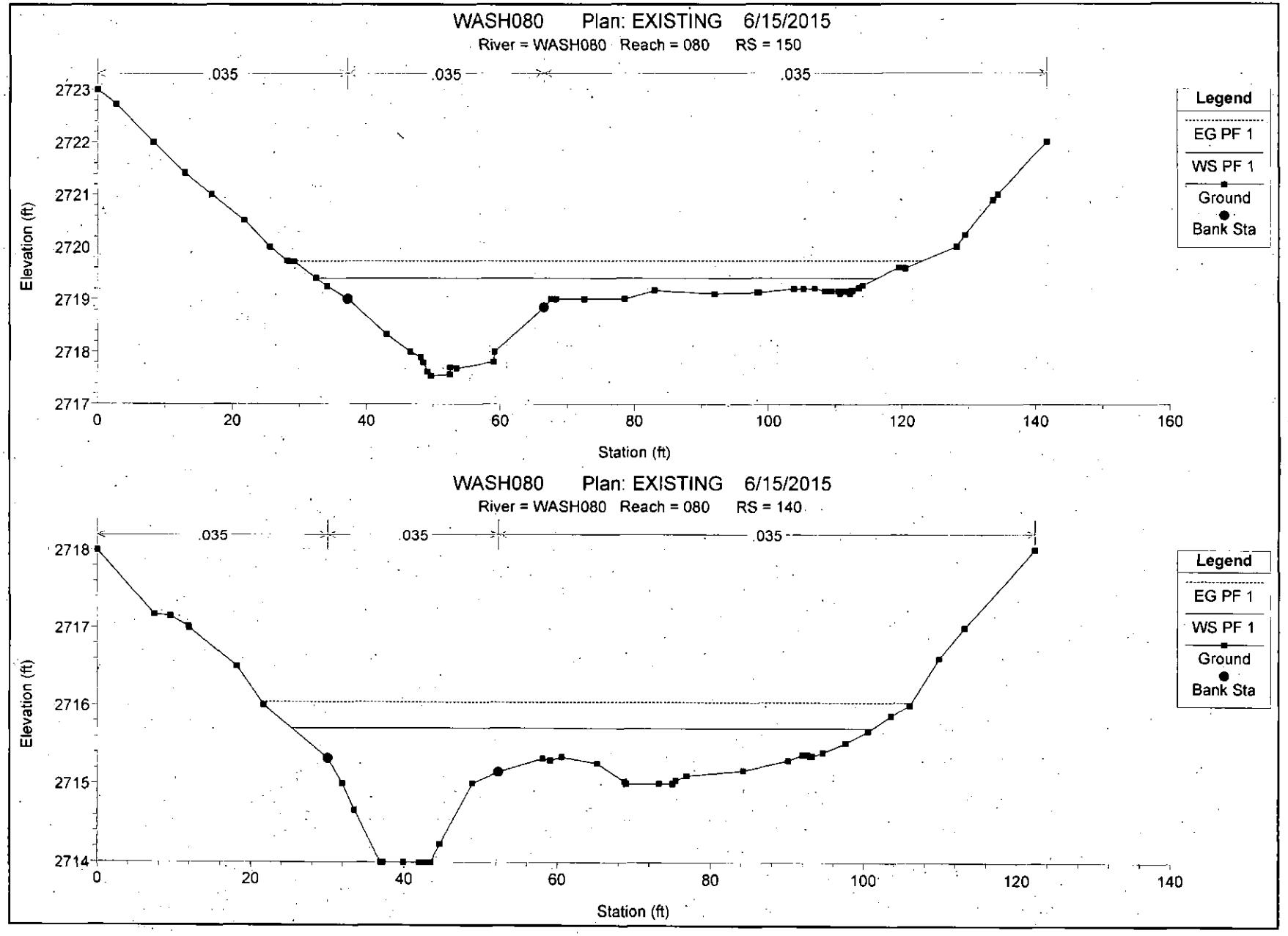

WASH080 Plan: EXISTING 6/15/2015
River = WASH080 Reach = 080 RS = 250
.035
.035
.035
Elevation (ft)
2756
2755
2754
2753
2752
2751
2750
2749
2748
0
20
40
60
80
100
120
140
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
WASH080 Plan: EXISTING 6/15/2015
River = WASH080 Reach = 080 RS = 240
.035
.035
.035
Elevation (ft)
2752
2751
2750
2749
2748
2747
2746
0
20
40
60
80
100
120
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

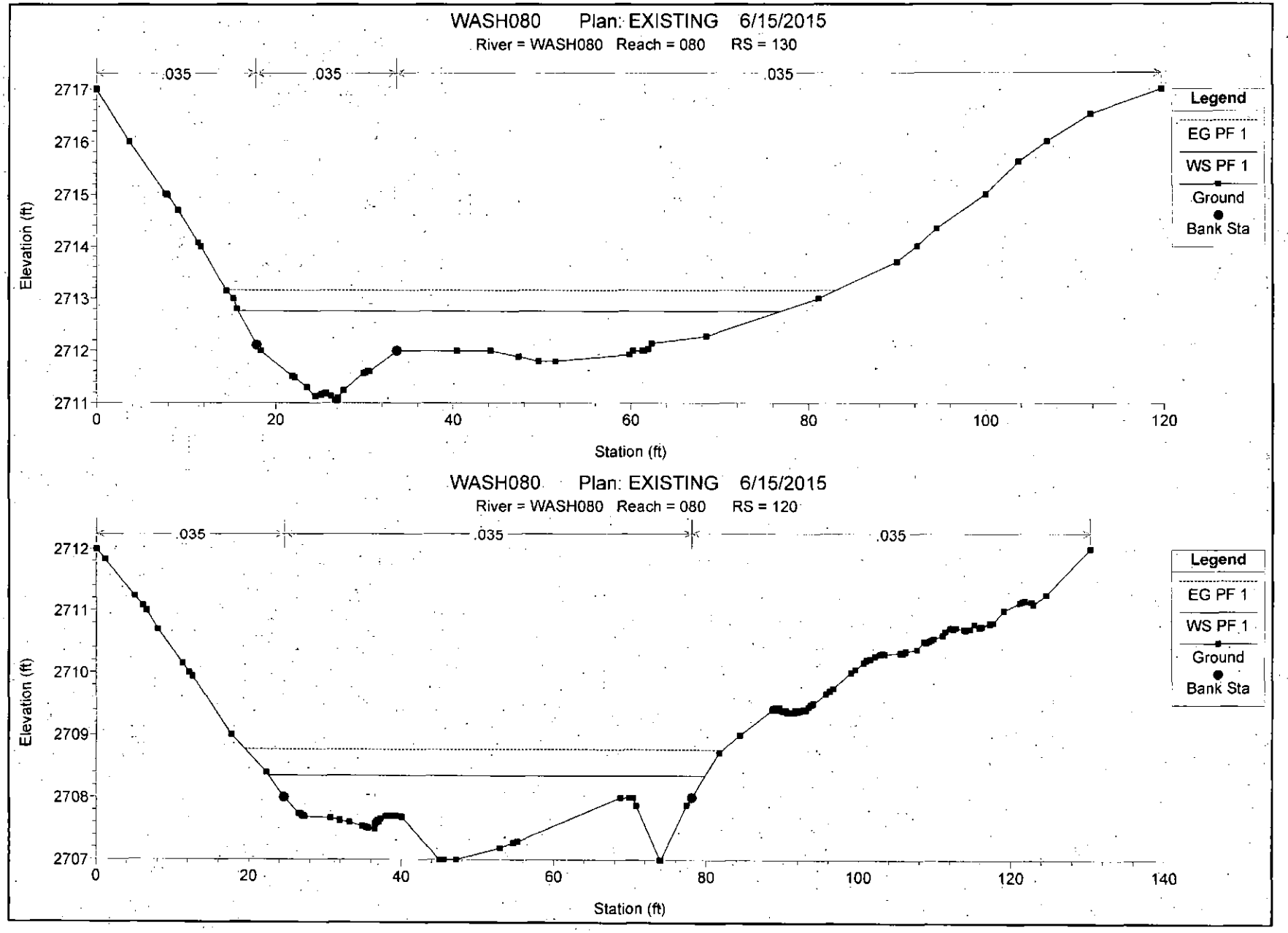

WASH080 Plan: EXISTING 6/15/2015
River = WASH080 Reach = 080 RS = 230
.035
.035
.035
Elevation (ft)
2750
2749
2748
2747
2746
2745
0
20
40
60
80
100
120
140
160
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
WASH080 Plan: EXISTING 6/15/2015
River = WASH080 Reach = 080 RS = 220
.035
.035
Elevation (ft)
2748
2747
2746
2745
2744
2743
2742
0
20
40
60
80
100
120
140
160
180
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

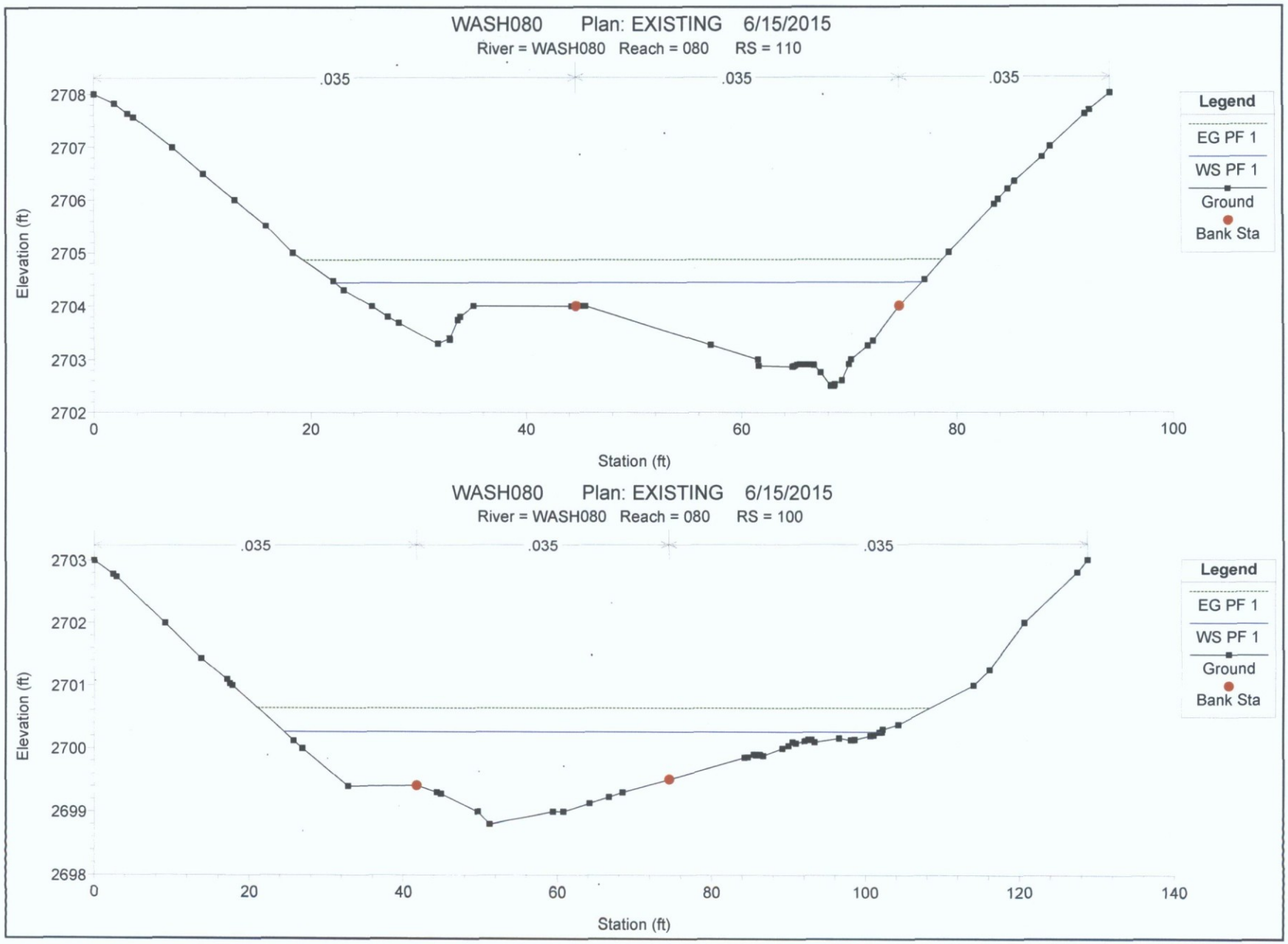

WASH080 Plan: EXISTING 6/15/2015
River = WASH080 Reach = 080 RS = 210
.035
.035
.035
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
WASH080 Plan: EXISTING 6/15/2015
River = WASH080 Reach = 080 RS = 200
.035
.035
.035
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

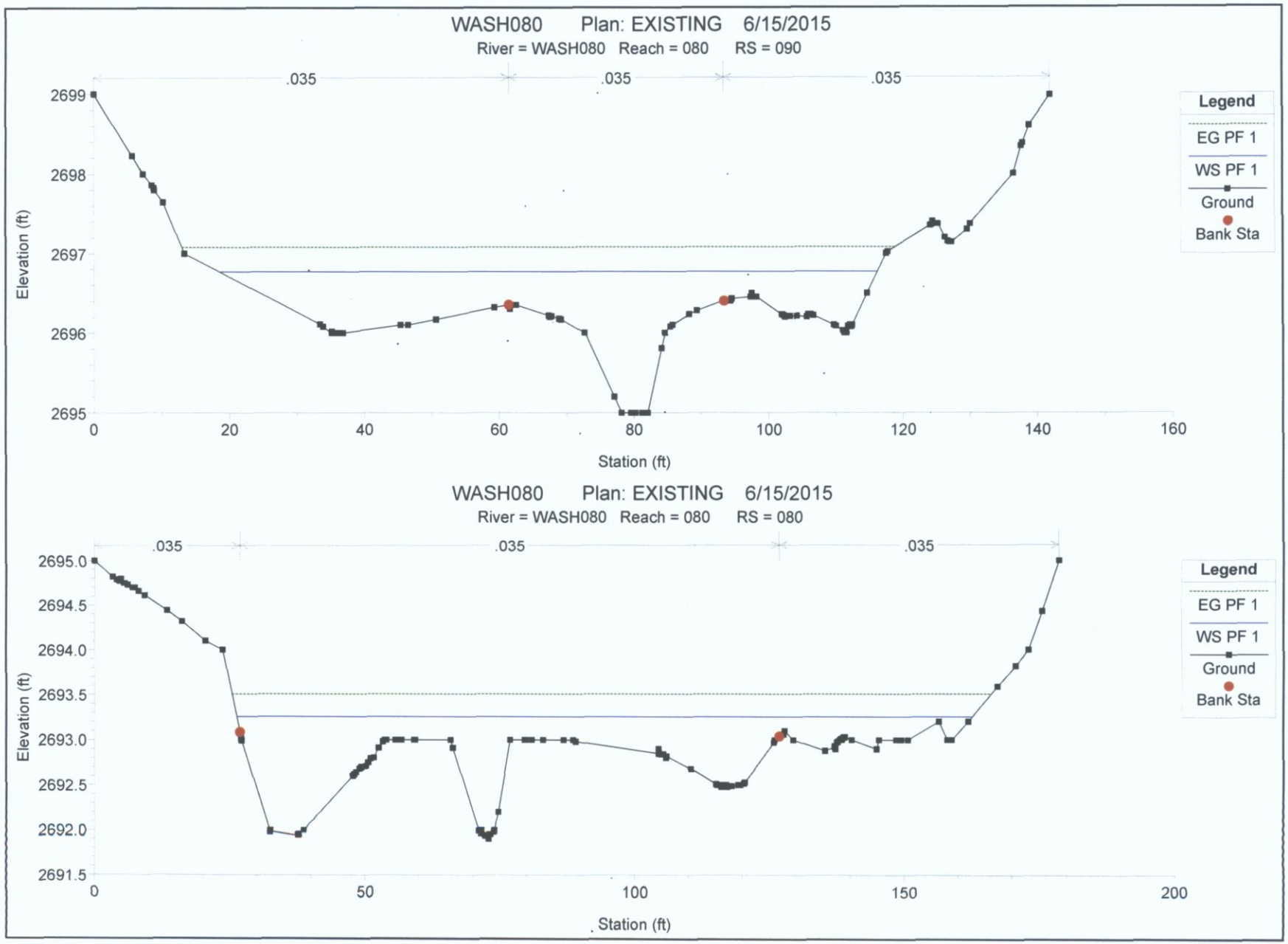

WASH080 Plan: EXISTING 6/15/2015
River = WASH080 Reach = 080 RS = 190
.035
.035
.035
2739
2738
2737
2736
2735
Elevation (ft)
0
10
20
30
40
50
60
70
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
WASH080 Plan: EXISTING 6/15/2015
River = WASH080 Reach = 080 RS = 180
.035
.035
.035
2737
2736
2735
2734
2733
Elevation (ft)
0
20
40
60
80
100
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

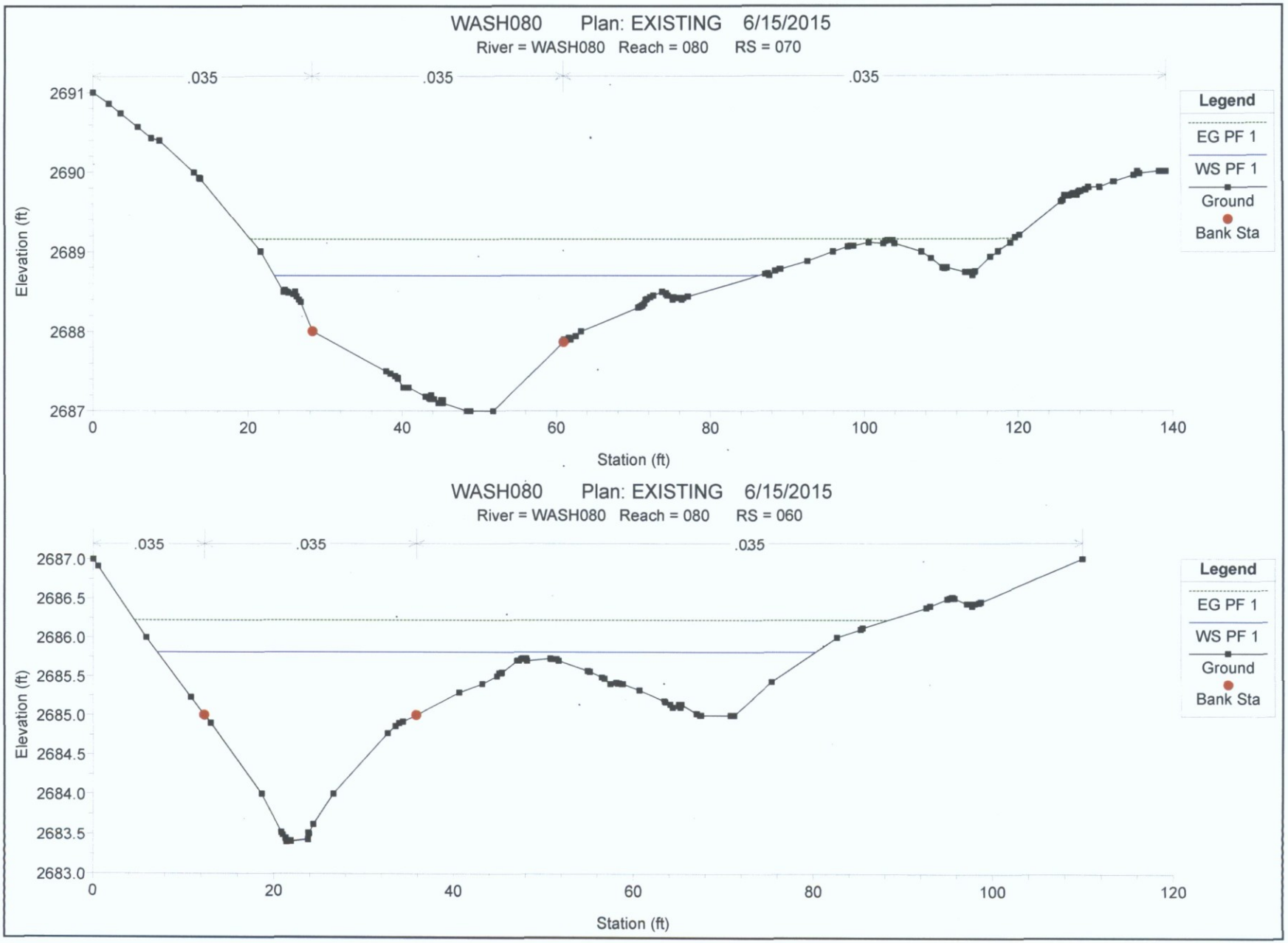

WASH080 Plan: EXISTING 6/15/2015
River = WASH080 Reach = 080 RS = 170
.035
.035
.035
2733
2732
2731
2730
2729
2728
Elevation (ft)
0
20
40
60
80
100
120
140
160
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
WASH080 Plan: EXISTING 6/15/2015
River = WASH080 Reach = 080 RS = 160
.035
.035
.035
2727.0
2726.5
2726.0
2725.5
2725.0
2724.5
2724.0
Elevation (ft)
0
50
100
150
200
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

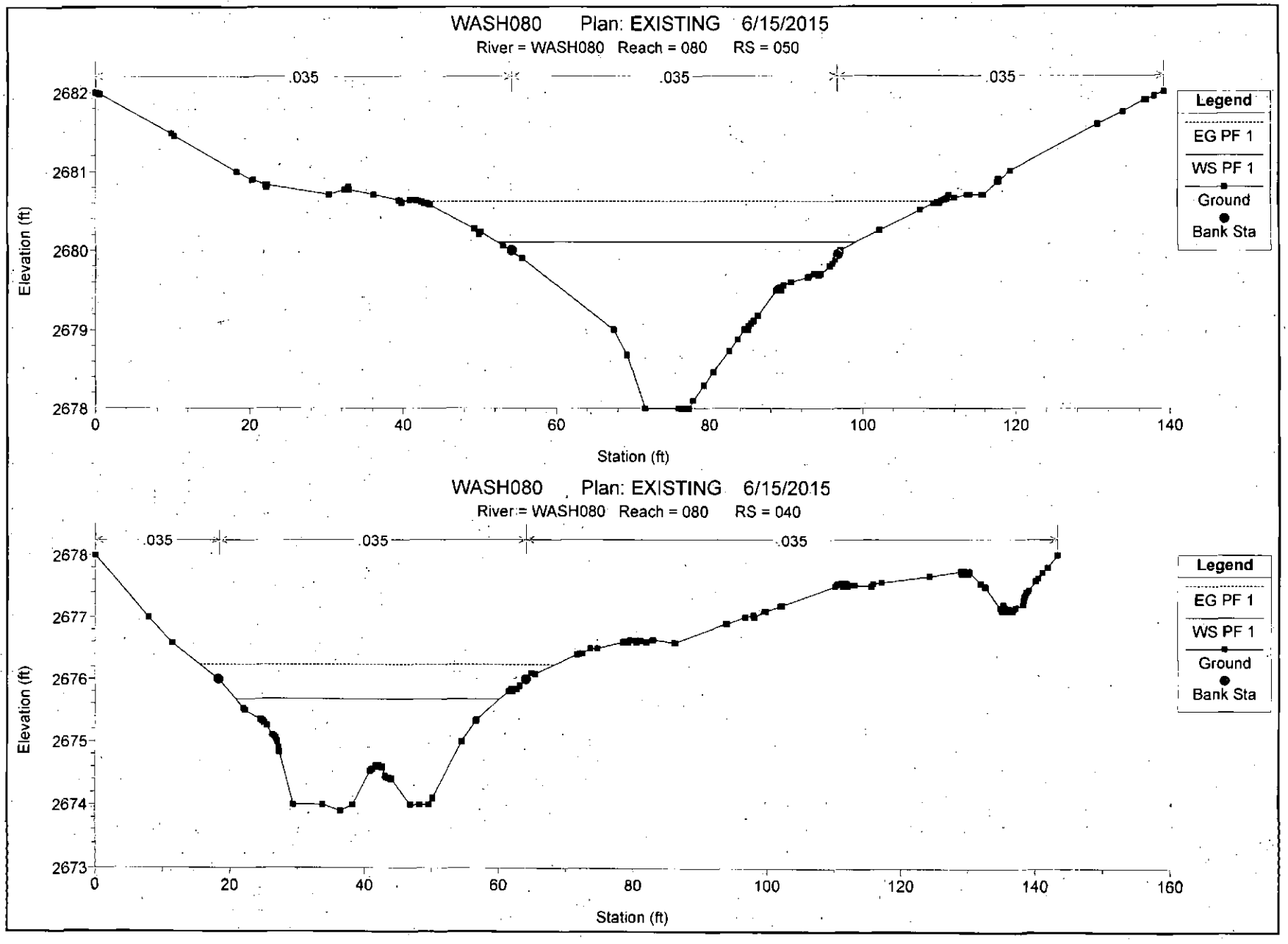

WASH080 Plan: EXISTING 6/15/2015
River = WASH080 Reach = 080 RS = 150
.035
.035
.035
Elevation (ft)
2723
2722
2721
2720
2719
2718
2717
0
20
40
60
80
100
120
140
160
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
WASH080 Plan: EXISTING 6/15/2015
River = WASH080 Reach = 080 RS = 140
.035
.035
.035
Elevation (ft)
2718
2717
2716
2715
2714
0
20
40
60
80
100
120
140
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

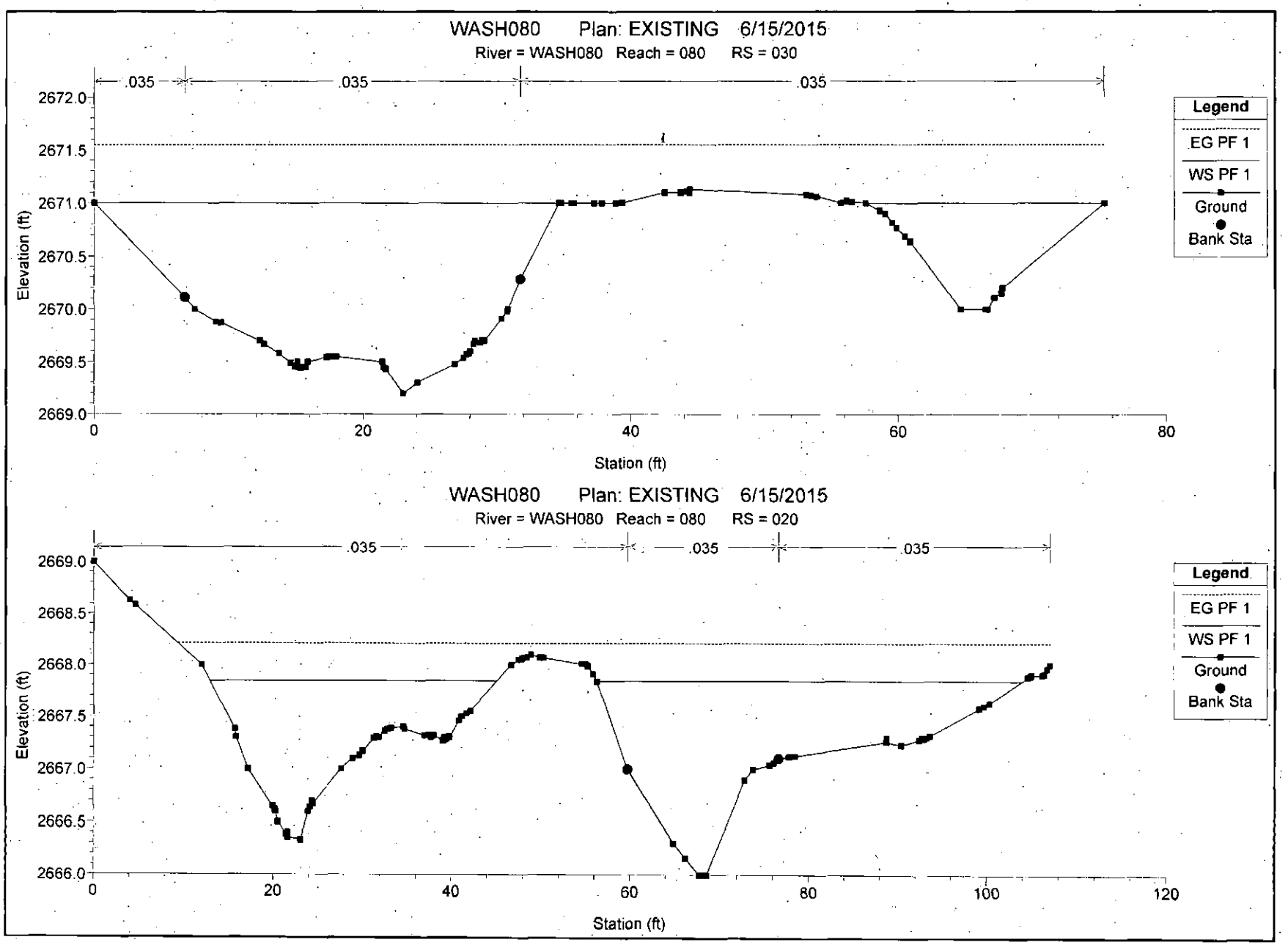

WASH080 Plan: EXISTING 6/15/2015
River = WASH080 Reach = 080 RS = 130
.035
.035
.035
Elevation (ft)
2717
2716
2715
2714
2713
2712
2711
0
20
40
60
80
100
120
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
WASH080 Plan: EXISTING 6/15/2015
River = WASH080 Reach = 080 RS = 120
.035
.035
.035
Elevation (ft)
2712
2711
2710
2709
2708
2707
0
20
40
60
80
100
120
140
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

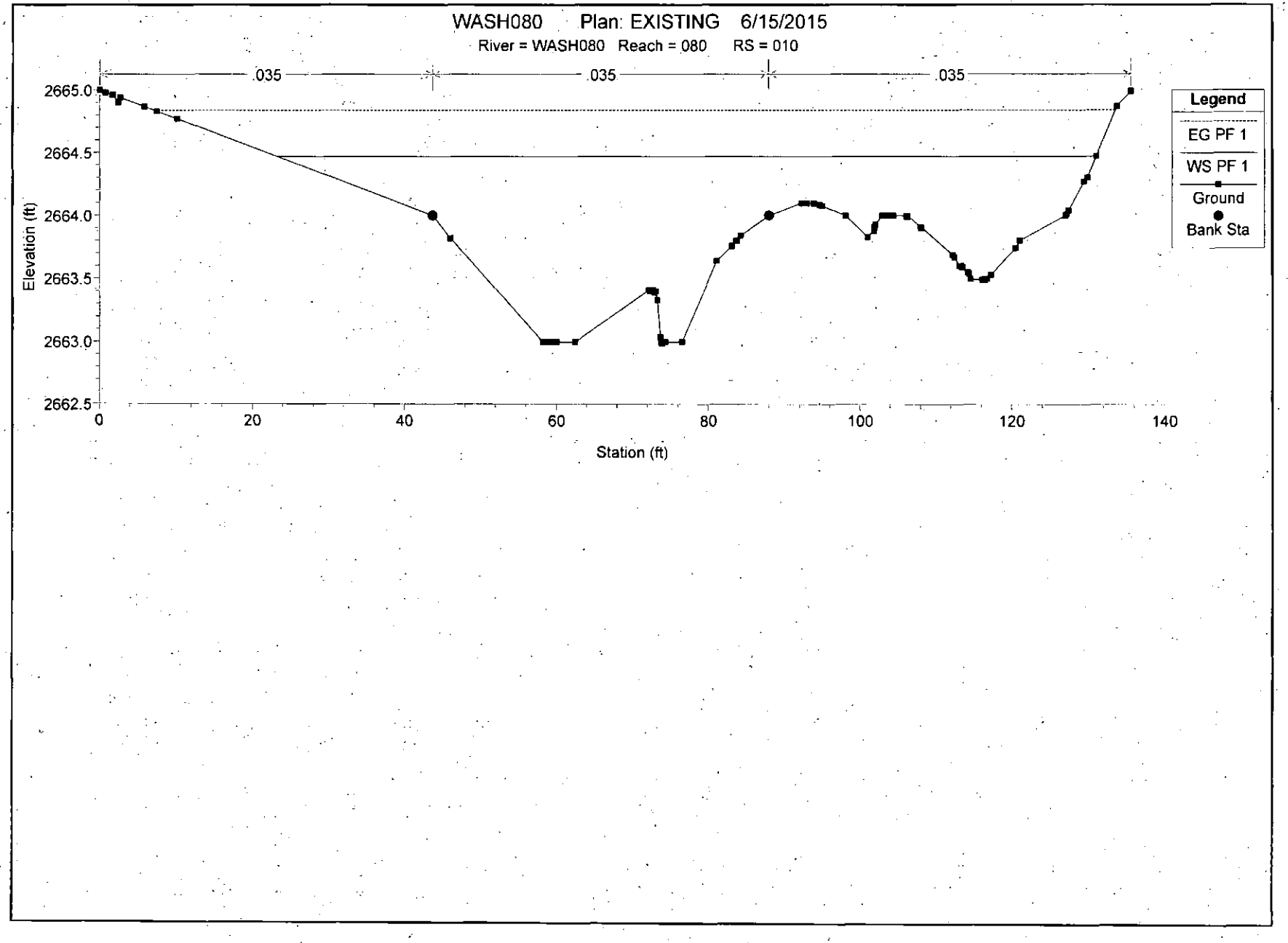

WASH080 Plan: EXISTING 6/15/2015
River = WASH080 Reach = 080 RS = 110
.035
.035
.035
Elevation (ft)
2708
2707
2706
2705
2704
2703
2702
0
20
40
60
80
100
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
WASH080 Plan: EXISTING 6/15/2015
River = WASH080 Reach = 080 RS = 100
.035
.035
.035
Elevation (ft)
2703
2702
2701
2700
2699
2698
0
20
40
60
80
100
120
140
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

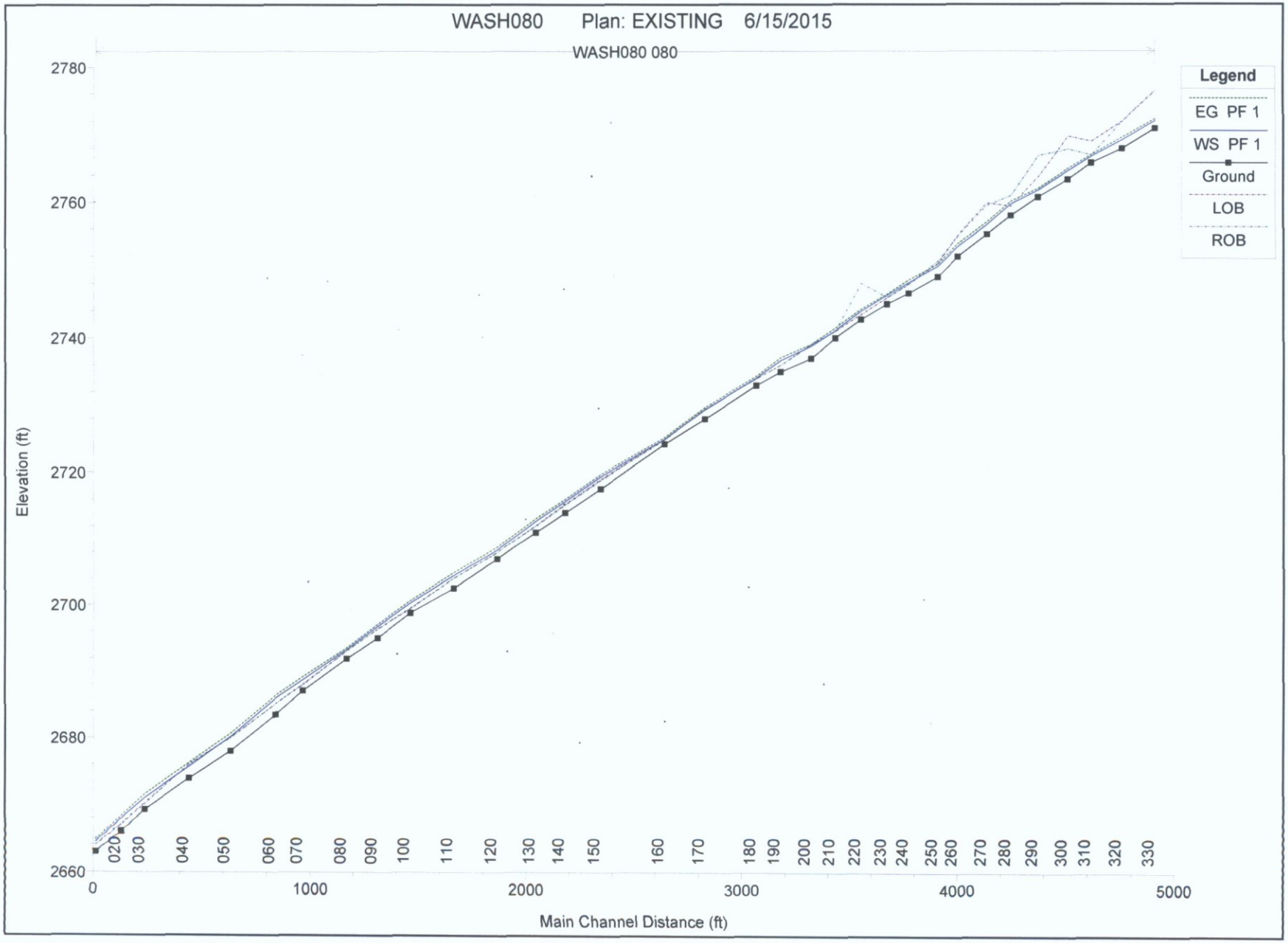

WASH080 Plan: EXISTING 6/15/2015
River = WASH080 Reach = 080 RS = 090
.035
.035
.035
Elevation (ft)
2699
2698
2697
2696
2695
0
20
40
60
80
100
120
140
160
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
WASH080 Plan: EXISTING 6/15/2015
River = WASH080 Reach = 080 RS = 080
.035
.035
.035
Elevation (ft)
2695.0
2694.5
2694.0
2693.5
2693.0
2692.5
2692.0
2691.5
0
50
100
150
200
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta


WASH080 Plan: EXISTING 6/15/2015
River = WASH080 Reach = 080 RS = 070
.035
.035
.035
Elevation (ft)
2691
2690
2689
2688
2687
0
20
40
60
80
100
120
140
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
WASH080 Plan: EXISTING 6/15/2015
River = WASH080 Reach = 080 RS = 060
.035
.035
.035
Elevation (ft)
2687.0
2686.5
2686.0
2685.5
2685.0
2684.5
2684.0
2683.5
2683.0
0
20
40
60
80
100
120
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

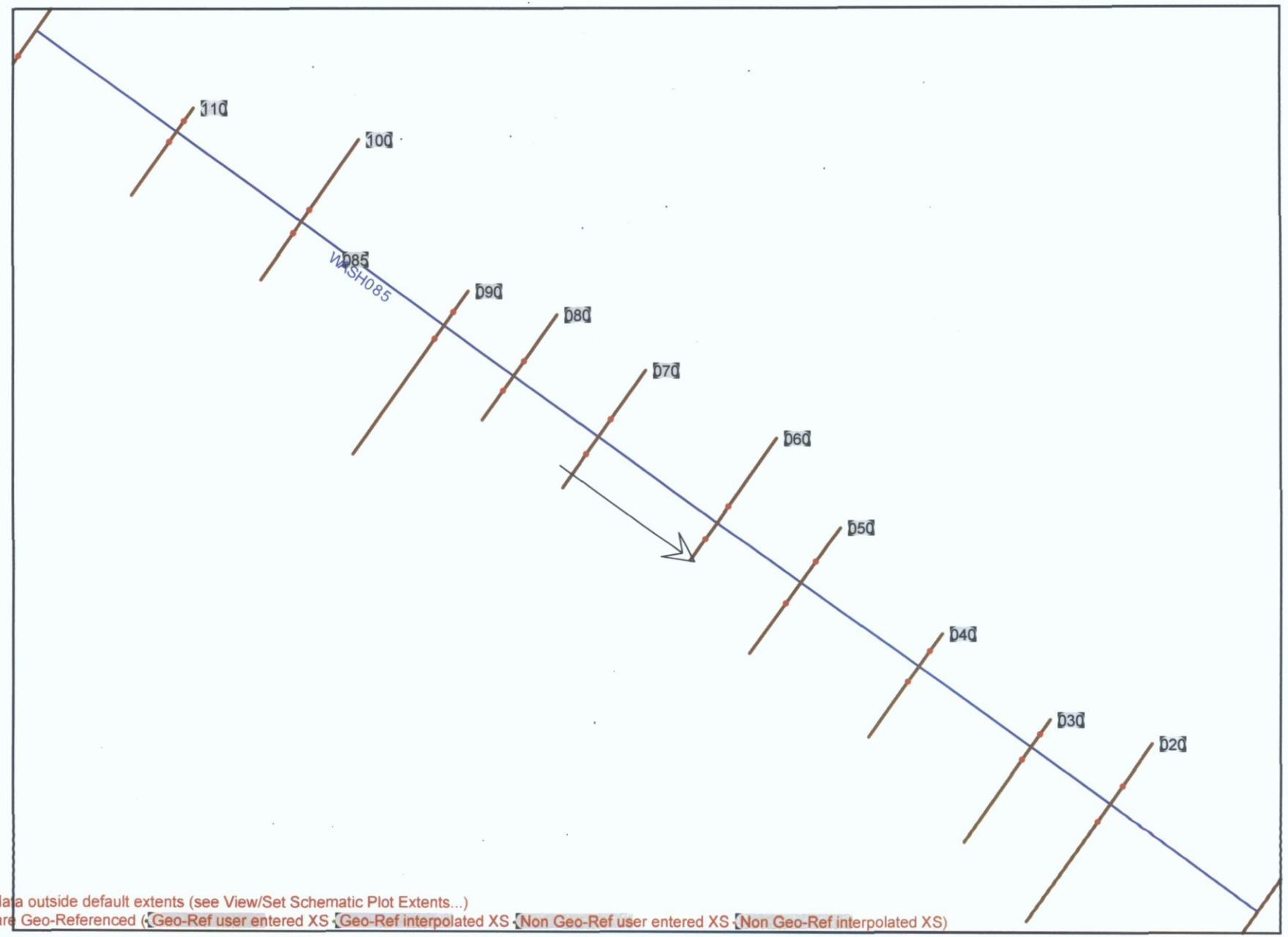

WASH080 Plan: EXISTING 6/15/2015
River = WASH080 Reach = 080 RS = 050
.035
.035
.035
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2682
2681
2680
2679
2678
0
20
40
60
80
100
120
140
WASH080 Plan: EXISTING 6/15/2015
River = WASH080 Reach = 080 RS = 040
.035
.035
.035
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2678
2677
2676
2675
2674
2673
0
20
40
60
80
100
120
140
160


WASH080 Plan: EXISTING 6/15/2015
River = WASH080 Reach = 080 RS = 030
.035
.035
.035
2672.0
2671.5
2671.0
2670.5
2670.0
2669.5
2669.0
Elevation (ft)
0
20
40
60
80
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
WASH080 Plan: EXISTING 6/15/2015
River = WASH080 Reach = 080 RS = 020
.035
.035
.035
2669.0
2668.5
2668.0
2667.5
2667.0
2666.5
2666.0
Elevation (ft)
0
20
40
60
80
100
120
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta


WASH080 Plan: EXISTING 6/15/2015
River = WASH080 Reach = 080 RS = 010
.035
.035
.035
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
2665.0
2664.5
2664.0
2663.5
2663.0
2662.5
0
20
40
60
80
100
120
140
Station (ft)


WASH080 Plan: EXISTING 6/15/2015
WASH080 080
Legend
EG PF 1
WS PF 1
Ground
LOB
ROB
Elevation (ft)
2780
2760
2740
2720
2700
2680
2660
020
030
040
050
060
070
080
090
100
110
120
130
140
150
160
170
180
190
200
210
220
230
240
250
260
270
280
290
300
310
320
330
0
1000
2000
3000
4000
5000
Main Channel Distance (ft)

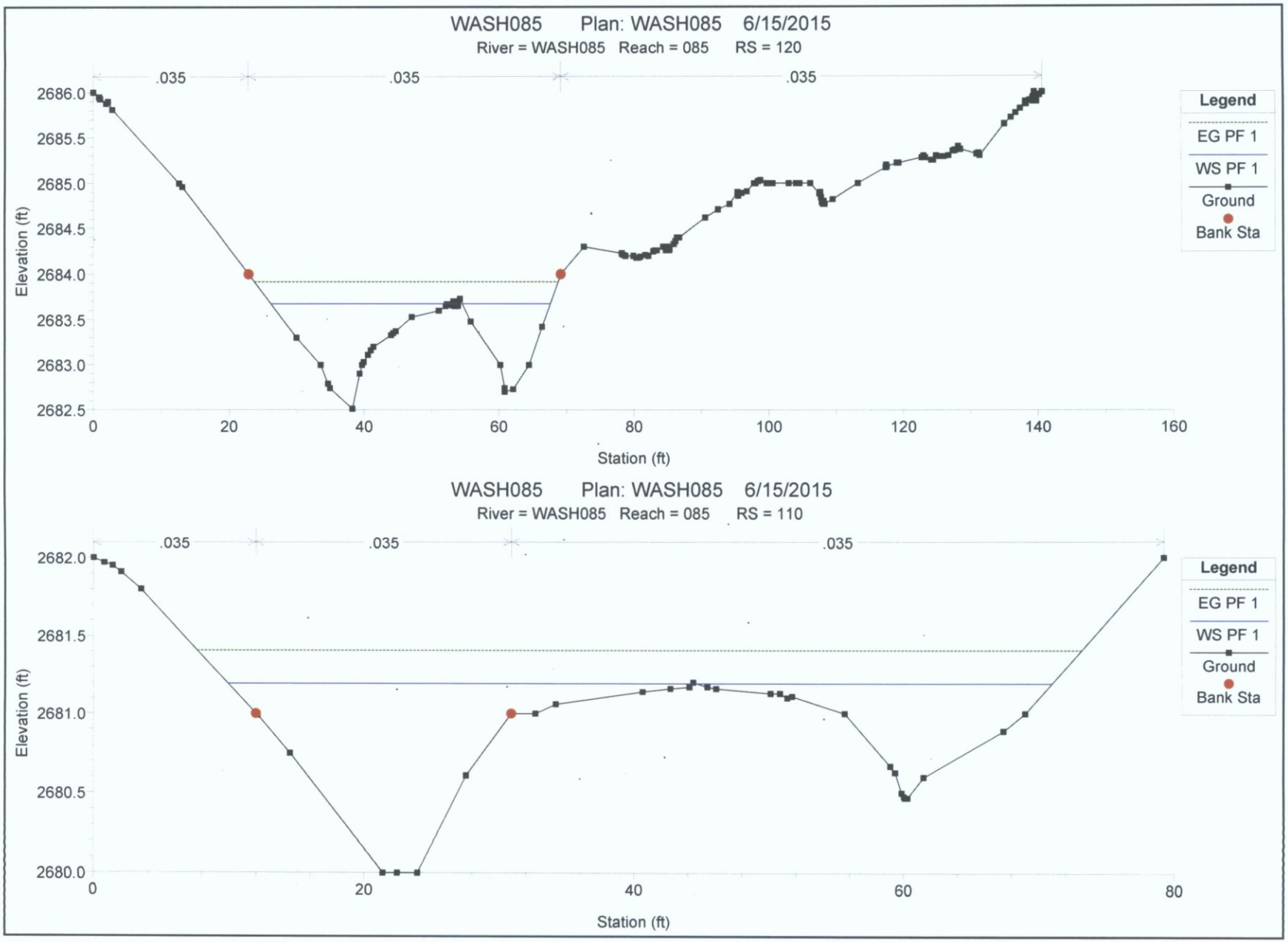
EXISTING WASH 085 HEC-RAS

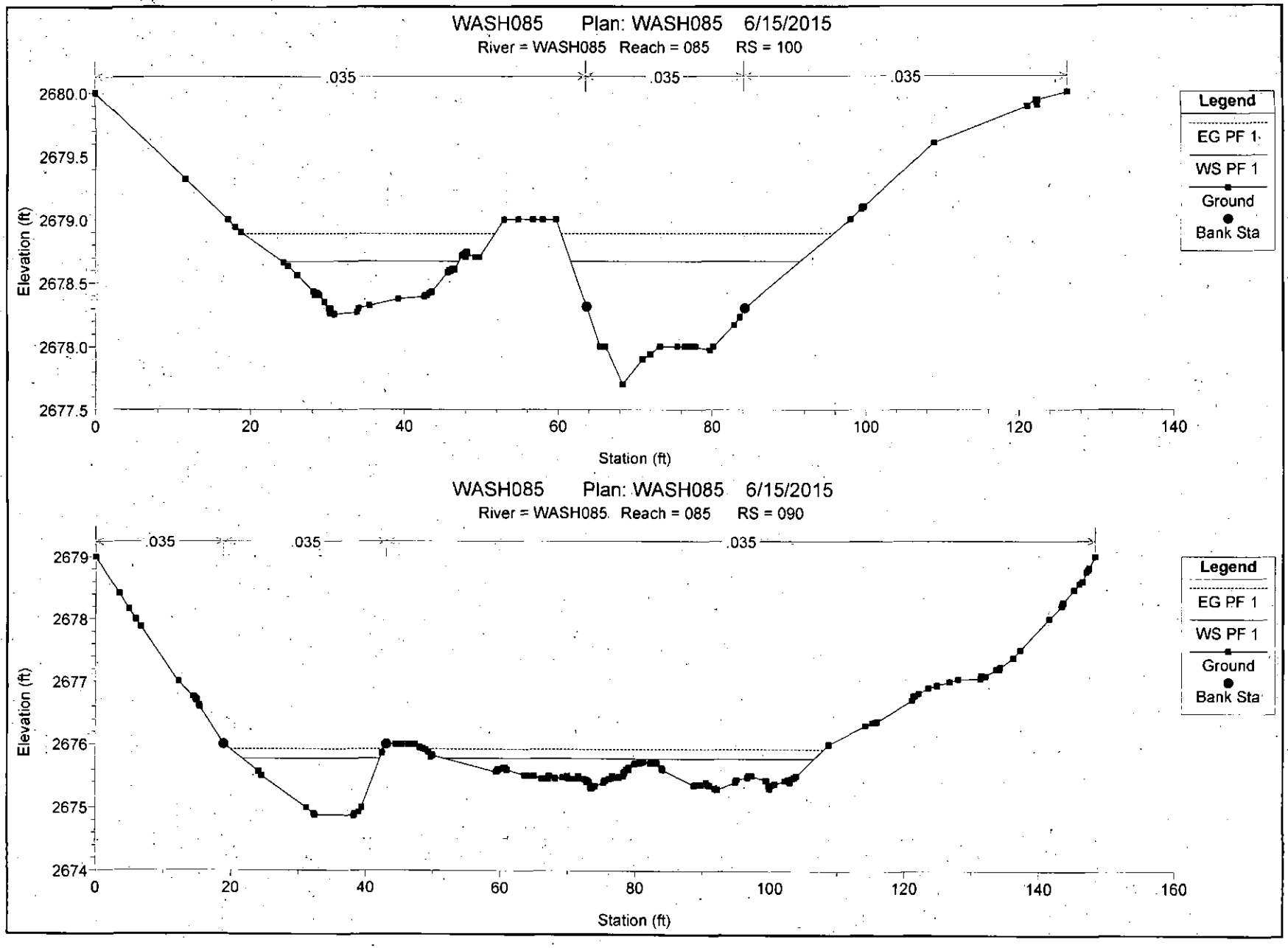


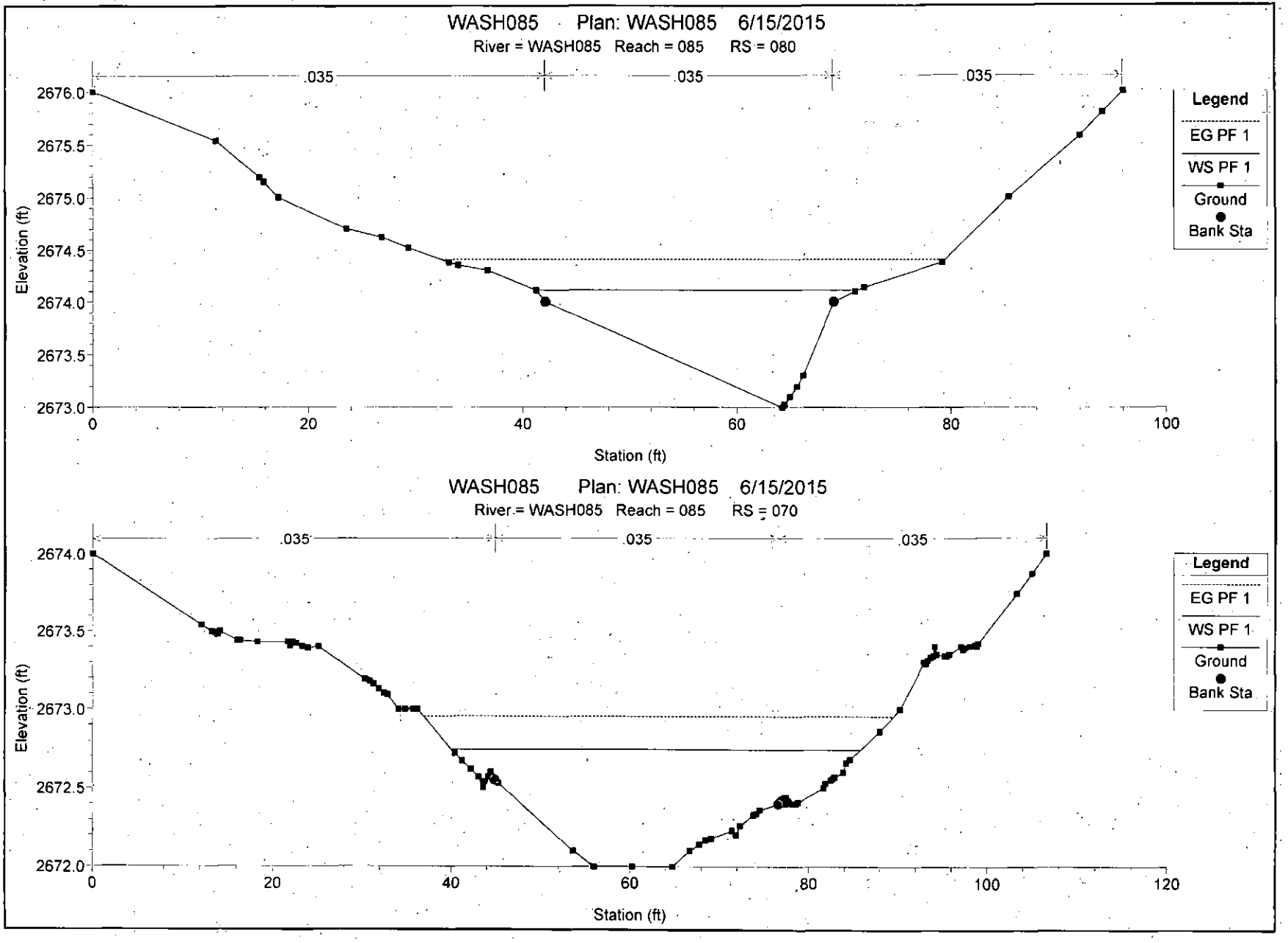
me schematic data outside default extents (see View/Set Schematic Plot Extents...)
ne of the XS's are Geo-Referenced (Geo-Ref user entered XS Geo-Ref interpolated XS Non Geo-Ref user entered XS Non Geo-Ref interpolated XS)

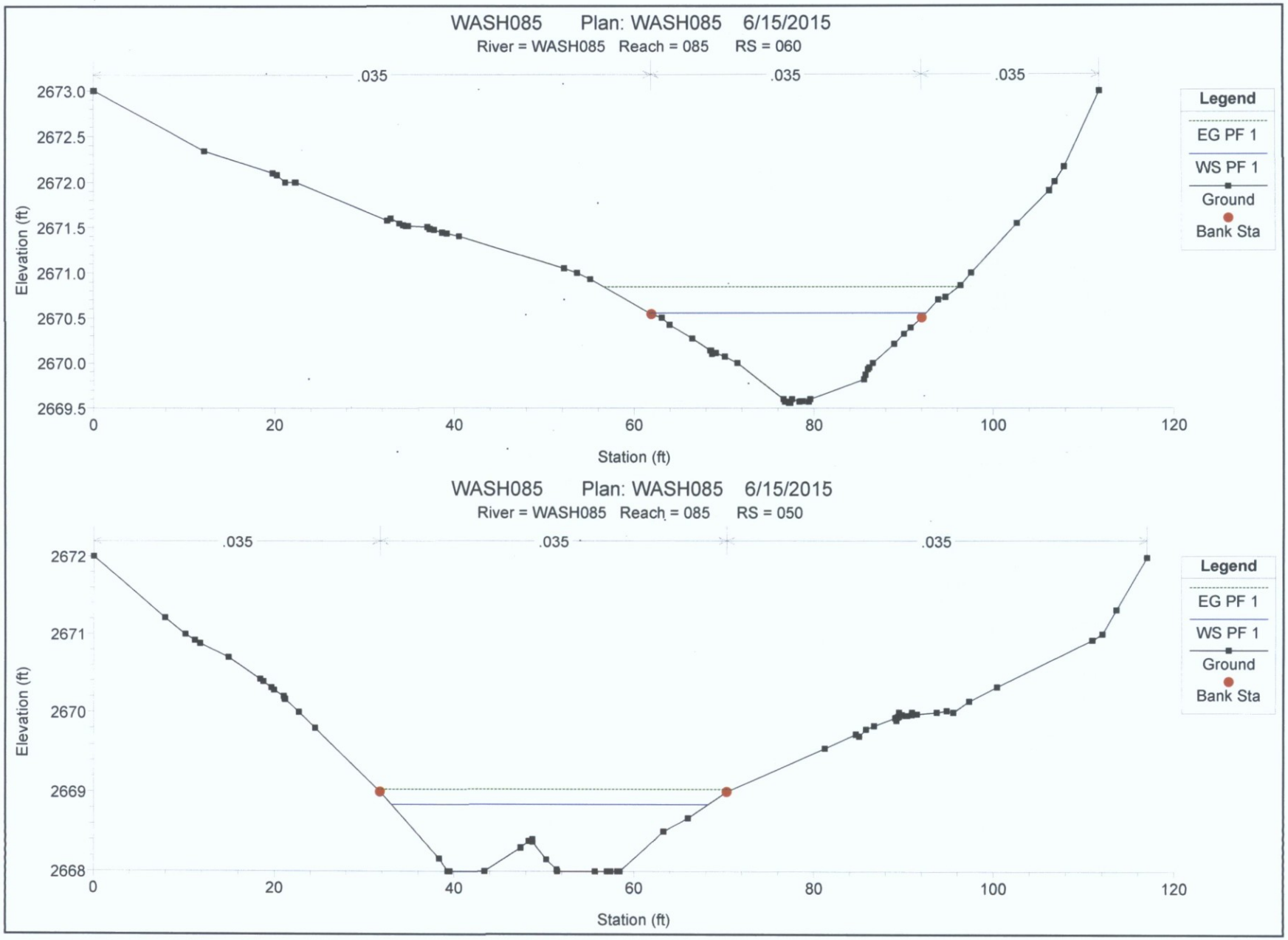
HEC-RAS Plan: 085 River: WASH085 Reach: 085 Profile: PF 1

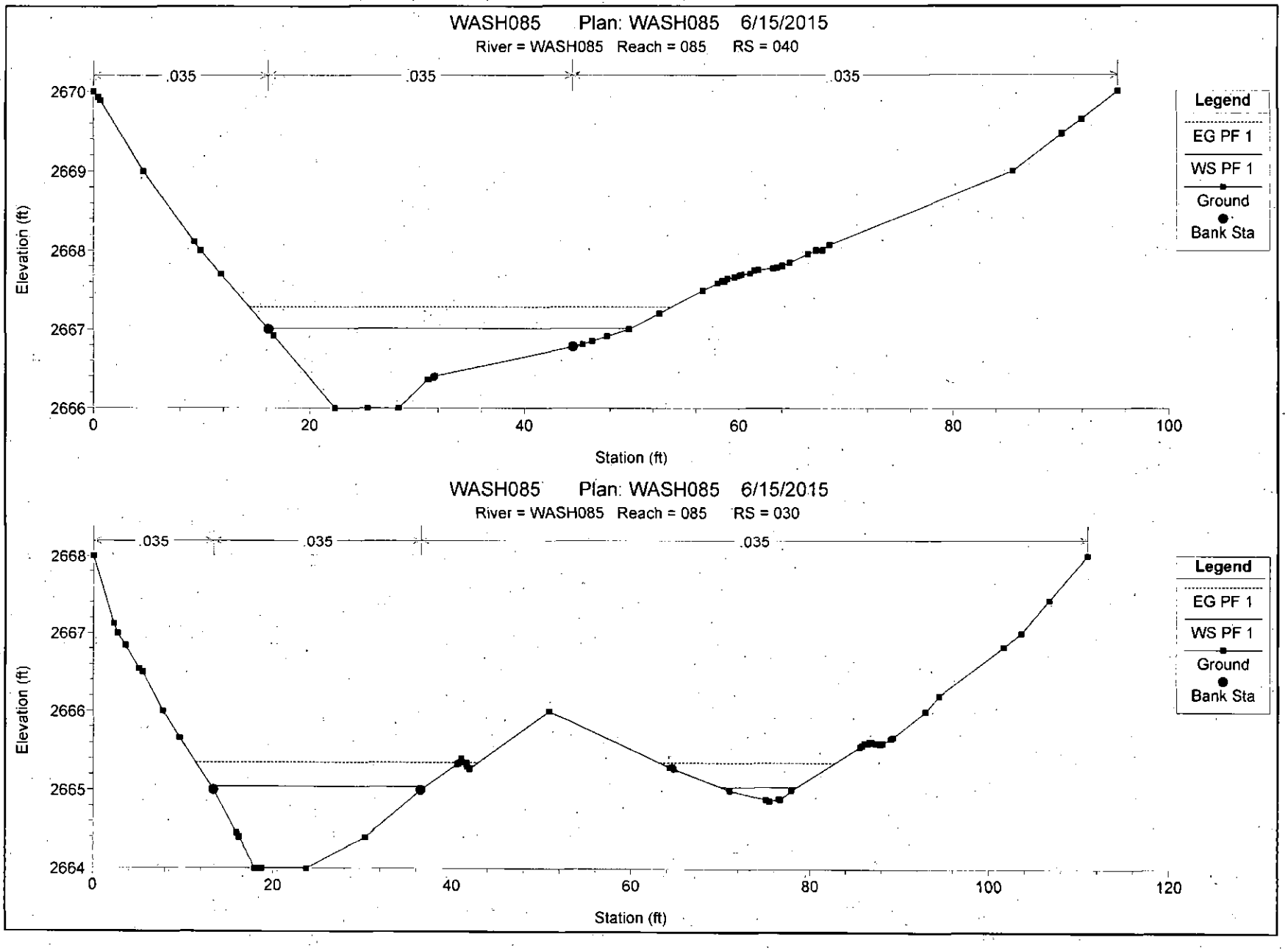
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
085	120	PF 1	73.00	2682.51	2683.68	2683.68	2683.92	0.024466	3.93	18.60	40.50	1.02
085	110	PF 1	73.00	2680.00	2681.19	2681.19	2681.41	0.013898	4.08	22.48	60.79	0.84
085	100	PF 1	73.00	2677.70	2678.67	2678.67	2678.89	0.015774	4.10	21.61	52.87	0.88
085	090	PF 1	73.00	2674.87	2675.77	2675.77	2675.92	0.014598	3.59	26.30	75.29	0.82
085	080	PF 1	73.00	2673.00	2674.11	2674.10	2674.41	0.019674	4.34	16.98	30.19	0.97
085	070	PF 1	73.00	2672.00	2672.74	2672.72	2672.95	0.016840	3.78	20.68	45.79	0.88
085	060	PF 1	73.00	2669.56	2670.55	2670.55	2670.84	0.022466	4.32	16.91	30.84	1.02
085	050	PF 1	73.00	2668.00	2668.84		2669.03	0.013836	3.51	20.82	35.21	0.80
085	040	PF 1	73.00	2666.00	2667.01	2667.00	2667.28	0.018957	4.18	17.87	33.74	0.95
085	030	PF 1	73.00	2664.00	2665.04	2665.04	2665.35	0.017987	4.46	16.97	32.41	0.94
085	020	PF 1	73.00	2662.56	2664.00		2664.04	0.002604	1.90	44.97	76.11	0.37
085	010	PF 1	350.00	2661.00	2662.33	2662.33	2662.65	0.016024	4.78	80.94	126.70	0.92

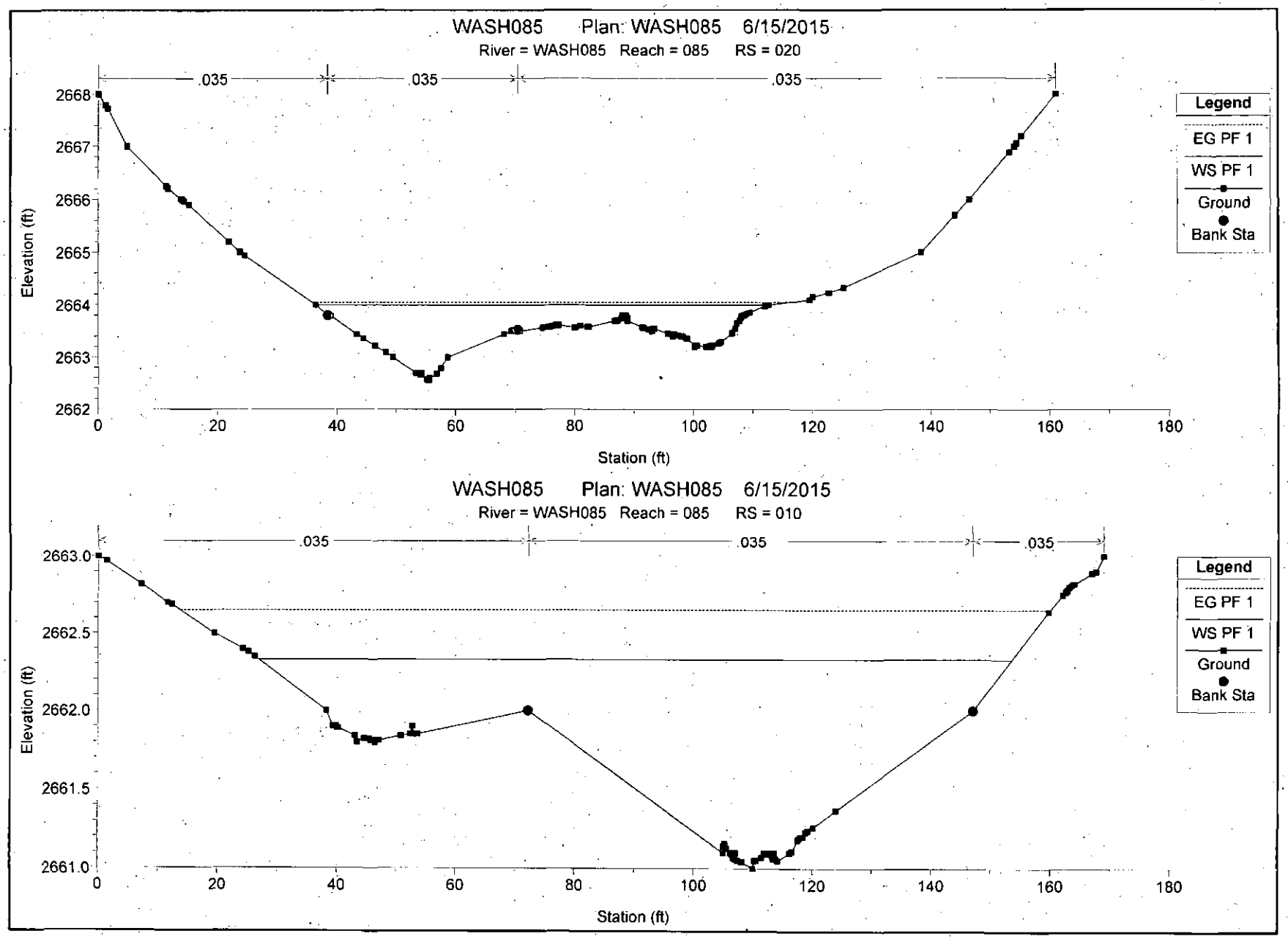

WASH085 Plan: WASH085 6/15/2015
River = WASH085 Reach = 085 RS = 120
.035
.035
.035
Elevation (ft)
2686.0
2685.5
2685.0
2684.5
2684.0
2683.5
2683.0
2682.5
0
20
40
60
80
100
120
140
160
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
WASH085 Plan: WASH085 6/15/2015
River = WASH085 Reach = 085 RS = 110
.035
.035
.035
Elevation (ft)
2682.0
2681.5
2681.0
2680.5
2680.0
0
20
40
60
80
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

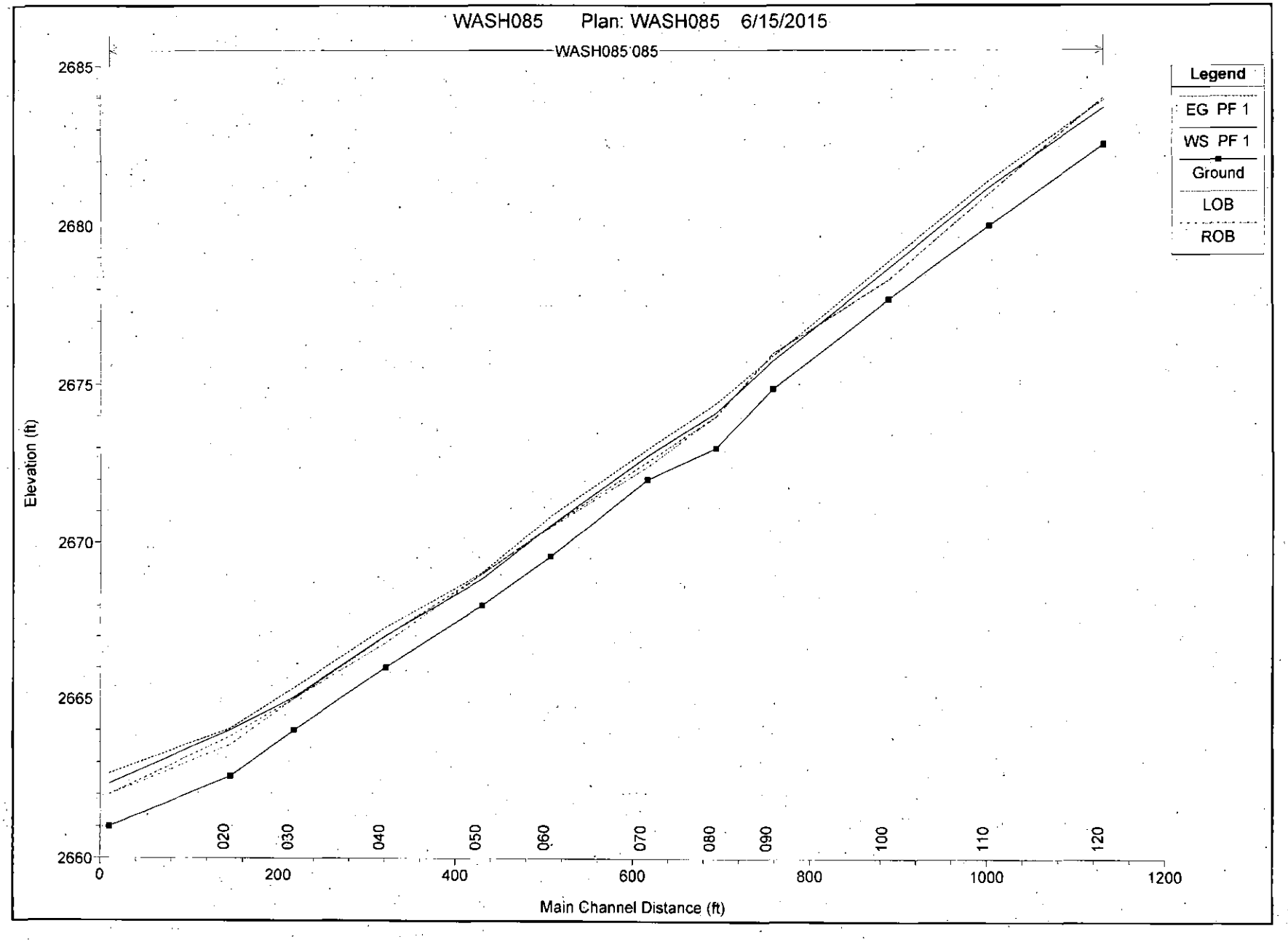

WASH085 Plan: WASH085 6/15/2015
River = WASH085 Reach = 085 RS = 100
.035
.035
.035
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
2680.0
2679.5
2679.0
2678.5
2678.0
2677.5
0
20
40
60
80
100
120
140
Station (ft)
WASH085 Plan: WASH085 6/15/2015
River = WASH085 Reach = 085 RS = 090
.035
.035
.035
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
2679
2678
2677
2676
2675
2674
0
20
40
60
80
100
120
140
160
Station (ft)


WASH085 Plan: WASH085 6/15/2015
River = WASH085 Reach = 085 RS = 080
.035
.035
.035
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
2676.0
2675.5
2675.0
2674.5
2674.0
2673.5
2673.0
0
20
40
60
80
100
Station (ft)
WASH085 Plan: WASH085 6/15/2015
River = WASH085 Reach = 085 RS = 070
.035
.035
.035
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
2674.0
2673.5
2673.0
2672.5
2672.0
0
20
40
60
80
100
120
Station (ft)

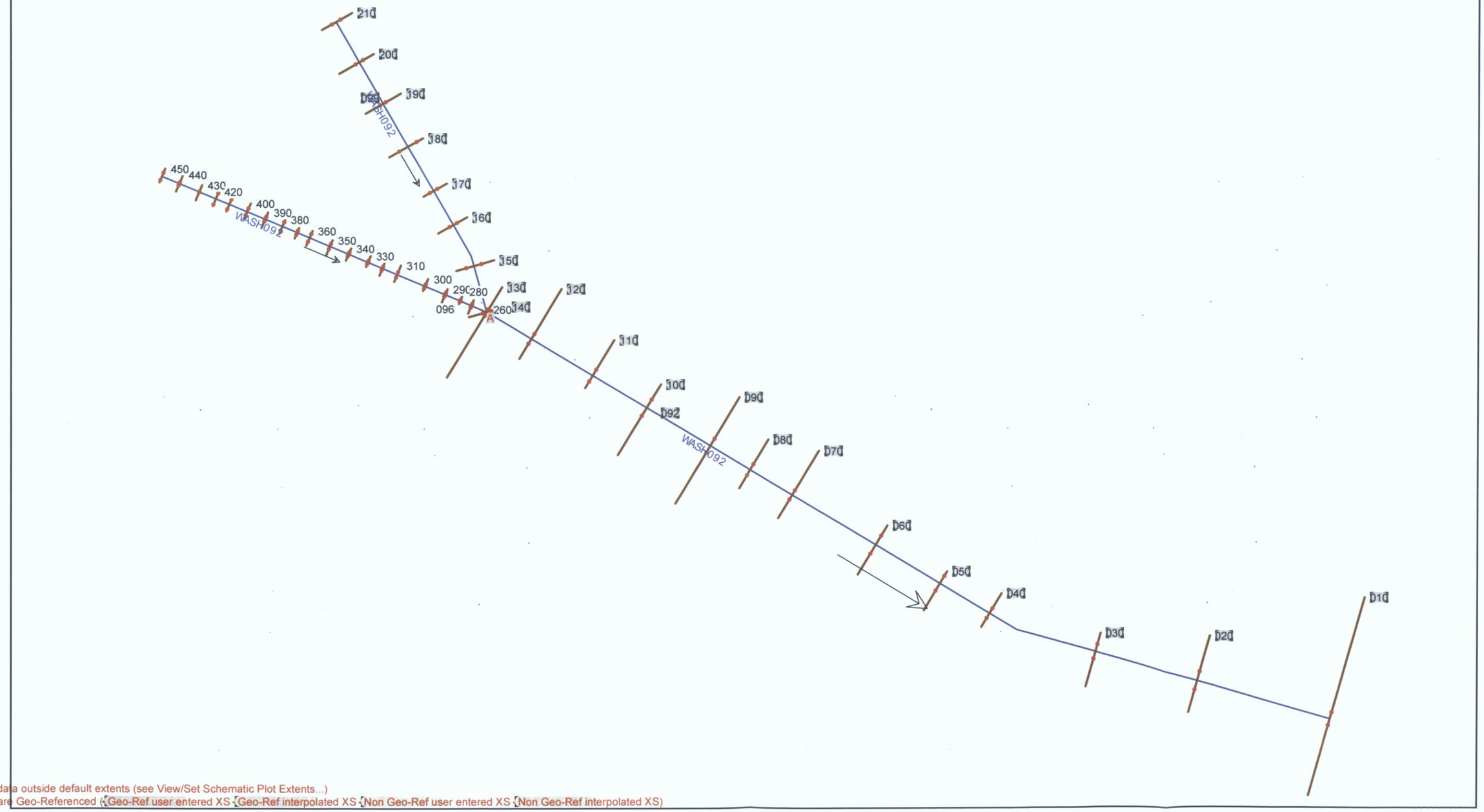

WASH085 Plan: WASH085 6/15/2015
River = WASH085 Reach = 085 RS = 060
.035
.035
.035
2673.0
2672.5
2672.0
2671.5
2671.0
2670.5
2670.0
2669.5
Elevation (ft)
0
20
40
60
80
100
120
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
WASH085 Plan: WASH085 6/15/2015
River = WASH085 Reach = 085 RS = 050
.035
.035
.035
2672
2671
2670
2669
2668
Elevation (ft)
0
20
40
60
80
100
120
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta


WASH085 Plan: WASH085 6/15/2015
River = WASH085 Reach = 085 RS = 040
.035
.035
.035
2670
2669
2668
2667
2666
Elevation (ft)
0
20
40
60
80
100
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
WASH085 Plan: WASH085 6/15/2015
River = WASH085 Reach = 085 RS = 030
.035
.035
.035
2668
2667
2666
2665
2664
Elevation (ft)
0
20
40
60
80
100
120
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta


WASH085 Plan: WASH085 6/15/2015
River = WASH085 Reach = 085 RS = 020
.035
.035
.035
Elevation (ft)
2668
2667
2666
2665
2664
2663
2662
0
20
40
60
80
100
120
140
160
180
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
WASH085 Plan: WASH085 6/15/2015
River = WASH085 Reach = 085 RS = 010
.035
.035
.035
Elevation (ft)
2663.0
2662.5
2662.0
2661.5
2661.0
0
20
40
60
80
100
120
140
160
180
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta


WASH085 Plan: WASH085 6/15/2015
WASH085 085
Legend
EG PF 1
WS PF 1
Ground
LOB
ROB
Elevation (ft)
2685
2680
2675
2670
2665
2660
020
030
040
050
060
070
080
090
100
110
120
0
200
400
600
800
1000
1200
Main Channel Distance (ft)

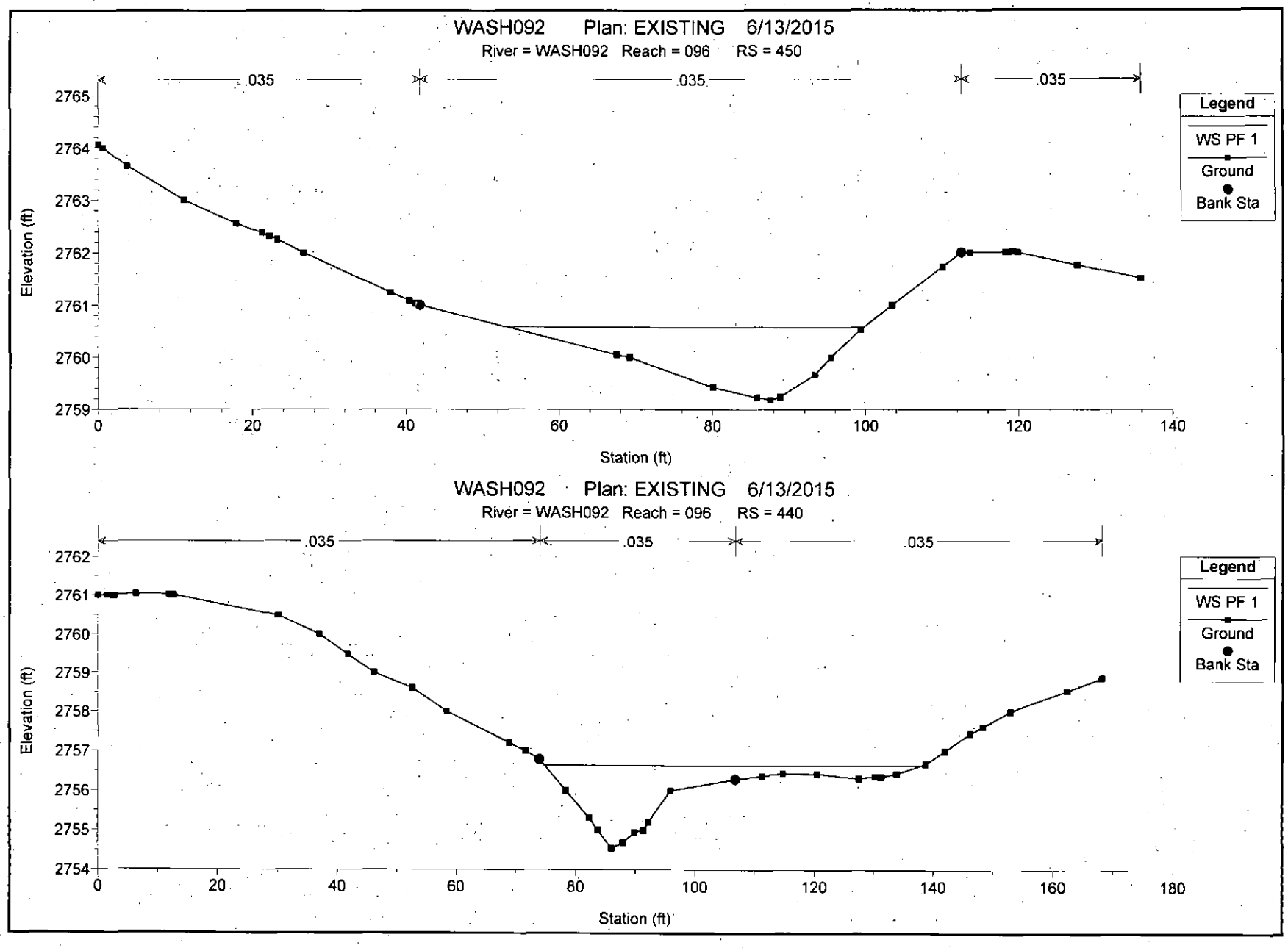
EXISTING WASH 092 HEC-RAS

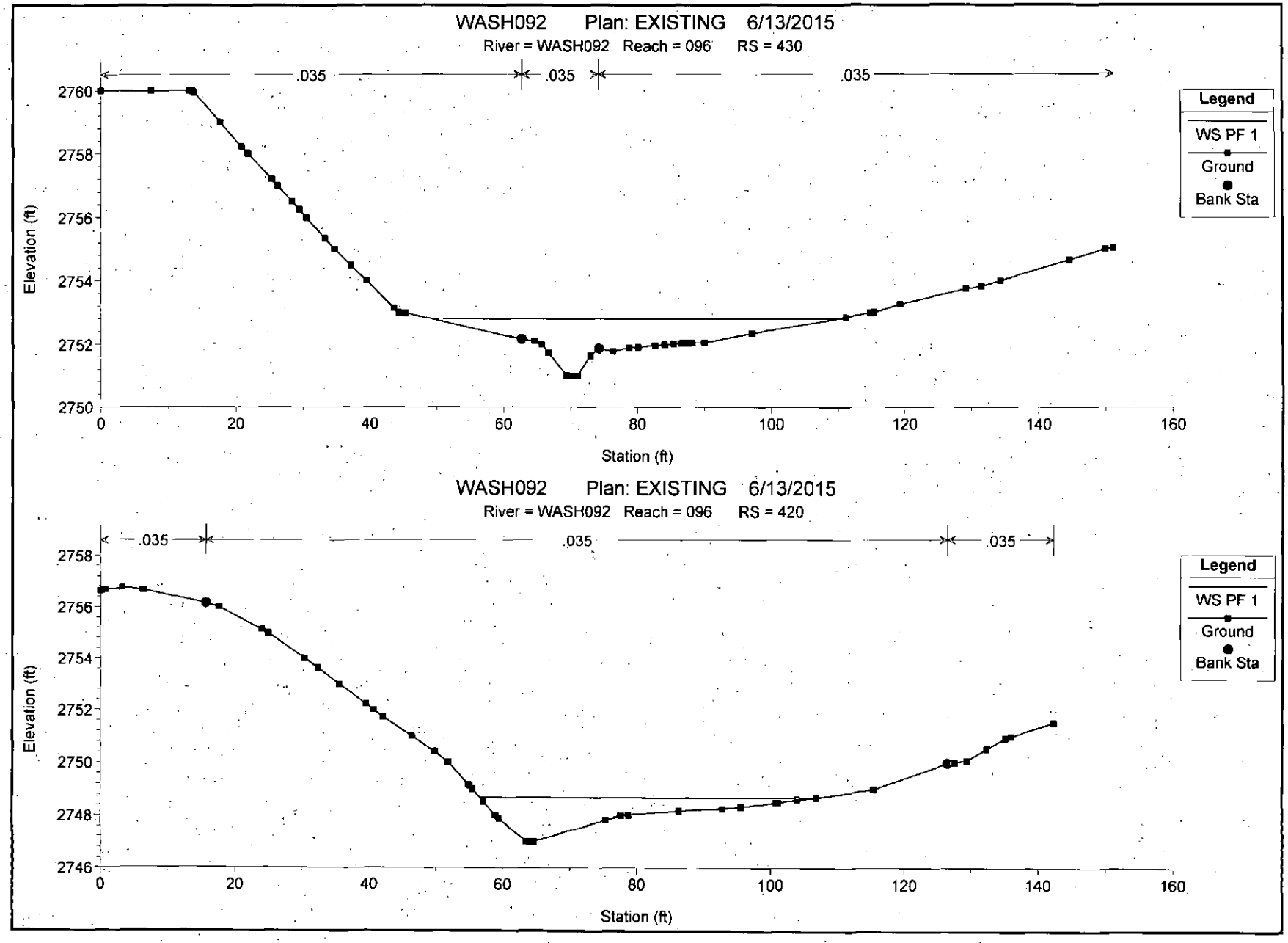


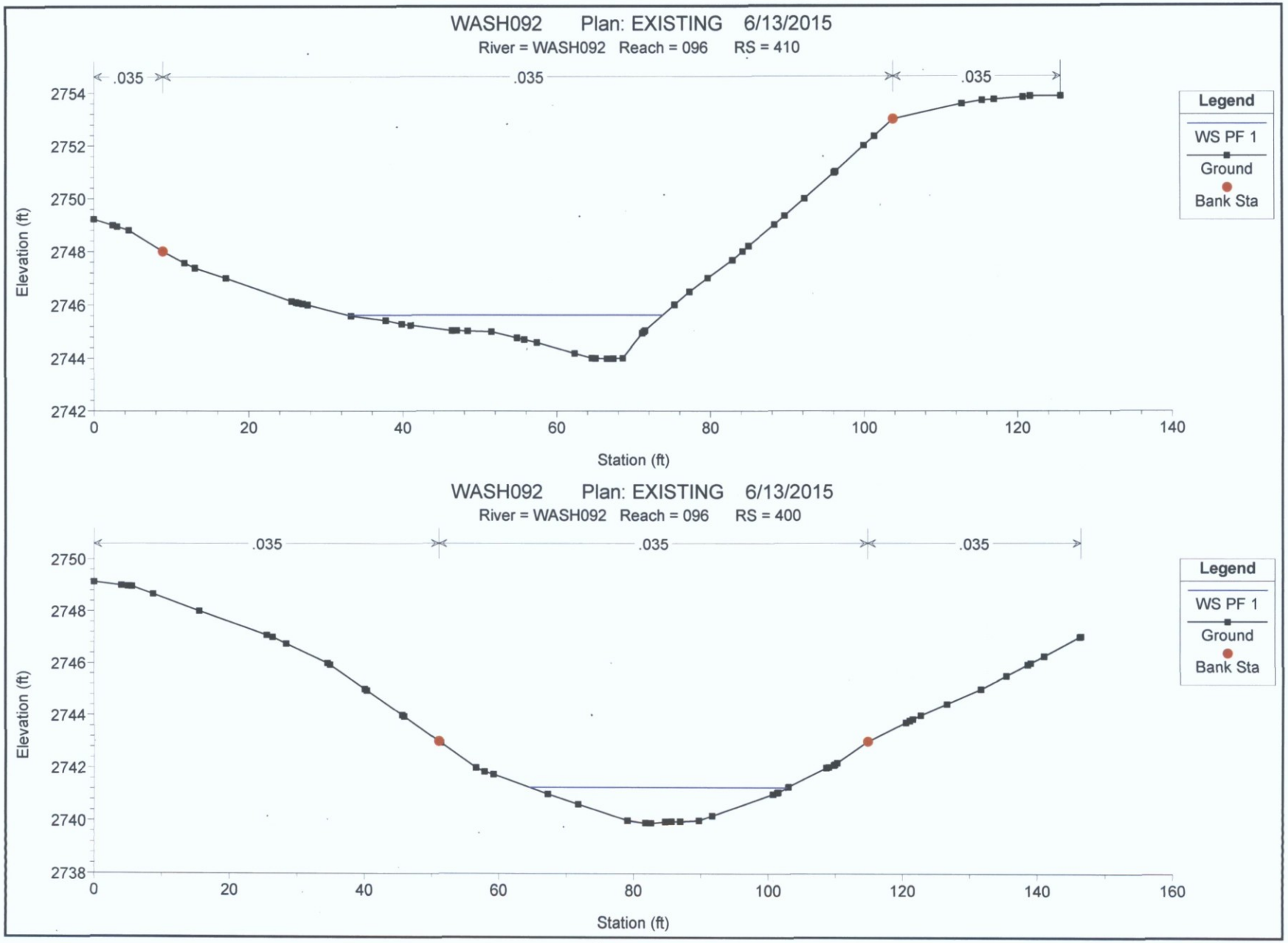
matic data outside default extents (see View/Set Schematic Plot Extents...)
e XS's are Geo-Referenced (Geo-Ref user entered XS Geo-Ref interpolated XS Non Geo-Ref user entered XS Non Geo-Ref interpolated XS)

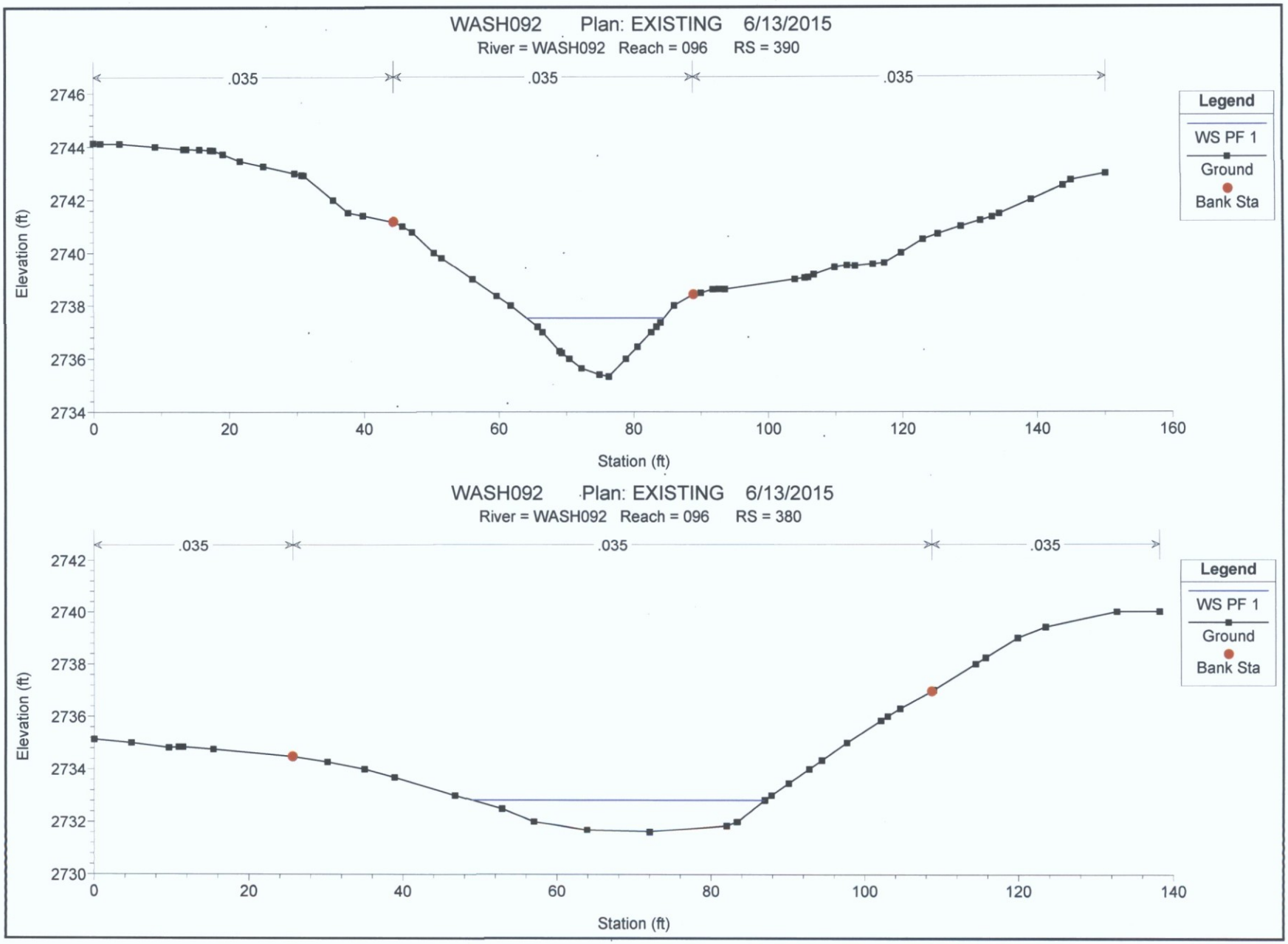
HEC-RAS Plan: 092 River: WASH092 Reach: 096 Profile: PF 1

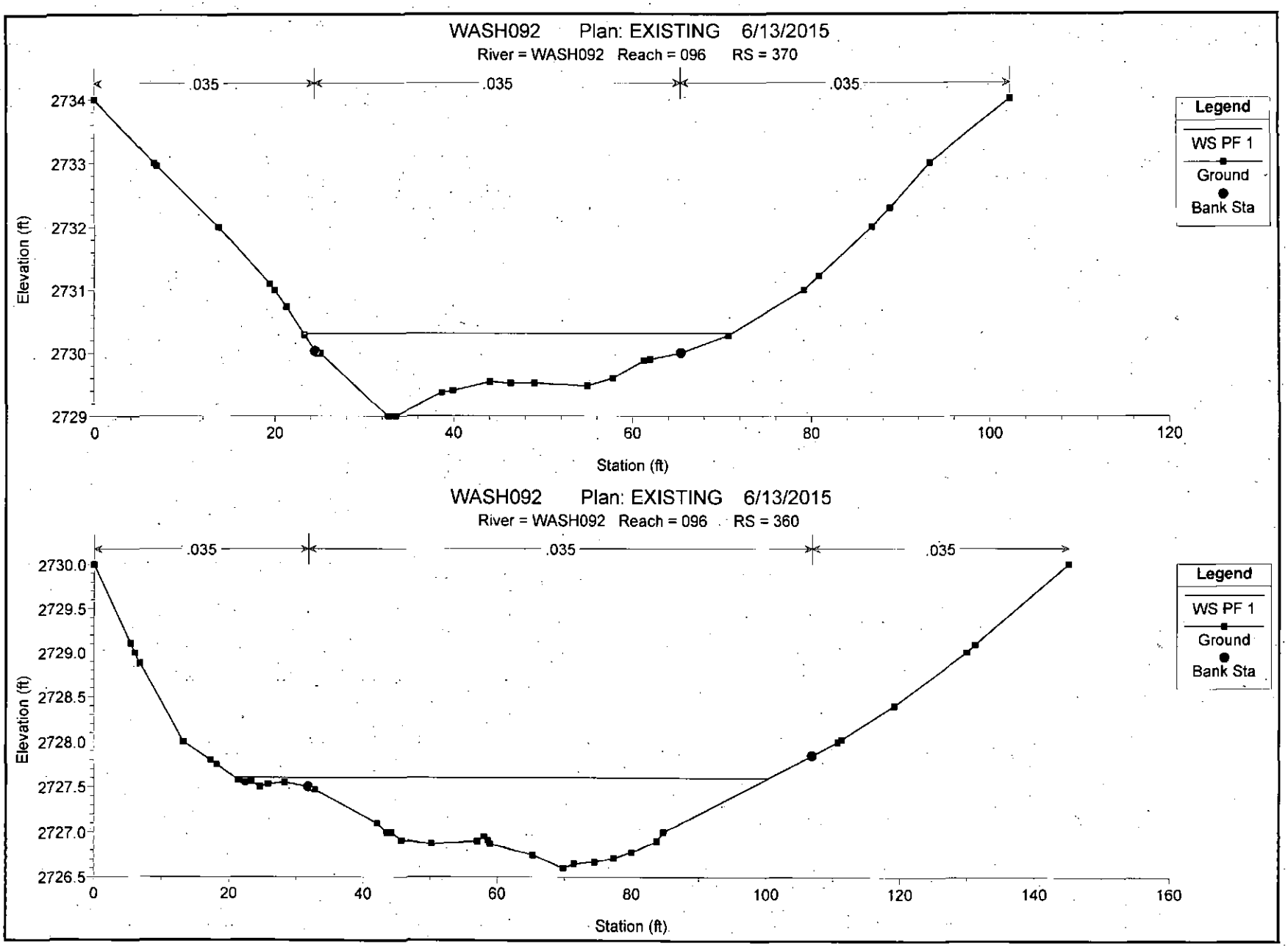
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
096	450	PF 1	162.00	2759.18	2760.58	2760.58	2760.95	0.020486	4.86	33.36	46.56	1.01
096	440	PF 1	162.00	2754.55	2756.62	2756.62	2756.95	0.013123	4.77	38.35	62.93	0.85
096	430	PF 1	162.00	2750.99	2752.80	2752.80	2753.14	0.014001	5.64	39.12	60.68	0.90
096	420	PF 1	162.00	2746.99	2748.67	2748.67	2749.02	0.021261	4.77	33.94	49.88	1.02
096	410	PF 1	162.00	2743.99	2745.62	2745.62	2746.02	0.020336	5.09	31.83	40.98	1.02
096	400	PF 1	162.00	2739.90	2741.24	2741.24	2741.66	0.019481	5.18	31.30	38.22	1.01
096	390	PF 1	162.00	2735.33	2737.52	2737.52	2738.16	0.017635	6.40	25.29	20.37	1.01
096	380	PF 1	162.00	2731.62	2732.81	2732.77	2733.20	0.016800	4.96	32.64	37.94	0.94
096	370	PF 1	162.00	2729.00	2730.31	2730.31	2730.69	0.018662	4.95	33.44	47.89	0.98
096	360	PF 1	162.00	2726.60	2727.60	2727.56	2727.84	0.016706	3.91	41.96	79.42	0.89
096	350	PF 1	162.00	2722.00	2723.80	2723.80	2724.20	0.020197	5.09	31.82	40.80	1.02
096	340	PF 1	162.00	2719.00	2720.17	2720.17	2720.61	0.019204	5.35	30.27	34.69	1.01
096	330	PF 1	162.00	2714.43	2716.47	2716.47	2716.93	0.019185	5.46	29.78	34.96	1.01
096	320	PF 1	162.00	2712.00	2713.81	2713.81	2714.20	0.019311	5.00	32.73	48.79	0.99
096	310	PF 1	162.00	2709.00	2710.60	2710.60	2711.01	0.020126	5.14	31.51	39.67	1.02
096	300	PF 1	230.00	2702.84	2704.79	2704.79	2705.33	0.017850	5.91	38.92	36.33	1.01
096	290	PF 1	230.00	2699.00	2700.74	2700.74	2701.18	0.013612	5.44	46.24	57.28	0.89
096	280	PF 1	230.00	2695.82	2697.58	2697.58	2697.93	0.012441	5.68	55.14	77.82	0.86
096	270	PF 1	230.00	2693.79	2695.38	2695.38	2695.79	0.016780	5.37	46.80	62.61	0.96
096	260	PF 1	230.00	2690.53	2692.18	2692.18	2692.61	0.018763	5.26	44.25	54.63	1.00

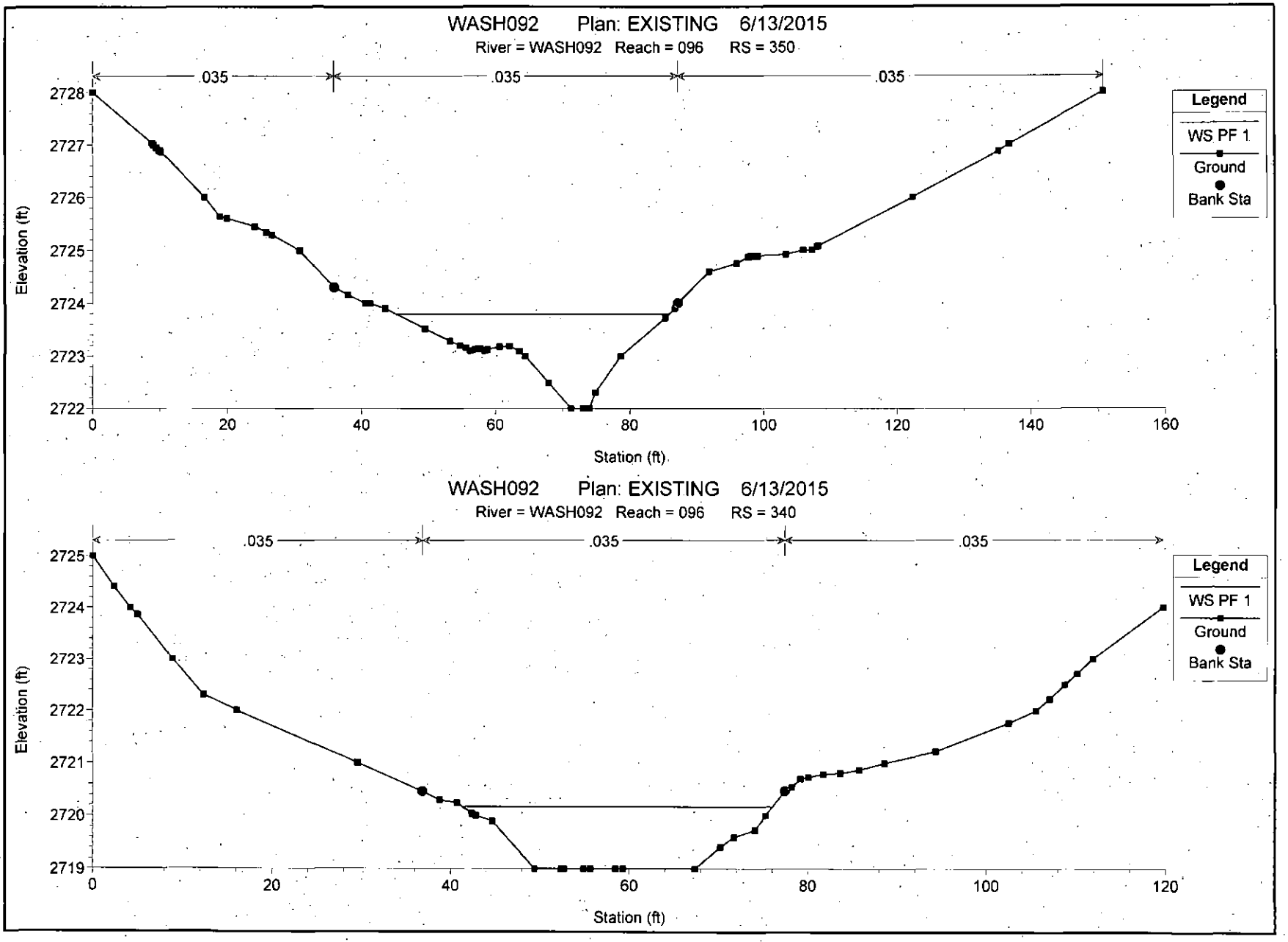

WASH092 Plan: EXISTING 6/13/2015
River = WASH092 Reach = 096 RS = 450
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
WASH092 Plan: EXISTING 6/13/2015
River = WASH092 Reach = 096 RS = 440
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

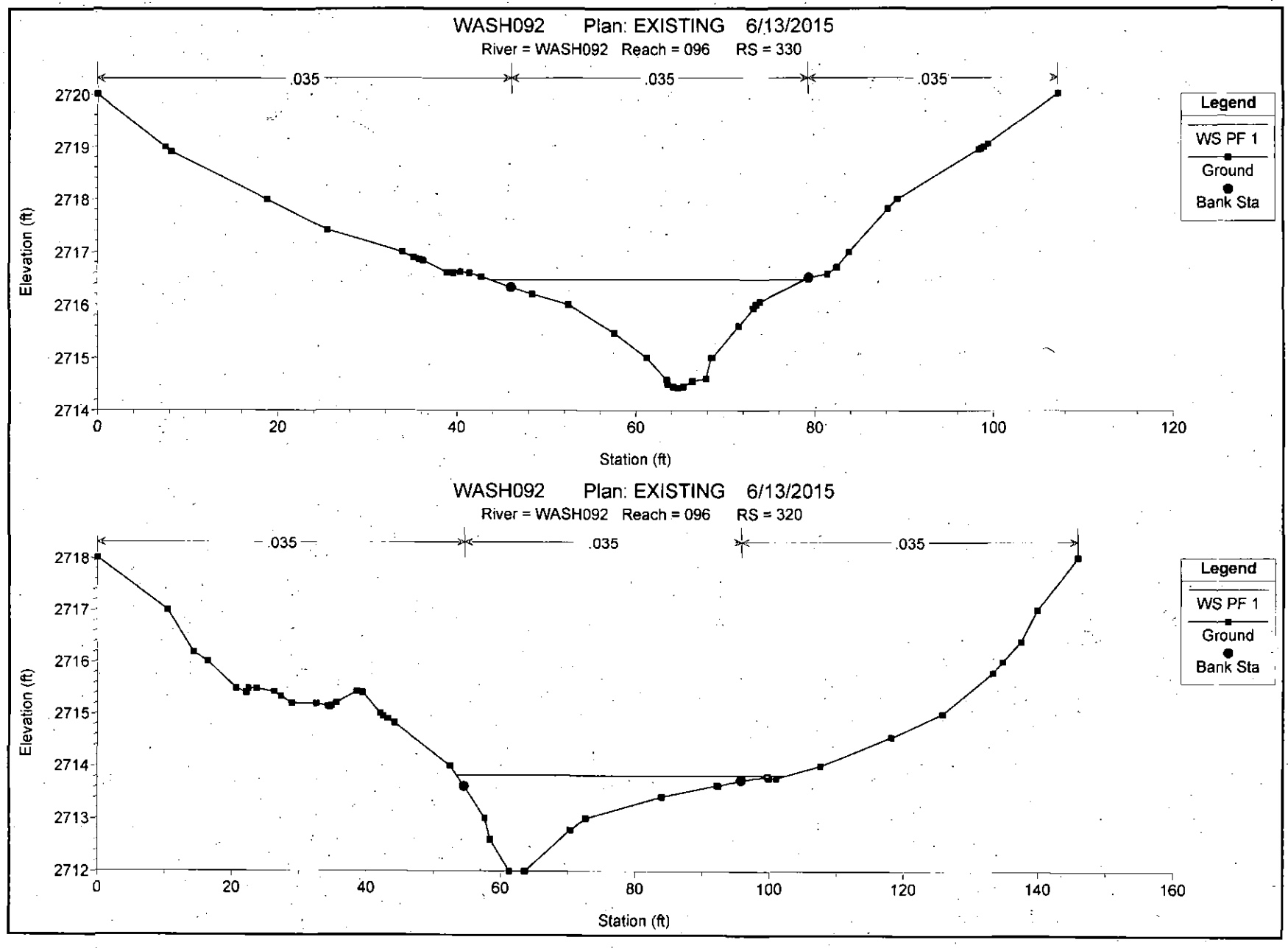

WASH092 Plan: EXISTING 6/13/2015
River = WASH092 Reach = 096 RS = 430
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2760
2758
2756
2754
2752
2750
0
20
40
60
80
100
120
140
160
Station (ft)
WASH092 Plan: EXISTING 6/13/2015
River = WASH092 Reach = 096 RS = 420
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2758
2756
2754
2752
2750
2748
2746
0
20
40
60
80
100
120
140
160
Station (ft)

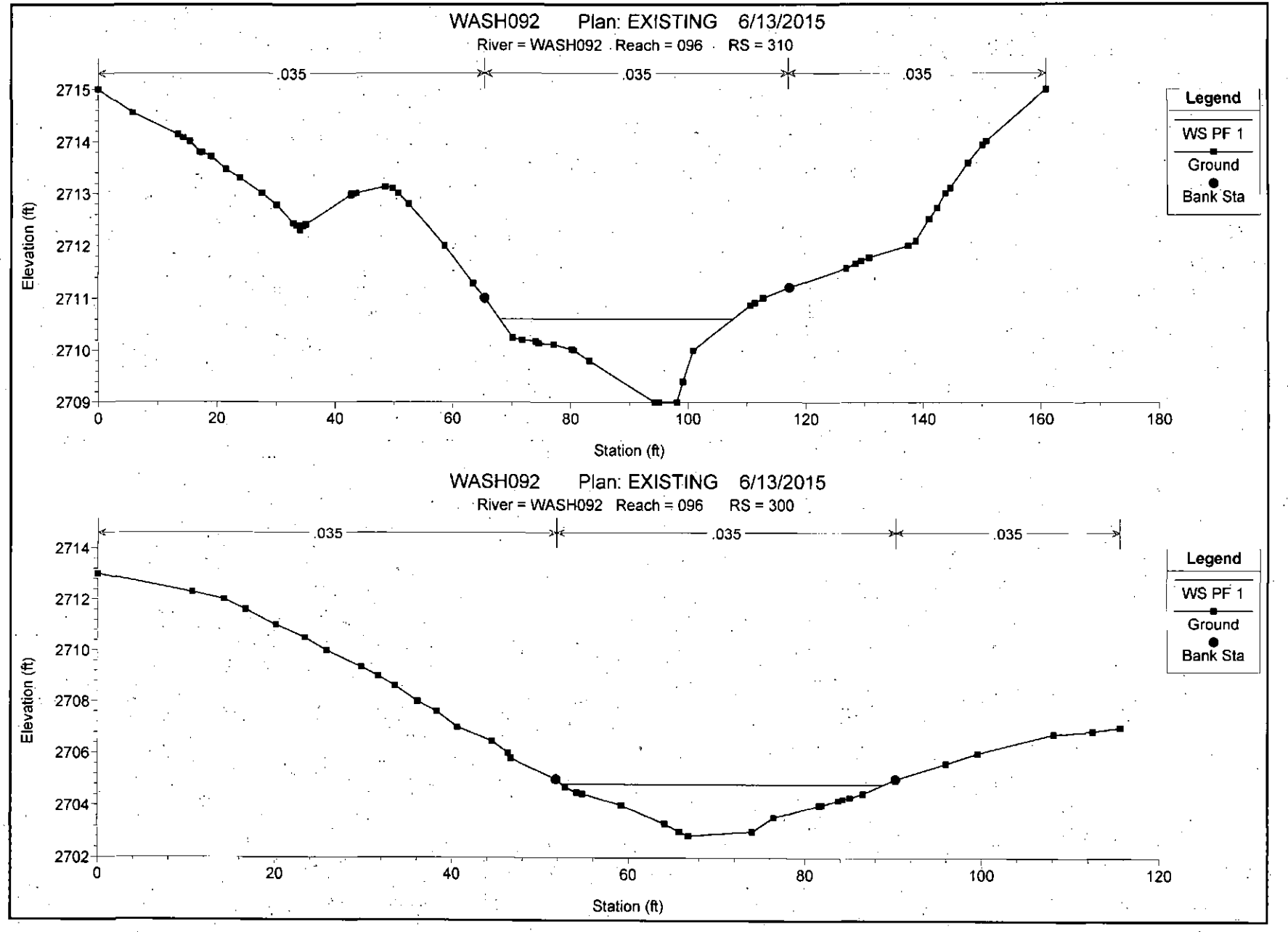

WASH092 Plan: EXISTING 6/13/2015
River = WASH092 Reach = 096 RS = 410
.035
.035
.035
Elevation (ft)
2754
2752
2750
2748
2746
2744
2742
0
20
40
60
80
100
120
140
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
WASH092 Plan: EXISTING 6/13/2015
River = WASH092 Reach = 096 RS = 400
.035
.035
.035
Elevation (ft)
2750
2748
2746
2744
2742
2740
2738
0
20
40
60
80
100
120
140
160
Station (ft)
Legend
WS PF 1
Ground
Bank Sta

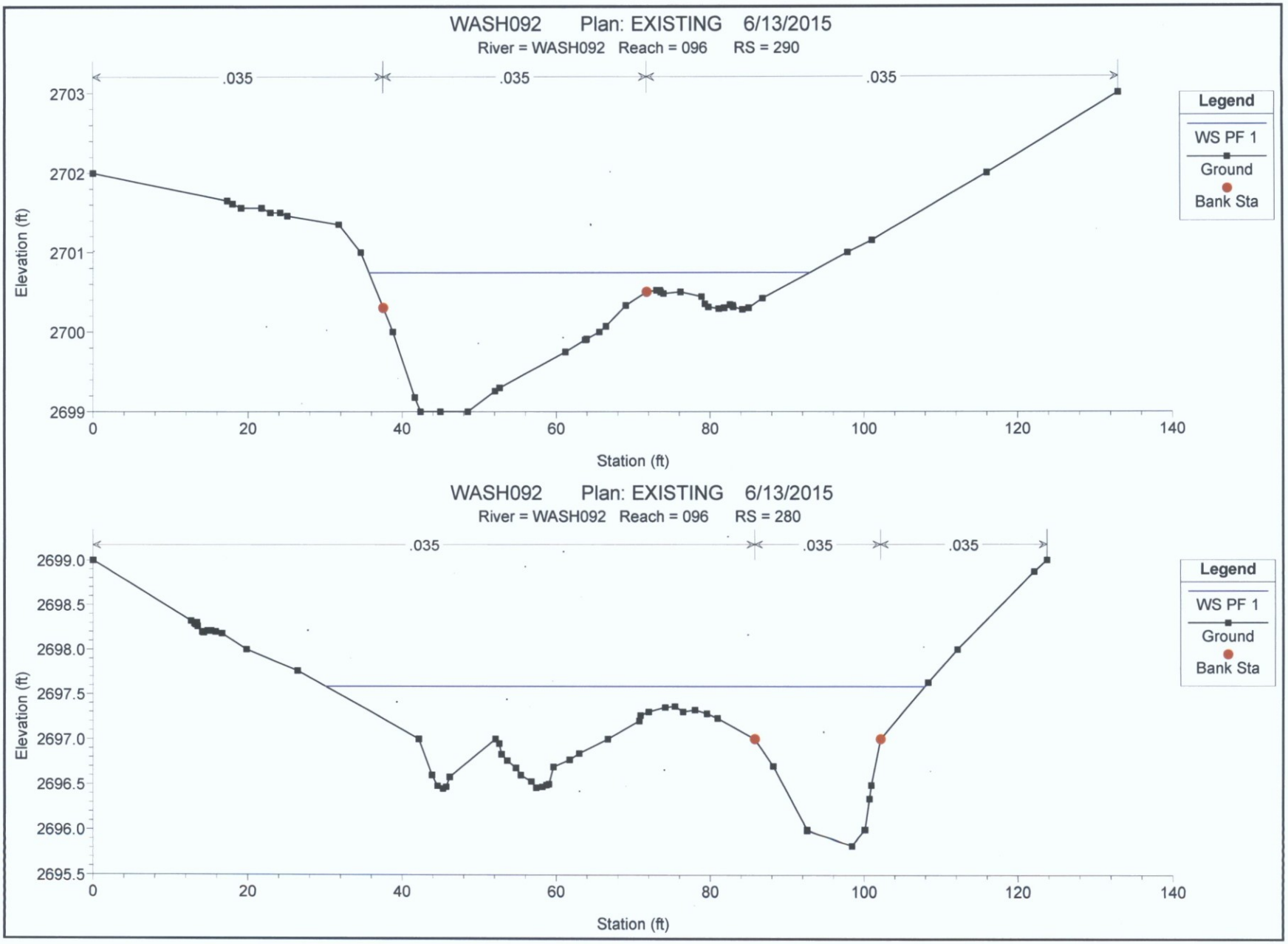

WASH092 Plan: EXISTING 6/13/2015
River = WASH092 Reach = 096 RS = 390
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
WASH092 Plan: EXISTING 6/13/2015
River = WASH092 Reach = 096 RS = 380
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

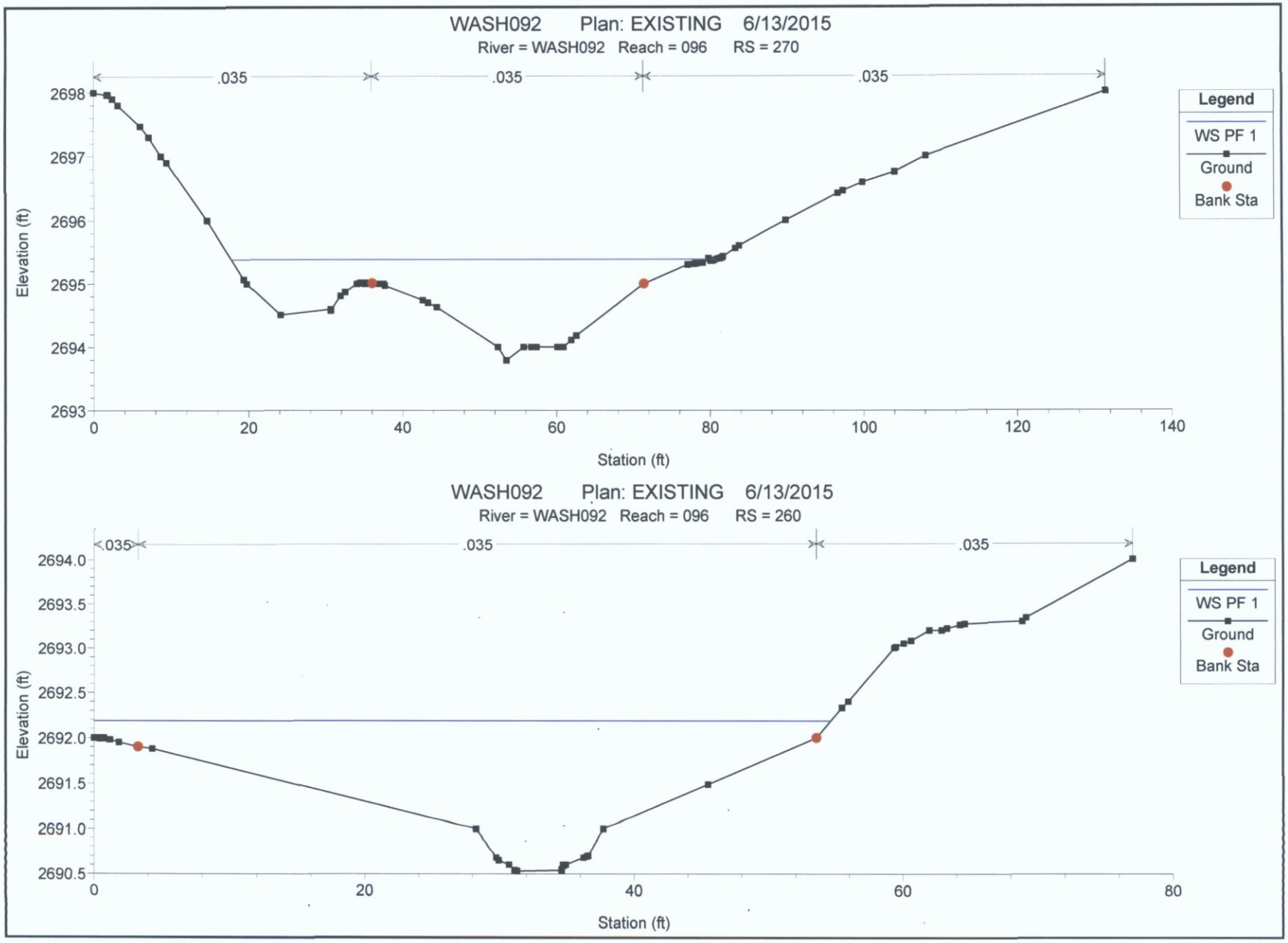

WASH092 Plan: EXISTING 6/13/2015
River = WASH092 Reach = 096 RS = 370
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2734
2733
2732
2731
2730
2729
0
20
40
60
80
100
120
Station (ft)
WASH092 Plan: EXISTING 6/13/2015
River = WASH092 Reach = 096 RS = 360
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2730.0
2729.5
2729.0
2728.5
2728.0
2727.5
2727.0
2726.5
0
20
40
60
80
100
120
140
160
Station (ft)

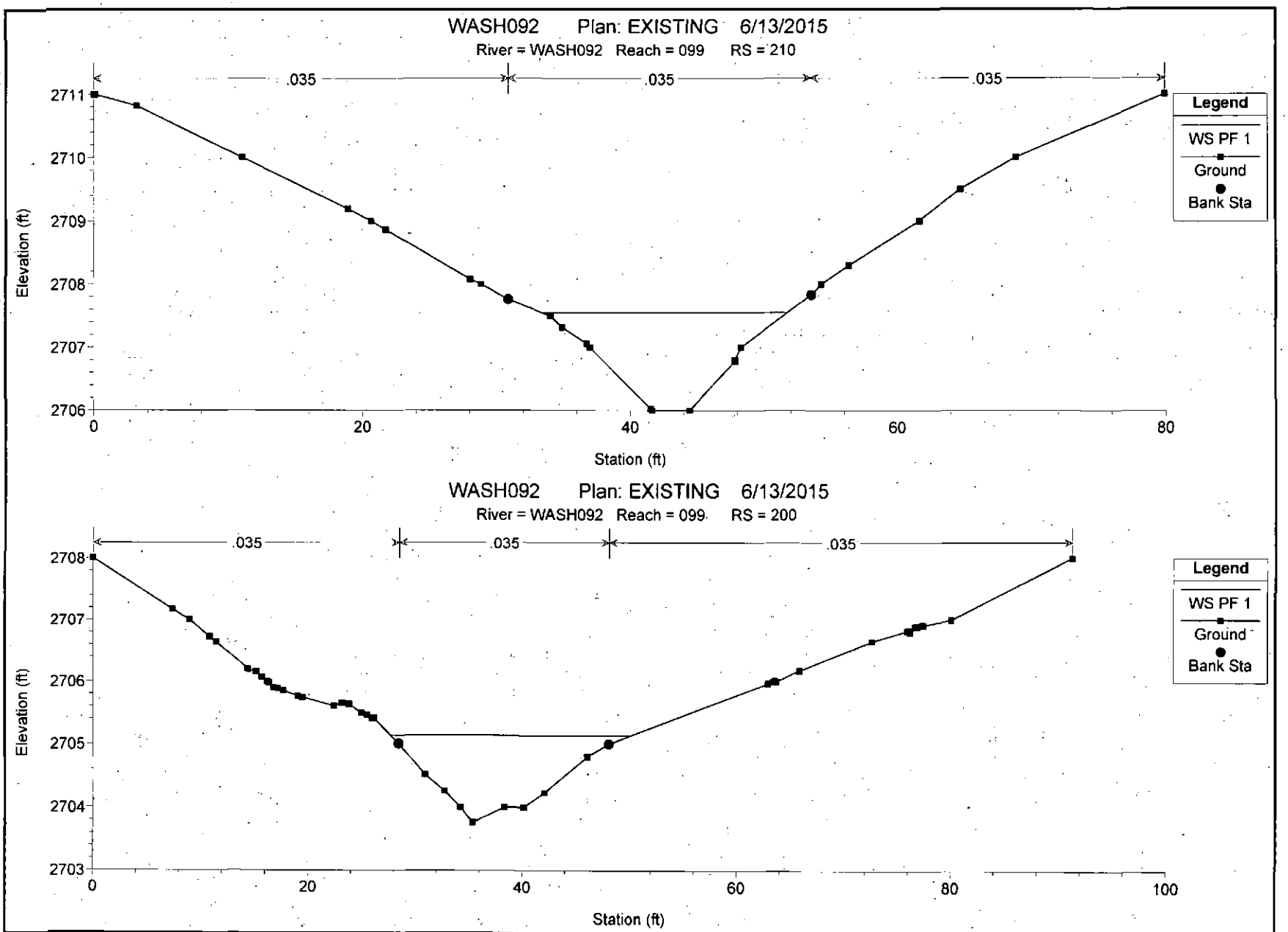

WASH092 Plan: EXISTING 6/13/2015
River = WASH092 Reach = 096 RS = 350
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
WASH092 Plan: EXISTING 6/13/2015
River = WASH092 Reach = 096 RS = 340
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

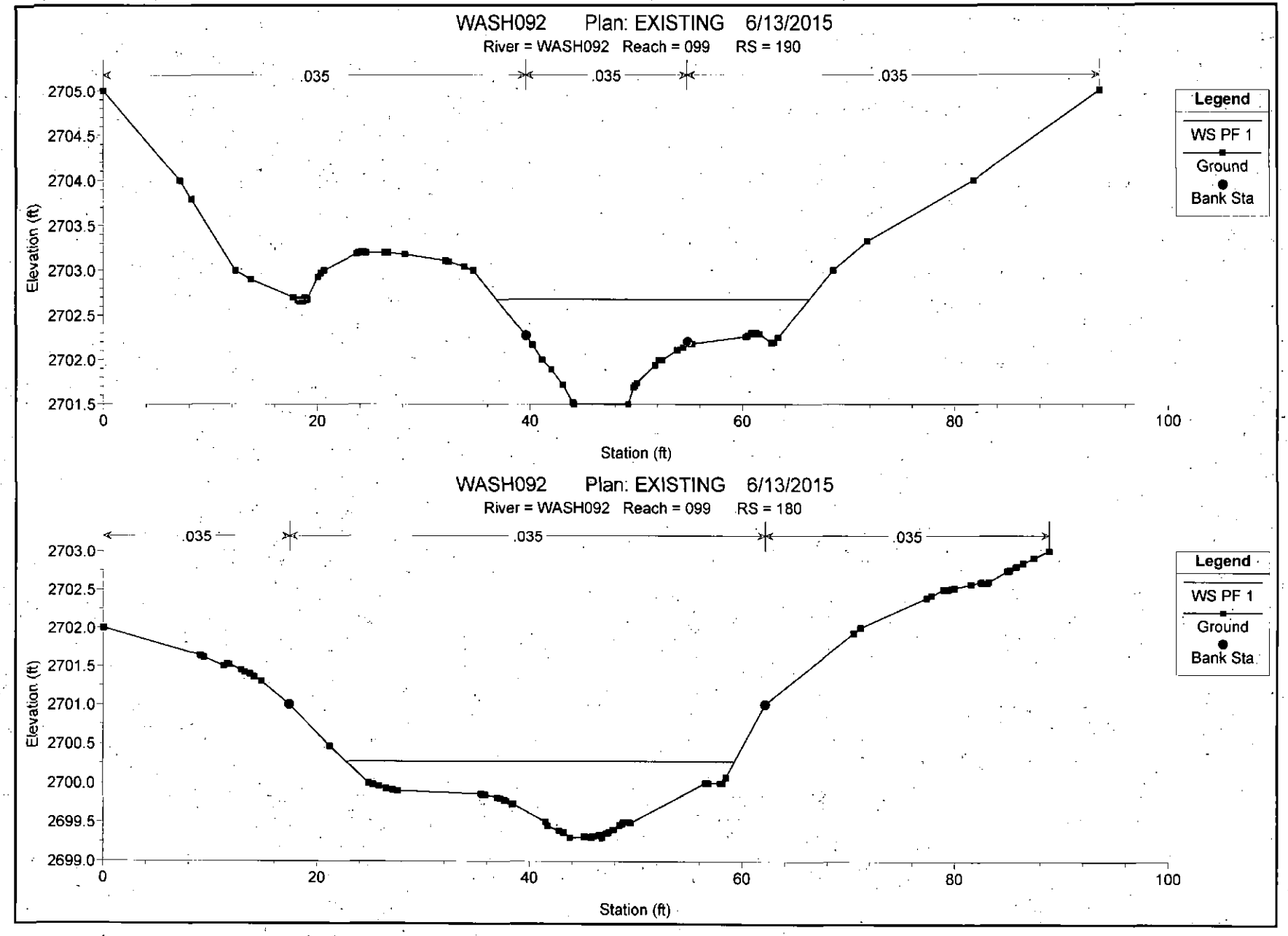

WASH092 Plan: EXISTING 6/13/2015
River = WASH092 Reach = 096 RS = 330
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
WASH092 Plan: EXISTING 6/13/2015
River = WASH092 Reach = 096 RS = 320
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

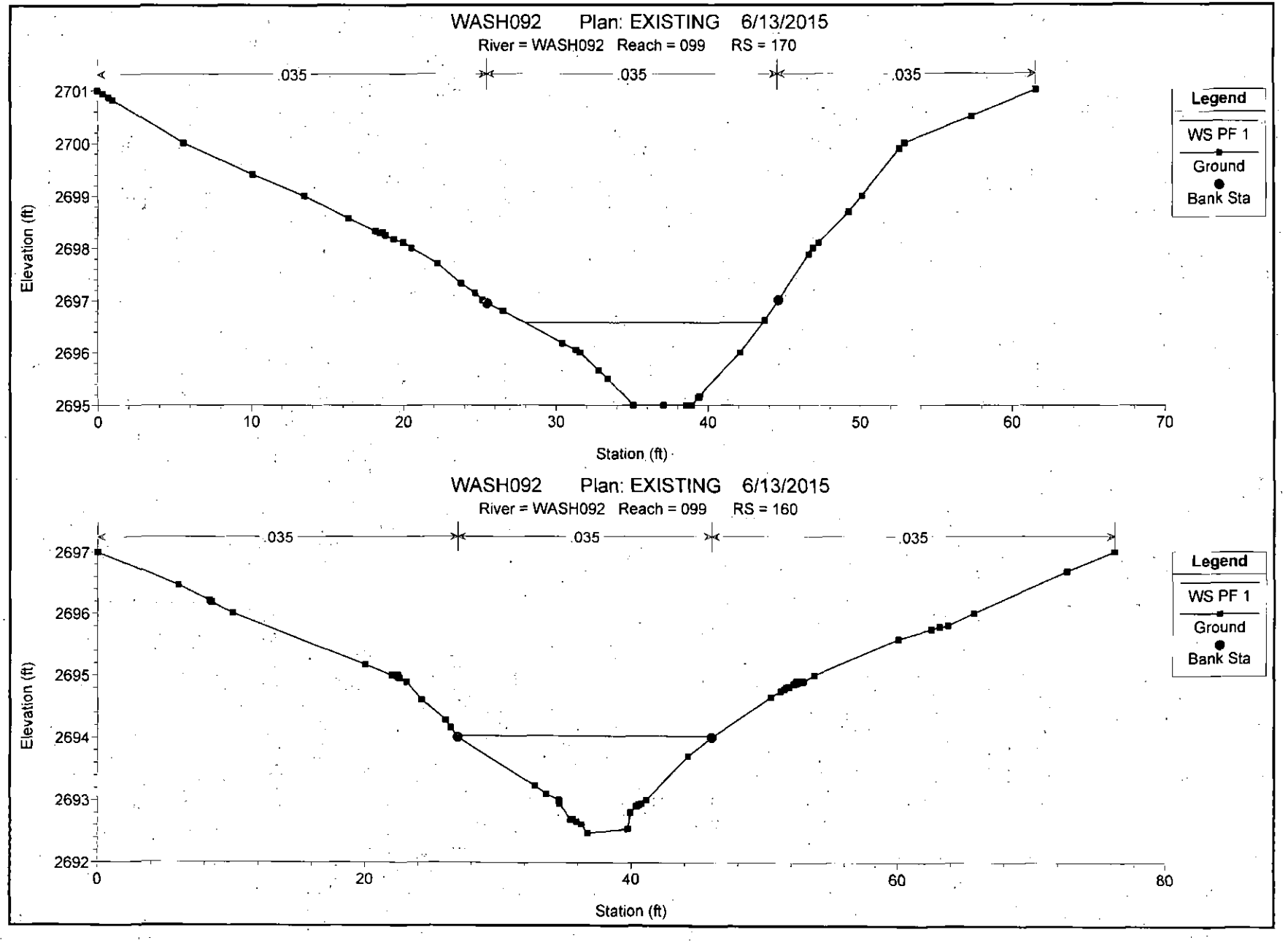

WASH092 Plan: EXISTING 6/13/2015
River = WASH092 Reach = 096 RS = 310
.035
.035
.035
Elevation (ft)
2715
2714
2713
2712
2711
2710
2709
0
20
40
60
80
100
120
140
160
180
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
WASH092 Plan: EXISTING 6/13/2015
River = WASH092 Reach = 096 RS = 300
.035
.035
.035
Elevation (ft)
2714
2712
2710
2708
2706
2704
2702
0
20
40
60
80
100
120
Station (ft)
Legend
WS PF 1
Ground
Bank Sta

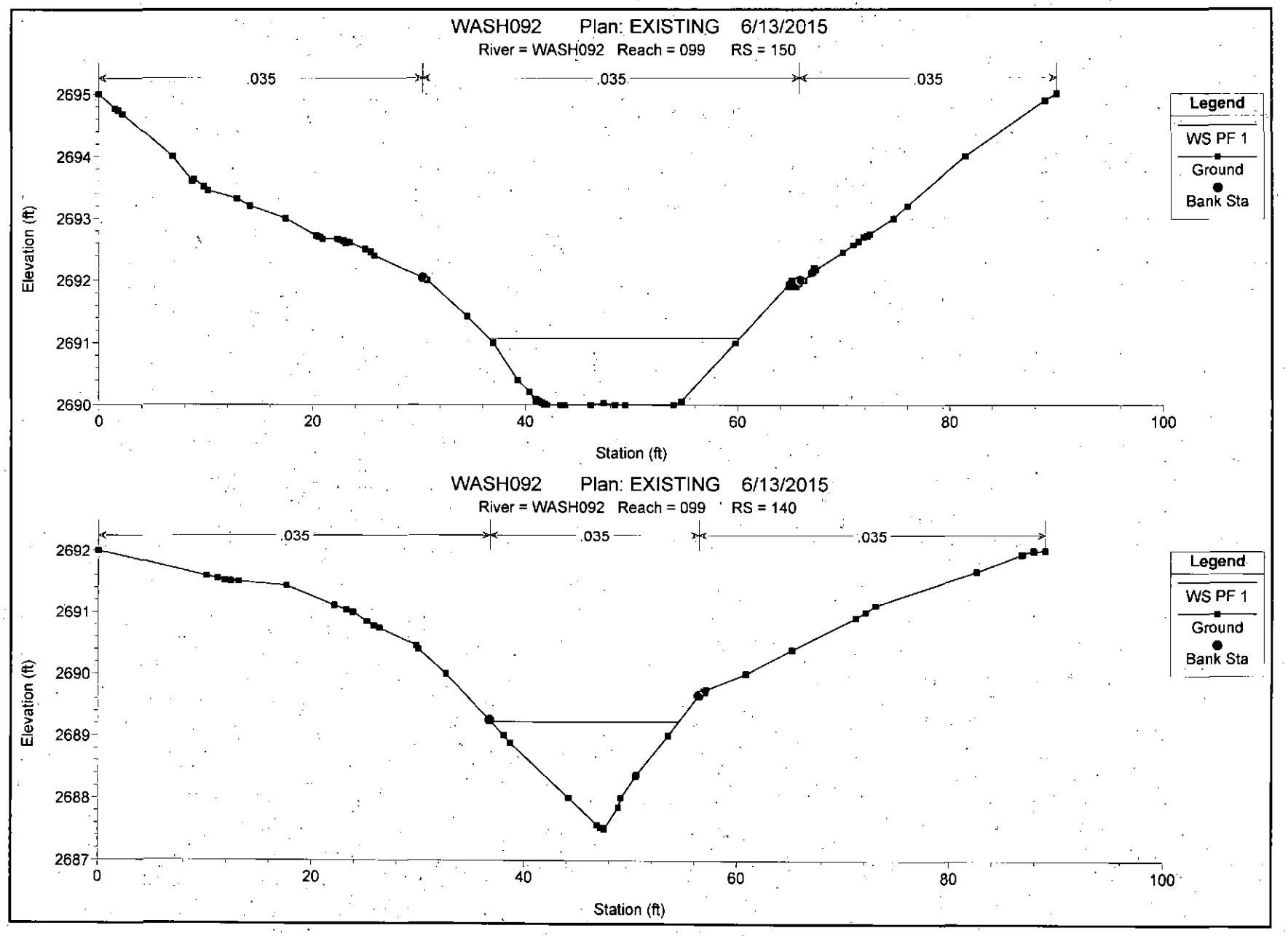

WASH092 Plan: EXISTING 6/13/2015
River = WASH092 Reach = 096 RS = 290
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
WASH092 Plan: EXISTING 6/13/2015
River = WASH092 Reach = 096 RS = 280
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

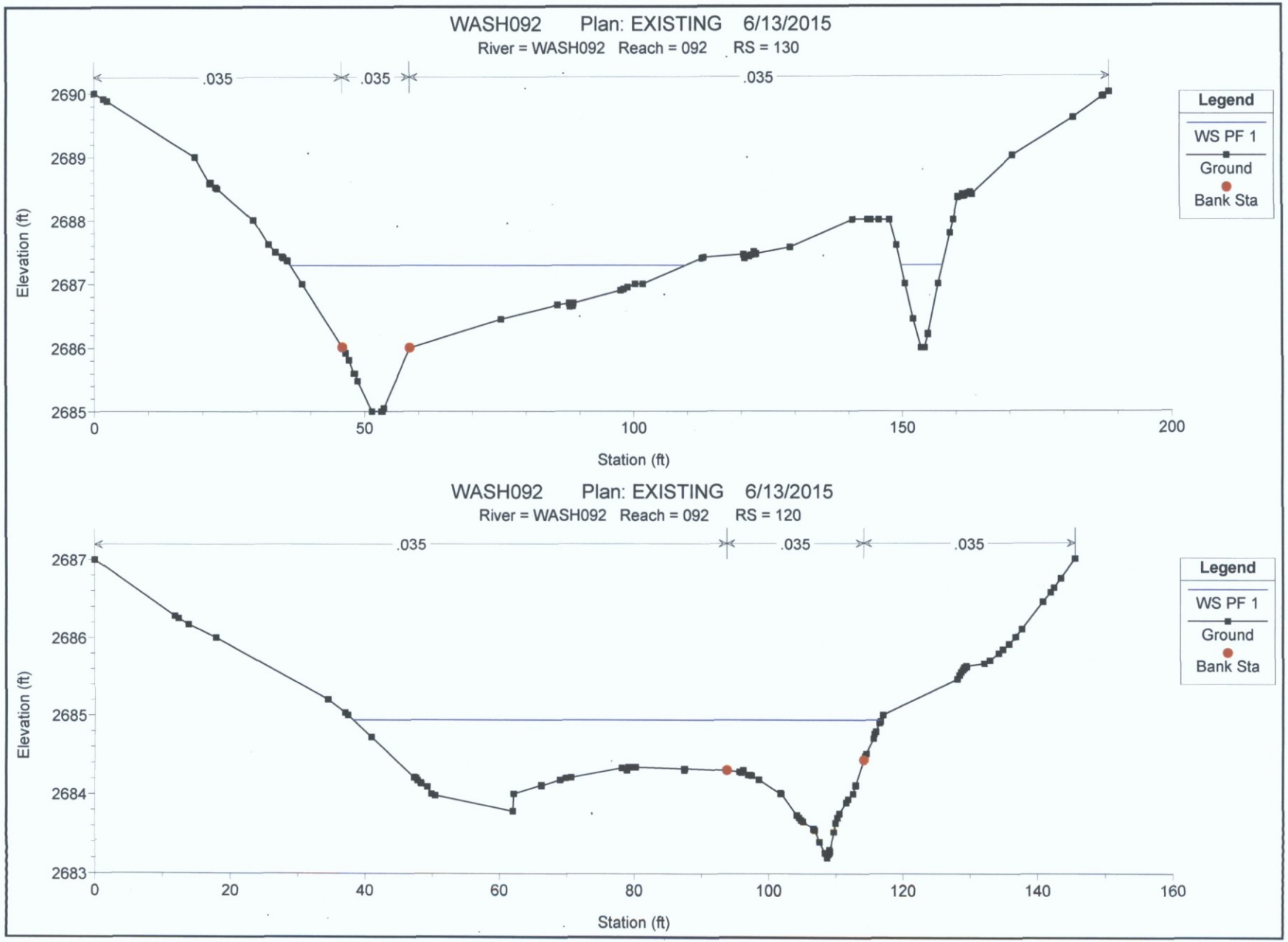

WASH092 Plan: EXISTING 6/13/2015
River = WASH092 Reach = 096 RS = 270
.035
.035
.035
Elevation (ft)
2698
2697
2696
2695
2694
2693
0
20
40
60
80
100
120
140
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
WASH092 Plan: EXISTING 6/13/2015
River = WASH092 Reach = 096 RS = 260
.035
.035
.035
Elevation (ft)
2694.0
2693.5
2693.0
2692.5
2692.0
2691.5
2691.0
2690.5
0
20
40
60
80
Station (ft)
Legend
WS PF 1
Ground
Bank Sta

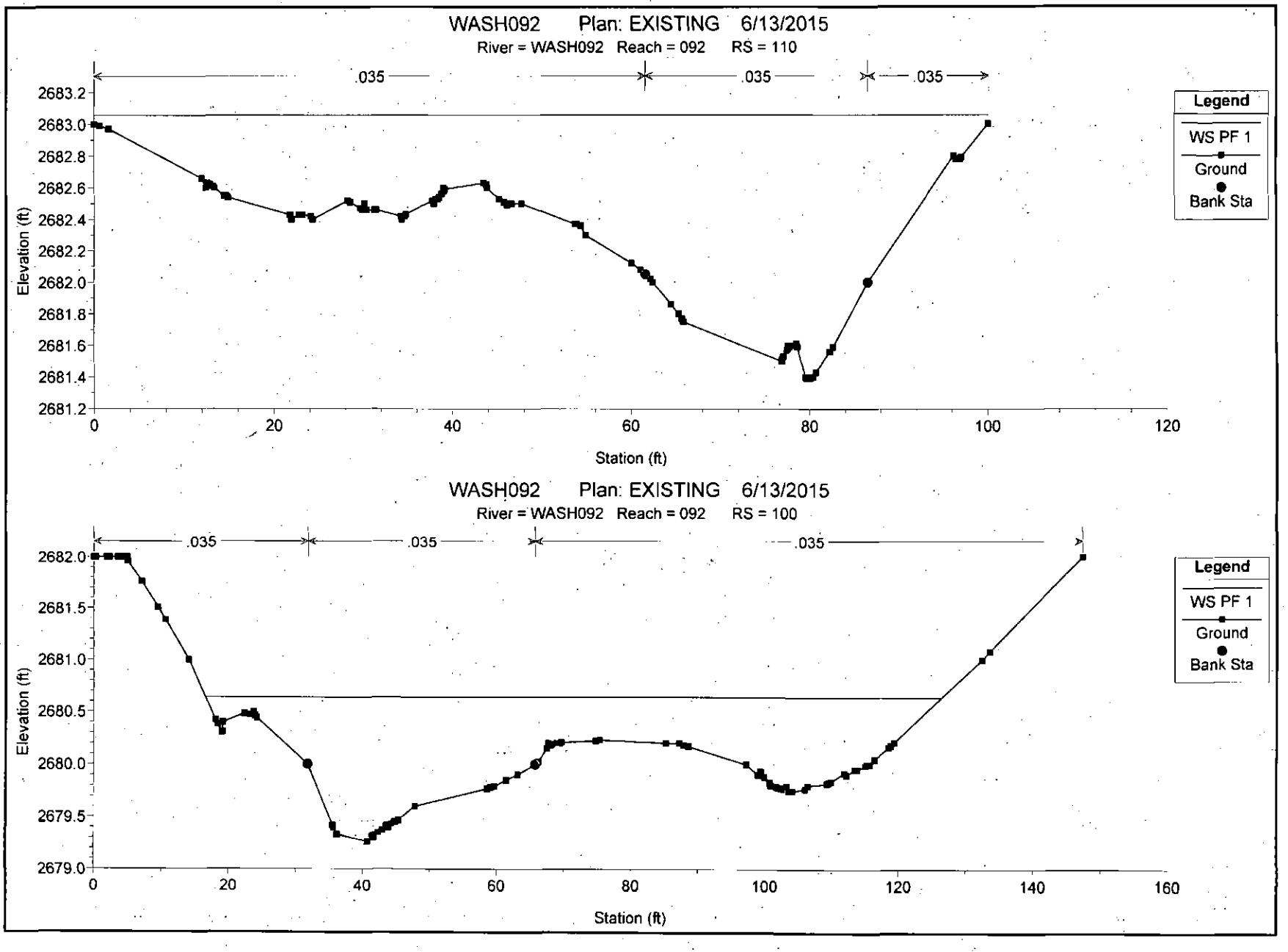

WASH092 Plan: EXISTING 6/13/2015
River = WASH092 Reach = 099 RS = 210
.035
.035
.035
2711
2710
2709
2708
2707
2706
Elevation (ft)
0
20
40
60
80
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
WASH092 Plan: EXISTING 6/13/2015
River = WASH092 Reach = 099 RS = 200
.035
.035
.035
2708
2707
2706
2705
2704
2703
Elevation (ft)
0
20
40
60
80
100
Station (ft)
Legend
WS PF 1
Ground
Bank Sta

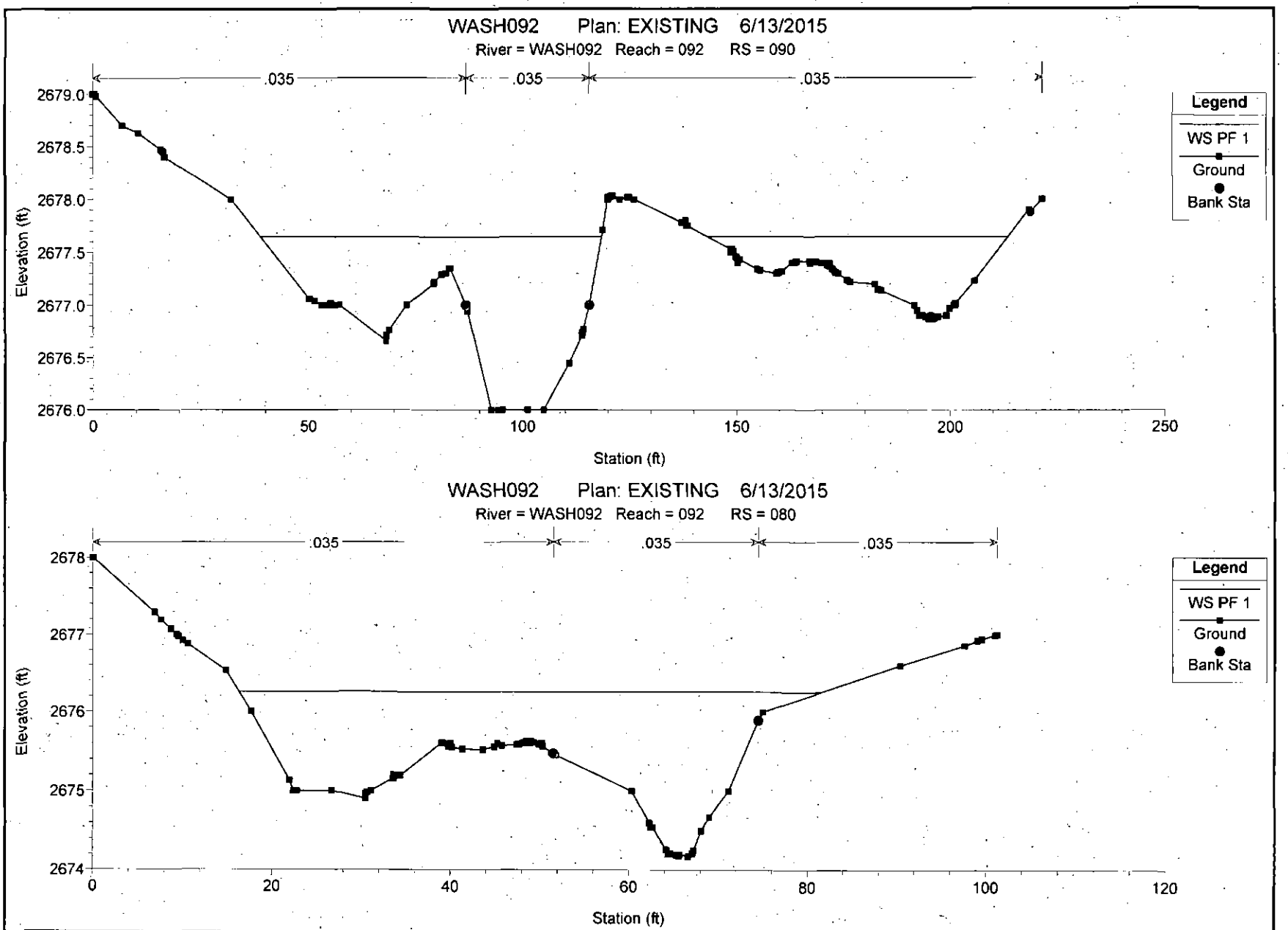

WASH092 Plan: EXISTING 6/13/2015
River = WASH092 Reach = 099 RS = 190
.035
.035
.035
2705.0
2704.5
2704.0
2703.5
2703.0
2702.5
2702.0
2701.5
Elevation (ft)
0
20
40
60
80
100
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
WASH092 Plan: EXISTING 6/13/2015
River = WASH092 Reach = 099 RS = 180
.035
.035
.035
2703.0
2702.5
2702.0
2701.5
2701.0
2700.5
2700.0
2699.5
2699.0
Elevation (ft)
0
20
40
60
80
100
Station (ft)
Legend
WS PF 1
Ground
Bank Sta

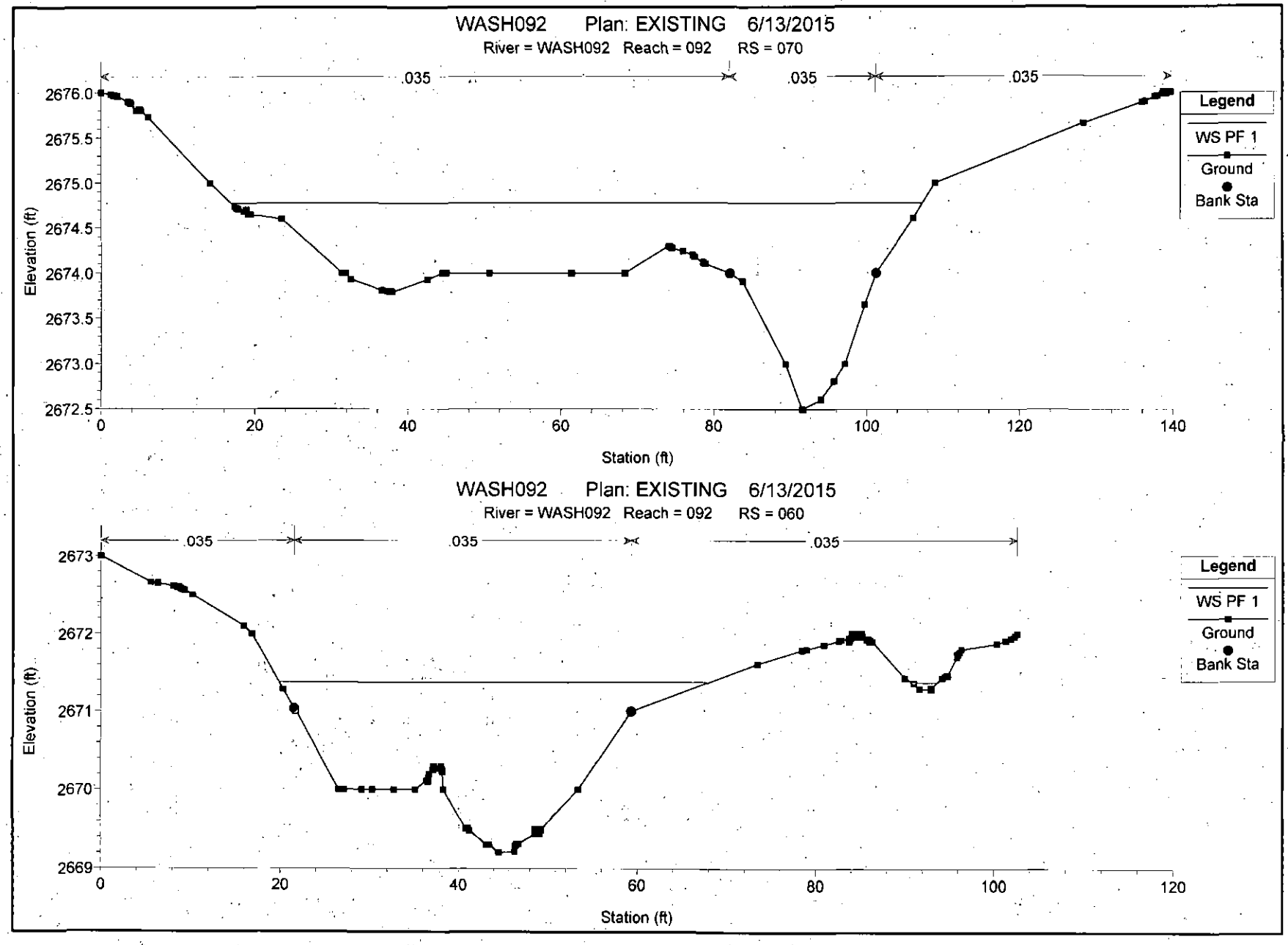

WASH092 Plan: EXISTING 6/13/2015
River = WASH092 Reach = 099 RS = 170
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
WASH092 Plan: EXISTING 6/13/2015
River = WASH092 Reach = 099 RS = 160
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

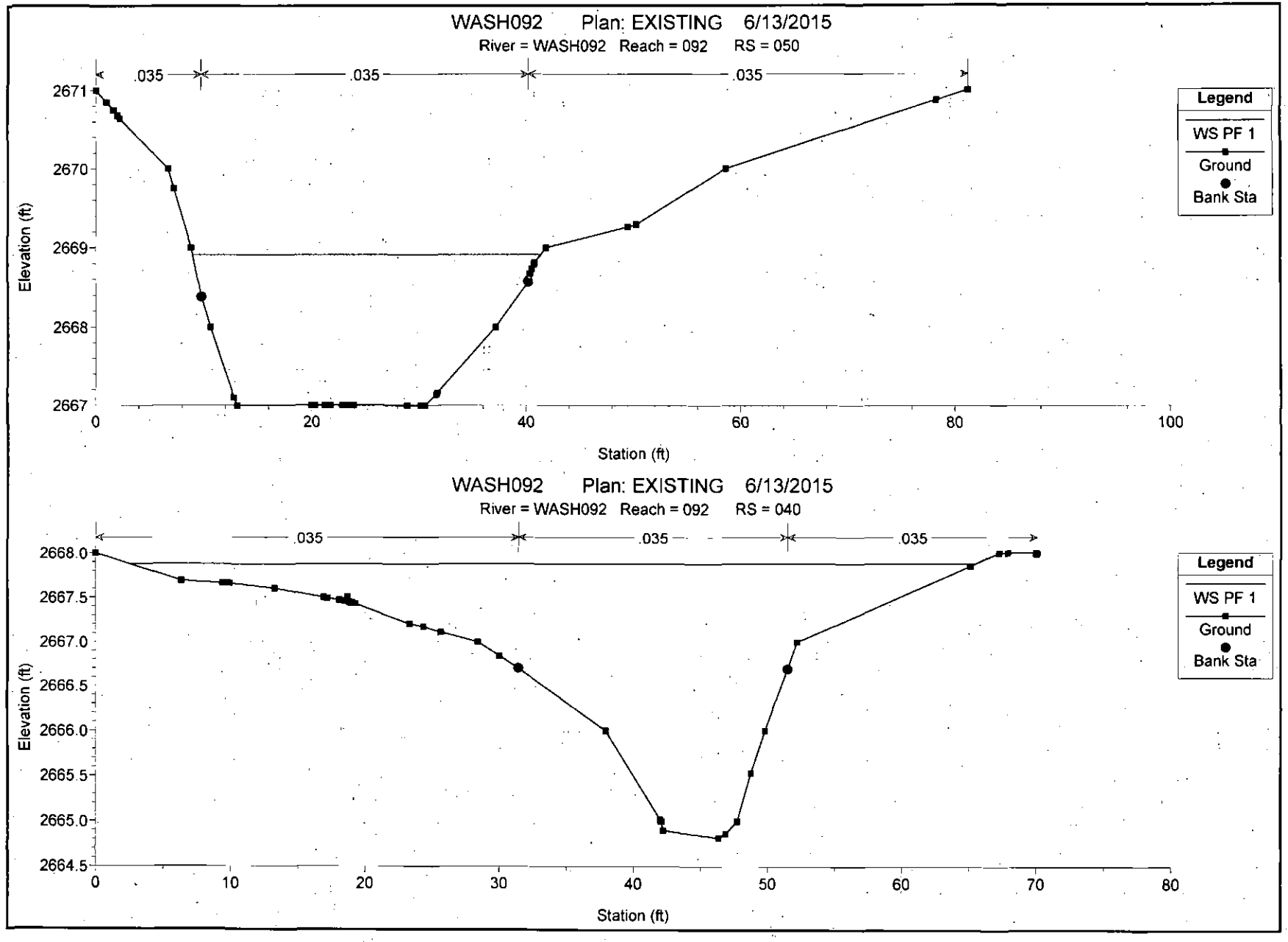

WASH092 Plan: EXISTING 6/13/2015
River = WASH092 Reach = 099 RS = 150
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2695
2694
2693
2692
2691
2690
0
20
40
60
80
100
Station (ft)
WASH092 Plan: EXISTING 6/13/2015
River = WASH092 Reach = 099 RS = 140
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2692
2691
2690
2689
2688
2687
0
20
40
60
80
100
Station (ft)

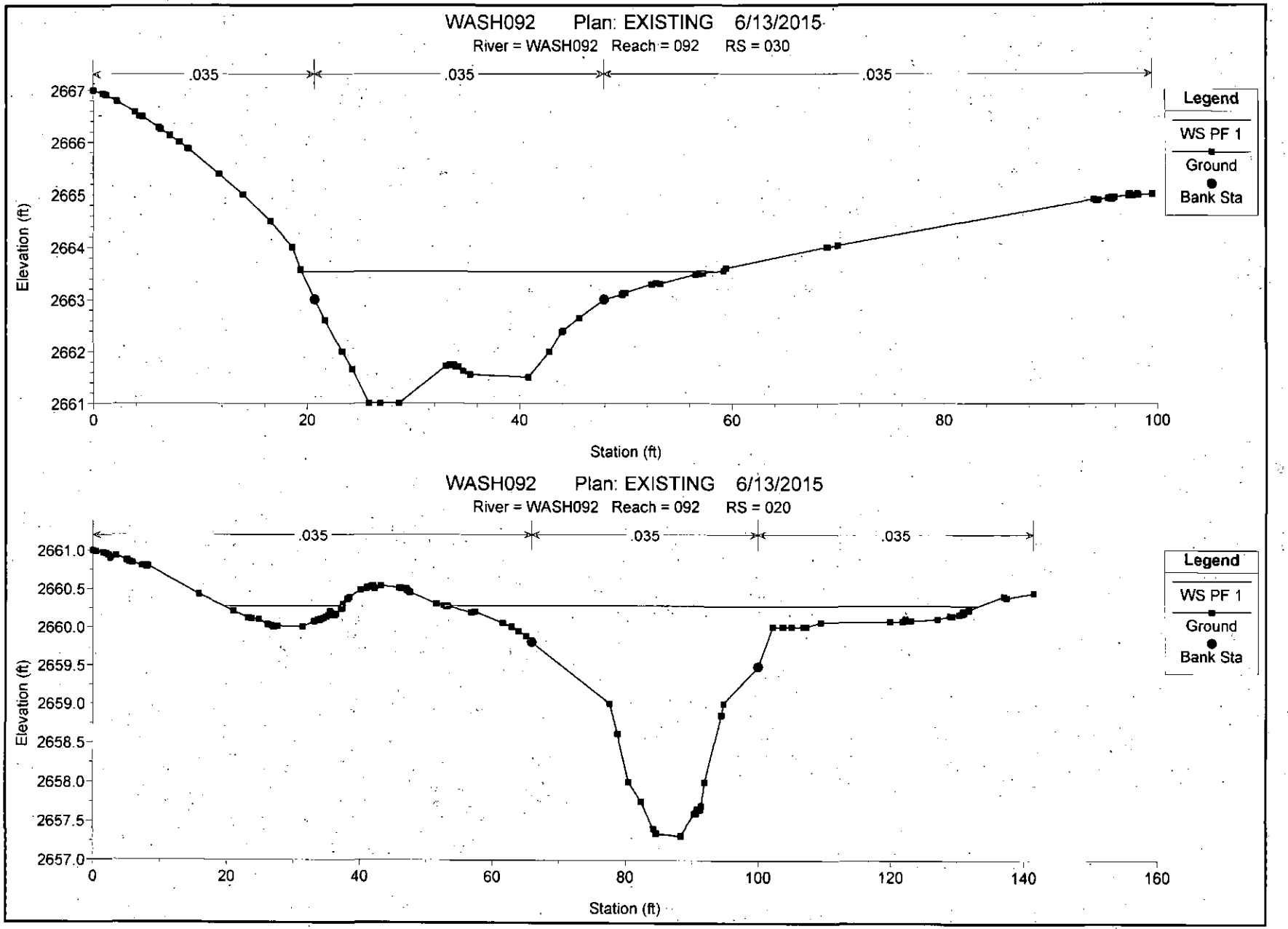

WASH092 Plan: EXISTING 6/13/2015
River = WASH092 Reach = 092 RS = 130
.035
.035
.035
Elevation (ft)
2690
2689
2688
2687
2686
2685
0
50
100
150
200
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
WASH092 Plan: EXISTING 6/13/2015
River = WASH092 Reach = 092 RS = 120
.035
.035
.035
Elevation (ft)
2687
2686
2685
2684
2683
0
20
40
60
80
100
120
140
160
Station (ft)
Legend
WS PF 1
Ground
Bank Sta

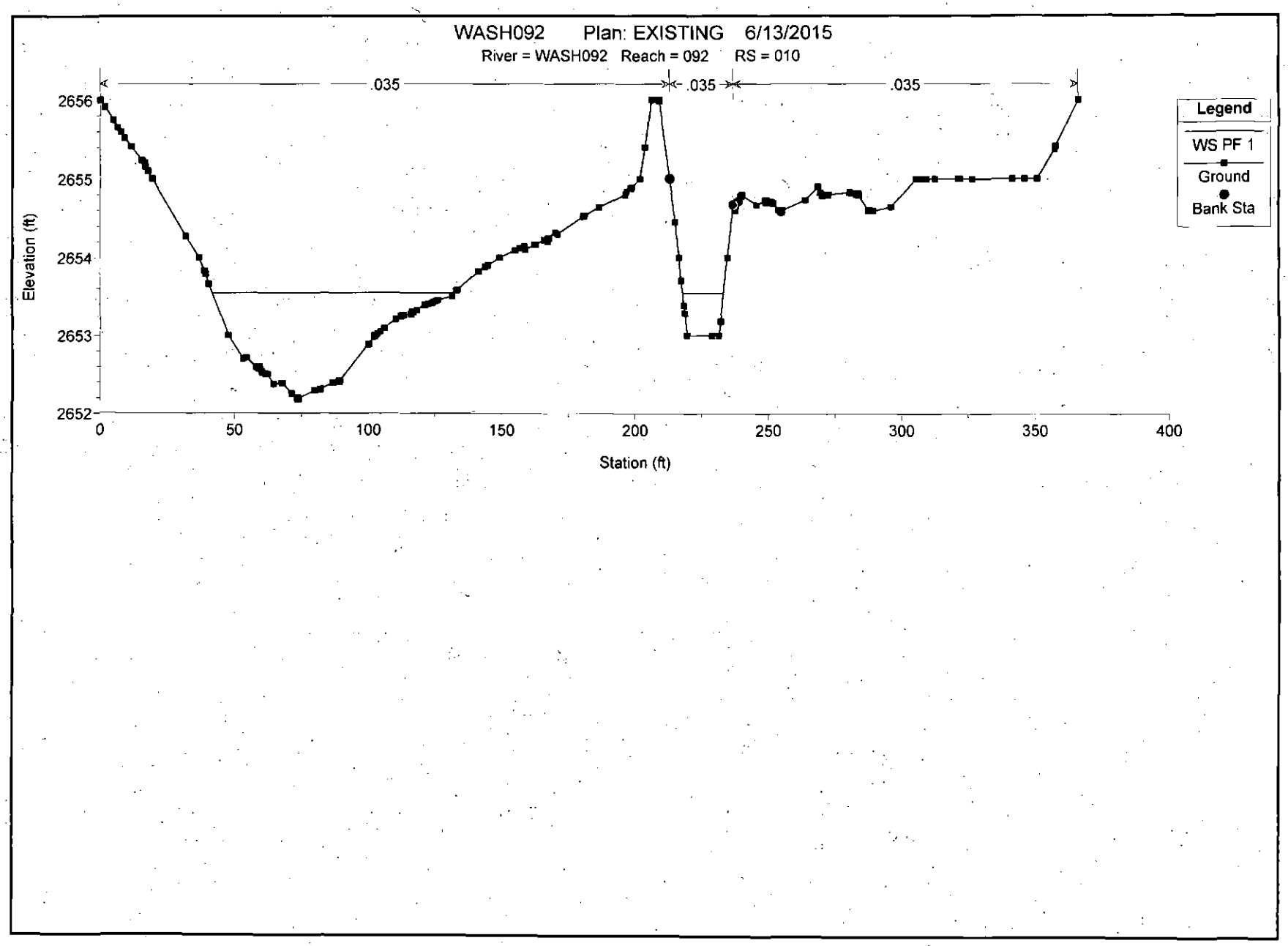

WASH092 Plan: EXISTING 6/13/2015
River = WASH092 Reach = 092 RS = 110
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
WASH092 Plan: EXISTING 6/13/2015
River = WASH092 Reach = 092 RS = 100
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

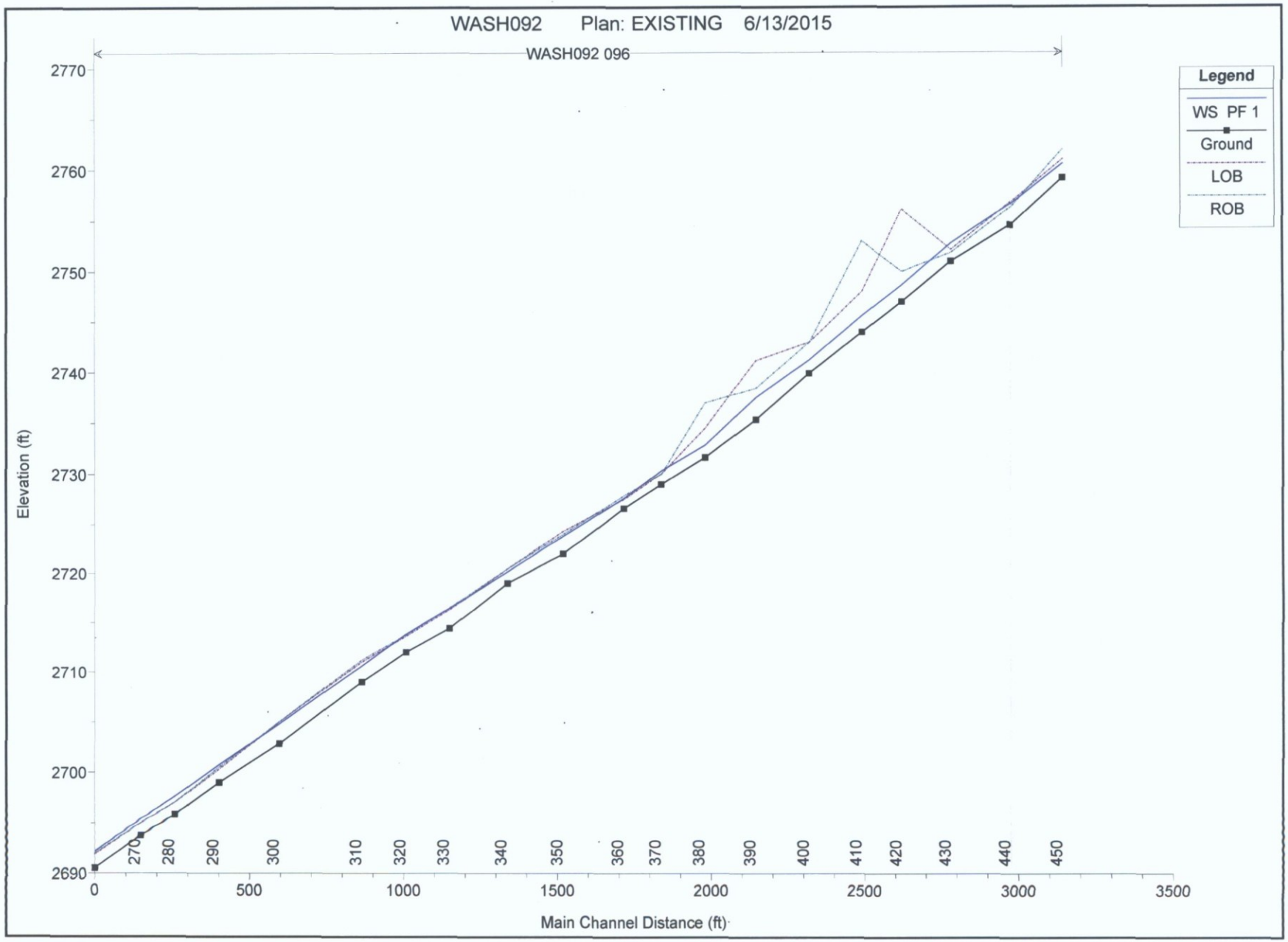

WASH092 Plan: EXISTING 6/13/2015
River = WASH092 Reach = 092 RS = 090
.035
.035
.035
2679.0
2678.5
2678.0
2677.5
2677.0
2676.5
2676.0
Elevation (ft)
0
50
100
150
200
250
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
WASH092 Plan: EXISTING 6/13/2015
River = WASH092 Reach = 092 RS = 080
.035
.035
.035
2678
2677
2676
2675
2674
Elevation (ft)
0
20
40
60
80
100
120
Station (ft)
Legend
WS PF 1
Ground
Bank Sta


WASH092 Plan: EXISTING 6/13/2015
River = WASH092 Reach = 092 RS = 070
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2676.0
2675.5
2675.0
2674.5
2674.0
2673.5
2673.0
2672.5
0
20
40
60
80
100
120
140
Station (ft)
WASH092 Plan: EXISTING 6/13/2015
River = WASH092 Reach = 092 RS = 060
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2673
2672
2671
2670
2669
0
20
40
60
80
100
120
Station (ft)

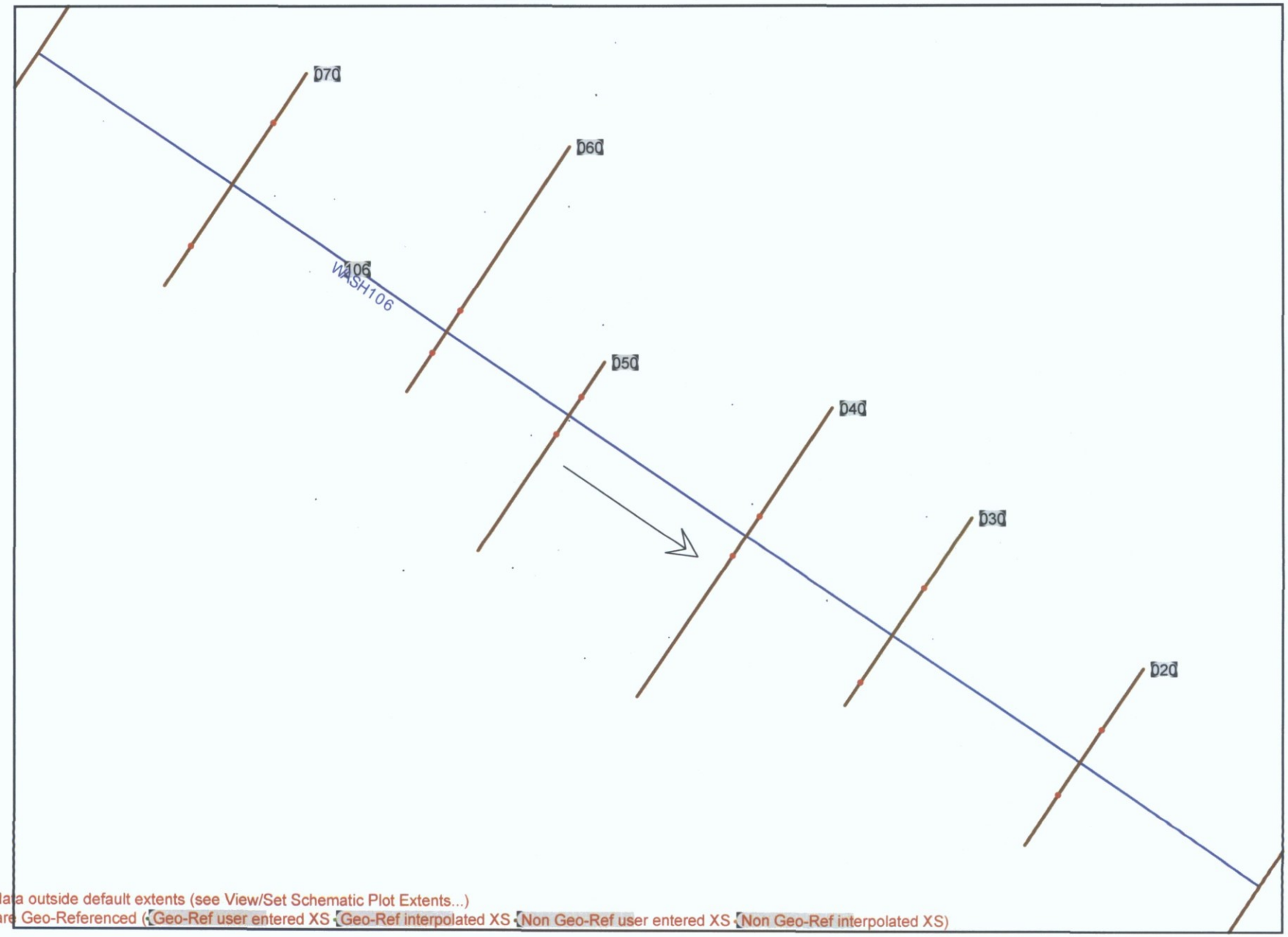

WASH092 Plan: EXISTING 6/13/2015
River = WASH092 Reach = 092 RS = 050
.035
.035
.035
2671
2670
2669
2668
2667
Elevation (ft)
0
20
40
60
80
100
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
WASH092 Plan: EXISTING 6/13/2015
River = WASH092 Reach = 092 RS = 040
.035
.035
.035
2668.0
2667.5
2667.0
2666.5
2666.0
2665.5
2665.0
2664.5
Elevation (ft)
0
10
20
30
40
50
60
70
80
Station (ft)
Legend
WS PF 1
Ground
Bank Sta


WASH092 Plan: EXISTING 6/13/2015
River = WASH092 Reach = 092 RS = 030
.035
.035
.035
Elevation (ft)
2667
2666
2665
2664
2663
2662
2661
0
20
40
60
80
100
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
WASH092 Plan: EXISTING 6/13/2015
River = WASH092 Reach = 092 RS = 020
.035
.035
.035
Elevation (ft)
2661.0
2660.5
2660.0
2659.5
2659.0
2658.5
2658.0
2657.5
2657.0
0
20
40
60
80
100
120
140
160
Station (ft)
Legend
WS PF 1
Ground
Bank Sta


WASH092 Plan: EXISTING 6/13/2015
River = WASH092 Reach = 092 RS = 010
.035
.035
.035
2656
2655
2654
2653
2652
Elevation (ft)
0
50
100
150
200
250
300
350
400
Station (ft)
Legend
WS PF 1
Ground
Bank Sta


WASH092 Plan: EXISTING 6/13/2015
WASH092 096
Legend
WS PF 1
Ground
LOB
ROB
Elevation (ft)
2770
2760
2750
2740
2730
2720
2710
2700
2690
270
280
290
300
310
320
330
340
350
360
370
380
390
400
410
420
430
440
450
0
500
1000
1500
2000
2500
3000
3500
Main Channel Distance (ft)

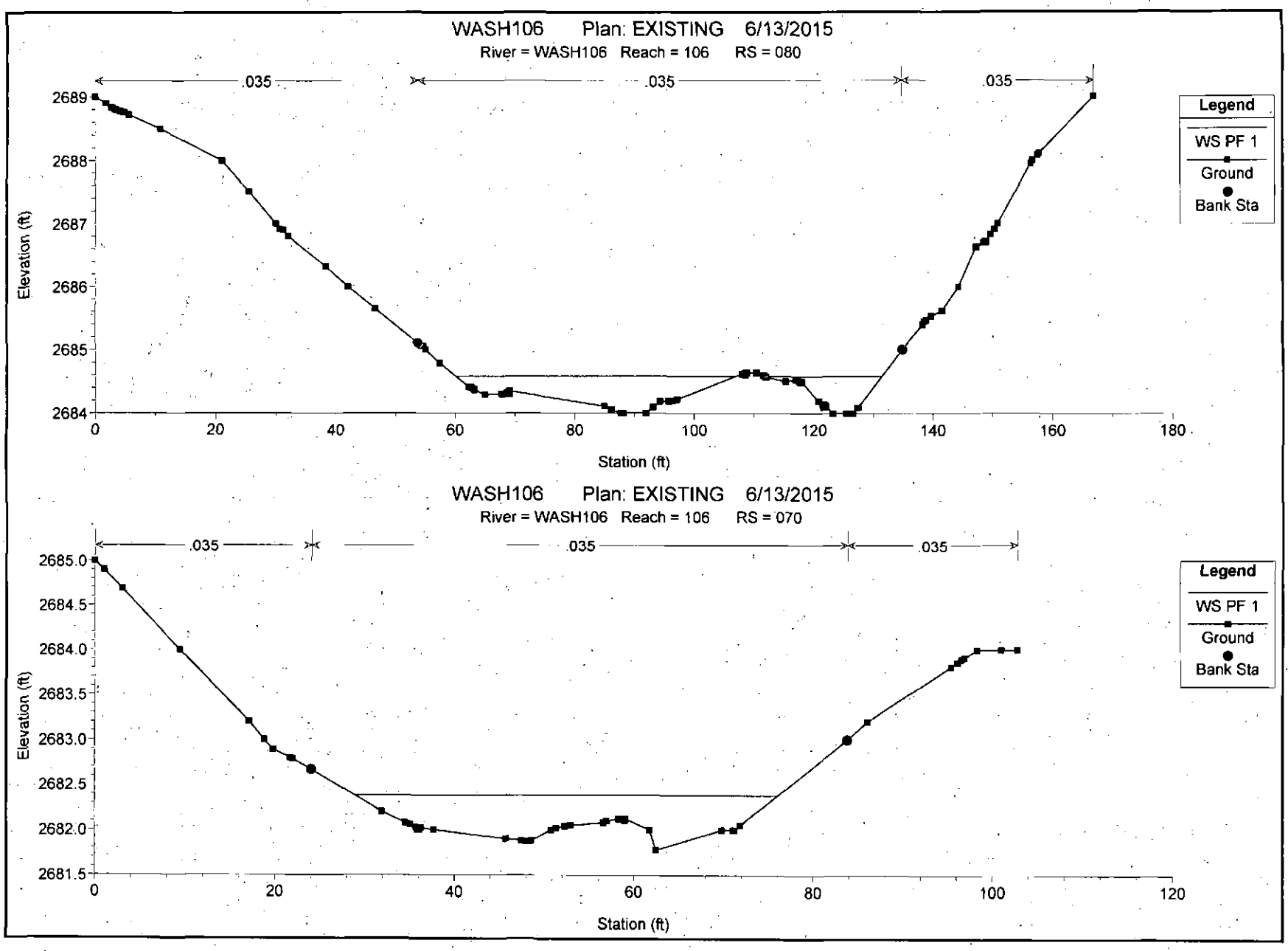
EXISTING WASH 106 HEC-RAS

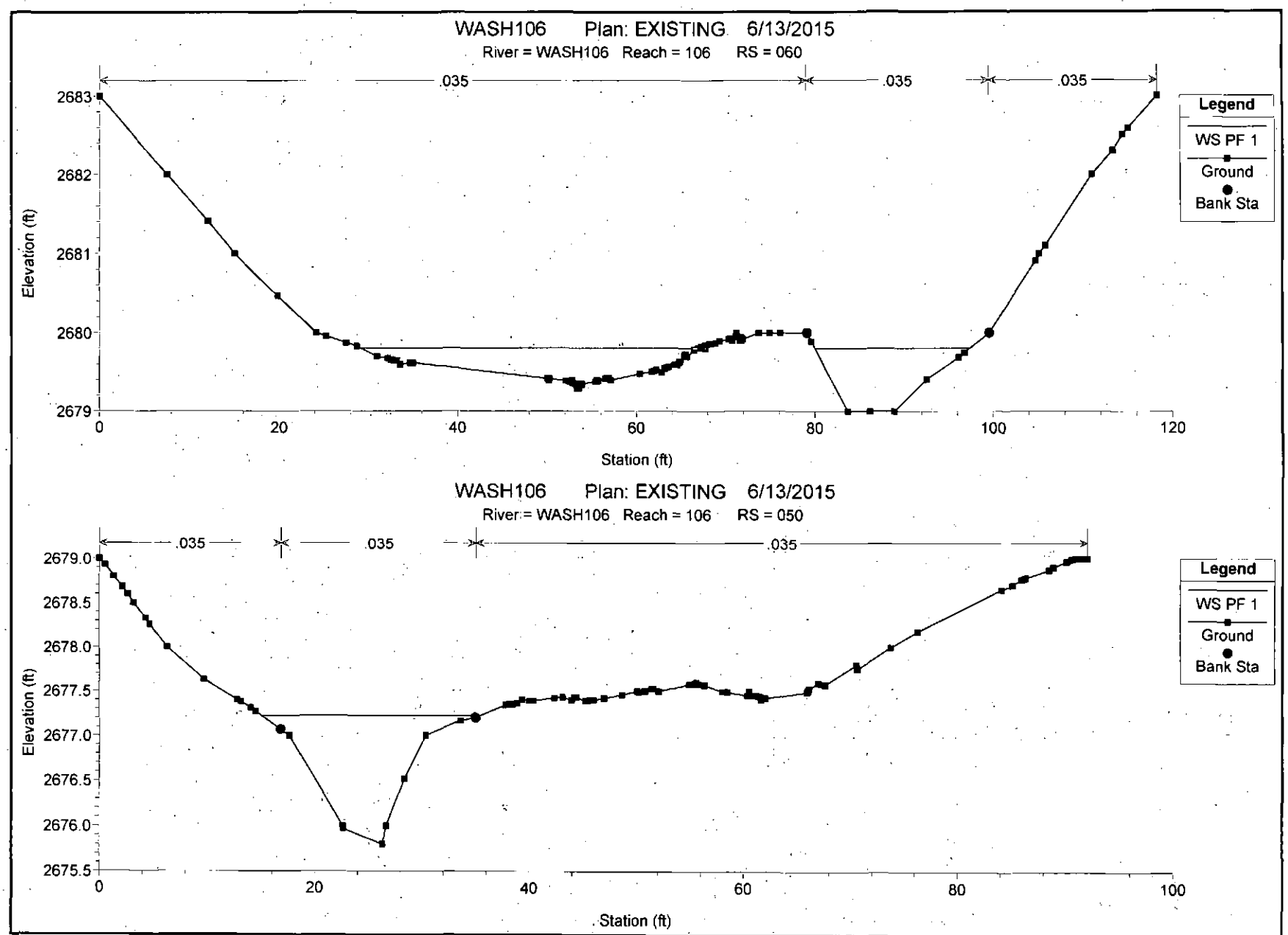


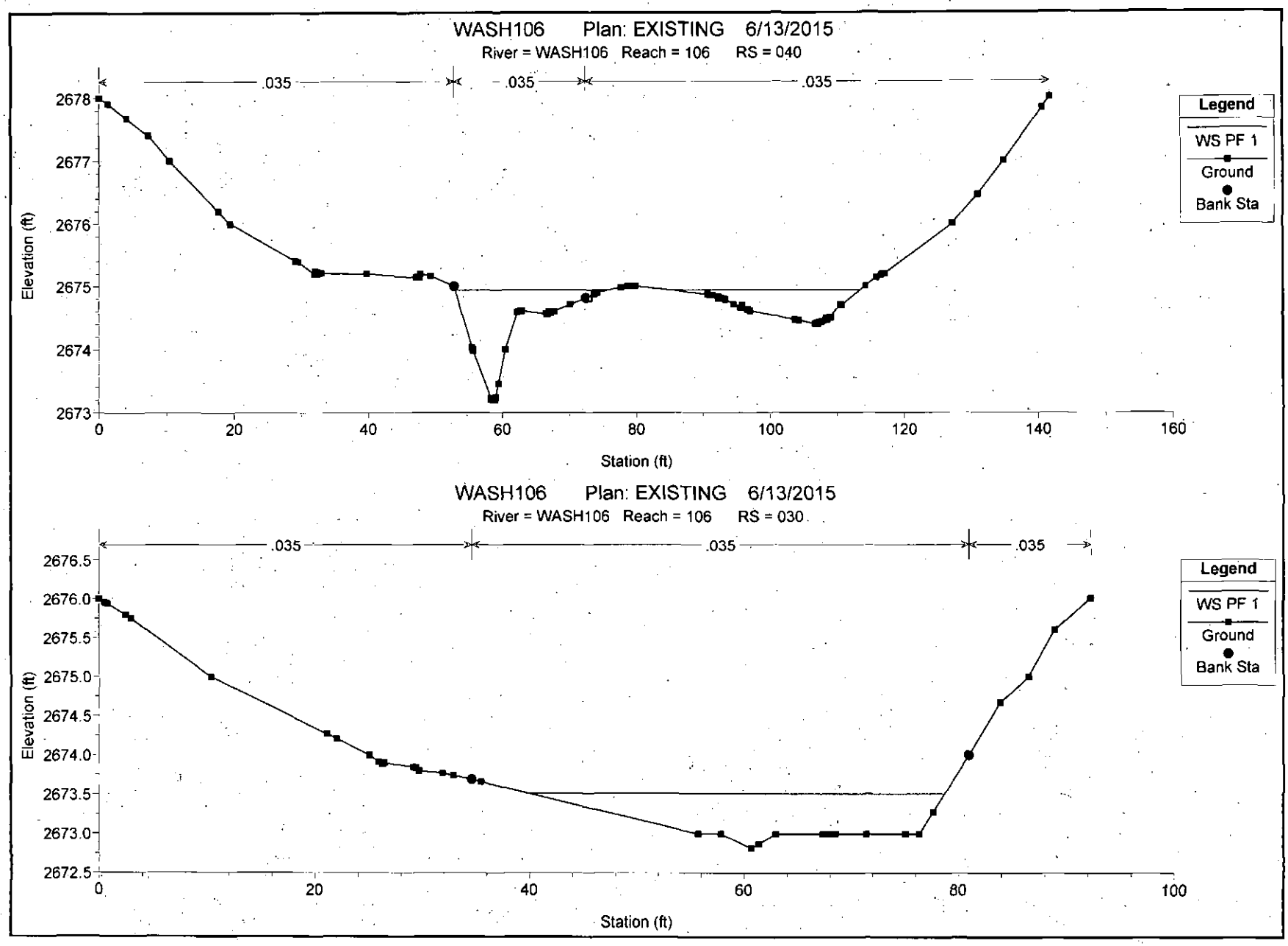
me schematic data outside default extents (see View/Set Schematic Plot Extents...)
ne of the XS's are Geo-Referenced (Geo-Ref user entered XS Geo-Ref interpolated XS Non Geo-Ref user entered XS Non Geo-Ref interpolated XS)

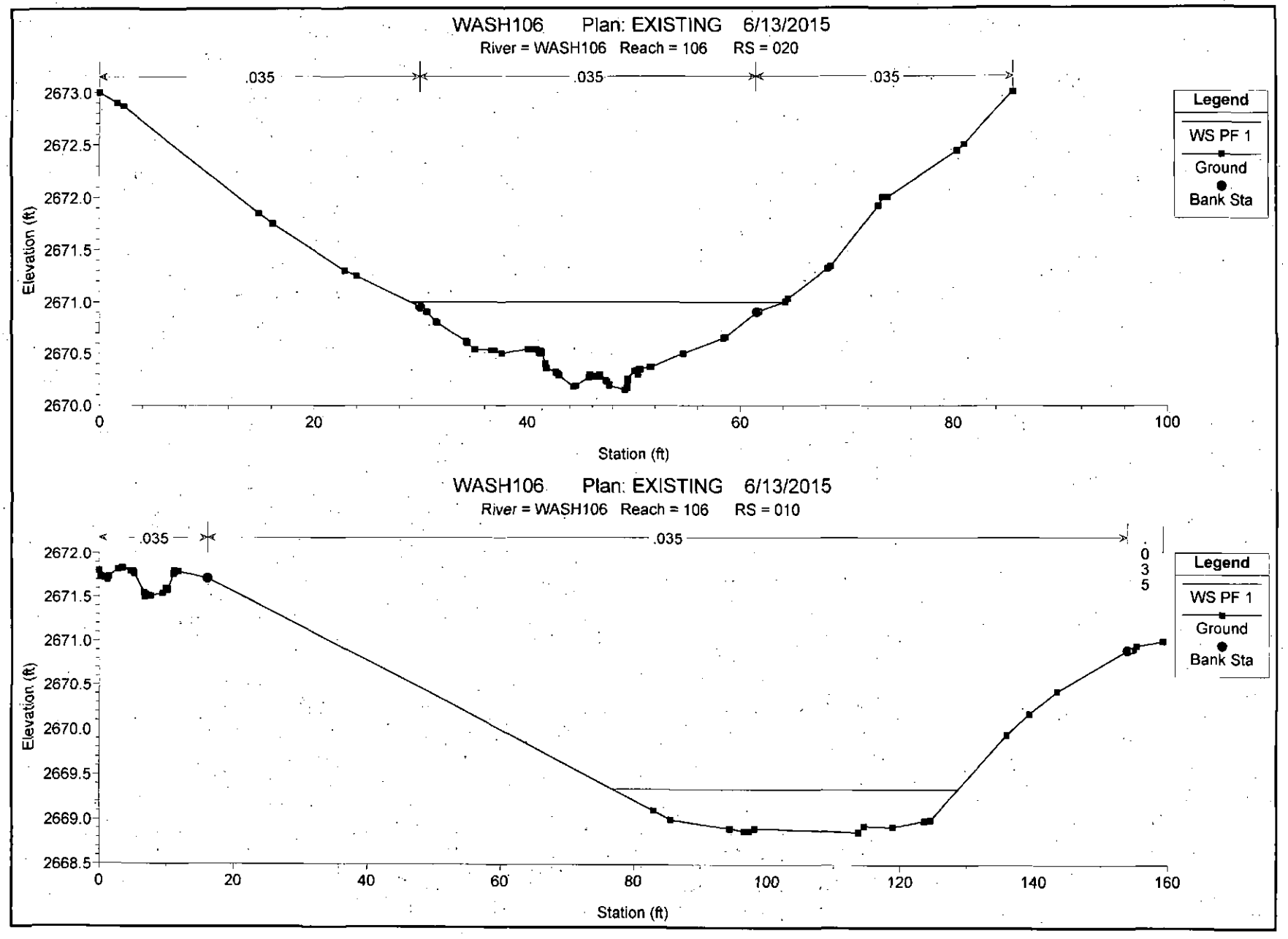
HEC-RAS Plan: 106 River: WASH106 Reach: 106 Profile: PF 1

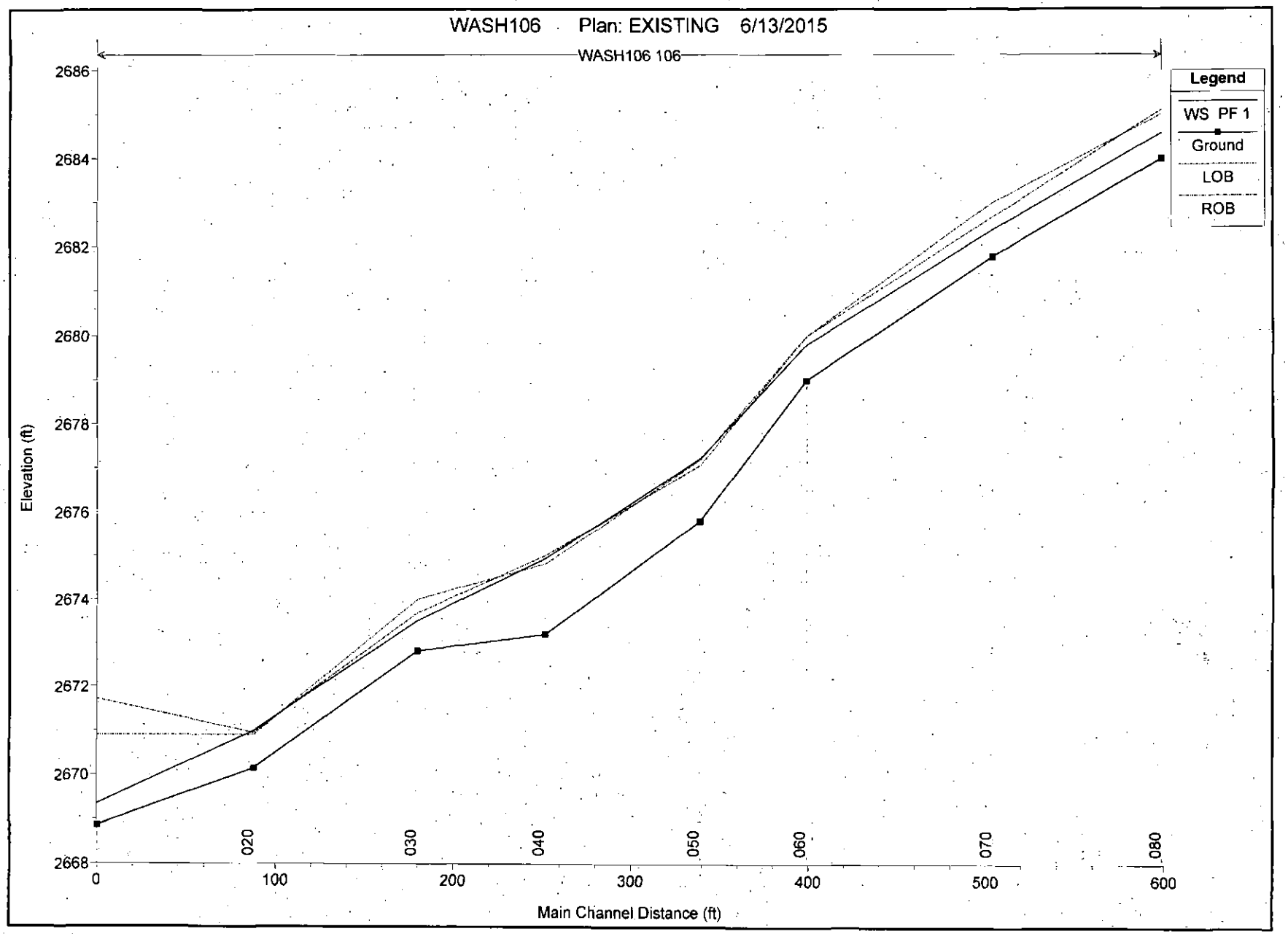
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
106	080	PF 1	57.00	2684.00	2684.58	2684.54	2684.70	0.019853	2.75	20.71	66.21	0.87
106	070	PF 1	57.00	2681.78	2682.38	2682.38	2682.56	0.025691	3.41	16.73	47.12	1.01
106	060	PF 1	57.00	2679.00	2679.81	2679.81	2679.96	0.017703	3.58	19.36	55.11	0.89
106	050	PF 1	57.00	2675.80	2677.22	2677.22	2677.56	0.020948	4.66	12.34	20.37	1.00
106	040	PF 1	57.00	2673.20	2674.93	2674.86	2675.09	0.013480	3.50	19.55	50.53	0.79
106	030	PF 1	57.00	2672.82	2673.51	2673.51	2673.72	0.024909	3.65	15.60	38.68	1.01
106	020	PF 1	57.00	2670.15	2671.00	2670.97	2671.20	0.018808	3.63	15.80	34.95	0.91
106	010	PF 1	57.00	2668.86	2669.34	2669.31	2669.48	0.020013	3.04	18.72	51.84	0.89


WASH106 Plan: EXISTING 6/13/2015
River = WASH106 Reach = 106 RS = 080
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2689
2688
2687
2686
2685
2684
0
20
40
60
80
100
120
140
160
180
Station (ft)
WASH106 Plan: EXISTING 6/13/2015
River = WASH106 Reach = 106 RS = 070
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2685.0
2684.5
2684.0
2683.5
2683.0
2682.5
2682.0
2681.5
0
20
40
60
80
100
120
Station (ft)

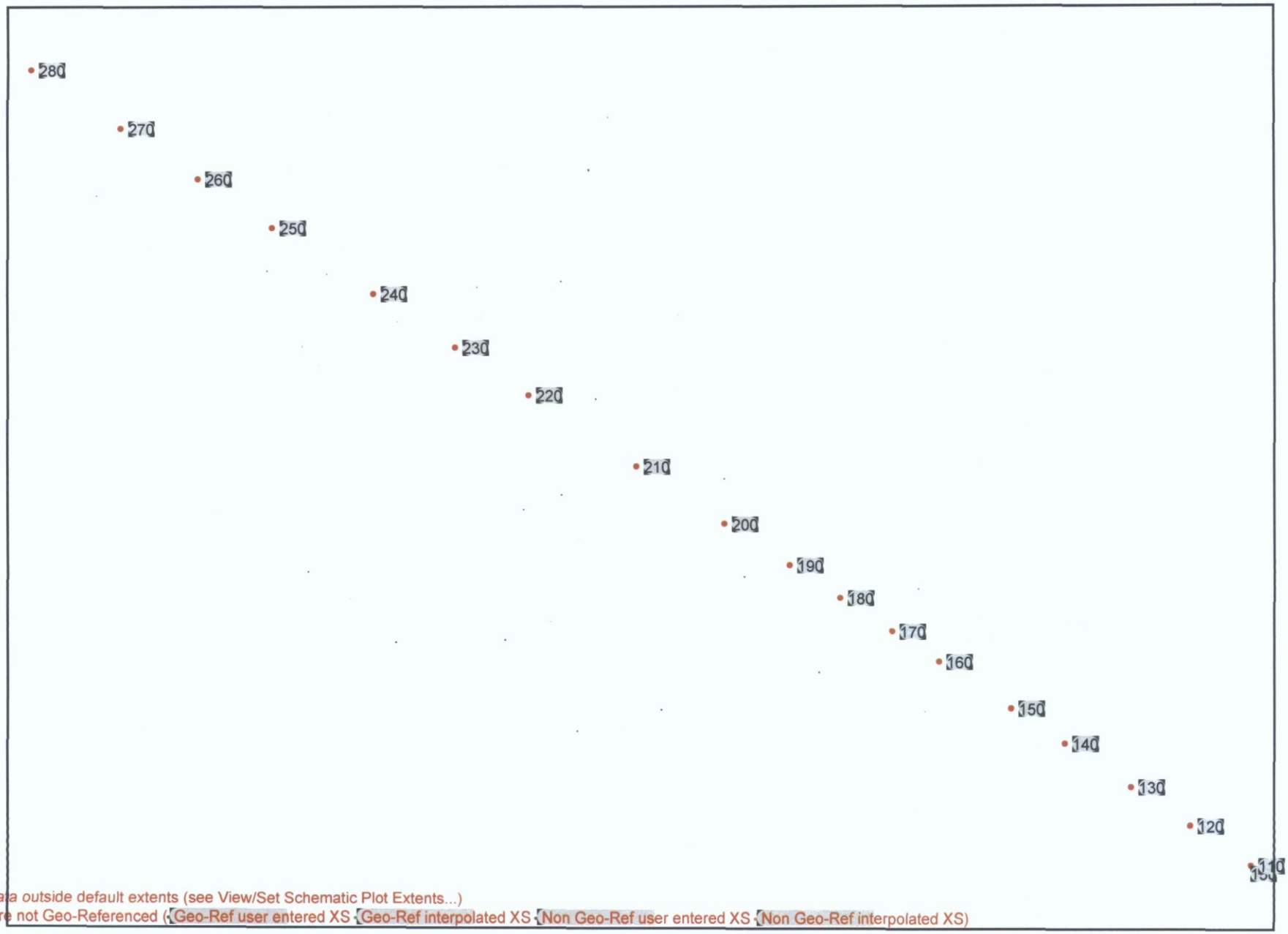

WASH106 Plan: EXISTING 6/13/2015
River = WASH106 Reach = 106 RS = 060
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2683
2682
2681
2680
2679
0
20
40
60
80
100
120
Station (ft)
WASH106 Plan: EXISTING 6/13/2015
River = WASH106 Reach = 106 RS = 050
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2679.0
2678.5
2678.0
2677.5
2677.0
2676.5
2676.0
2675.5
0
20
40
60
80
100
Station (ft)


WASH106 Plan: EXISTING 6/13/2015
River = WASH106 Reach = 106 RS = 040
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2678
2677
2676
2675
2674
2673
0
20
40
60
80
100
120
140
160
Station (ft)
WASH106 Plan: EXISTING 6/13/2015
River = WASH106 Reach = 106 RS = 030
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2676.5
2676.0
2675.5
2675.0
2674.5
2674.0
2673.5
2673.0
2672.5
0
20
40
60
80
100
Station (ft)


WASH106 Plan: EXISTING 6/13/2015
River = WASH106 Reach = 106 RS = 020
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
WASH106 Plan: EXISTING 6/13/2015
River = WASH106 Reach = 106 RS = 010
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


WASH106 Plan: EXISTING 6/13/2015
WASH106 106
Legend
WS PF 1
Ground
LOB
ROB
Elevation (ft)
2686
2684
2682
2680
2678
2676
2674
2672
2670
2668
020
030
040
050
060
070
080
0
100
200
300
400
500
600
Main Channel Distance (ft)

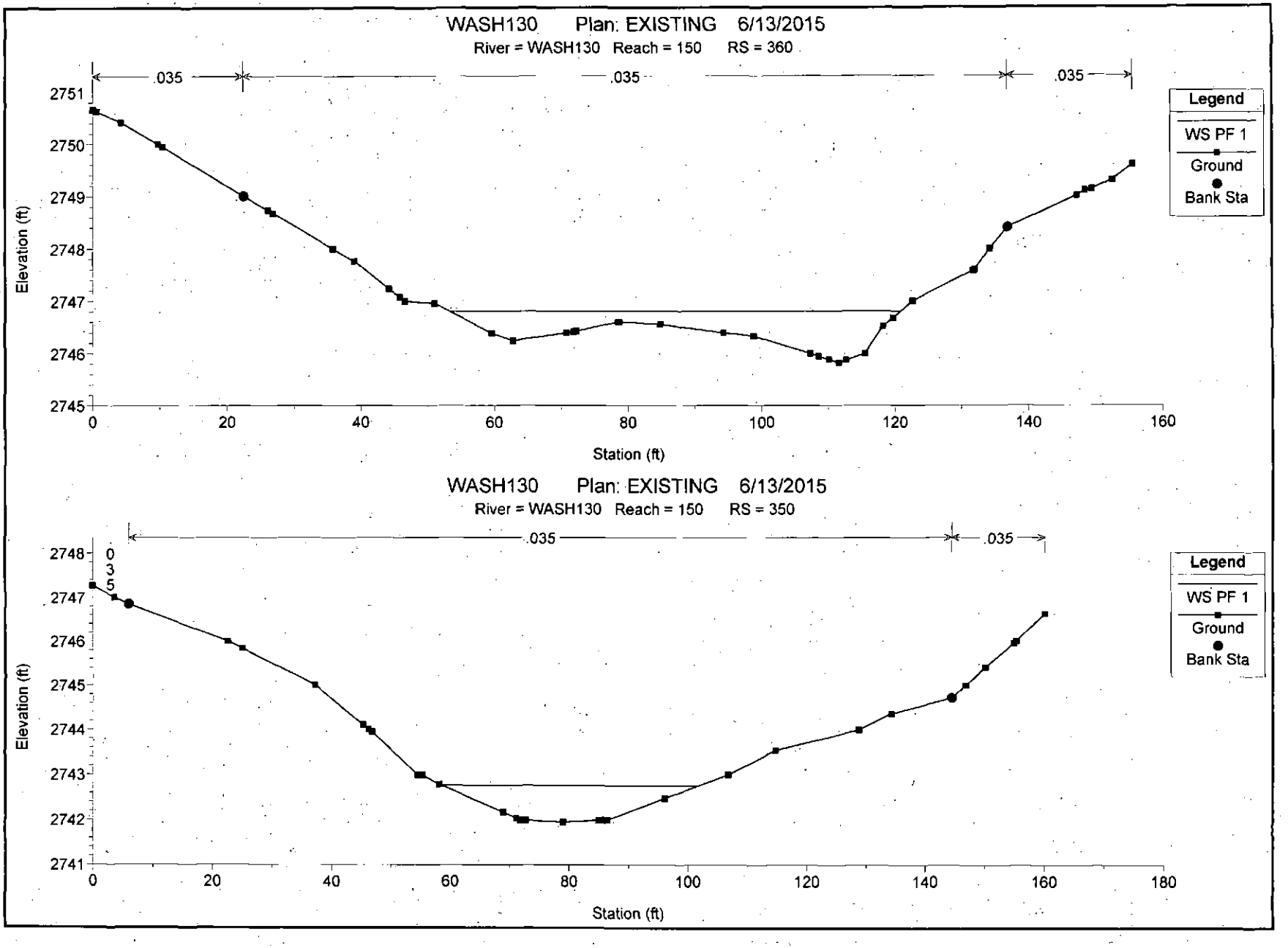
EXISTING WASH 130 HEC-RAS

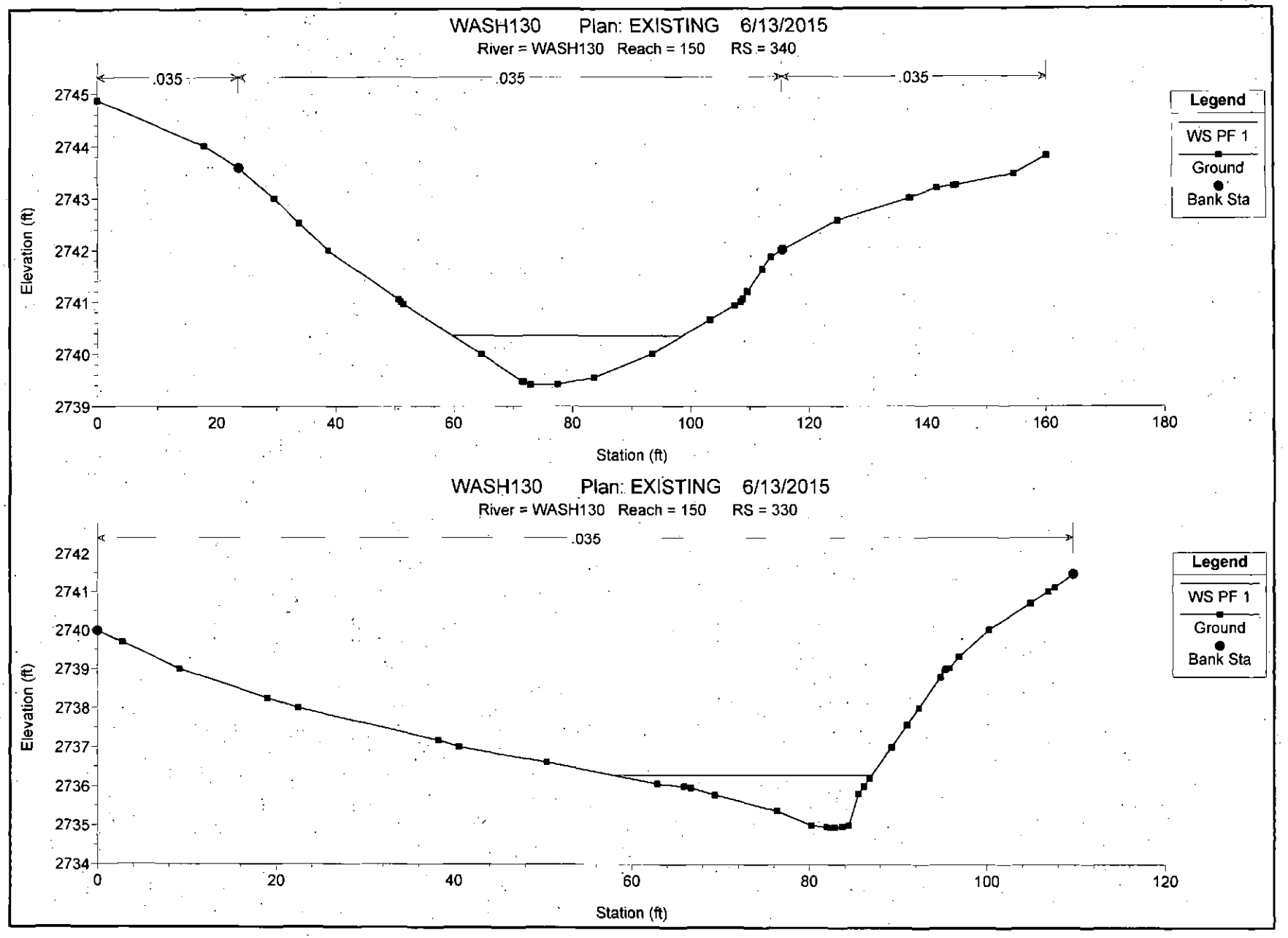


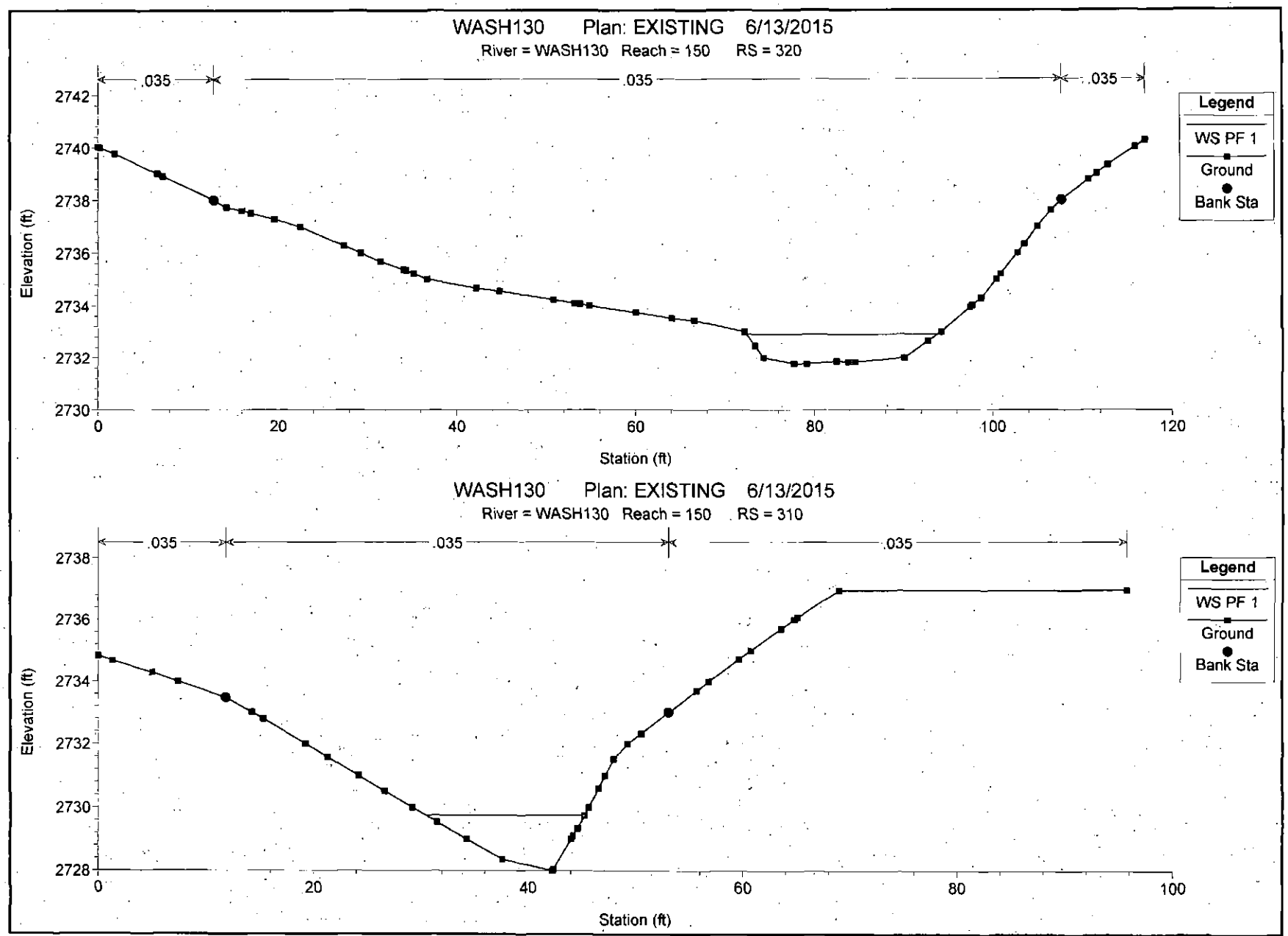
me schematic data outside default extents (see View/Set Schematic Plot Extents...)
of the 32 XS's are not Geo-Referenced (Geo-Ref user entered XS Geo-Ref interpolated XS Non Geo-Ref user entered XS Non Geo-Ref interpolated XS)

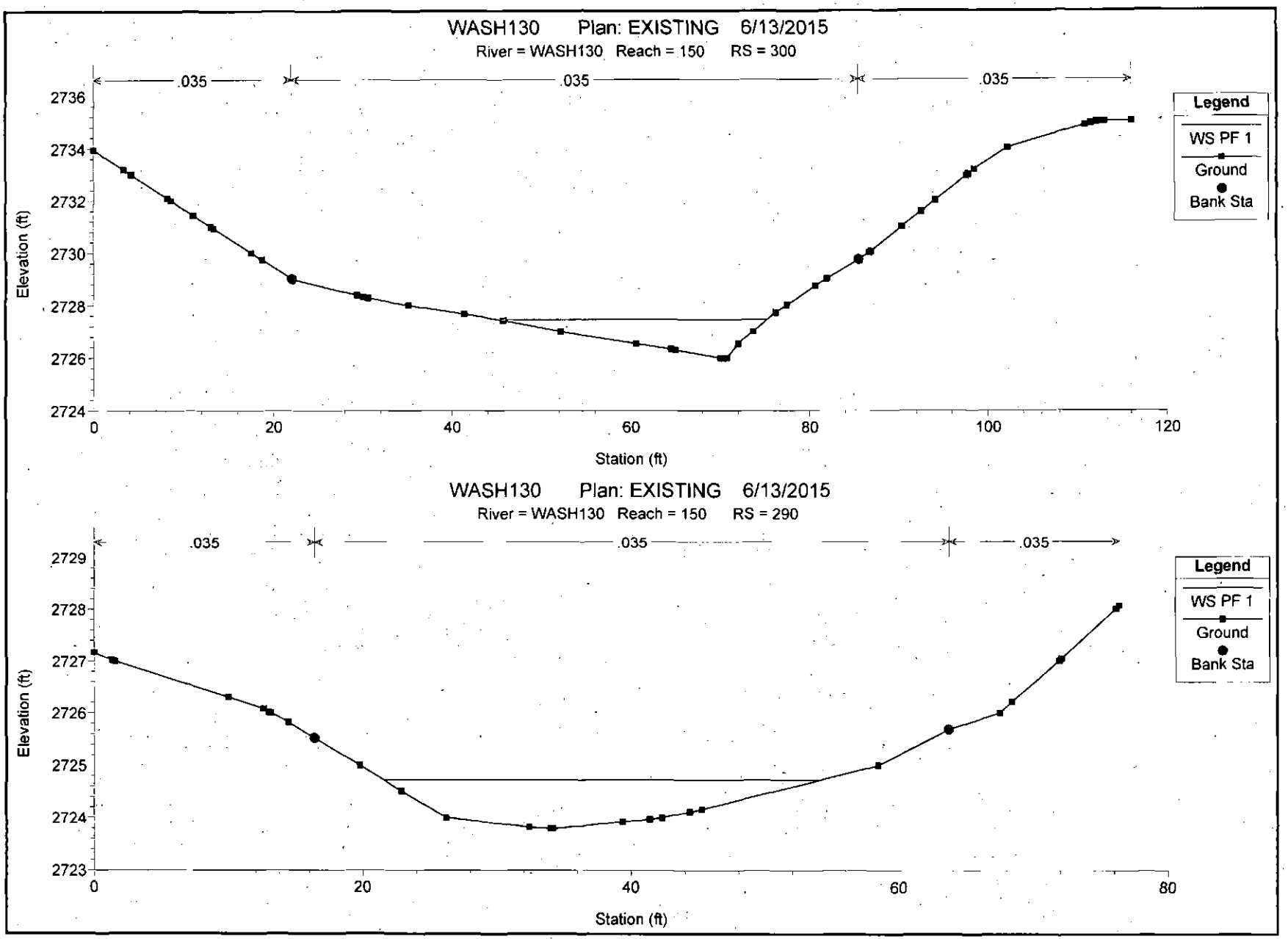
HEC-RAS Plan: 130 River: WASH130 Reach: 150 Profile: PF 1

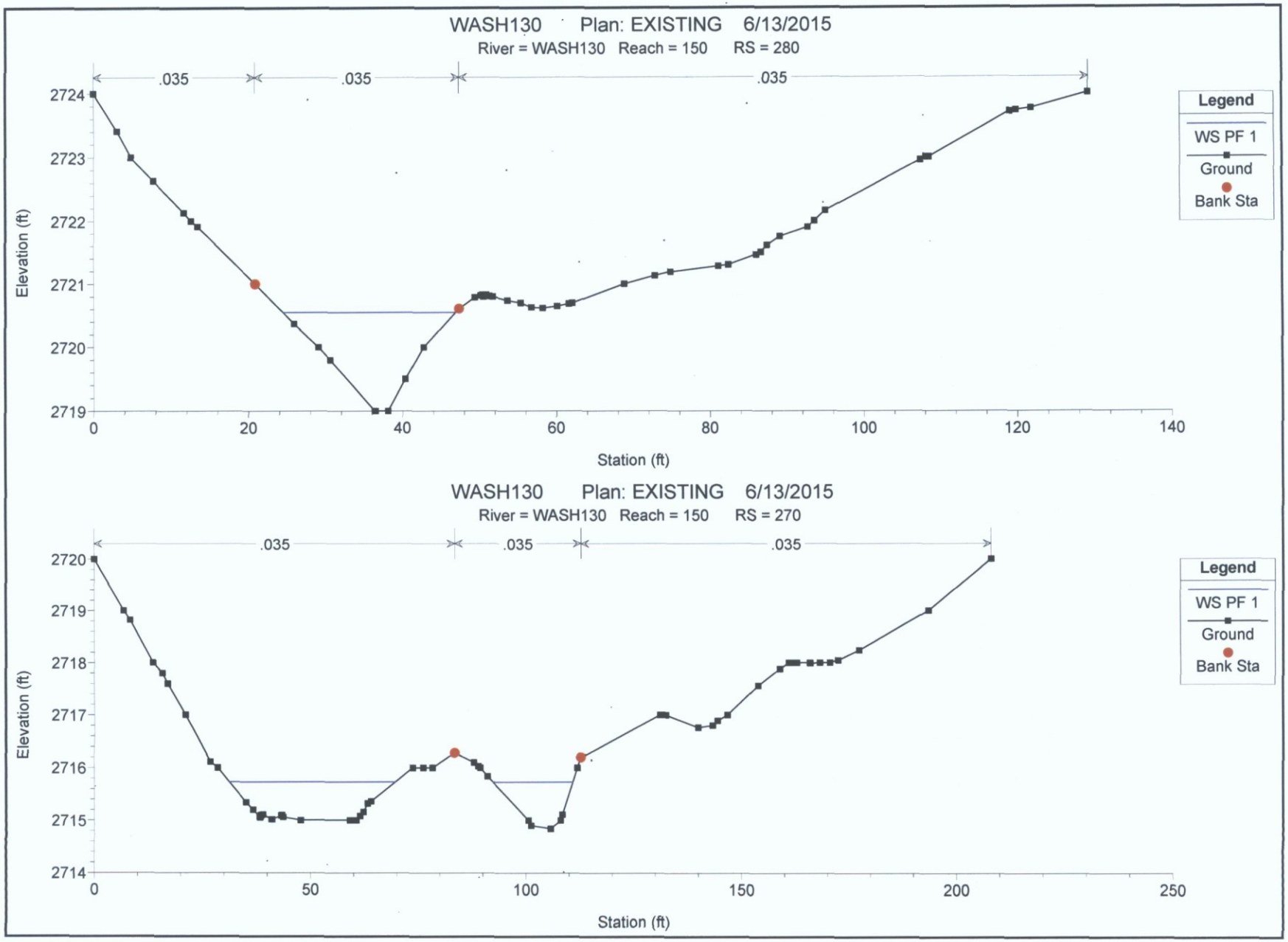
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
150	360	PF 1	86.00	2745.83	2746.81	2746.72	2746.93	0.013208	2.85	30.20	67.61	0.75
150	350	PF 1	86.00	2741.95	2742.75	2742.74	2742.99	0.021032	3.93	21.90	42.98	0.97
150	340	PF 1	86.00	2739.41	2740.35	2740.29	2740.58	0.017147	3.85	22.36	38.81	0.89
150	330	PF 1	86.00	2734.95	2736.28	2736.28	2736.61	0.021780	4.61	18.65	29.15	1.02
150	320	PF 1	86.00	2731.76	2732.90	2732.80	2733.23	0.014073	4.57	18.80	21.40	0.86
150	310	PF 1	86.00	2728.00	2729.75	2729.75	2730.26	0.019208	5.76	14.92	14.77	1.01
150	300	PF 1	86.00	2725.99	2727.45	2727.30	2727.68	0.012282	3.85	22.37	30.00	0.78
150	290	PF 1	86.00	2723.79	2724.72	2724.72	2725.02	0.021812	4.44	19.38	32.47	1.01
150	280	PF 1	86.00	2719.00	2720.55	2720.52	2720.92	0.018544	4.88	17.62	22.47	0.97
150	270	PF 1	133.00	2714.84	2715.73	2715.73	2716.01	0.022443	4.26	31.23	56.79	1.01
150	260	PF 1	133.00	2711.46	2712.48	2712.39	2712.67	0.015112	3.56	38.06	69.84	0.83
150	250	PF 1	133.00	2708.00	2708.92	2708.92	2709.22	0.021308	4.40	30.24	50.50	1.00
150	240	PF 1	133.00	2702.68	2704.26	2704.26	2704.67	0.015601	5.19	26.94	38.34	0.93
150	230	PF 1	133.00	2699.00	2700.56	2700.56	2700.88	0.014411	4.77	31.68	52.90	0.88
150	220	PF 1	133.00	2695.00	2696.75	2696.71	2697.17	0.017333	5.19	25.64	28.91	0.96
150	210	PF 1	133.00	2691.00	2692.39	2692.39	2692.82	0.017627	5.28	25.77	34.98	0.97
150	200	PF 1	133.00	2687.00	2688.34	2688.34	2688.75	0.019721	5.16	25.79	31.89	1.01
150	190	PF 1	133.00	2683.37	2685.30	2685.30	2685.76	0.013622	5.93	26.65	30.46	0.90
150	180	PF 1	133.00	2681.00	2682.28	2682.28	2682.65	0.018031	4.95	27.97	39.32	0.97
150	170	PF 1	133.00	2678.00	2679.80	2679.80	2680.21	0.019486	5.15	25.82	31.61	1.00
150	160	PF 1	133.00	2676.00	2677.82	2677.82	2678.12	0.009013	5.17	36.90	59.33	0.75
150	150	PF 1	133.00	2672.60	2674.16	2674.16	2674.41	0.010469	4.37	39.42	88.24	0.76
150	140	PF 1	133.00	2670.03	2671.64	2671.64	2672.06	0.019982	5.22	25.47	30.99	1.01
150	130	PF 1	133.00	2667.00	2668.73	2668.73	2668.93	0.011929	4.24	43.38	103.86	0.79
150	120	PF 1	133.00	2664.00	2665.38	2665.38	2665.57	0.009386	3.90	48.80	144.02	0.71
150	110	PF 1	133.00	2660.40	2661.62	2661.62	2661.77	0.018811	4.04	45.57	135.80	0.92
150	060	PF 1	233.00	2657.40	2658.90	2658.90	2659.11	0.014279	4.94	72.31	173.72	0.87
150	050	PF 1	233.00	2656.00	2657.12	2657.12	2657.40	0.021030	4.51	55.46	99.34	1.00
150	040	PF 1	233.00	2653.19	2654.72	2654.67	2655.06	0.017220	4.69	49.73	63.94	0.94
150	030	PF 1	233.00	2650.35	2651.77	2651.77	2652.02	0.017753	4.26	61.52	135.16	0.93
150	020	PF 1	233.00	2647.74	2648.92		2649.16	0.012149	4.04	59.07	75.92	0.79
150	010	PF 1	233.00	2646.00	2647.33	2647.33	2647.57	0.012751	4.37	66.59	129.41	0.82

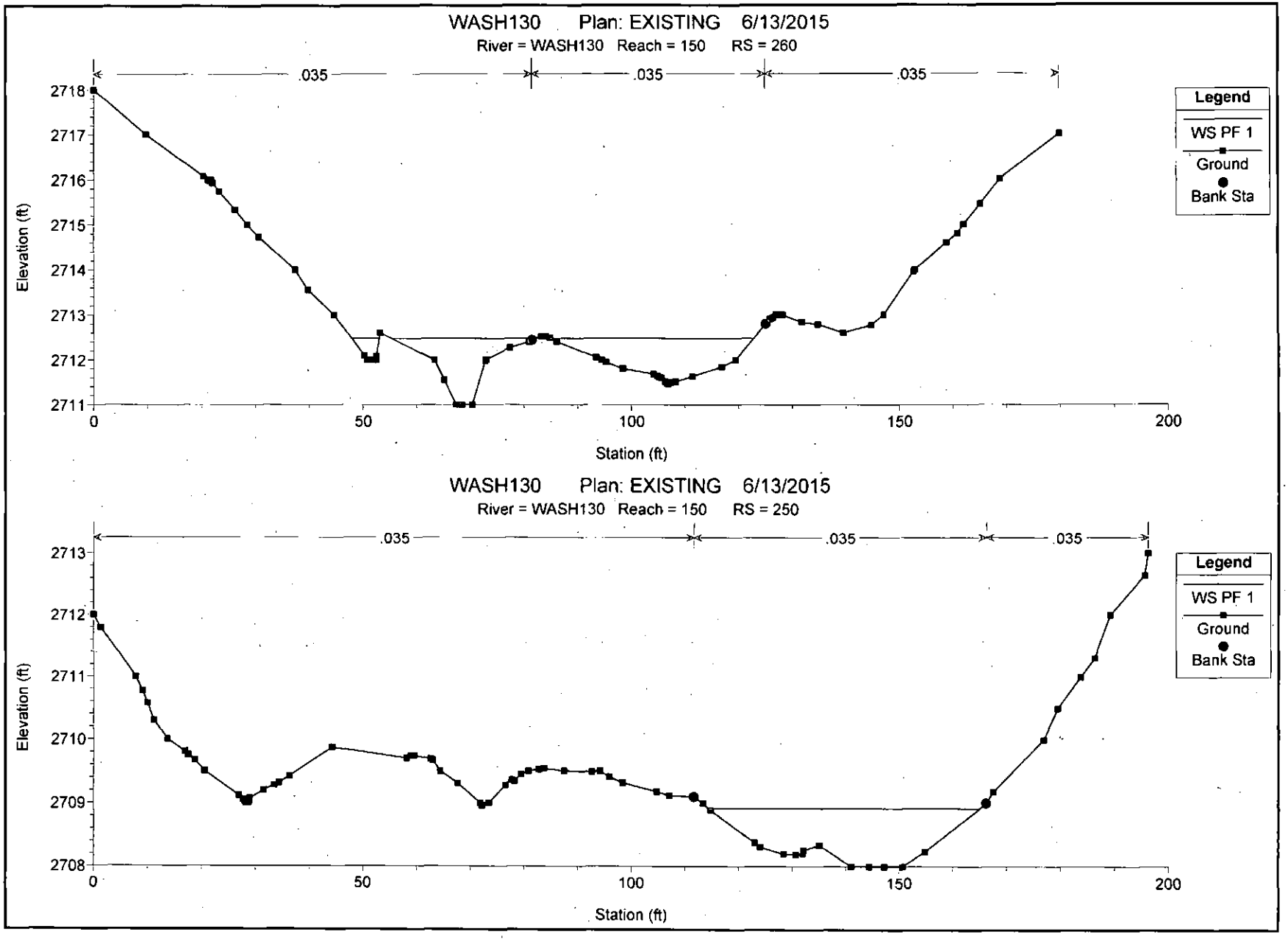

WASH130 Plan: EXISTING 6/13/2015
River = WASH130 Reach = 150 RS = 360
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
WASH130 Plan: EXISTING 6/13/2015
River = WASH130 Reach = 150 RS = 350
.035
.035
0
3
5
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

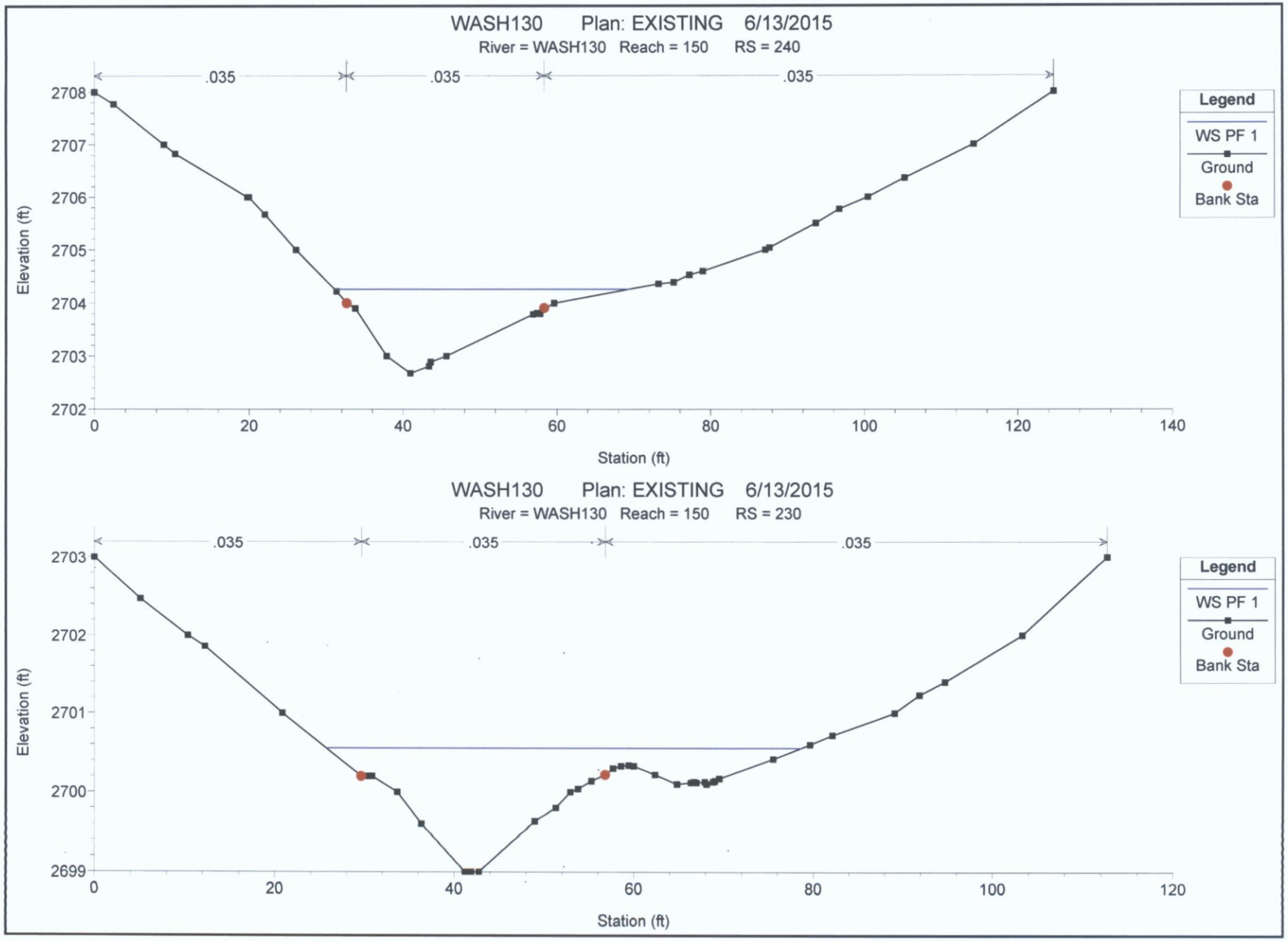

WASH130 Plan: EXISTING 6/13/2015
River = WASH130 Reach = 150 RS = 340
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
WASH130 Plan: EXISTING 6/13/2015
River = WASH130 Reach = 150 RS = 330
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

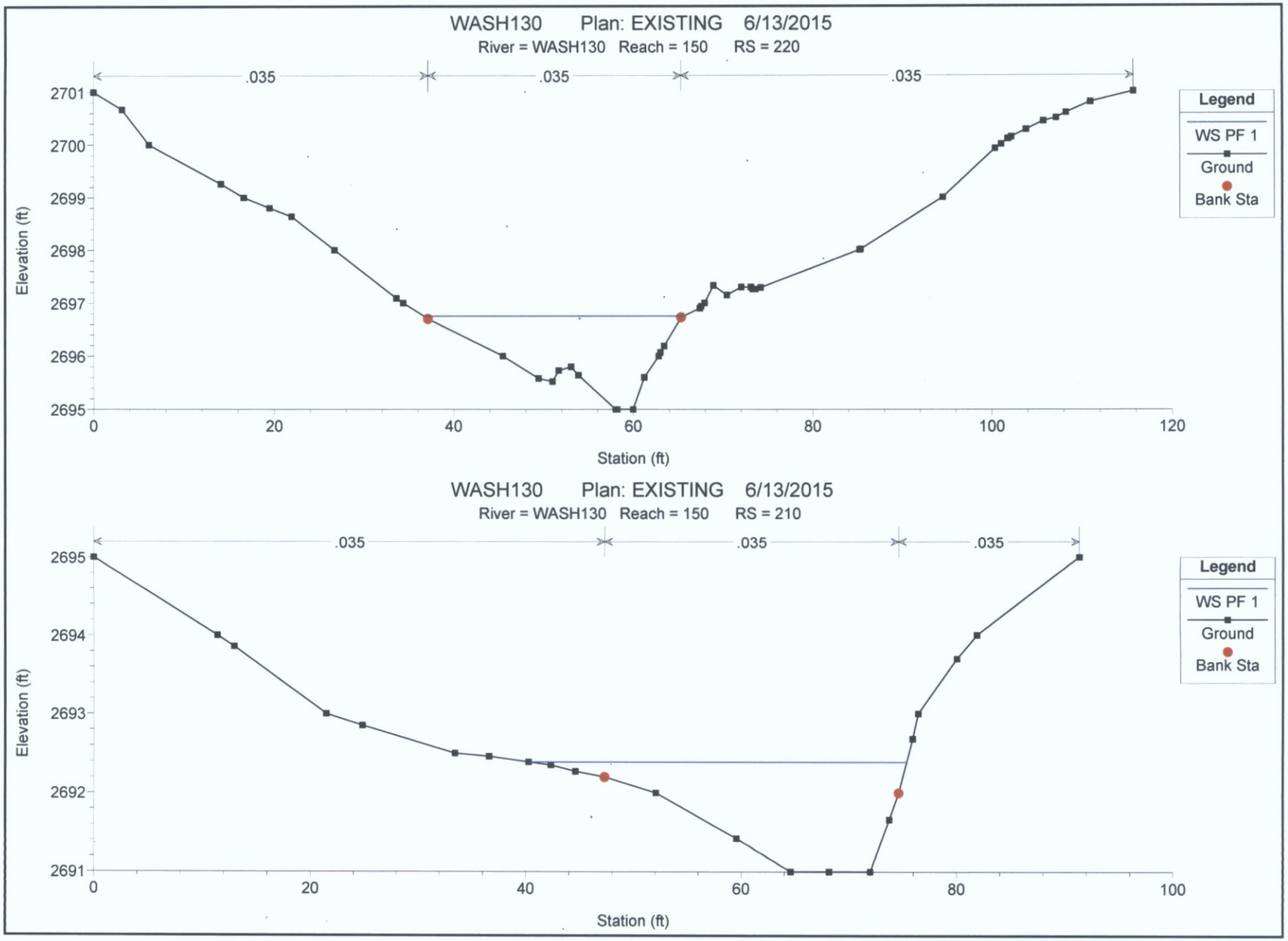

WASH130 Plan: EXISTING 6/13/2015
River = WASH130 Reach = 150 RS = 320
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2742
2740
2738
2736
2734
2732
2730
0
20
40
60
80
100
120
Station (ft)
WASH130 Plan: EXISTING 6/13/2015
River = WASH130 Reach = 150 RS = 310
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2738
2736
2734
2732
2730
2728
0
20
40
60
80
100
Station (ft)

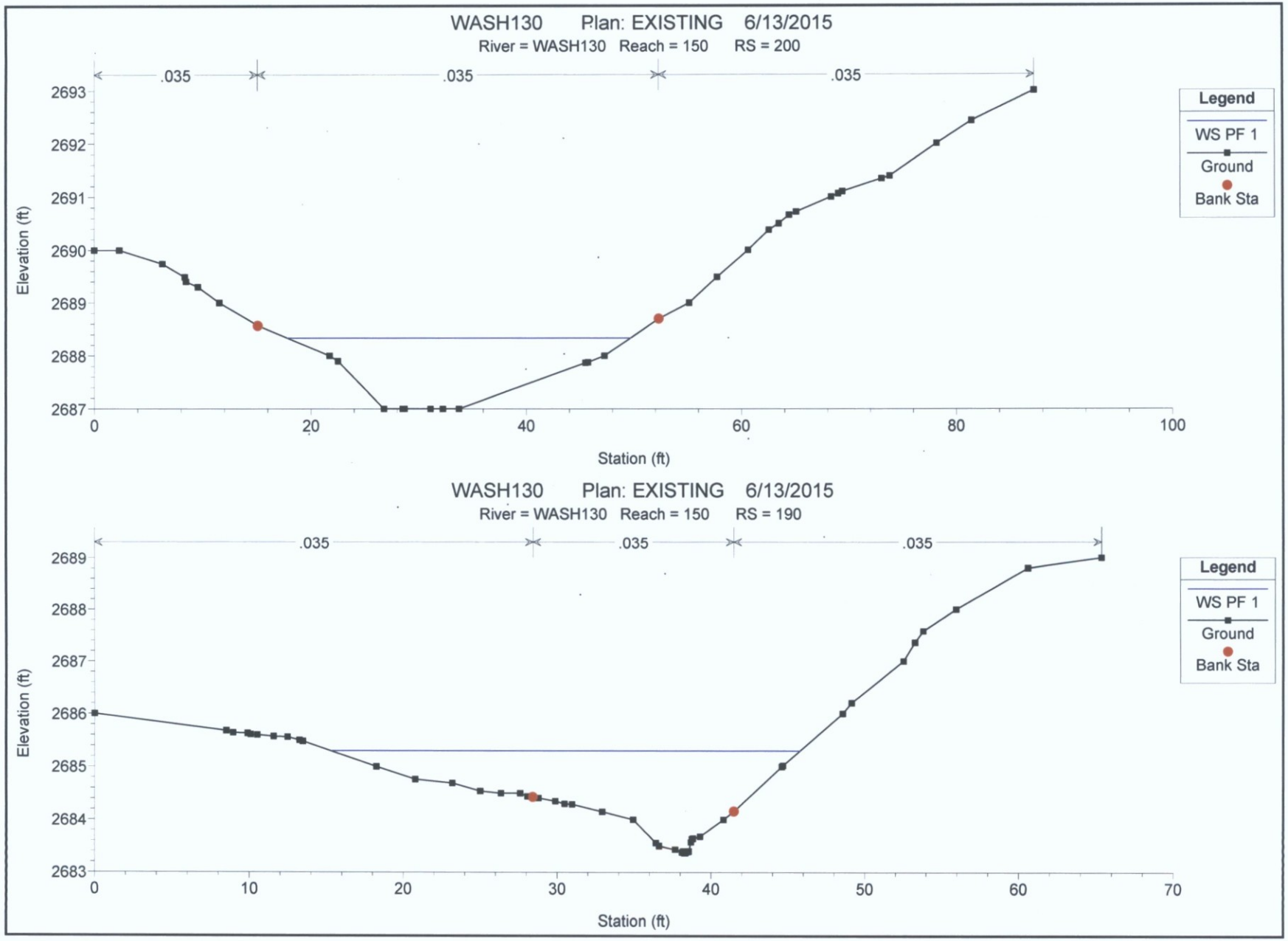

WASH130 Plan: EXISTING 6/13/2015
River = WASH130 Reach = 150 RS = 300
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2736
2734
2732
2730
2728
2726
2724
0
20
40
60
80
100
120
Station (ft)
WASH130 Plan: EXISTING 6/13/2015
River = WASH130 Reach = 150 RS = 290
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2729
2728
2727
2726
2725
2724
2723
0
20
40
60
80
Station (ft)

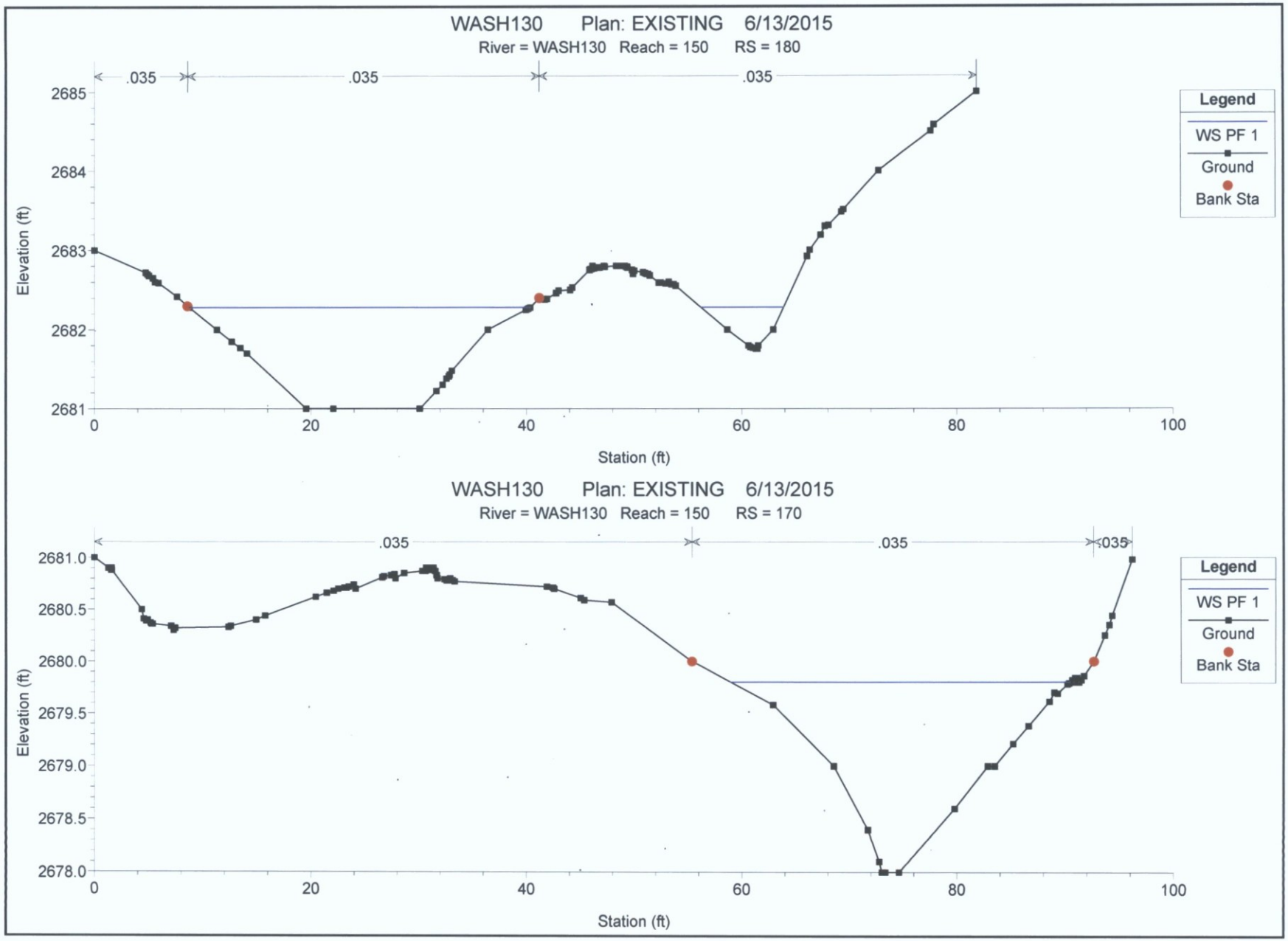

WASH130 Plan: EXISTING 6/13/2015
River = WASH130 Reach = 150 RS = 280
.035
.035
.035
Elevation (ft)
2724
2723
2722
2721
2720
2719
0
20
40
60
80
100
120
140
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
WASH130 Plan: EXISTING 6/13/2015
River = WASH130 Reach = 150 RS = 270
.035
.035
.035
Elevation (ft)
2720
2719
2718
2717
2716
2715
2714
0
50
100
150
200
250
Station (ft)
Legend
WS PF 1
Ground
Bank Sta

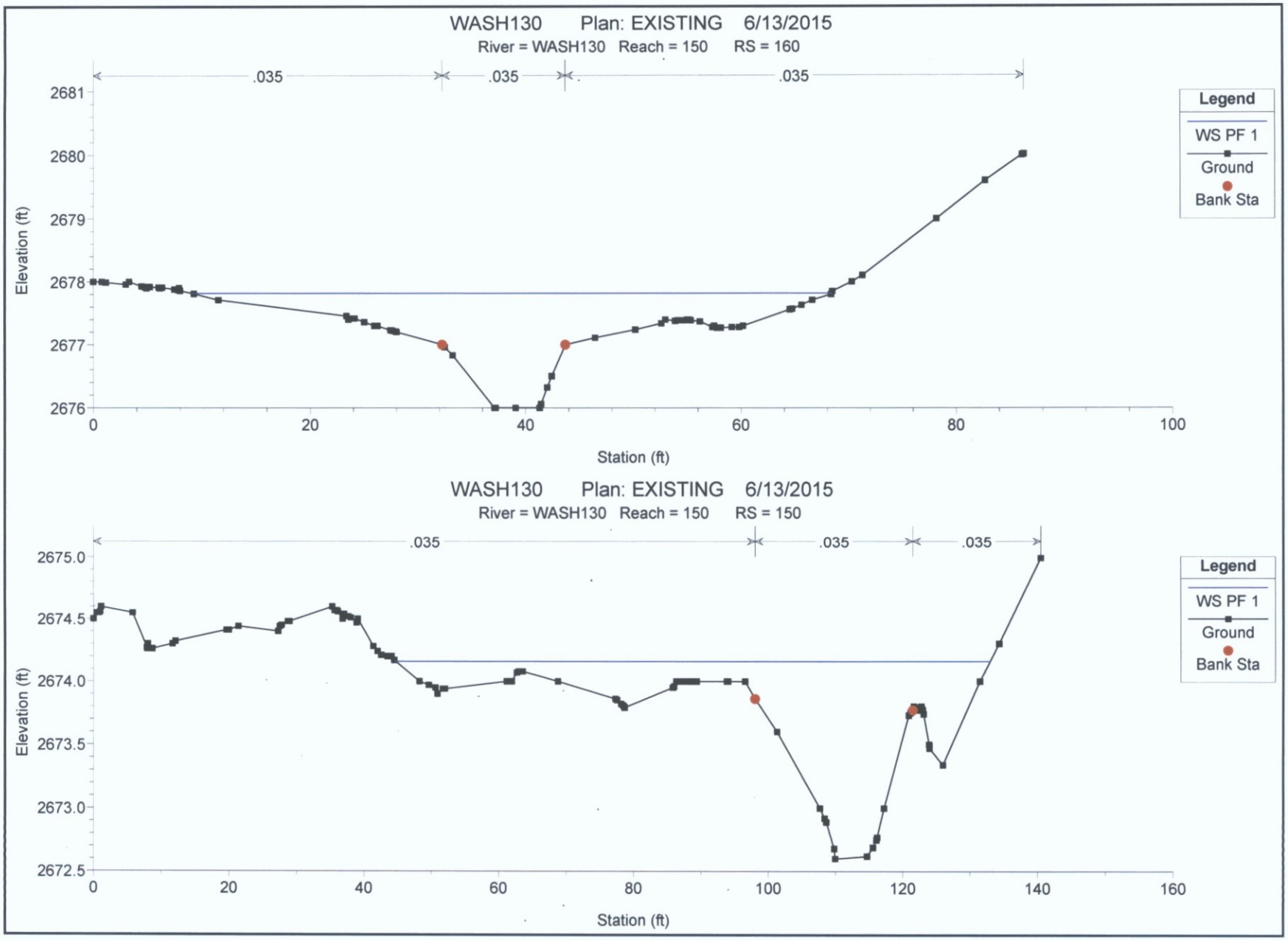

WASH130 Plan: EXISTING 6/13/2015
River = WASH130 Reach = 150 RS = 260
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2718
2717
2716
2715
2714
2713
2712
2711
0
50
100
150
200
Station (ft)
WASH130 Plan: EXISTING 6/13/2015
River = WASH130 Reach = 150 RS = 250
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2713
2712
2711
2710
2709
2708
0
50
100
150
200
Station (ft)

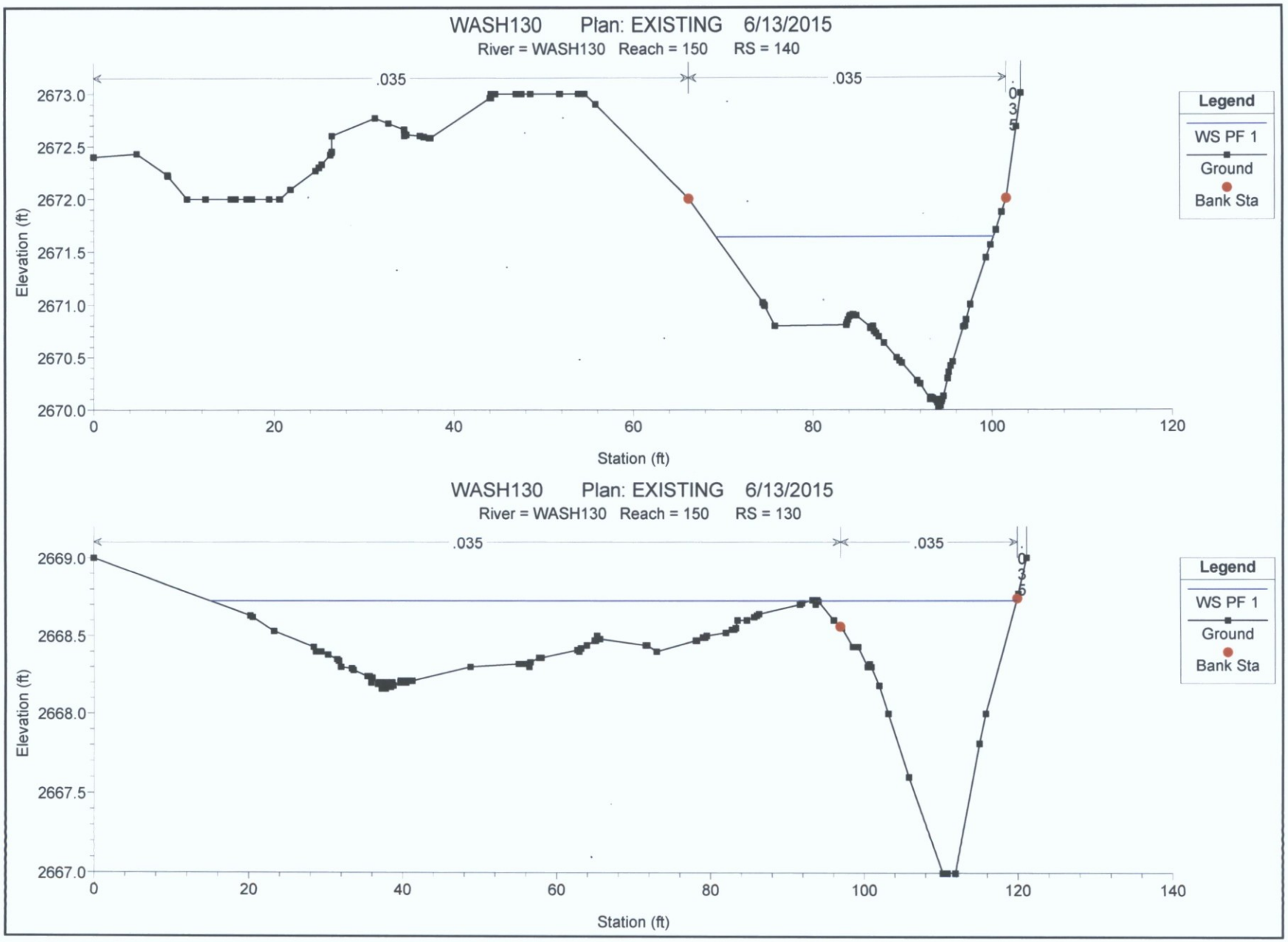

WASH130 Plan: EXISTING 6/13/2015
River = WASH130 Reach = 150 RS = 240
.035
.035
.035
Elevation (ft)
2708
2707
2706
2705
2704
2703
2702
0
20
40
60
80
100
120
140
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
WASH130 Plan: EXISTING 6/13/2015
River = WASH130 Reach = 150 RS = 230
.035
.035
.035
Elevation (ft)
2703
2702
2701
2700
2699
0
20
40
60
80
100
120
Station (ft)
Legend
WS PF 1
Ground
Bank Sta

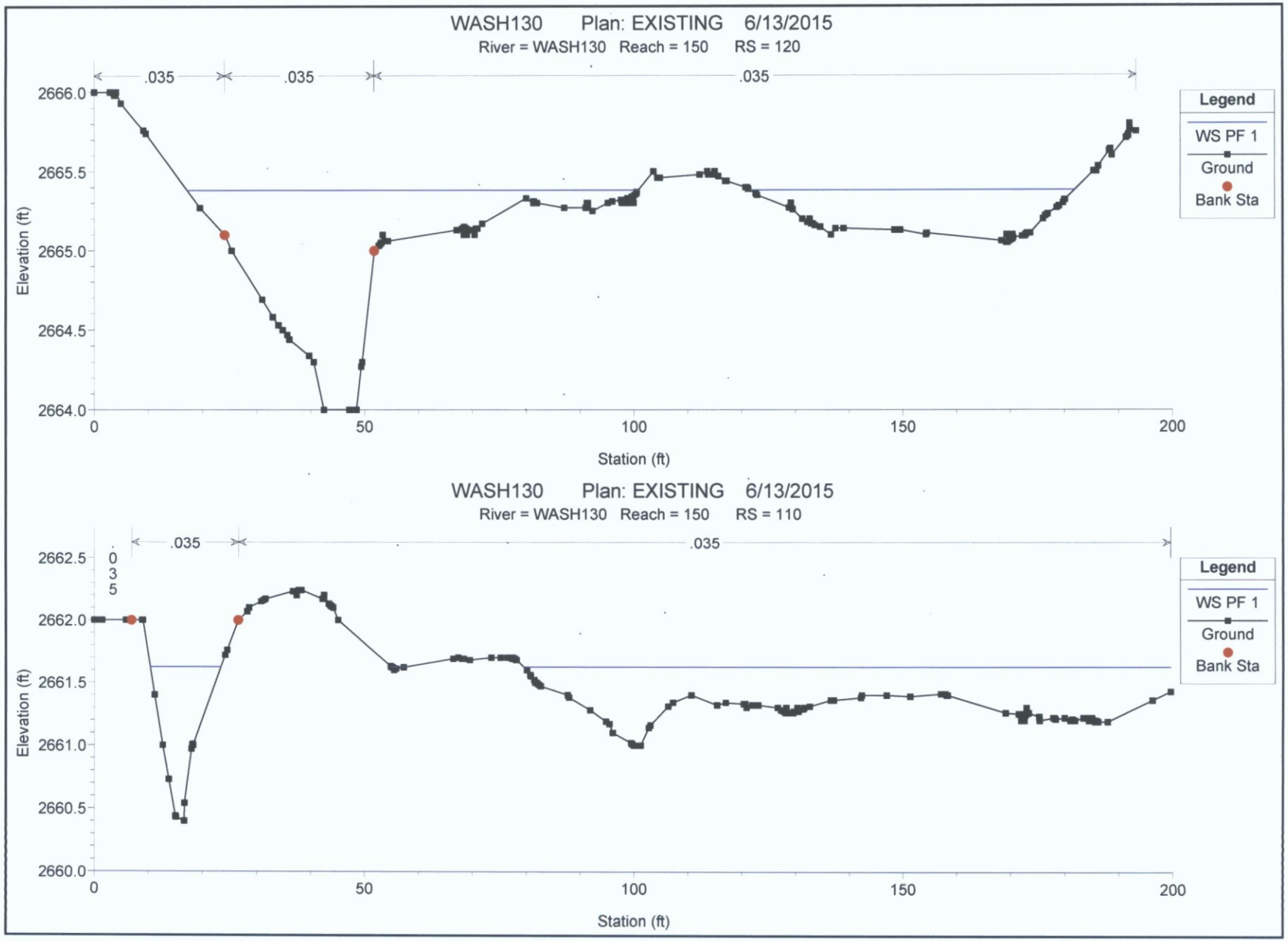

WASH130 Plan: EXISTING 6/13/2015
River = WASH130 Reach = 150 RS = 220
.035
.035
.035
Elevation (ft)
2701
2700
2699
2698
2697
2696
2695
0
20
40
60
80
100
120
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
WASH130 Plan: EXISTING 6/13/2015
River = WASH130 Reach = 150 RS = 210
.035
.035
.035
Elevation (ft)
2695
2694
2693
2692
2691
0
20
40
60
80
100
Station (ft)
Legend
WS PF 1
Ground
Bank Sta

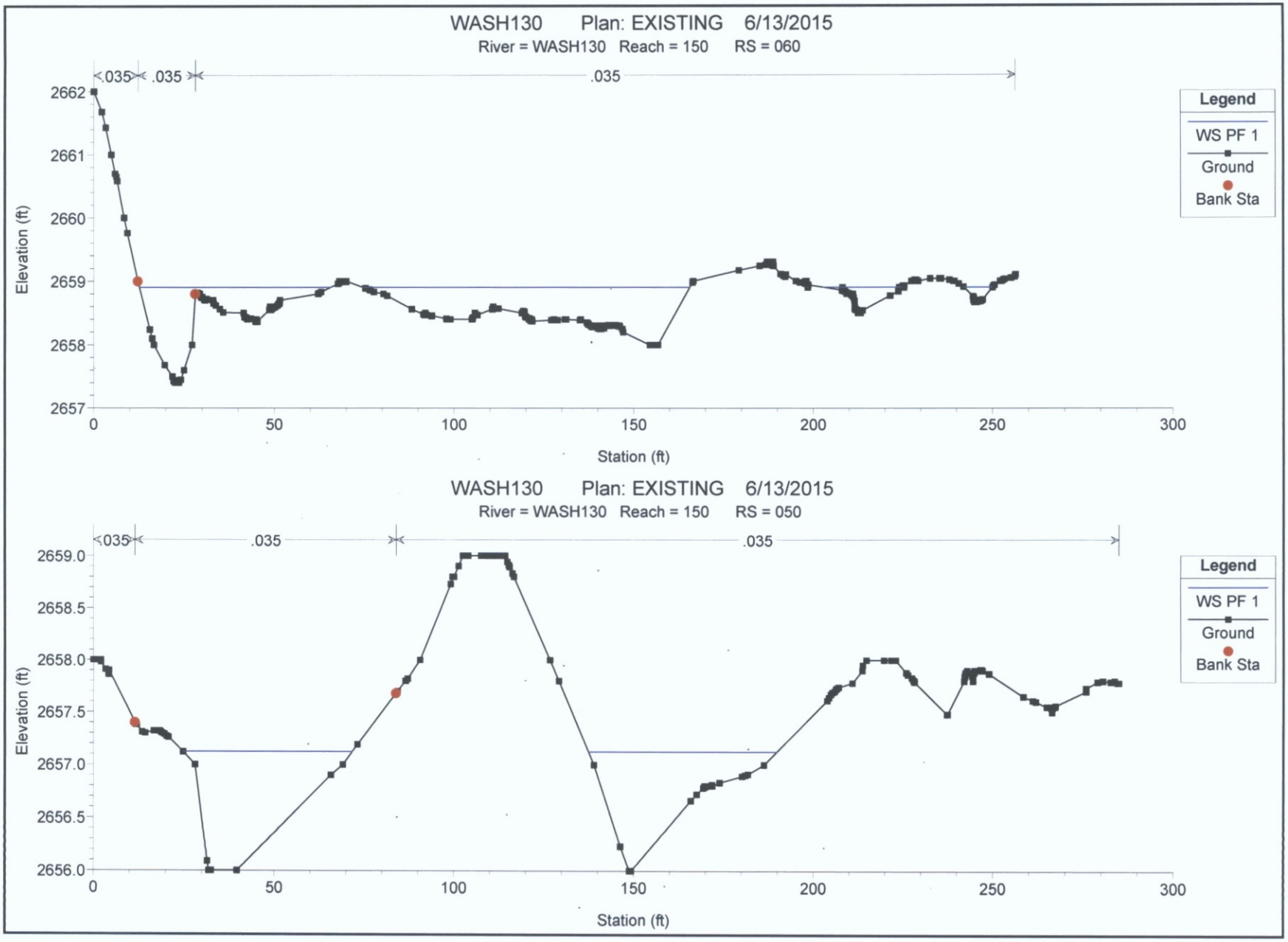

WASH130 Plan: EXISTING 6/13/2015
River = WASH130 Reach = 150 RS = 200
.035
.035
.035
Elevation (ft)
2693
2692
2691
2690
2689
2688
2687
0
20
40
60
80
100
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
WASH130 Plan: EXISTING 6/13/2015
River = WASH130 Reach = 150 RS = 190
.035
.035
.035
Elevation (ft)
2689
2688
2687
2686
2685
2684
2683
0
10
20
30
40
50
60
70
Station (ft)
Legend
WS PF 1
Ground
Bank Sta

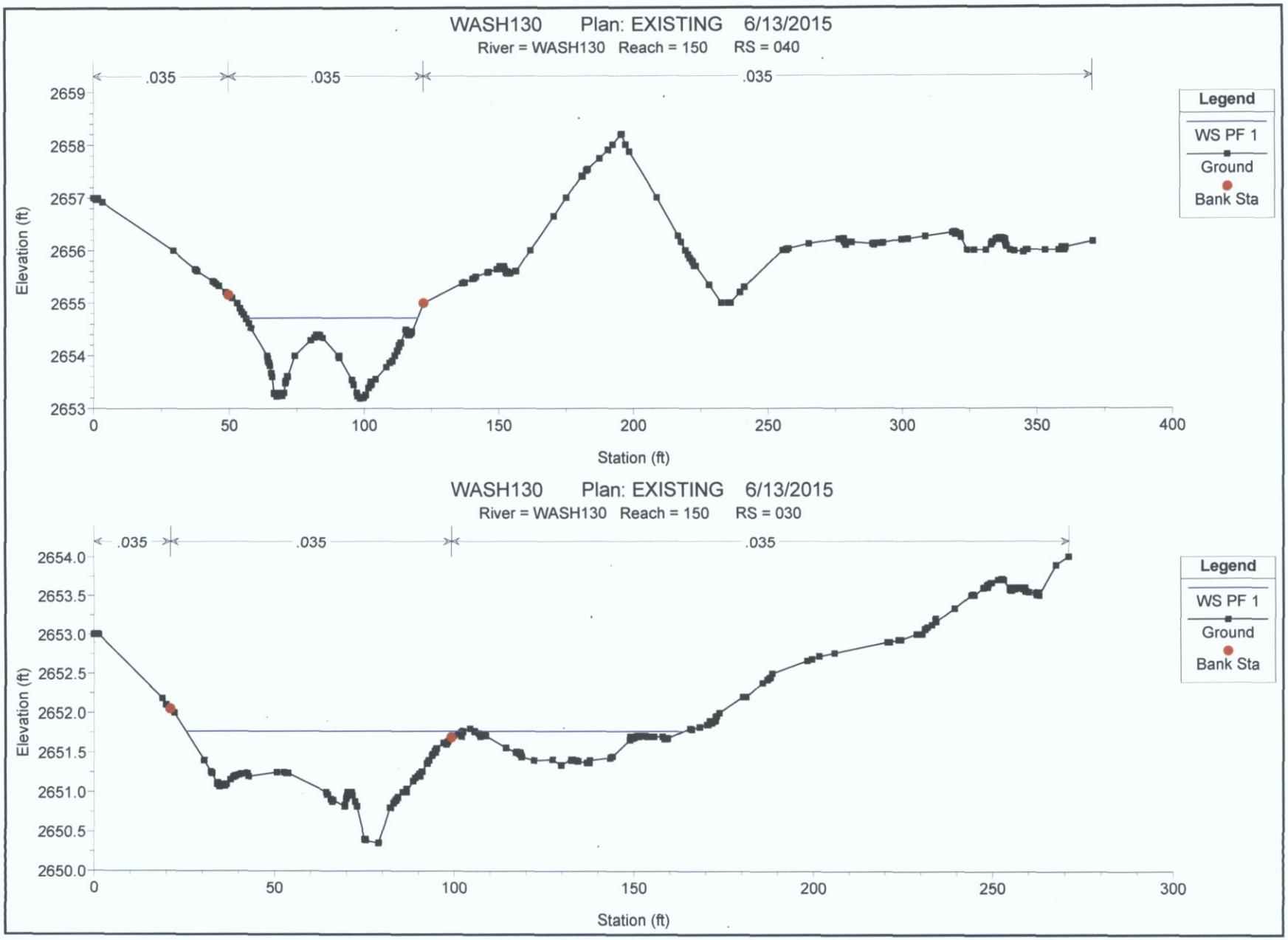

WASH130 Plan: EXISTING 6/13/2015
River = WASH130 Reach = 150 RS = 180
.035
.035
.035
Elevation (ft)
2685
2684
2683
2682
2681
0
20
40
60
80
100
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
WASH130 Plan: EXISTING 6/13/2015
River = WASH130 Reach = 150 RS = 170
.035
.035
.035
Elevation (ft)
2681.0
2680.5
2680.0
2679.5
2679.0
2678.5
2678.0
0
20
40
60
80
100
Station (ft)
Legend
WS PF 1
Ground
Bank Sta

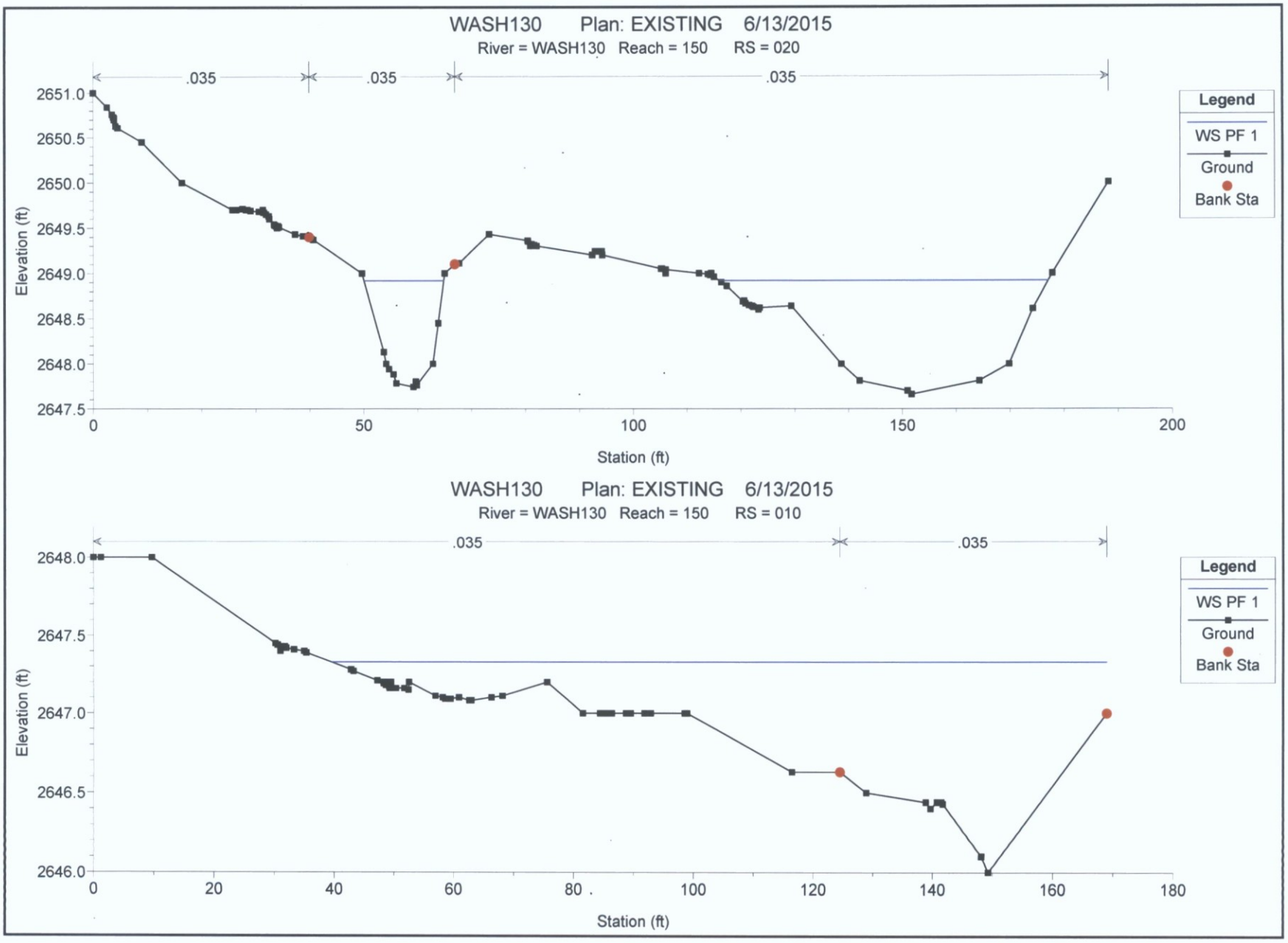

WASH130 Plan: EXISTING 6/13/2015
River = WASH130 Reach = 150 RS = 160
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2681
2680
2679
2678
2677
2676
0
20
40
60
80
100
Station (ft)
WASH130 Plan: EXISTING 6/13/2015
River = WASH130 Reach = 150 RS = 150
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2675.0
2674.5
2674.0
2673.5
2673.0
2672.5
0
20
40
60
80
100
120
140
160
Station (ft)

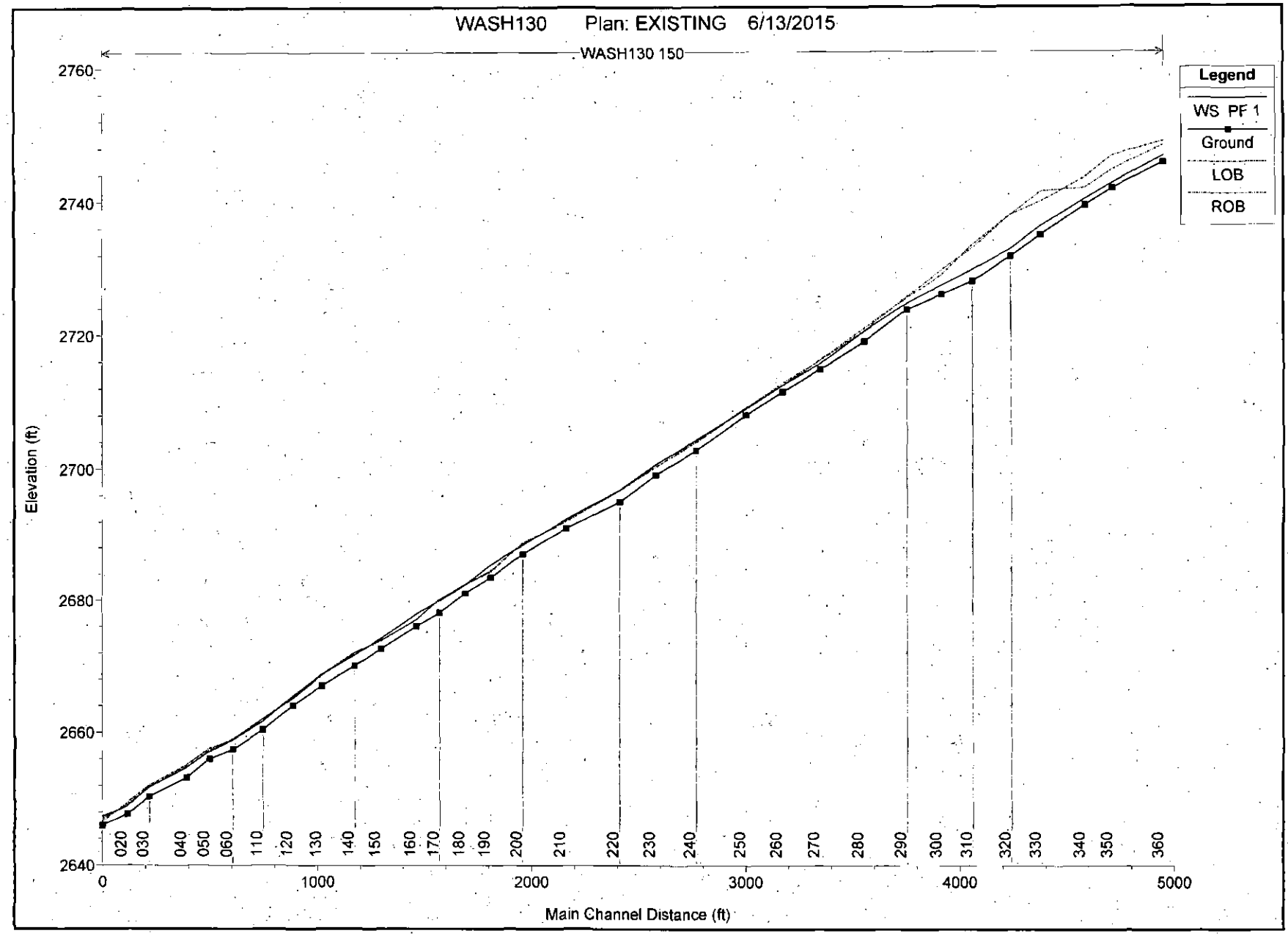

WASH130 Plan: EXISTING 6/13/2015
River = WASH130 Reach = 150 RS = 140
.035
.035
.013
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2673.0
2672.5
2672.0
2671.5
2671.0
2670.5
2670.0
0
20
40
60
80
100
120
Station (ft)
WASH130 Plan: EXISTING 6/13/2015
River = WASH130 Reach = 150 RS = 130
.035
.035
.013
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2669.0
2668.5
2668.0
2667.5
2667.0
0
20
40
60
80
100
120
140
Station (ft)


WASH130 Plan: EXISTING 6/13/2015
River = WASH130 Reach = 150 RS = 120
.035
.035
.035
2666.0
2665.5
2665.0
2664.5
2664.0
Elevation (ft)
0
50
100
150
200
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
WASH130 Plan: EXISTING 6/13/2015
River = WASH130 Reach = 150 RS = 110
.035
.035
.035
2662.5
2662.0
2661.5
2661.0
2660.5
2660.0
Elevation (ft)
0
50
100
150
200
Station (ft)
Legend
WS PF 1
Ground
Bank Sta

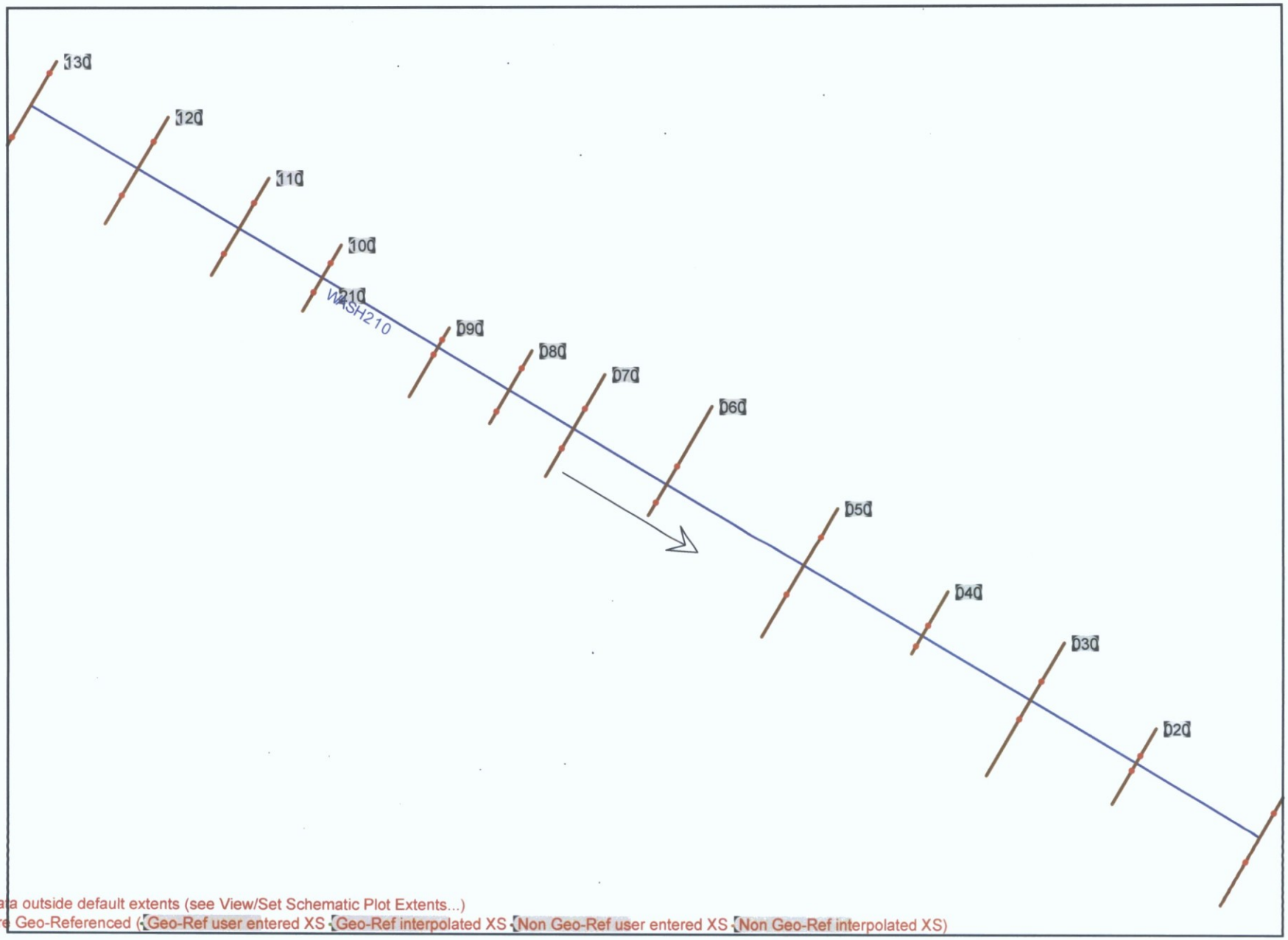

WASH130 Plan: EXISTING 6/13/2015
River = WASH130 Reach = 150 RS = 060
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2662
2661
2660
2659
2658
2657
0
50
100
150
200
250
300
Station (ft)
WASH130 Plan: EXISTING 6/13/2015
River = WASH130 Reach = 150 RS = 050
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2659.0
2658.5
2658.0
2657.5
2657.0
2656.5
2656.0
0
50
100
150
200
250
300
Station (ft)


WASH130 Plan: EXISTING 6/13/2015
River = WASH130 Reach = 150 RS = 040
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
WASH130 Plan: EXISTING 6/13/2015
River = WASH130 Reach = 150 RS = 030
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


WASH130 Plan: EXISTING 6/13/2015
River = WASH130 Reach = 150 RS = 020
.035
.035
.035
2651.0
2650.5
2650.0
2649.5
2649.0
2648.5
2648.0
2647.5
Elevation (ft)
0
50
100
150
200
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
WASH130 Plan: EXISTING 6/13/2015
River = WASH130 Reach = 150 RS = 010
.035
.035
2648.0
2647.5
2647.0
2646.5
2646.0
Elevation (ft)
0
20
40
60
80
100
120
140
160
180
Station (ft)
Legend
WS PF 1
Ground
Bank Sta


WASH130 Plan: EXISTING 6/13/2015
WASH130 150
Legend
WS PF 1
Ground
LOB
ROB
Elevation (ft)
2760
2740
2720
2700
2680
2660
2640
0
1000
2000
3000
4000
5000
Main Channel Distance (ft)
020
030
040
050
060
110
120
130
140
150
160
170
180
190
200
210
220
230
240
250
260
270
280
290
300
310
320
330
340
350
360

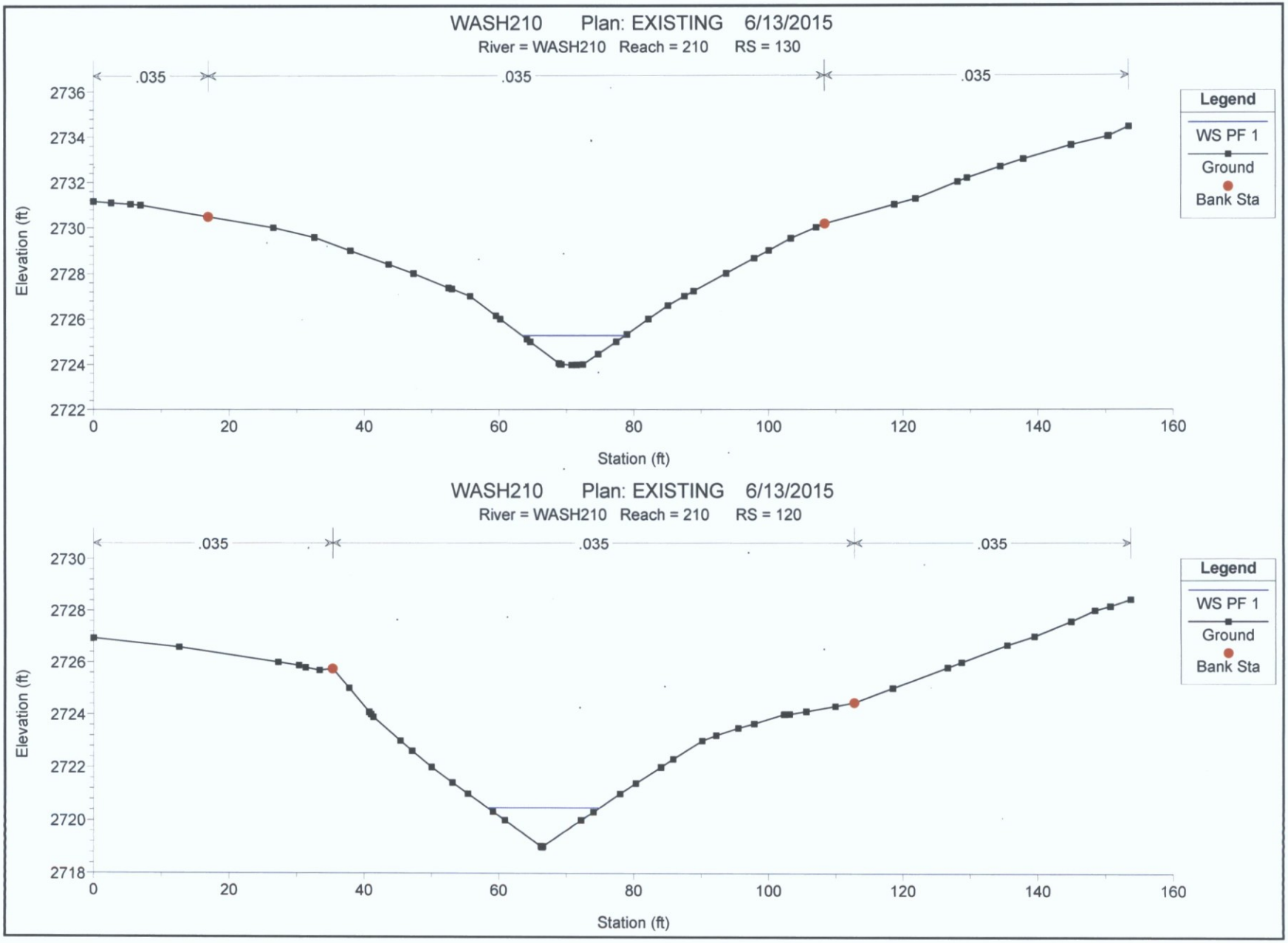
EXISTING WASH 210 HEC-RAS

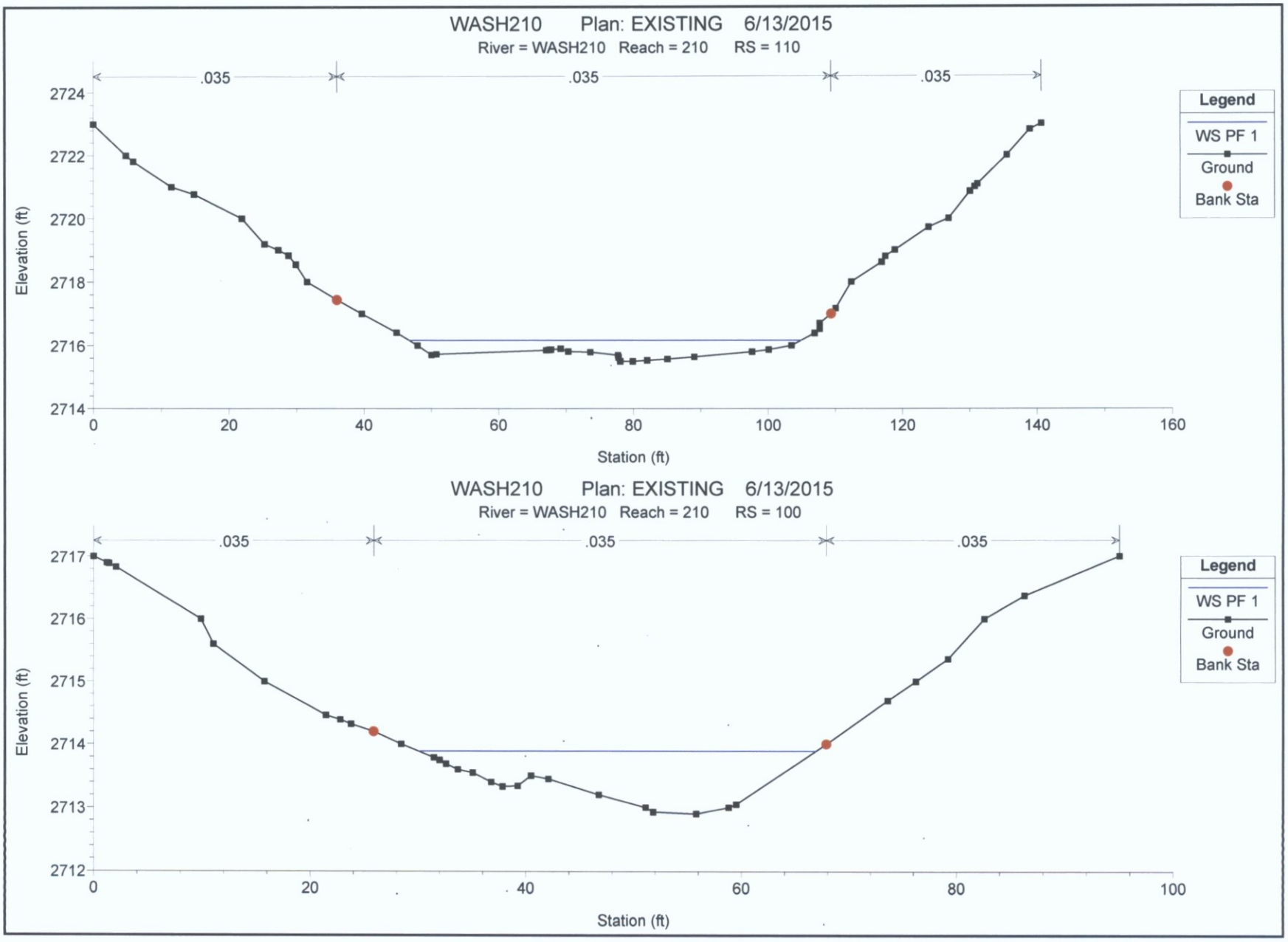


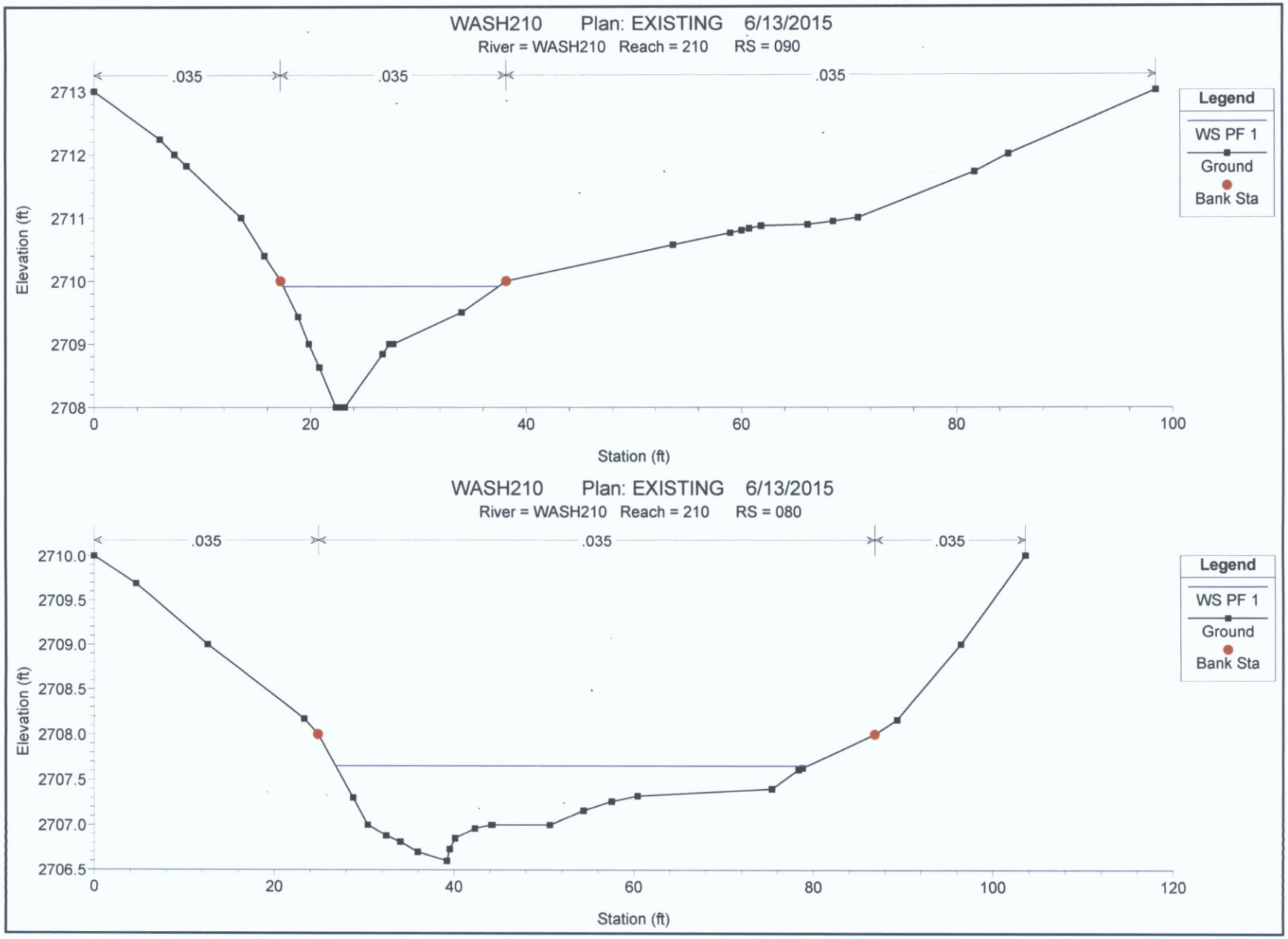
me schematic data outside default extents (see View/Set Schematic Plot Extents...)
ne of the XS's are Geo-Referenced (Geo-Ref user entered XS Geo-Ref interpolated XS Non Geo-Ref user entered XS Non Geo-Ref interpolated XS)

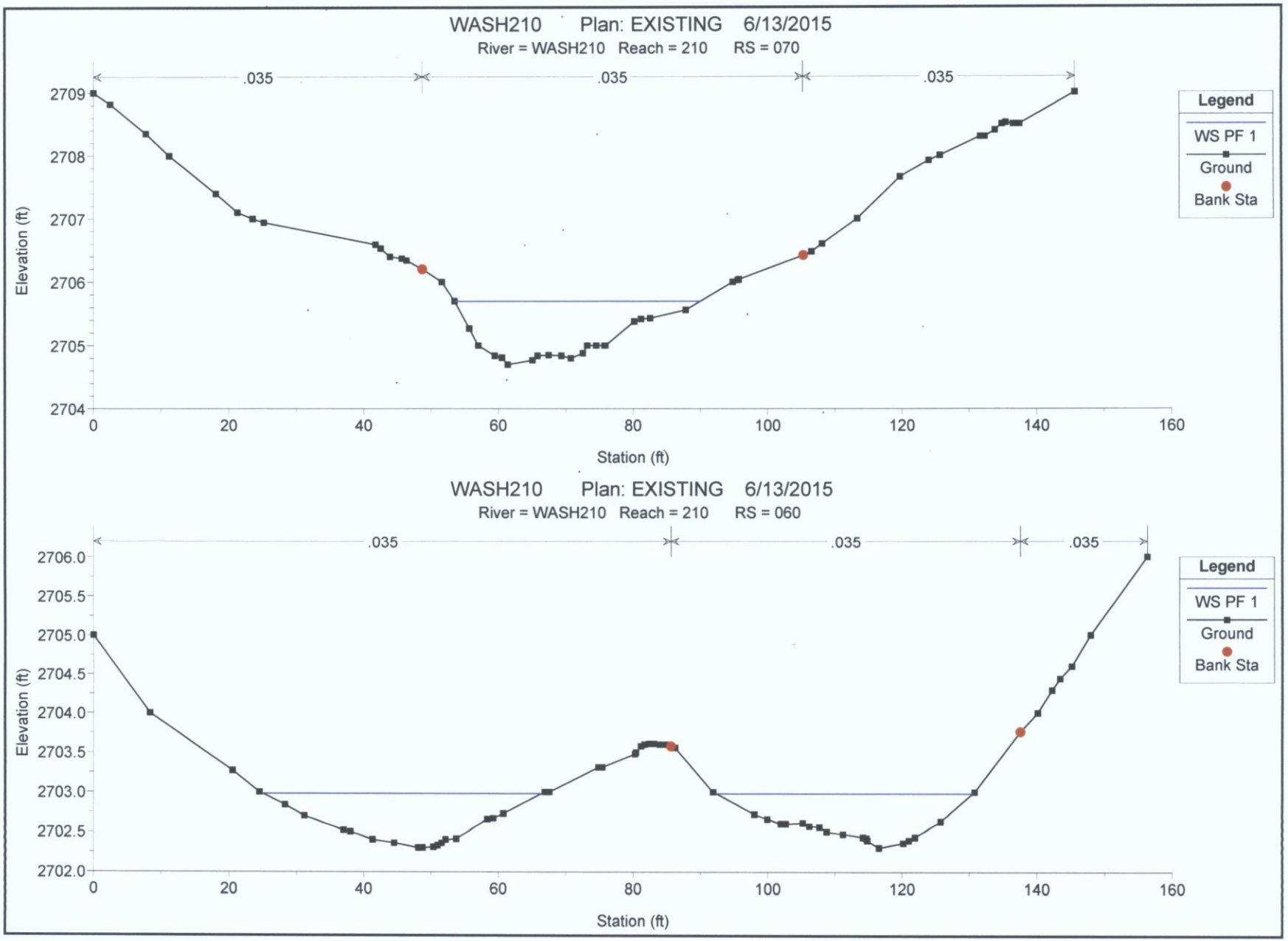
HEC-RAS Plan: 210 River: WASH210 Reach: 210 Profile: PF 1

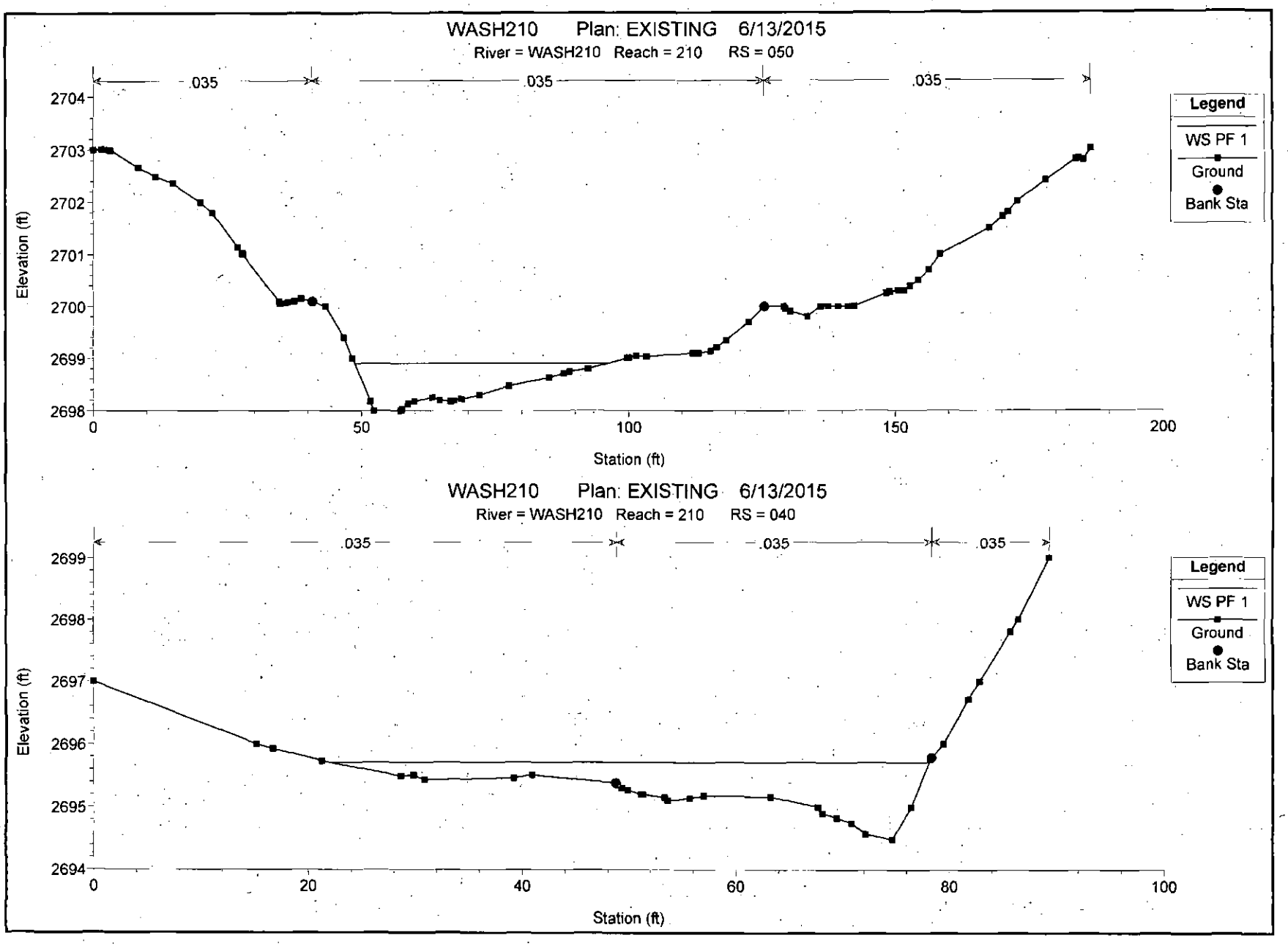
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
210	130	PF 1	60.00	2723.98	2725.27	2725.27	2725.67	0.020391	5.06	11.85	15.27	1.01
210	120	PF 1	60.00	2719.00	2720.47	2720.47	2720.84	0.020479	4.90	12.24	16.62	1.01
210	110	PF 1	60.00	2715.50	2716.16	2716.07	2716.26	0.012253	2.56	23.44	58.18	0.71
210	100	PF 1	93.00	2712.90	2713.89	2713.89	2714.18	0.022084	4.37	21.28	36.82	1.01
210	090	PF 1	93.00	2708.00	2709.91	2709.91	2710.37	0.020241	5.39	17.27	19.98	1.02
210	080	PF 1	93.00	2706.60	2707.65	2707.60	2707.85	0.017731	3.55	26.18	52.45	0.89
210	070	PF 1	93.00	2704.70	2705.70	2705.70	2705.99	0.022096	4.39	21.20	36.47	1.01
210	060	PF 1	93.00	2702.30	2702.98	2702.92	2703.12	0.016950	2.95	31.32	79.49	0.83
210	050	PF 1	93.00	2698.00	2698.90	2698.90	2699.15	0.022730	3.98	23.34	47.38	1.00
210	040	PF 1	93.00	2694.49	2695.71	2695.71	2695.95	0.015935	4.10	25.75	56.22	0.88
210	030	PF 1	93.00	2691.00	2692.32	2692.32	2692.66	0.018101	4.70	20.52	32.48	0.96
210	020	PF 1	93.00	2688.00	2689.64	2689.64	2689.98	0.015336	4.76	21.21	35.36	0.90
210	010	PF 1	93.00	2684.93	2685.54	2685.52	2685.75	0.020034	3.62	25.72	55.03	0.93

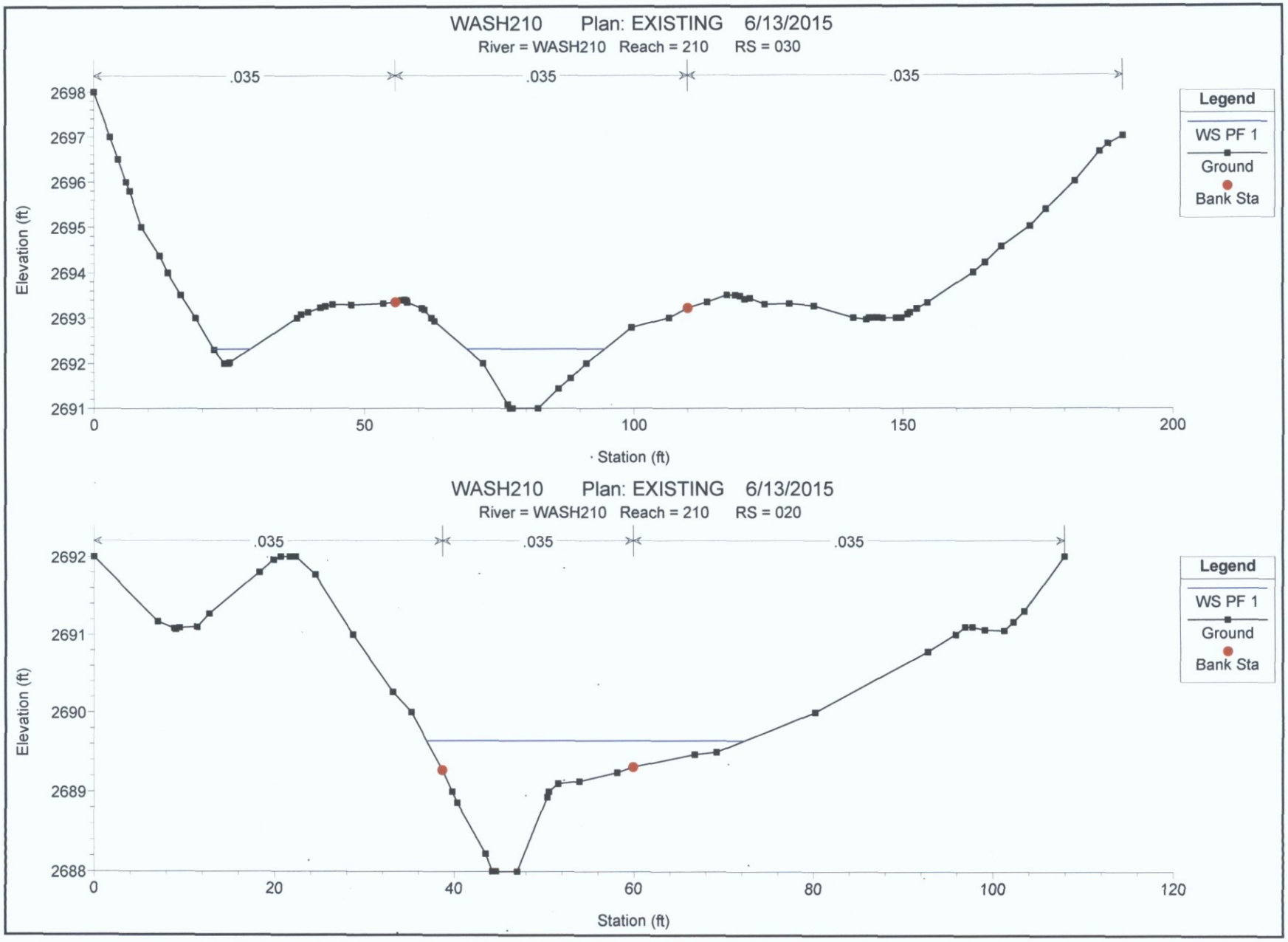

WASH210 Plan: EXISTING 6/13/2015
River = WASH210 Reach = 210 RS = 130
.035
.035
.035
Elevation (ft)
2736
2734
2732
2730
2728
2726
2724
2722
0
20
40
60
80
100
120
140
160
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
WASH210 Plan: EXISTING 6/13/2015
River = WASH210 Reach = 210 RS = 120
.035
.035
.035
Elevation (ft)
2730
2728
2726
2724
2722
2720
2718
0
20
40
60
80
100
120
140
160
Station (ft)
Legend
WS PF 1
Ground
Bank Sta

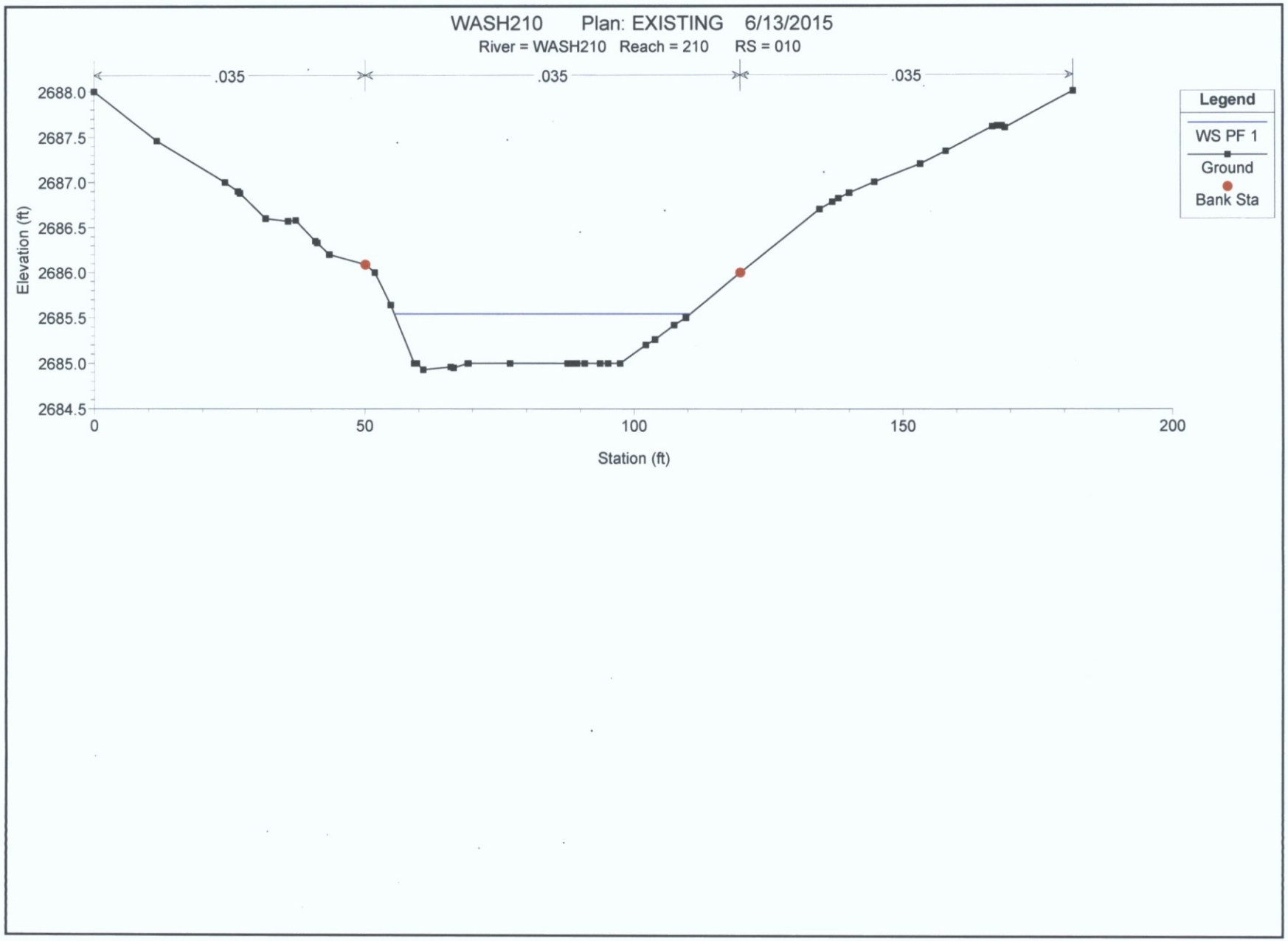

WASH210 Plan: EXISTING 6/13/2015
River = WASH210 Reach = 210 RS = 110
.035
.035
.035
Elevation (ft)
2724
2722
2720
2718
2716
2714
0
20
40
60
80
100
120
140
160
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
WASH210 Plan: EXISTING 6/13/2015
River = WASH210 Reach = 210 RS = 100
.035
.035
.035
Elevation (ft)
2717
2716
2715
2714
2713
2712
0
20
40
60
80
100
Station (ft)
Legend
WS PF 1
Ground
Bank Sta

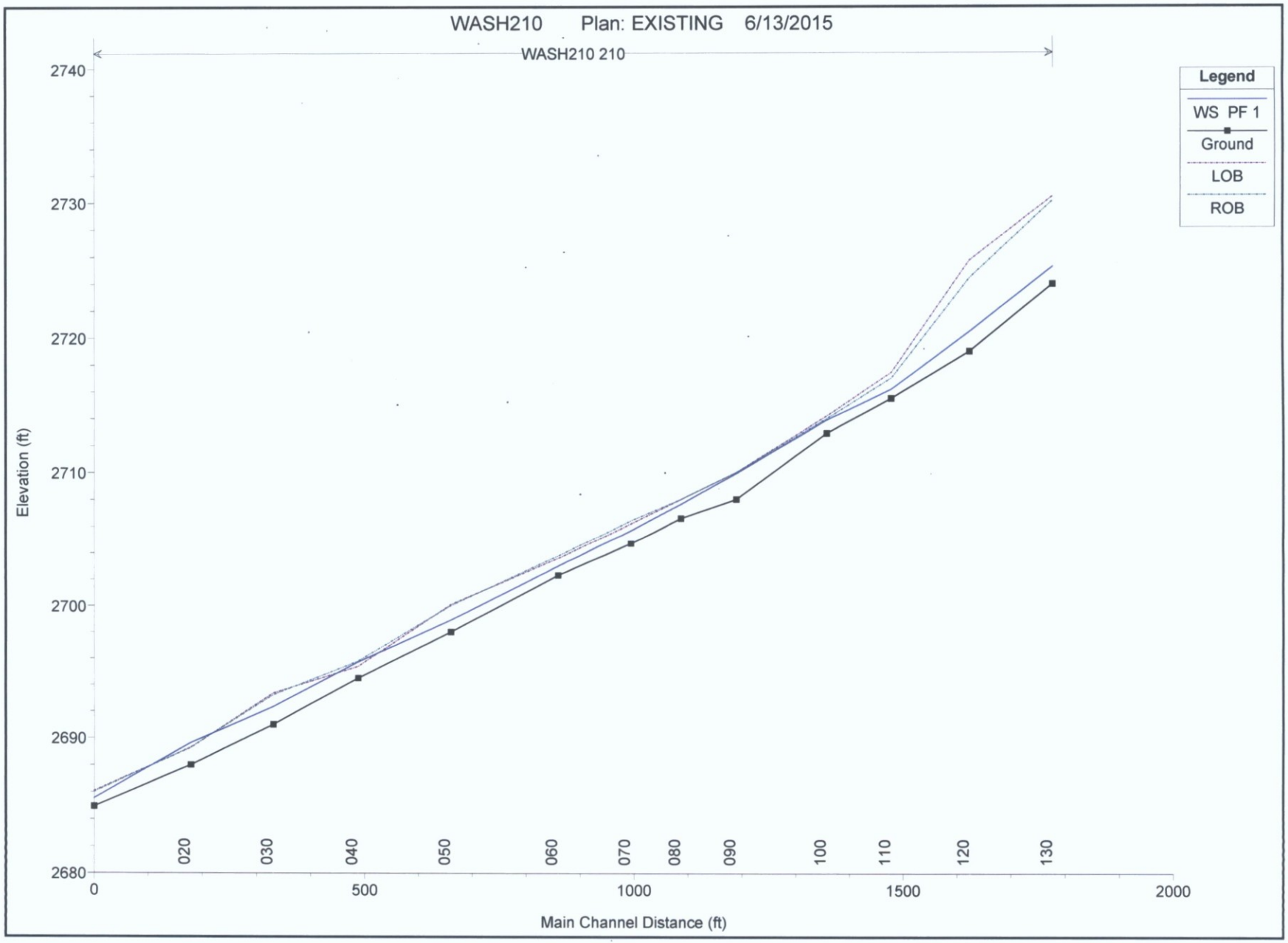

WASH210 Plan: EXISTING 6/13/2015
River = WASH210 Reach = 210 RS = 090
.035
.035
.035
Elevation (ft)
2713
2712
2711
2710
2709
2708
0
20
40
60
80
100
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
WASH210 Plan: EXISTING 6/13/2015
River = WASH210 Reach = 210 RS = 080
.035
.035
.035
Elevation (ft)
2710.0
2709.5
2709.0
2708.5
2708.0
2707.5
2707.0
2706.5
0
20
40
60
80
100
120
Station (ft)
Legend
WS PF 1
Ground
Bank Sta


WASH210 Plan: EXISTING 6/13/2015
River = WASH210 Reach = 210 RS = 070
.035
.035
.035
Elevation (ft)
2709
2708
2707
2706
2705
2704
0
20
40
60
80
100
120
140
160
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
WASH210 Plan: EXISTING 6/13/2015
River = WASH210 Reach = 210 RS = 060
.035
.035
.035
Elevation (ft)
2706.0
2705.5
2705.0
2704.5
2704.0
2703.5
2703.0
2702.5
2702.0
0
20
40
60
80
100
120
140
160
Station (ft)
Legend
WS PF 1
Ground
Bank Sta


WASH210 Plan: EXISTING 6/13/2015
River = WASH210 Reach = 210 RS = 050
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2704
2703
2702
2701
2700
2699
2698
0
50
100
150
200
Station (ft)
WASH210 Plan: EXISTING 6/13/2015
River = WASH210 Reach = 210 RS = 040
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2699
2698
2697
2696
2695
2694
0
20
40
60
80
100
Station (ft)

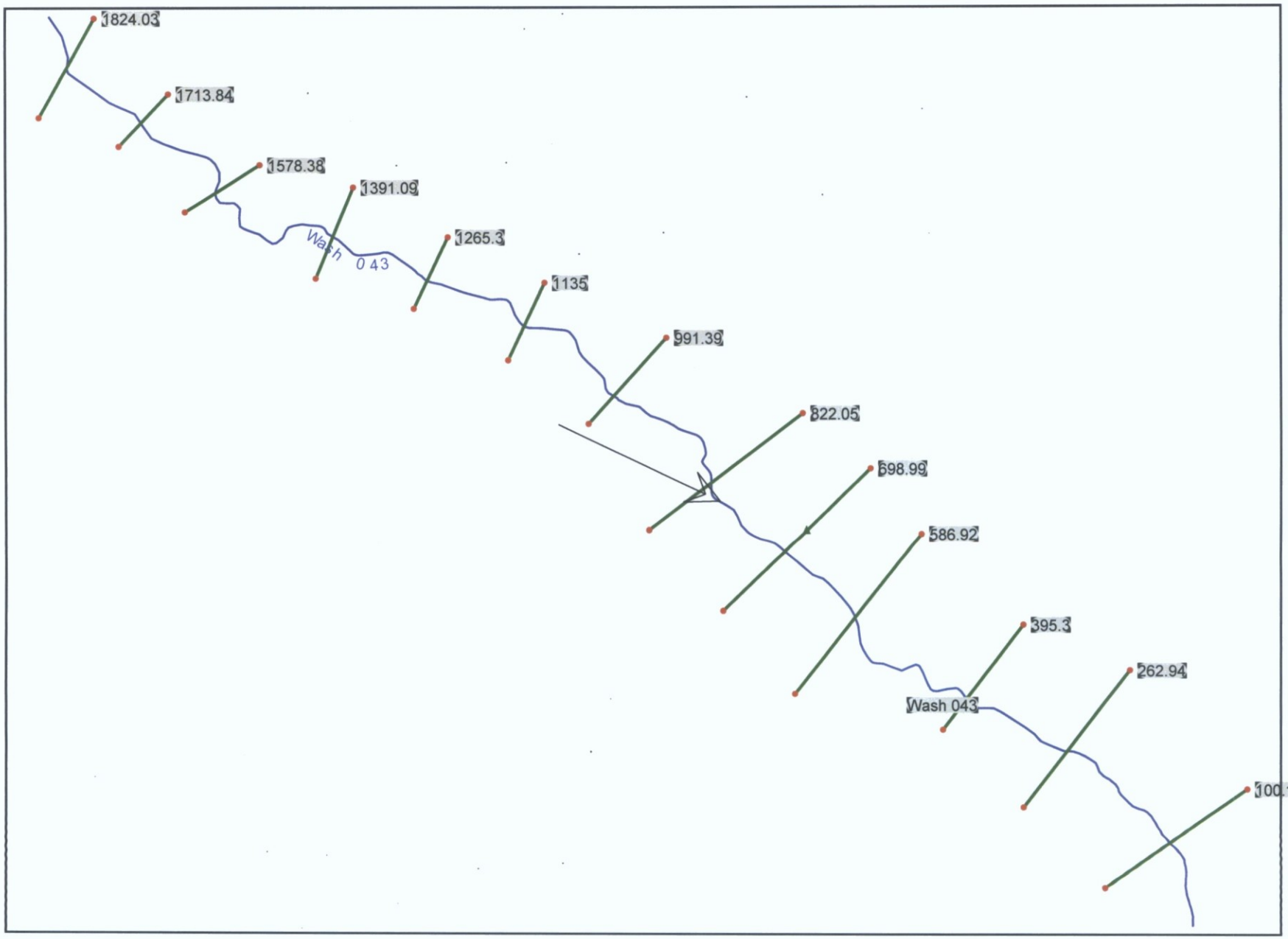

WASH210 Plan: EXISTING 6/13/2015
River = WASH210 Reach = 210 RS = 030
.035
.035
.035
Elevation (ft)
2698
2697
2696
2695
2694
2693
2692
2691
0
50
100
150
200
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
WASH210 Plan: EXISTING 6/13/2015
River = WASH210 Reach = 210 RS = 020
.035
.035
.035
Elevation (ft)
2692
2691
2690
2689
2688
0
20
40
60
80
100
120
Station (ft)
Legend
WS PF 1
Ground
Bank Sta


WASH210 Plan: EXISTING 6/13/2015
River = WASH210 Reach = 210 RS = 010
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2688.0
2687.5
2687.0
2686.5
2686.0
2685.5
2685.0
2684.5
0
50
100
150
200
Station (ft)


WASH210 Plan: EXISTING 6/13/2015
WASH210 210
Legend
WS PF 1
Ground
LOB
ROB
Elevation (ft)
2740
2730
2720
2710
2700
2690
2680
020
030
040
050
060
070
080
090
100
110
120
130
0
500
1000
1500
2000
Main Channel Distance (ft)

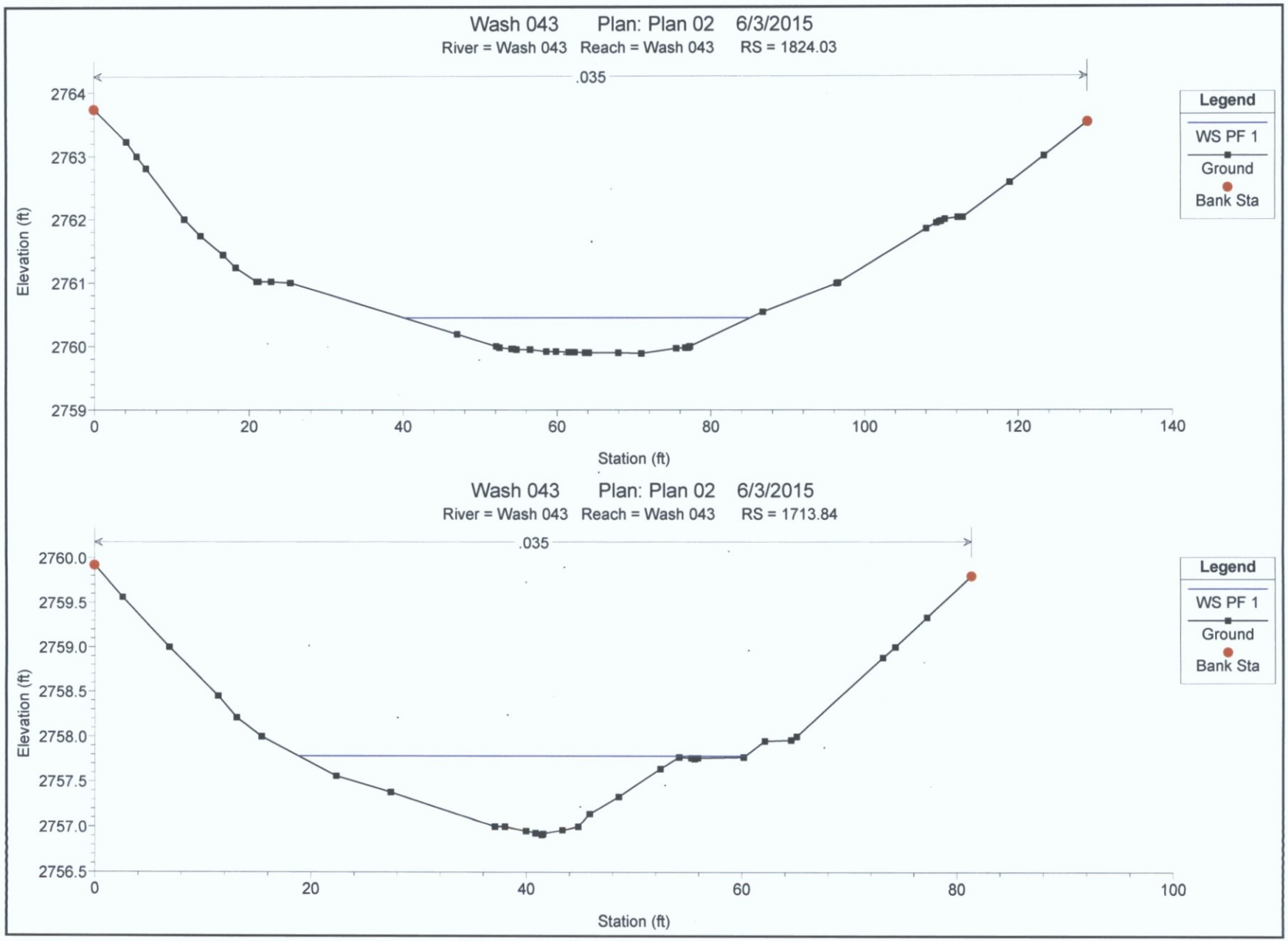
Post-Development Condition Wash HEC-RAS Outputs

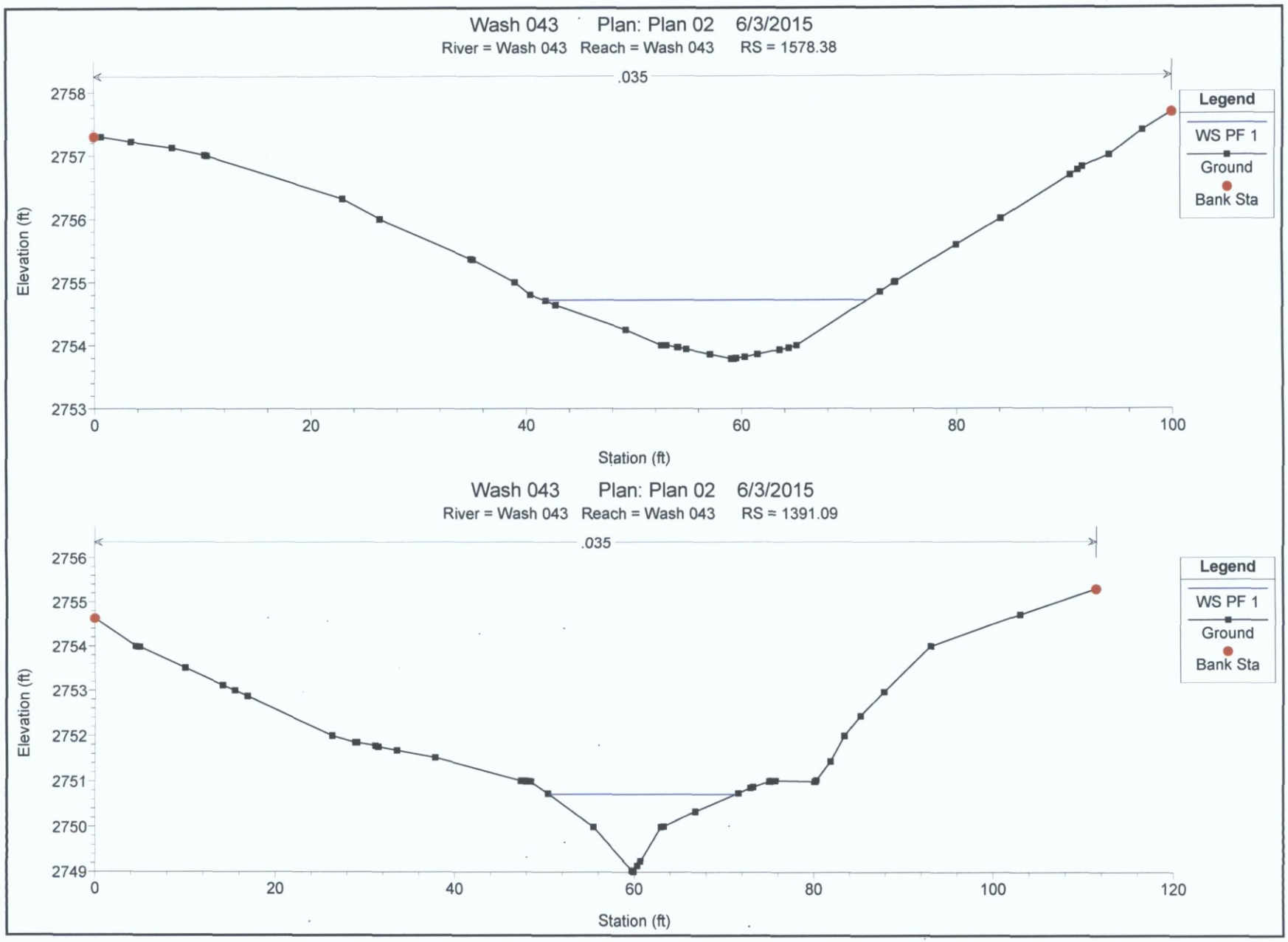
POST-DEVELOPMENT WASH 043 HEC-RAS

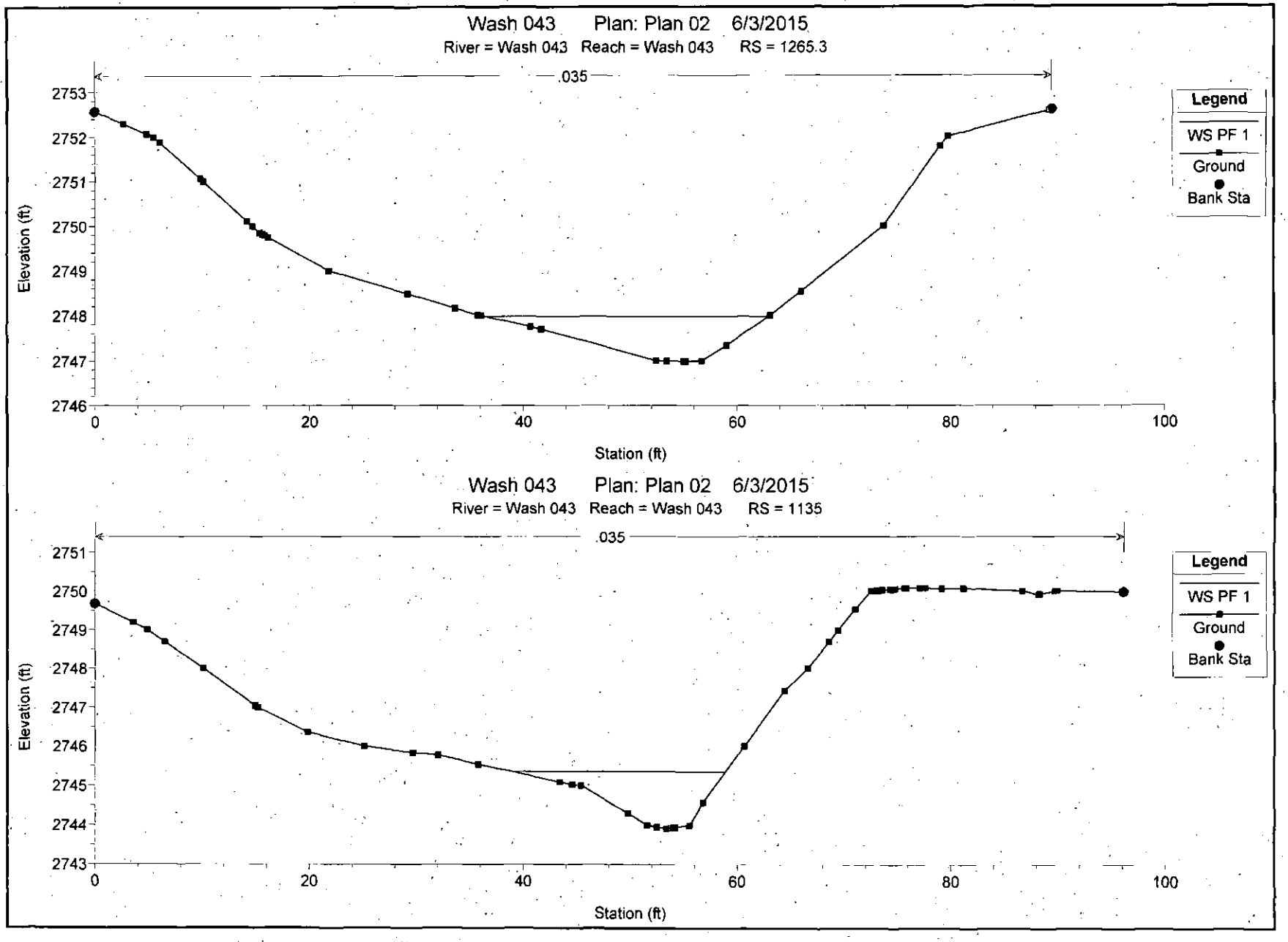

1824.03
1713.84
1578.38
1391.09
Wash 043
1265.3
1135
991.39
822.05
698.99
586.92
395.3
Wash 043
262.94
100.11

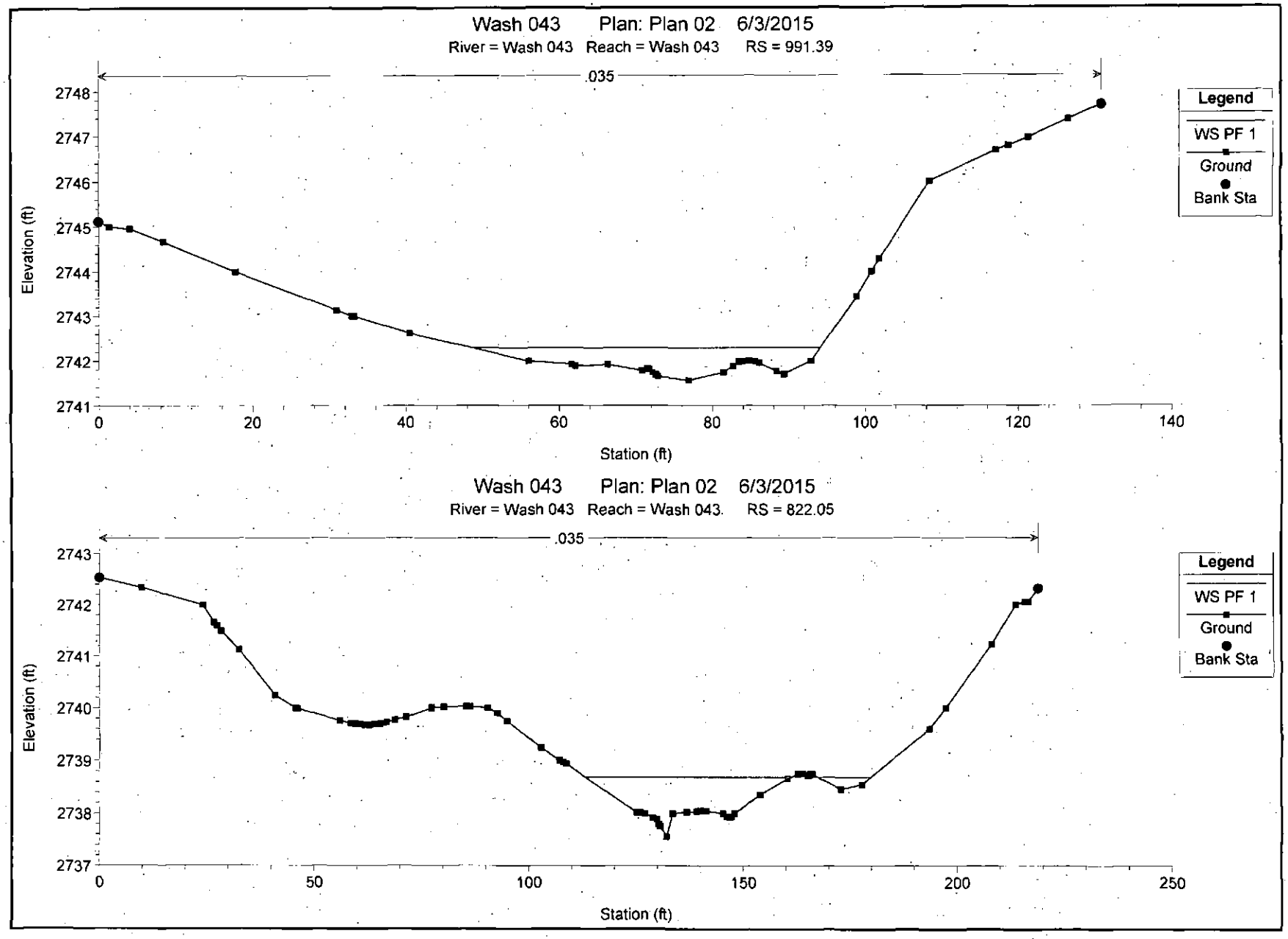
HEC-RAS Plan: Plan 01 River: Wash 043 Reach: Wash 043 Profile: PF 1

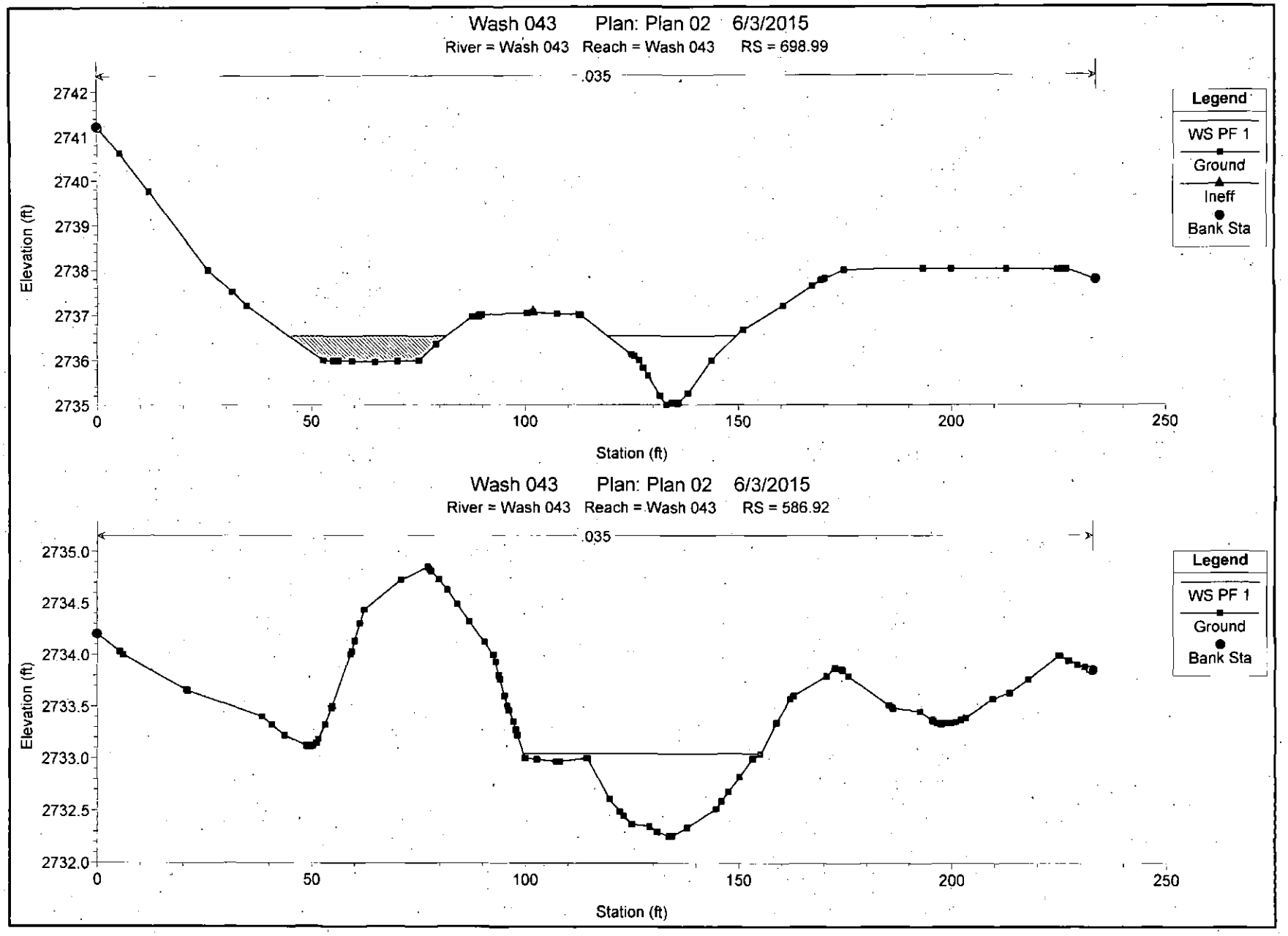
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Wash 043	1824.03	PF 1	66.00	2759.89	2760.45	2760.47	2760.67	0.028023	3.78	17.44	44.89	1.07
Wash 043	1713.84	PF 1	66.00	2756.91	2757.78	2757.78	2758.00	0.024096	3.73	17.69	41.48	1.01
Wash 043	1578.38	PF 1	66.00	2753.79	2754.72	2754.69	2754.97	0.019643	3.99	16.54	30.05	0.95
Wash 043	1391.09	PF 1	66.00	2749.00	2750.72	2750.72	2751.07	0.021986	4.75	13.88	20.79	1.03
Wash 043	1265.3	PF 1	66.00	2746.99	2747.98	2748.00	2748.29	0.024181	4.47	14.78	26.45	1.05
Wash 043	1135	PF 1	66.00	2743.91	2745.35	2745.33	2745.69	0.019547	4.67	14.13	19.88	0.98
Wash 043	991.39	PF 1	66.00	2741.56	2742.29	2742.29	2742.49	0.025007	3.64	18.12	45.26	1.01
Wash 043	822.05	PF 1	66.00	2737.56	2738.69	2738.54	2738.78	0.010641	2.52	26.22	60.01	0.67
Wash 043	698.99	PF 1	110.00	2735.00	2736.54	2736.54	2736.90	0.019388	4.86	22.64	67.03	0.99
Wash 043	586.92	PF 1	110.00	2732.26	2733.04	2733.17	2733.47	0.055338	5.23	21.05	55.55	1.50
Wash 043	395.3	PF 1	110.00	2728.00	2729.14	2729.14	2729.38	0.025784	3.92	28.08	64.20	1.04
Wash 043	262.94	PF 1	132.00	2725.00	2726.20	2726.16	2726.41	0.019503	3.69	35.75	72.50	0.93
Wash 043	100.11	PF 1	132.00	2721.92	2722.60	2722.60	2722.80	0.025376	3.62	36.45	93.00	1.02

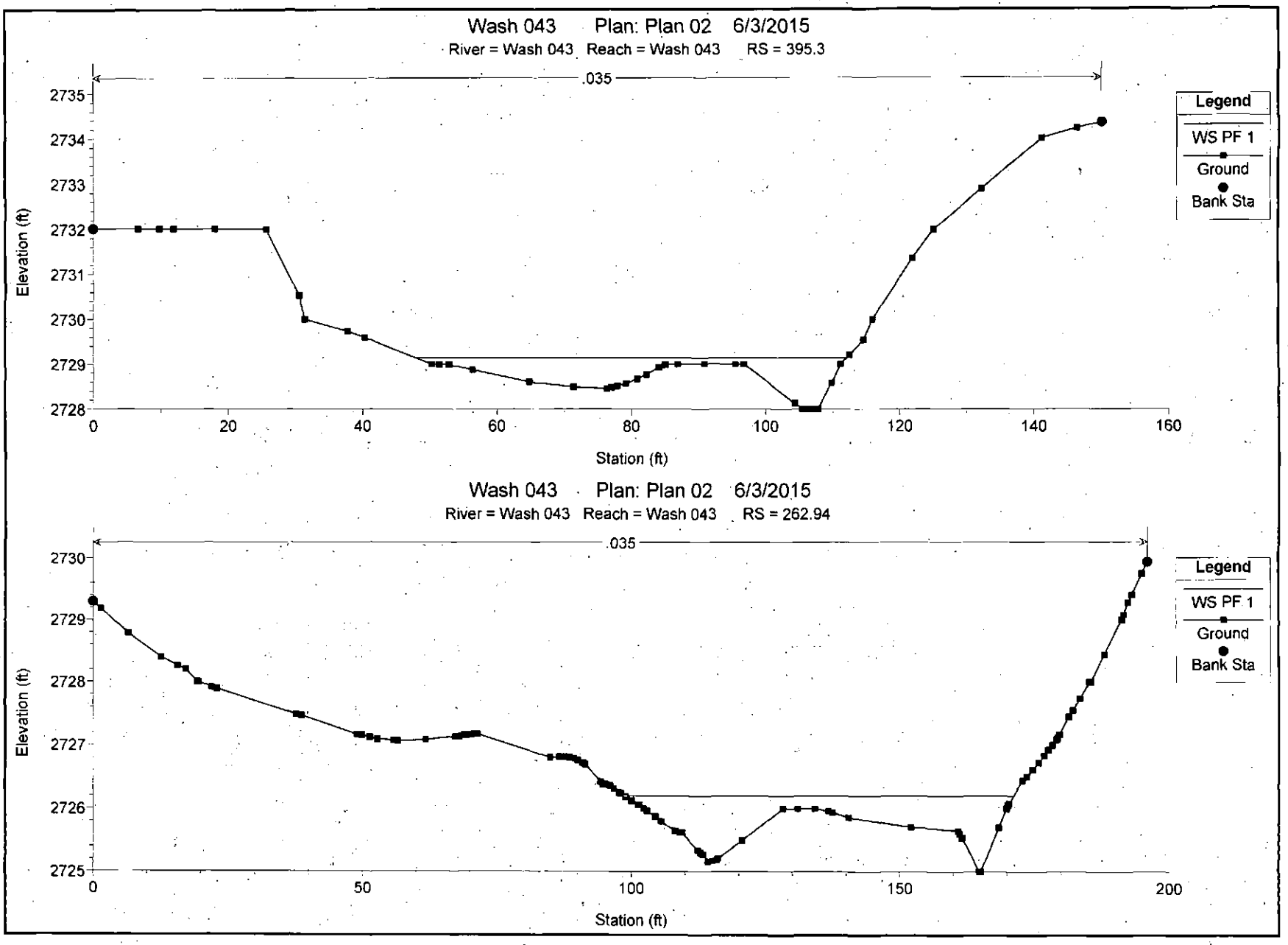

Wash 043 Plan: Plan 02 6/3/2015
River = Wash 043 Reach = Wash 043 RS = 1824.03
.035
Elevation (ft)
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
Wash 043 Plan: Plan 02 6/3/2015
River = Wash 043 Reach = Wash 043 RS = 1713.84
.035
Elevation (ft)
Station (ft)
Legend
WS PF 1
Ground
Bank Sta

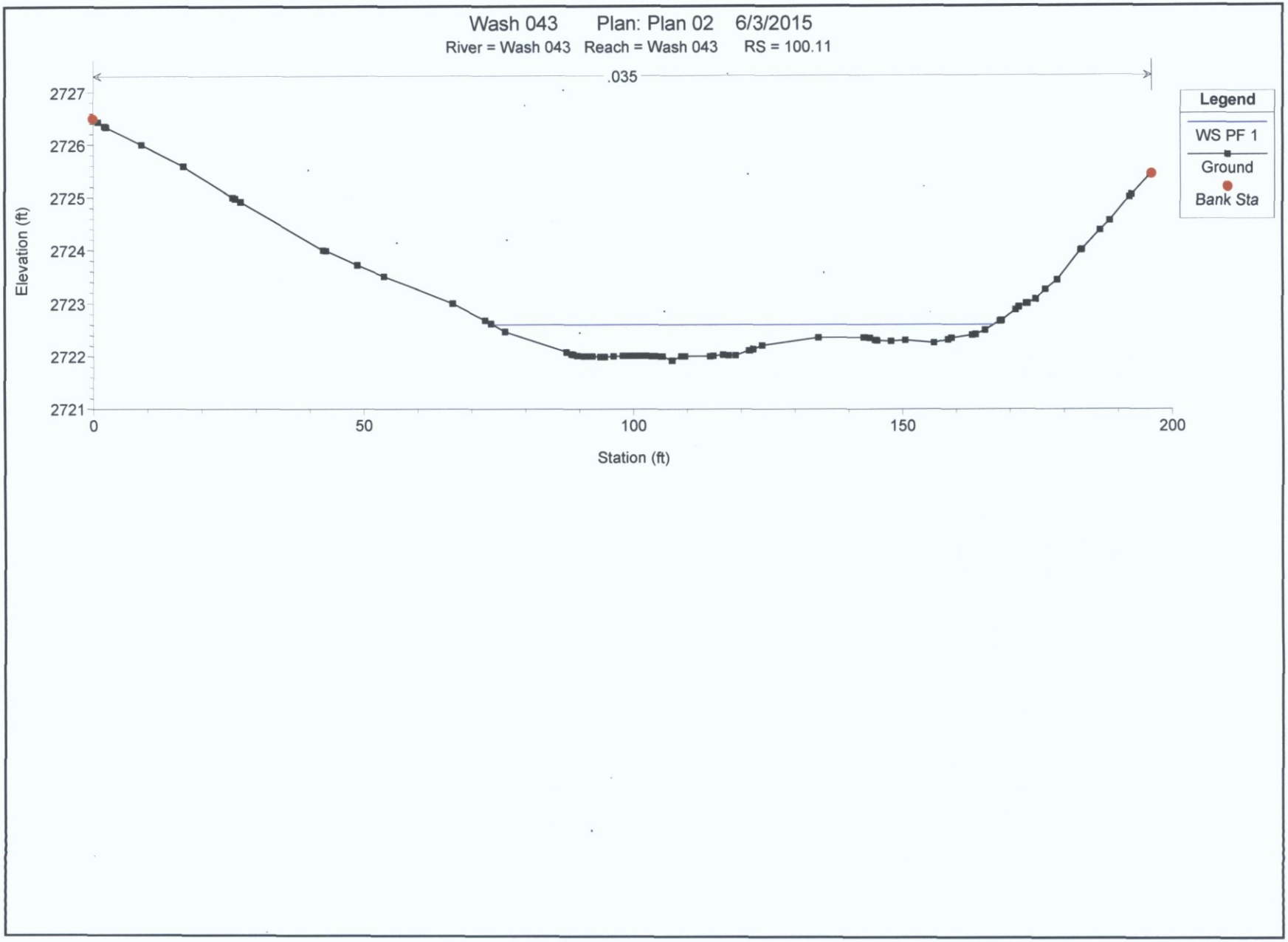

Wash 043 Plan: Plan 02 6/3/2015
River = Wash 043 Reach = Wash 043 RS = 1578.38
.035
Elevation (ft)
2758
2757
2756
2755
2754
2753
0
20
40
60
80
100
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
Wash 043 Plan: Plan 02 6/3/2015
River = Wash 043 Reach = Wash 043 RS = 1391.09
.035
Elevation (ft)
2756
2755
2754
2753
2752
2751
2750
2749
0
20
40
60
80
100
120
Station (ft)
Legend
WS PF 1
Ground
Bank Sta

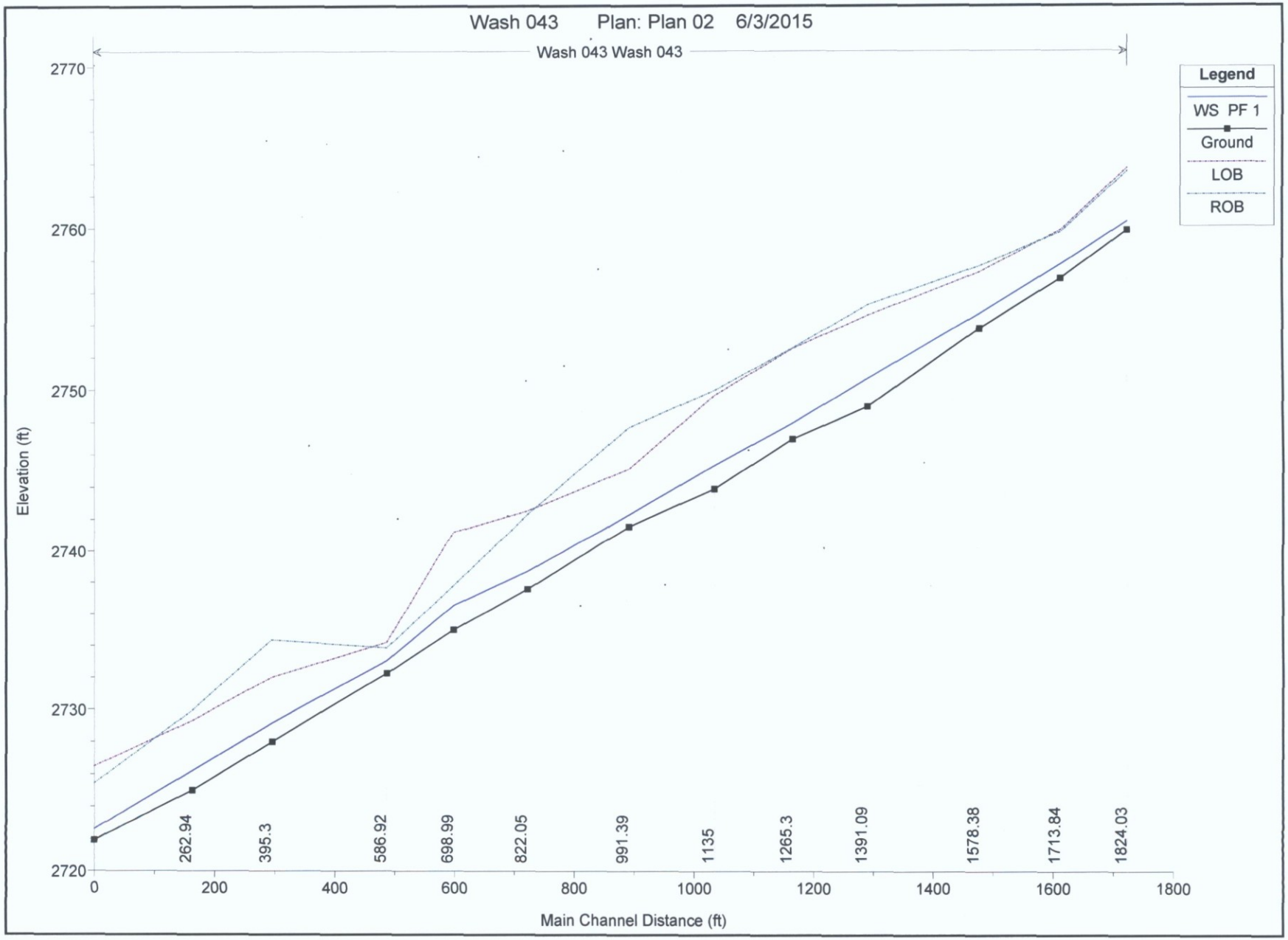

Wash 043 Plan: Plan 02 6/3/2015
River = Wash 043 Reach = Wash 043 RS = 1265.3
.035
Elevation (ft)
2753
2752
2751
2750
2749
2748
2747
2746
0
20
40
60
80
100
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
Wash 043 Plan: Plan 02 6/3/2015
River = Wash 043 Reach = Wash 043 RS = 1135
.035
Elevation (ft)
2751
2750
2749
2748
2747
2746
2745
2744
2743
0
20
40
60
80
100
Station (ft)
Legend
WS PF 1
Ground
Bank Sta


Wash 043 Plan: Plan 02 6/3/2015
River = Wash 043 Reach = Wash 043 RS = 991.39
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2748
2747
2746
2745
2744
2743
2742
2741
0
20
40
60
80
100
120
140
Wash 043 Plan: Plan 02 6/3/2015
River = Wash 043 Reach = Wash 043 RS = 822.05
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2743
2742
2741
2740
2739
2738
2737
0
50
100
150
200
250

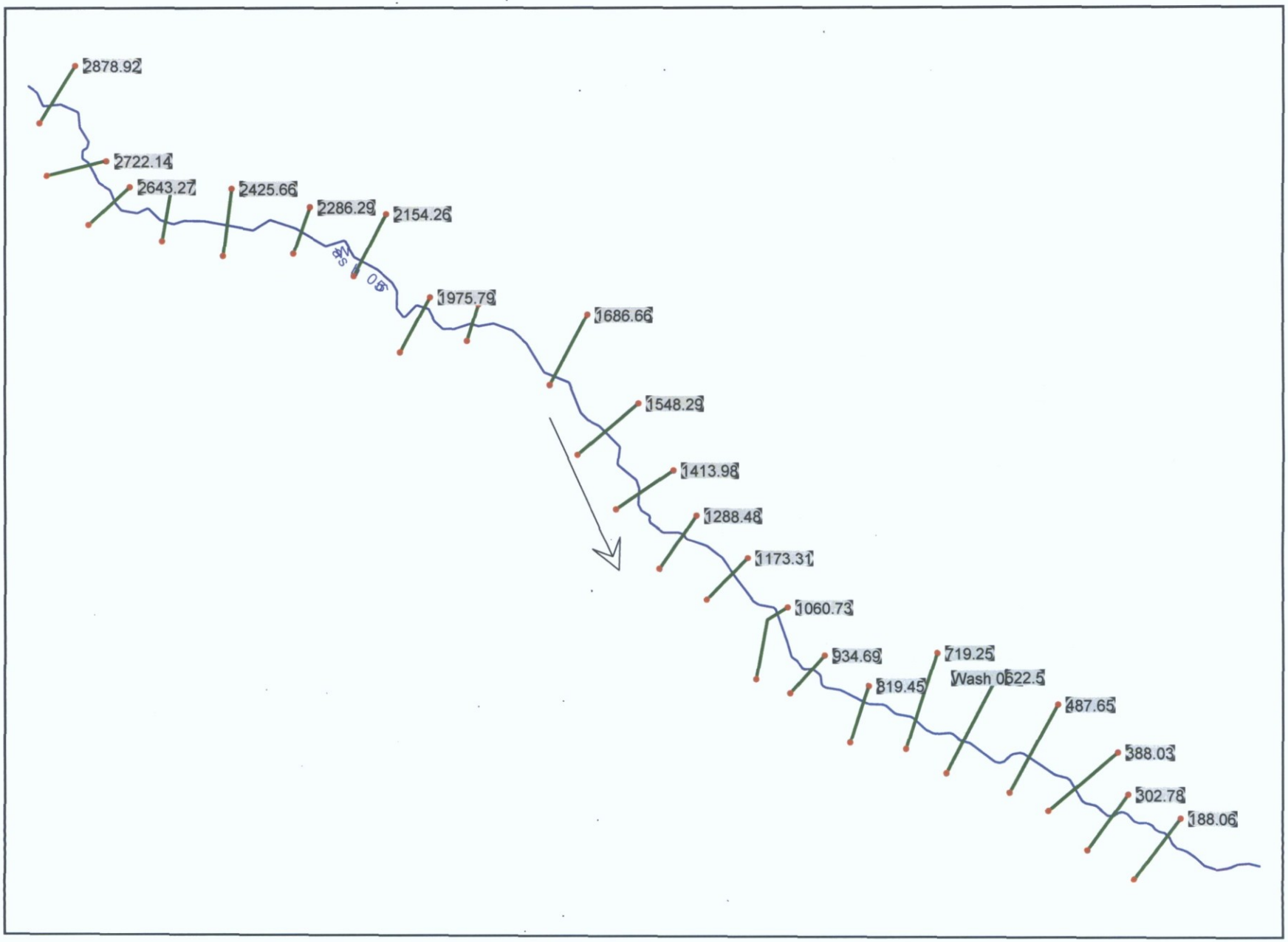

Wash 043 Plan: Plan 02 6/3/2015
River = Wash 043 Reach = Wash 043 RS = 698.99
.035
Elevation (ft)
2742
2741
2740
2739
2738
2737
2736
2735
0
50
100
150
200
250
Station (ft)
Legend
WS PF 1
Ground
Ineff
Bank Sta
Wash 043 Plan: Plan 02 6/3/2015
River = Wash 043 Reach = Wash 043 RS = 586.92
.035
Elevation (ft)
2735.0
2734.5
2734.0
2733.5
2733.0
2732.5
2732.0
0
50
100
150
200
250
Station (ft)
Legend
WS PF 1
Ground
Bank Sta


Wash 043 Plan: Plan 02 6/3/2015
River = Wash 043 Reach = Wash 043 RS = 395.3
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2735
2734
2733
2732
2731
2730
2729
2728
0
20
40
60
80
100
120
140
160
Wash 043 Plan: Plan 02 6/3/2015
River = Wash 043 Reach = Wash 043 RS = 262.94
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2730
2729
2728
2727
2726
2725
0
50
100
150
200


Wash 043 Plan: Plan 02 6/3/2015
River = Wash 043 Reach = Wash 043 RS = 100.11
.035
Elevation (ft)
2727
2726
2725
2724
2723
2722
2721
0
50
100
150
200
Station (ft)
Legend
WS PF 1
Ground
Bank Sta

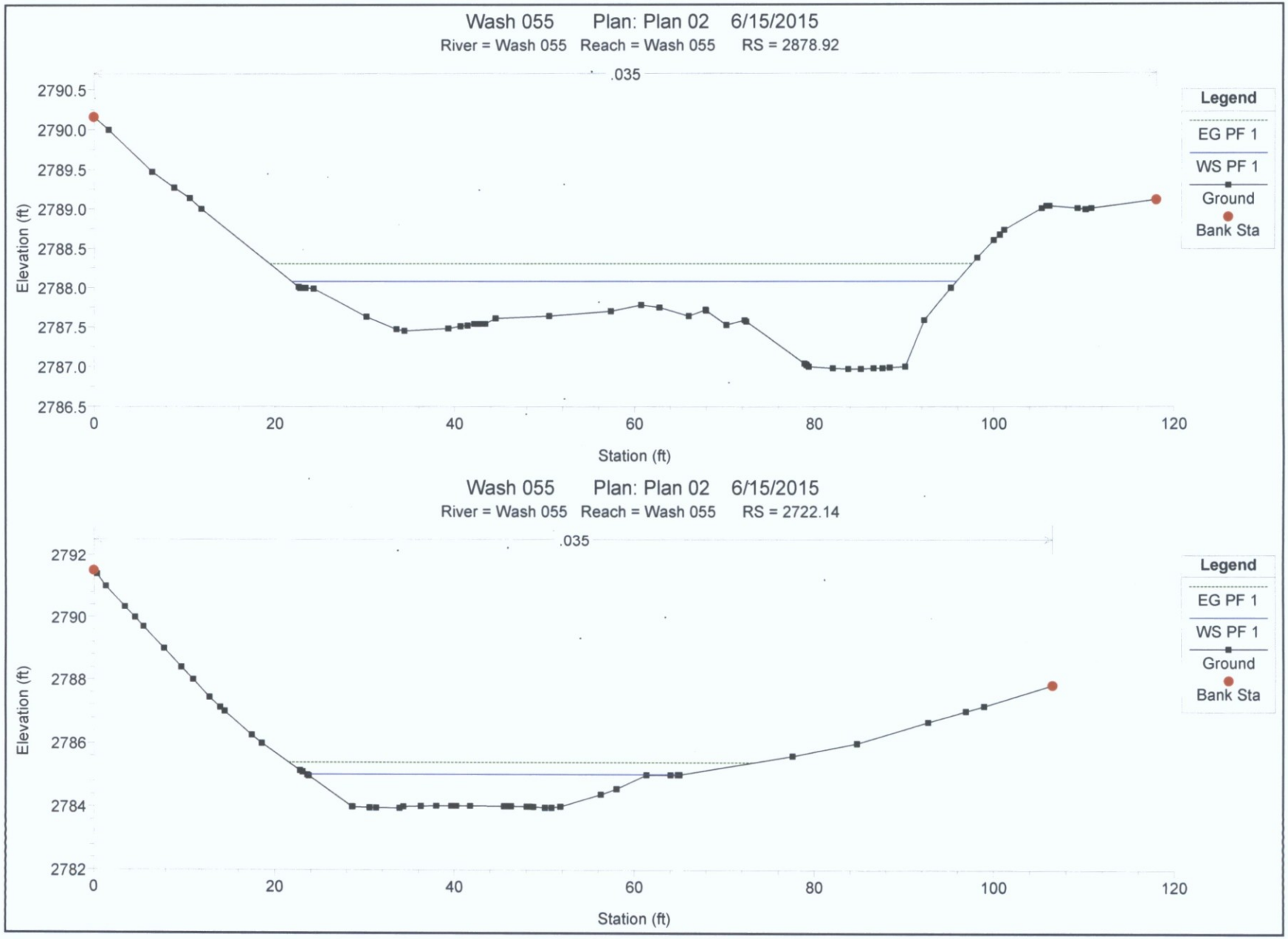

Wash 043 Plan: Plan 02 6/3/2015
Wash 043 Wash 043
Legend
WS PF 1
Ground
LOB
ROB
Elevation (ft)
2770
2760
2750
2740
2730
2720
262.94
395.3
586.92
698.99
822.05
991.39
1135
1265.3
1391.09
1578.38
1713.84
1824.03
0
200
400
600
800
1000
1200
1400
1600
1800
Main Channel Distance (ft)

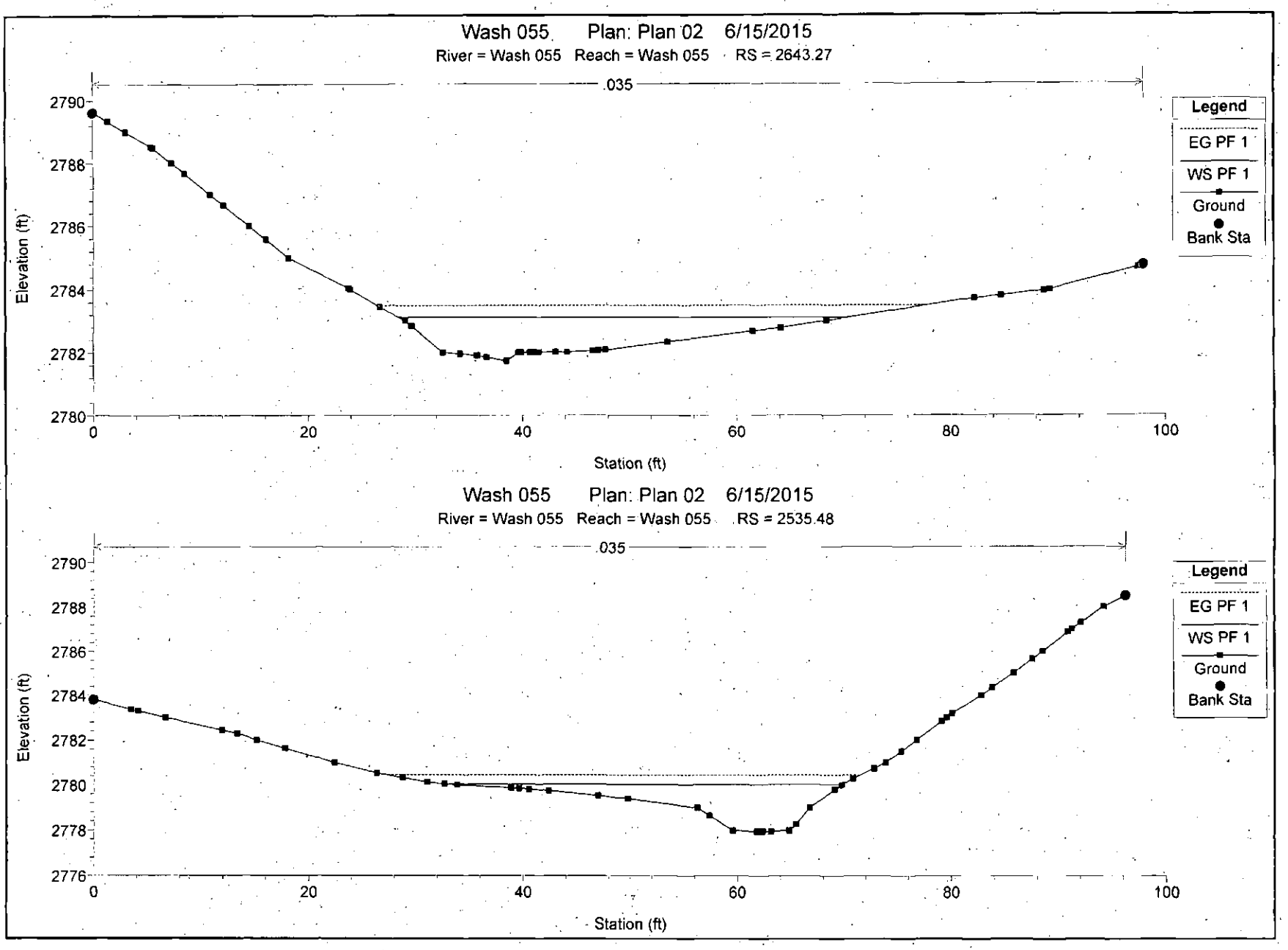
POST-DEVELOPMENT WASH 055 HEC-RAS

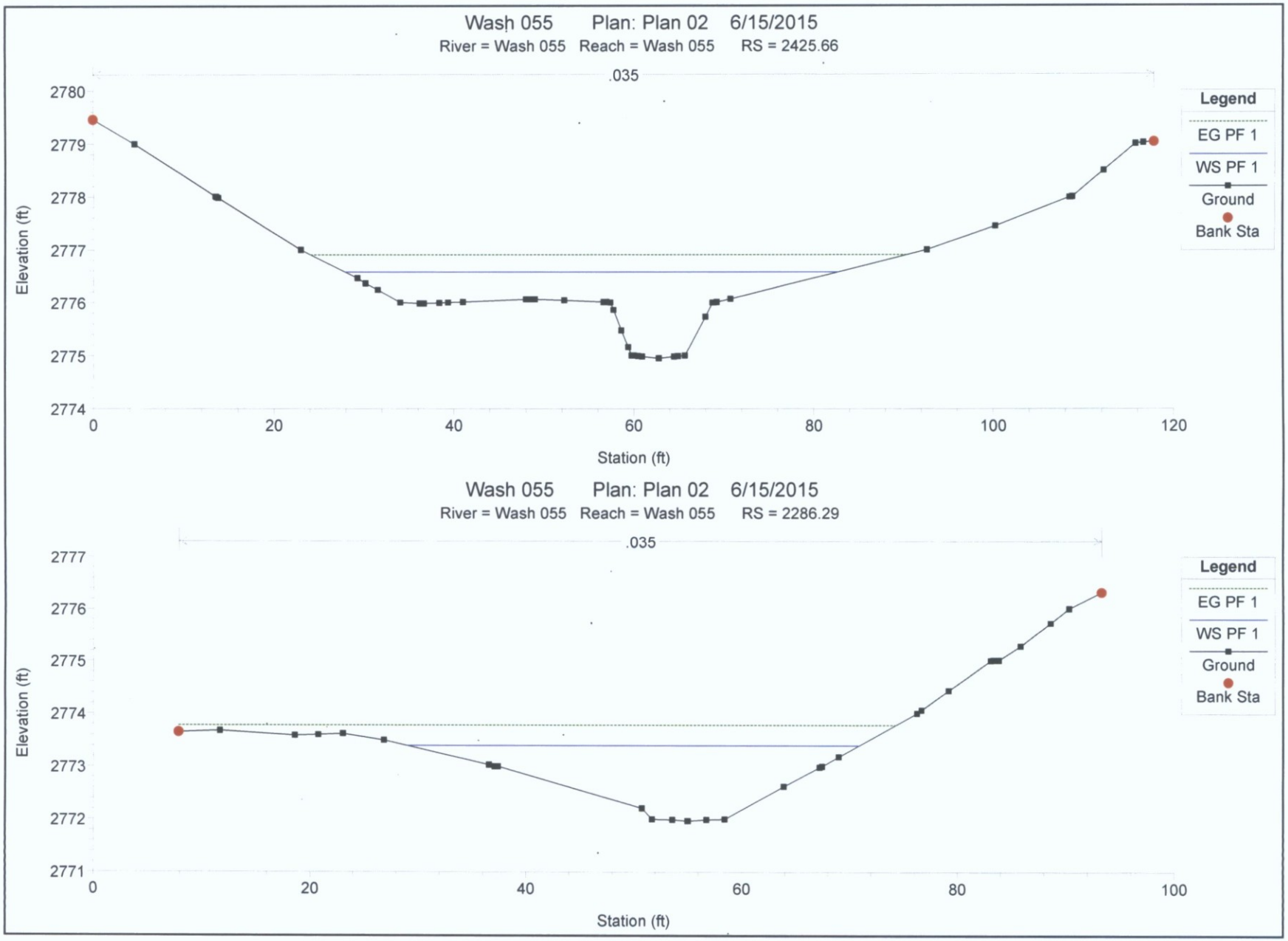

2878.92
2722.14
2643.27
2425.66
2286.29
2154.26
1975.79
1686.66
1548.29
1413.98
1288.48
1173.31
1060.73
934.69
819.45
719.25
622.5
Wash 0
487.65
388.03
302.78
188.06

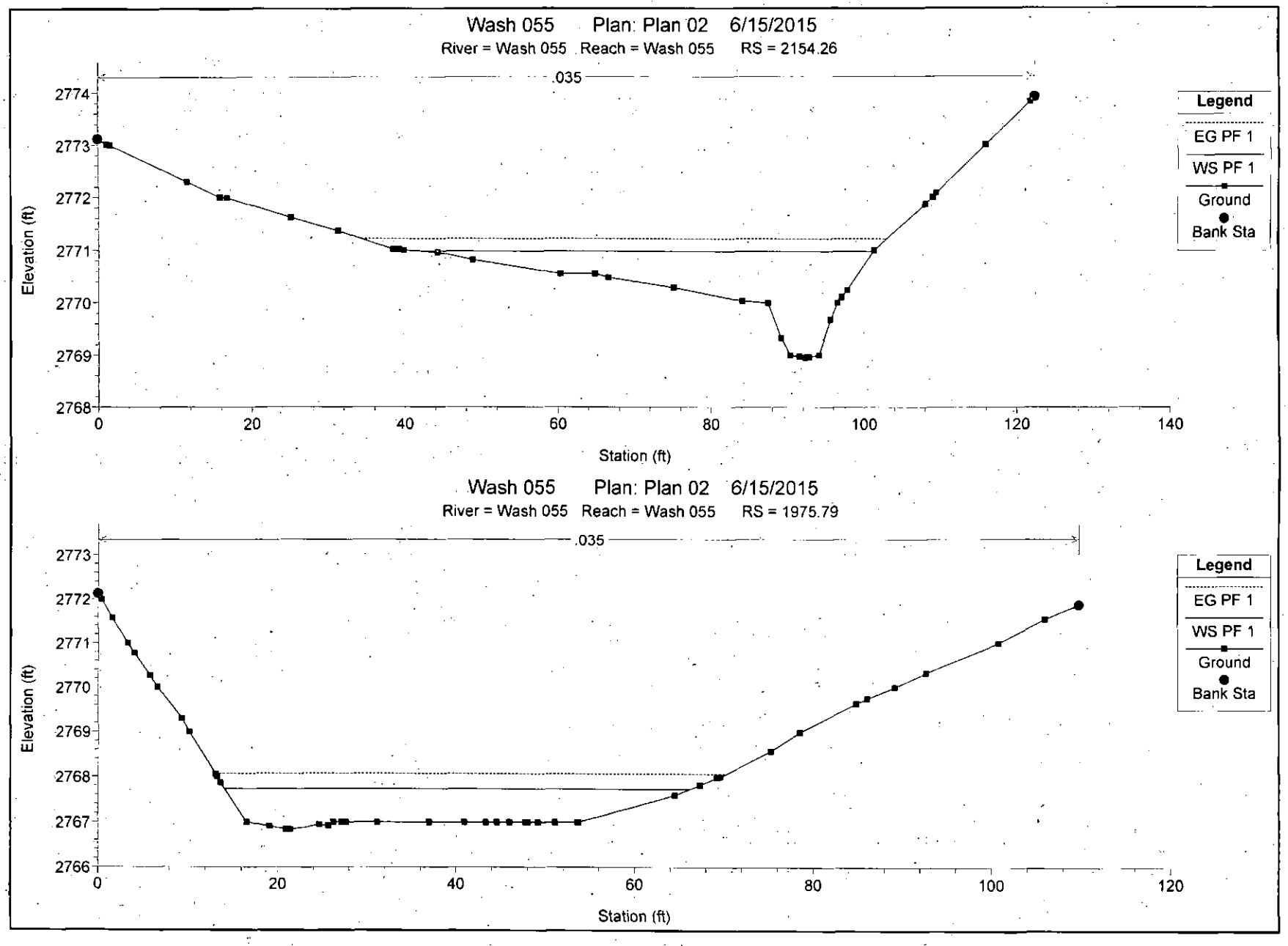
HEC-RAS Plan: Plan 01 River: Wash 055 Reach: Wash 055 Profile: PF 1

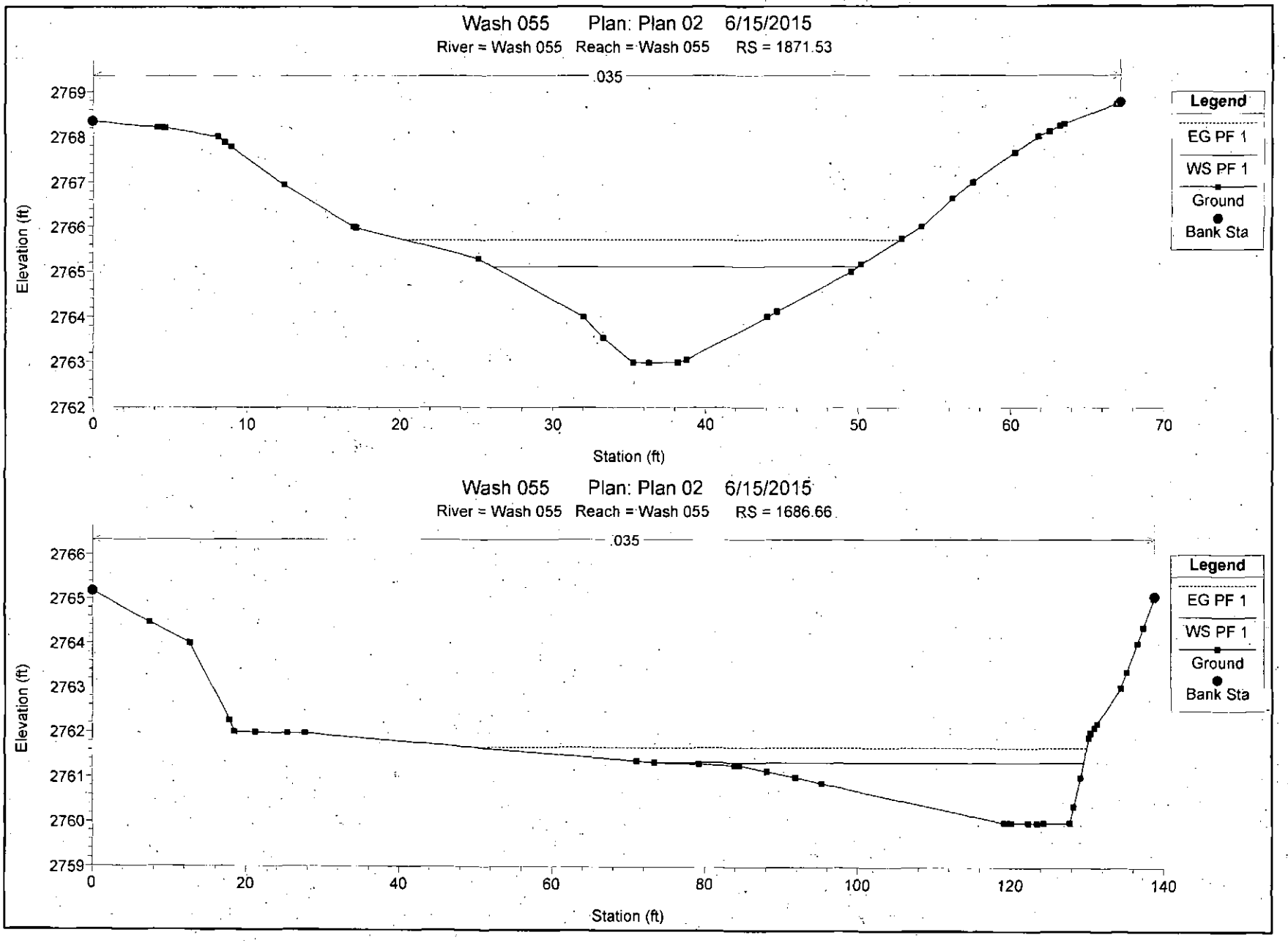
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Wash 055	2878.92	PF 1	157.00	2786.97	2788.08	2788.03	2788.30	0.017266	3.79	41.47	74.02	0.89
Wash 055	2722.14	PF 1	157.00	2783.95	2785.01	2785.01	2785.40	0.019816	4.97	31.61	41.56	1.00
Wash 055	2643.27	PF 1	157.00	2781.73	2783.11	2783.11	2783.49	0.019950	4.95	31.72	42.08	1.00
Wash 055	2535.48	PF 1	157.00	2777.95	2780.02	2780.02	2780.44	0.020123	5.22	30.08	36.69	1.02
Wash 055	2425.66	PF 1	157.00	2774.95	2776.58	2776.58	2776.90	0.022043	4.58	34.25	54.81	1.02
Wash 055	2286.29	PF 1	157.00	2771.97	2773.39	2773.39	2773.78	0.020067	4.97	31.57	41.85	1.01
Wash 055	2154.26	PF 1	157.00	2768.96	2770.98		2771.22	0.014685	3.95	39.78	58.72	0.85
Wash 055	1975.79	PF 1	157.00	2766.84	2767.73	2767.73	2768.07	0.021349	4.64	33.83	52.15	1.02
Wash 055	1871.53	PF 1	172.00	2762.99	2765.11	2765.11	2765.71	0.017902	6.20	27.74	23.87	1.01
Wash 055	1686.66	PF 1	172.00	2759.99	2761.33	2761.33	2761.66	0.020736	4.63	37.12	55.79	1.00
Wash 055	1548.29	PF 1	172.00	2756.92	2758.34	2758.32	2758.64	0.019780	4.35	39.54	63.46	0.97
Wash 055	1413.98	PF 1	172.00	2754.99	2755.96	2755.90	2756.20	0.016527	3.95	43.59	70.82	0.89
Wash 055	1288.48	PF 1	172.00	2752.75	2753.60	2753.58	2753.87	0.020929	4.18	41.16	73.29	0.98
Wash 055	1173.31	PF 1	172.00	2750.08	2751.10	2751.10	2751.39	0.022300	4.31	39.95	71.23	1.01
Wash 055	1060.73	PF 1	172.00	2746.99	2748.18		2748.40	0.012953	3.74	45.94	66.91	0.80
Wash 055	934.69	PF 1	172.00	2744.96	2745.97	2745.97	2746.40	0.019641	5.25	32.77	39.11	1.01
Wash 055	819.45	PF 1	172.00	2741.85	2743.45	2743.45	2743.96	0.018324	5.71	30.13	30.19	1.01
Wash 055	719.25	PF 1	172.00	2739.97	2741.28	2741.20	2741.63	0.015459	4.71	36.51	43.16	0.90
Wash 055	622.5	PF 1	172.00	2737.99	2739.51	2739.51	2739.95	0.019243	5.35	32.15	36.99	1.01
Wash 055	487.65	PF 1	172.00	2734.99	2736.92	2736.85	2737.24	0.016315	4.55	37.77	48.65	0.91
Wash 055	388.03	PF 1	172.00	2733.00	2735.03	2735.03	2735.38	0.021651	4.71	36.51	55.42	1.02
Wash 055	302.78	PF 1	172.00	2731.98	2732.98	2732.98	2733.38	0.019211	5.08	33.88	42.08	1.00
Wash 055	188.06	PF 1	172.00	2728.99	2730.37	2730.37	2730.63	0.024553	4.11	41.81	85.51	1.04

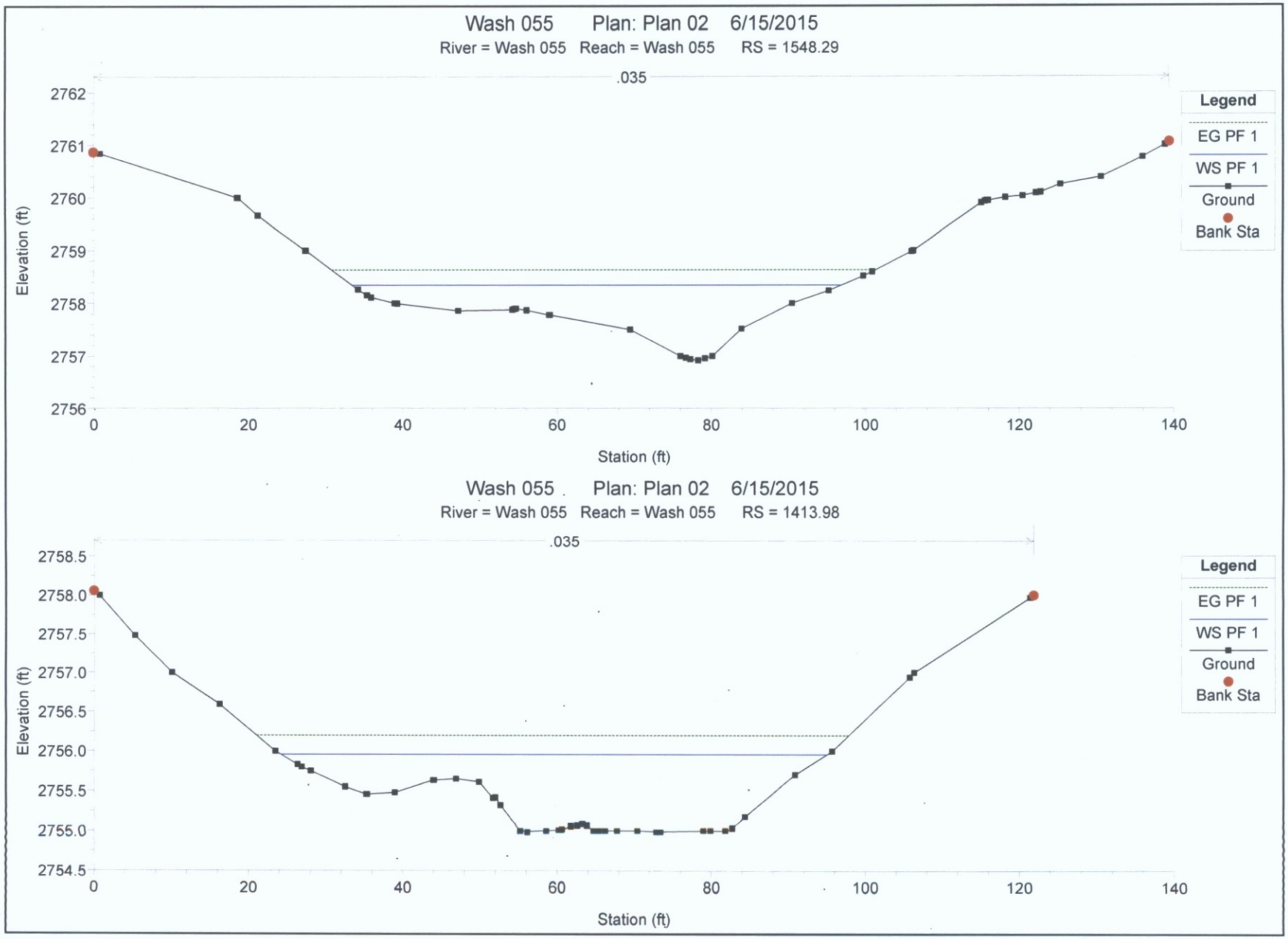

Wash 055 Plan: Plan 02 6/15/2015
River = Wash 055 Reach = Wash 055 RS = 2878.92
.035
Elevation (ft)
2790.5
2790.0
2789.5
2789.0
2788.5
2788.0
2787.5
2787.0
2786.5
0
20
40
60
80
100
120
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Wash 055 Plan: Plan 02 6/15/2015
River = Wash 055 Reach = Wash 055 RS = 2722.14
.035
Elevation (ft)
2792
2790
2788
2786
2784
2782
0
20
40
60
80
100
120
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

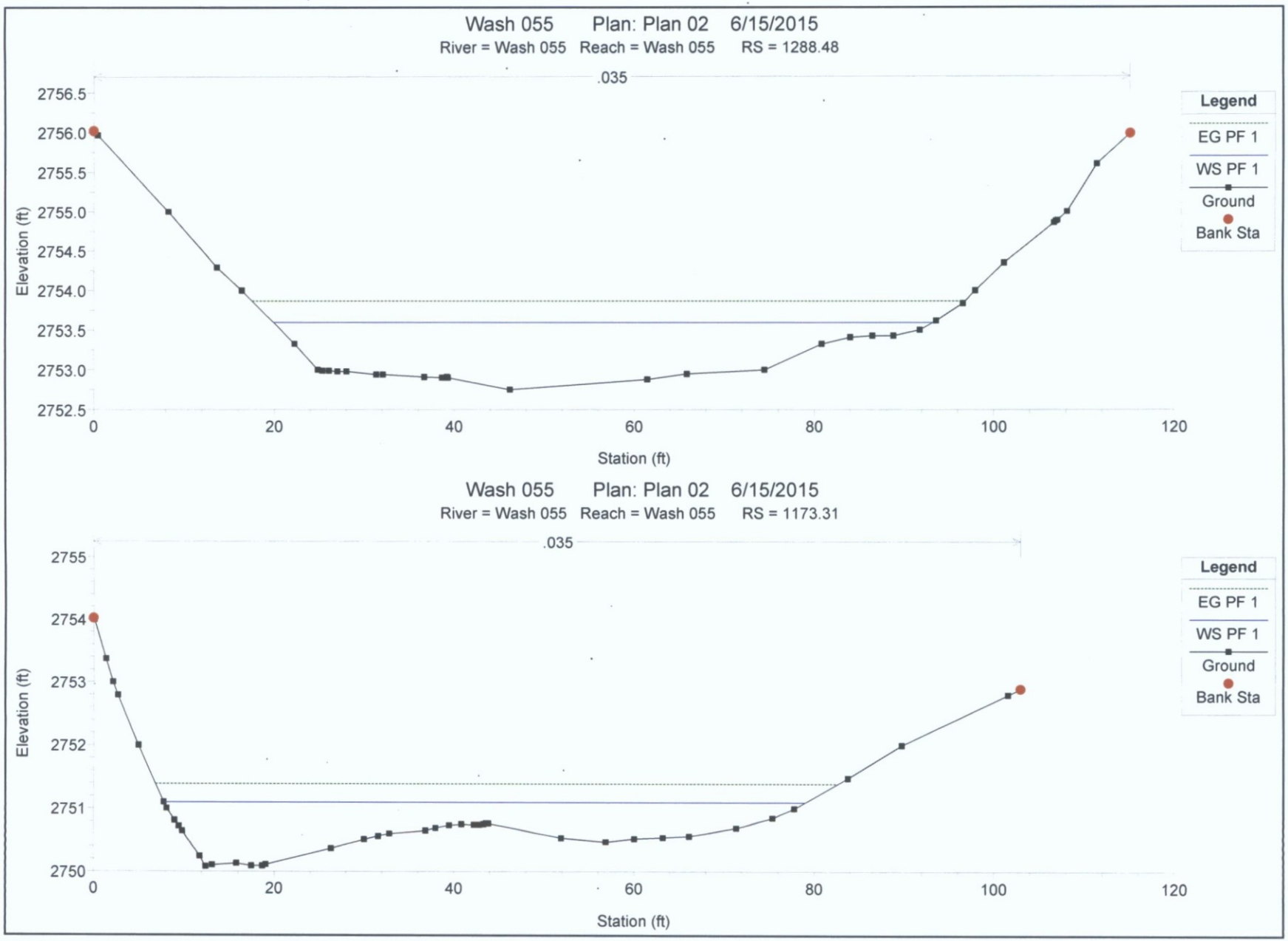

Wash 055 Plan: Plan 02 6/15/2015
River = Wash 055 Reach = Wash 055 RS = 2643.27
.035
Elevation (ft)
2790
2788
2786
2784
2782
2780
0
20
40
60
80
100
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Wash 055 Plan: Plan 02 6/15/2015
River = Wash 055 Reach = Wash 055 RS = 2535.48
.035
Elevation (ft)
2790
2788
2786
2784
2782
2780
2778
2776
0
20
40
60
80
100
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

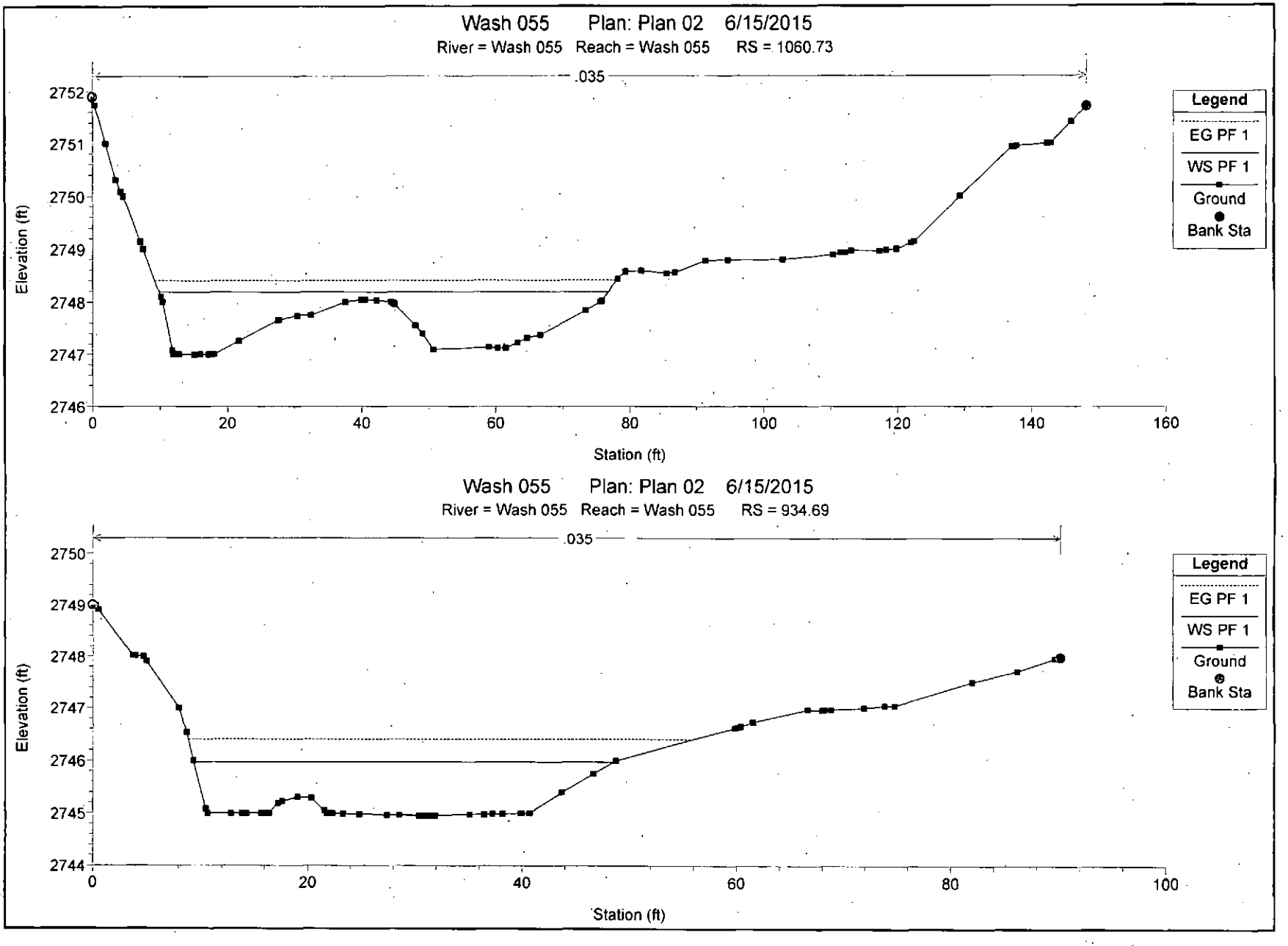

Wash 055 Plan: Plan 02 6/15/2015
River = Wash 055 Reach = Wash 055 RS = 2425.66
.035
Elevation (ft)
2780
2779
2778
2777
2776
2775
2774
0
20
40
60
80
100
120
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Wash 055 Plan: Plan 02 6/15/2015
River = Wash 055 Reach = Wash 055 RS = 2286.29
.035
Elevation (ft)
2777
2776
2775
2774
2773
2772
2771
0
20
40
60
80
100
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

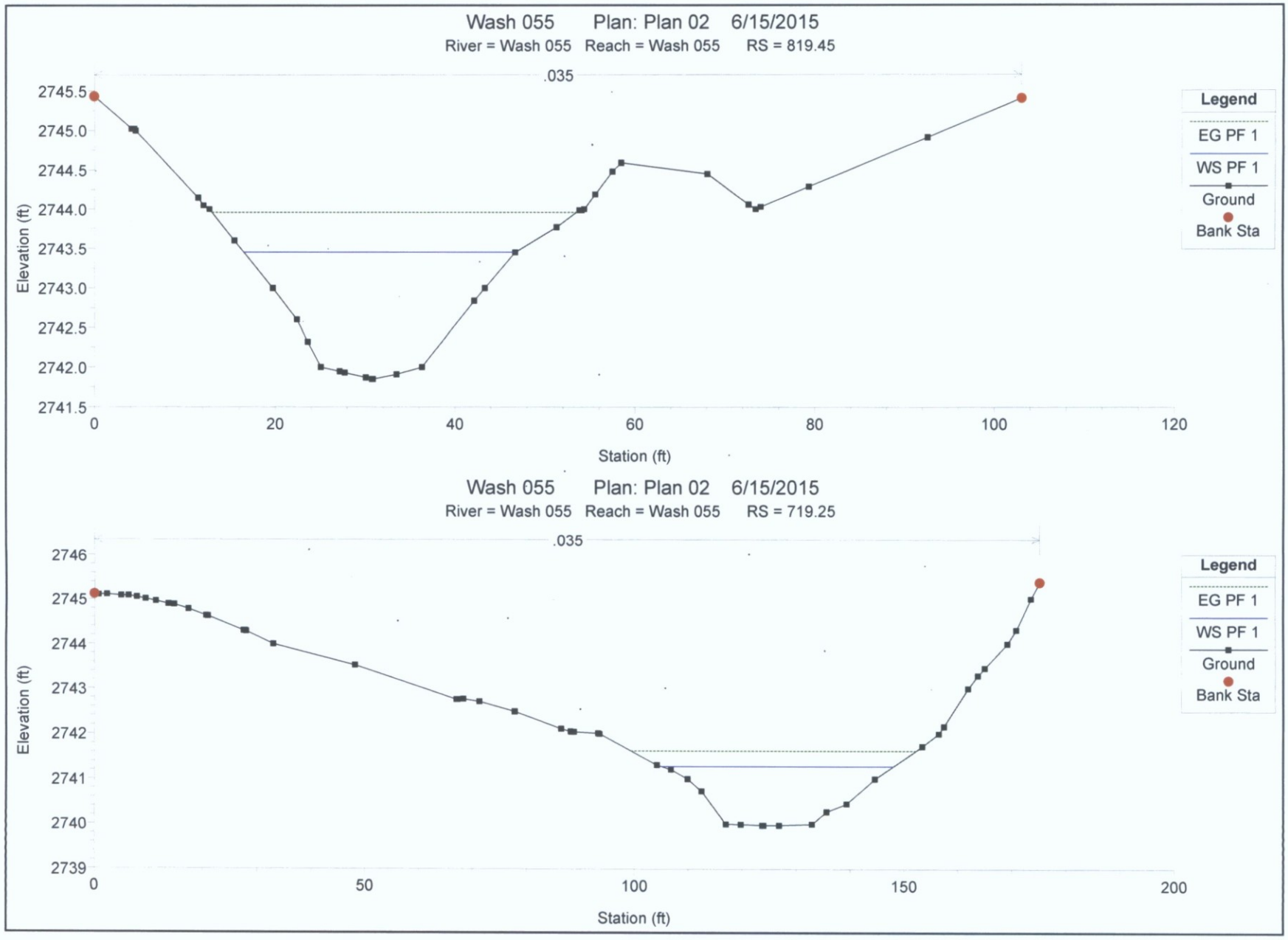

Wash 055 Plan: Plan 02 6/15/2015
River = Wash 055 Reach = Wash 055 RS = 2154.26
.035
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Wash 055 Plan: Plan 02 6/15/2015
River = Wash 055 Reach = Wash 055 RS = 1975.79
.035
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

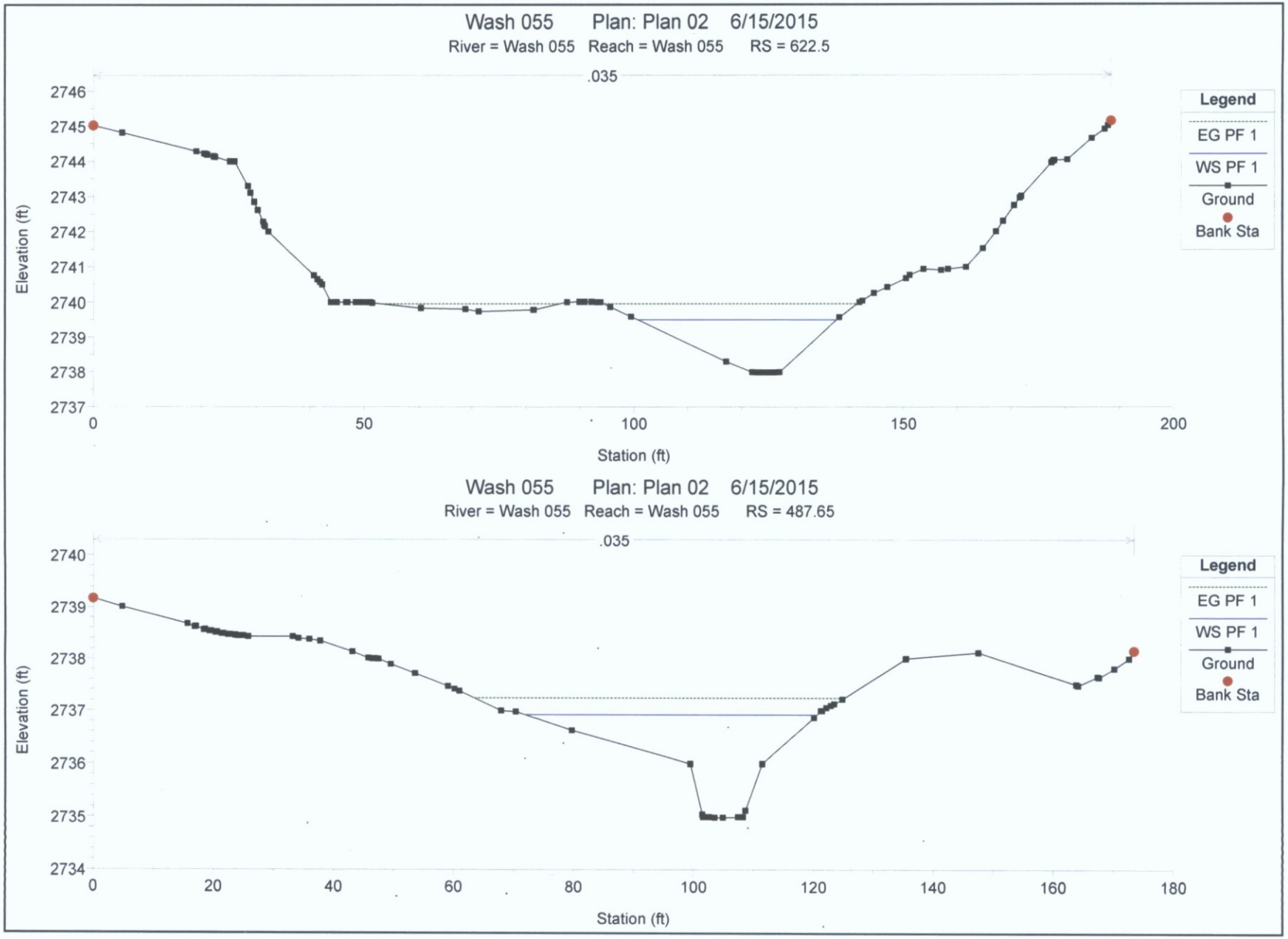

Wash 055 Plan: Plan 02 6/15/2015
River = Wash 055 Reach = Wash 055 RS = 1871.53
.035
Elevation (ft)
2769
2768
2767
2766
2765
2764
2763
2762
0
10
20
30
40
50
60
70
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Wash 055 Plan: Plan 02 6/15/2015
River = Wash 055 Reach = Wash 055 RS = 1686.66
.035
Elevation (ft)
2766
2765
2764
2763
2762
2761
2760
2759
0
20
40
60
80
100
120
140
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

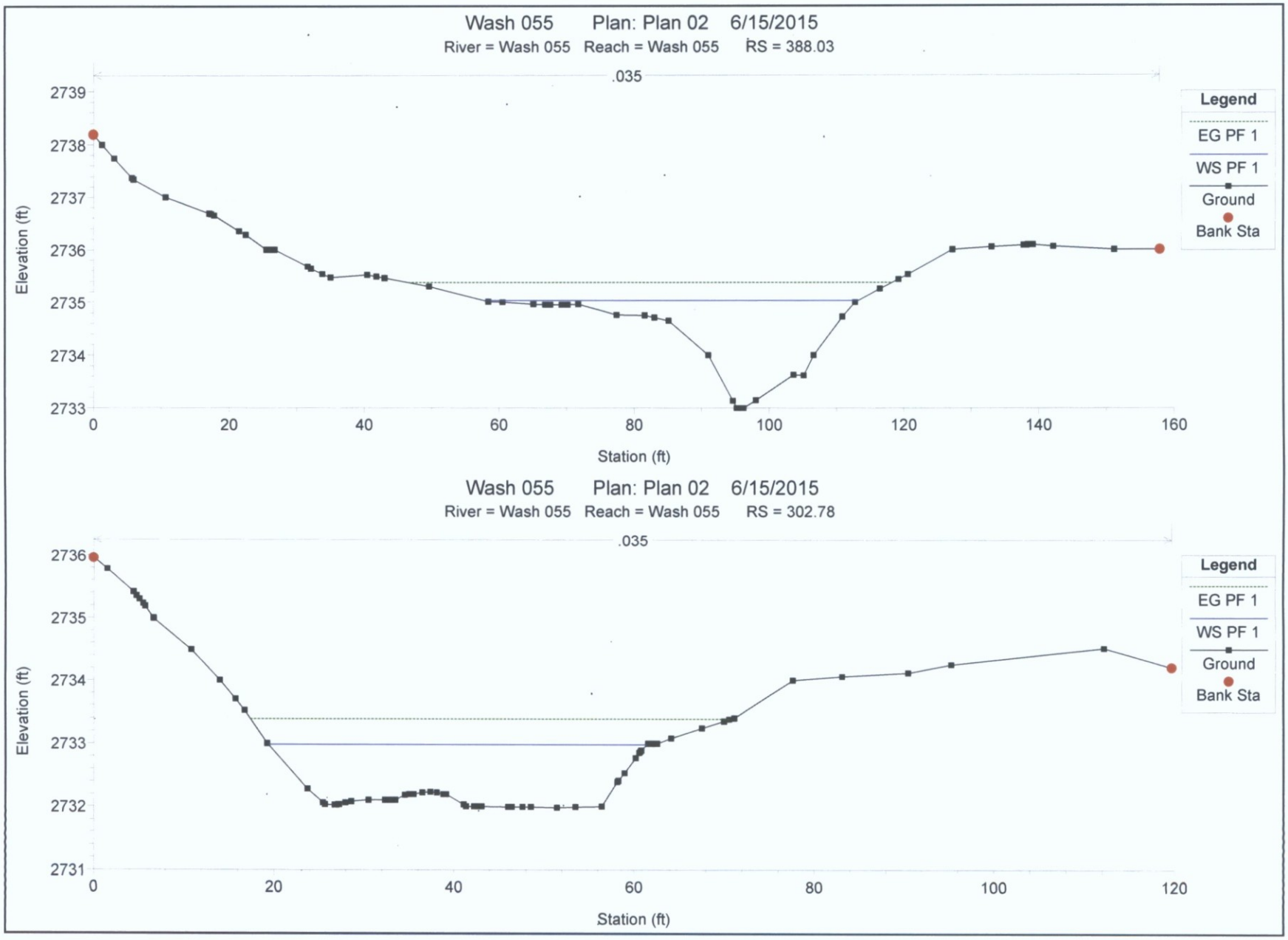

Wash 055 Plan: Plan 02 6/15/2015
River = Wash 055 Reach = Wash 055 RS = 1548.29
.035
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Wash 055 Plan: Plan 02 6/15/2015
River = Wash 055 Reach = Wash 055 RS = 1413.98
.035
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

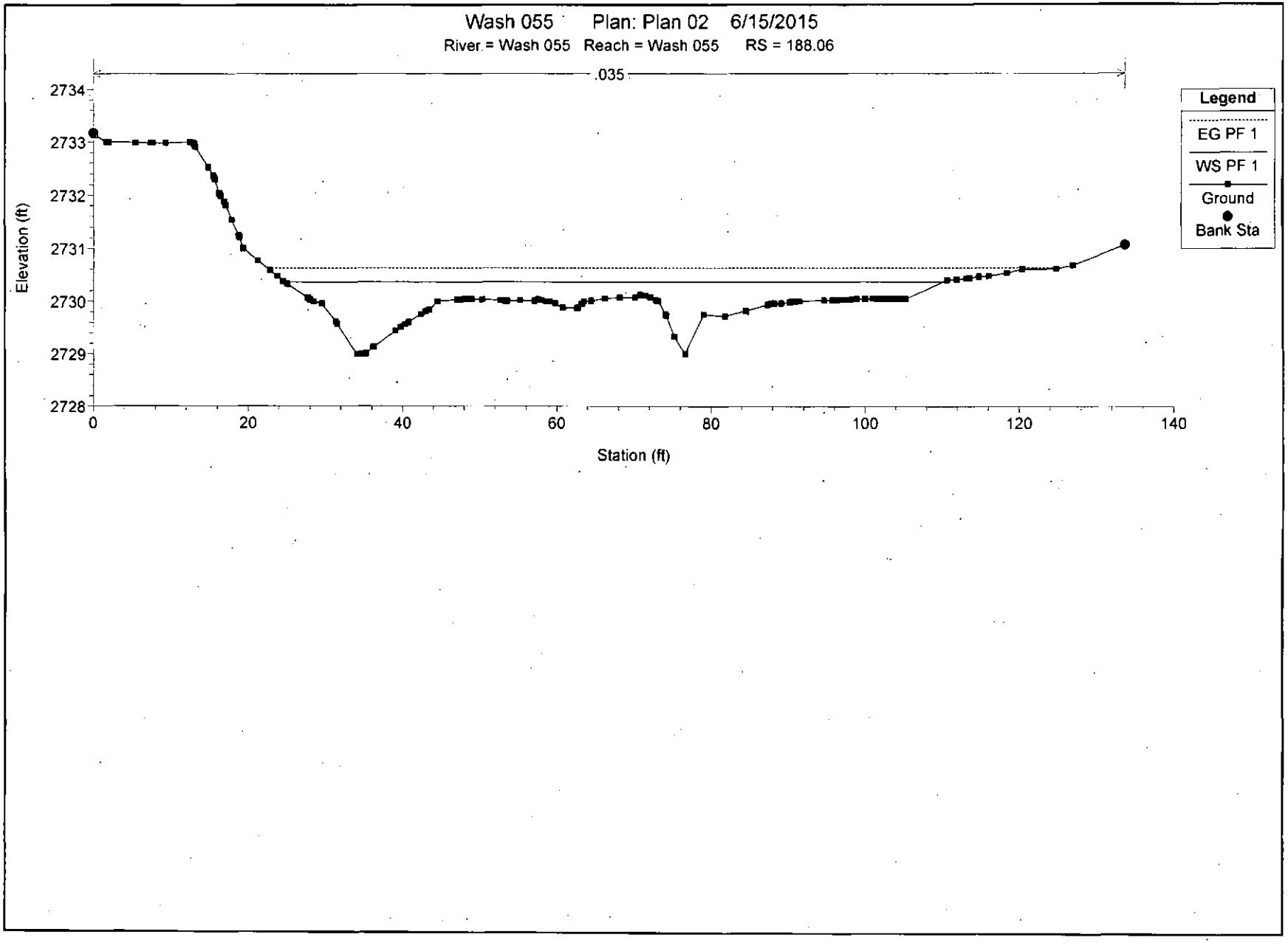

Wash 055 Plan: Plan 02 6/15/2015
River = Wash 055 Reach = Wash 055 RS = 1288.48
.035
Elevation (ft)
2756.5
2756.0
2755.5
2755.0
2754.5
2754.0
2753.5
2753.0
2752.5
0
20
40
60
80
100
120
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Wash 055 Plan: Plan 02 6/15/2015
River = Wash 055 Reach = Wash 055 RS = 1173.31
.035
Elevation (ft)
2755
2754
2753
2752
2751
2750
0
20
40
60
80
100
120
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

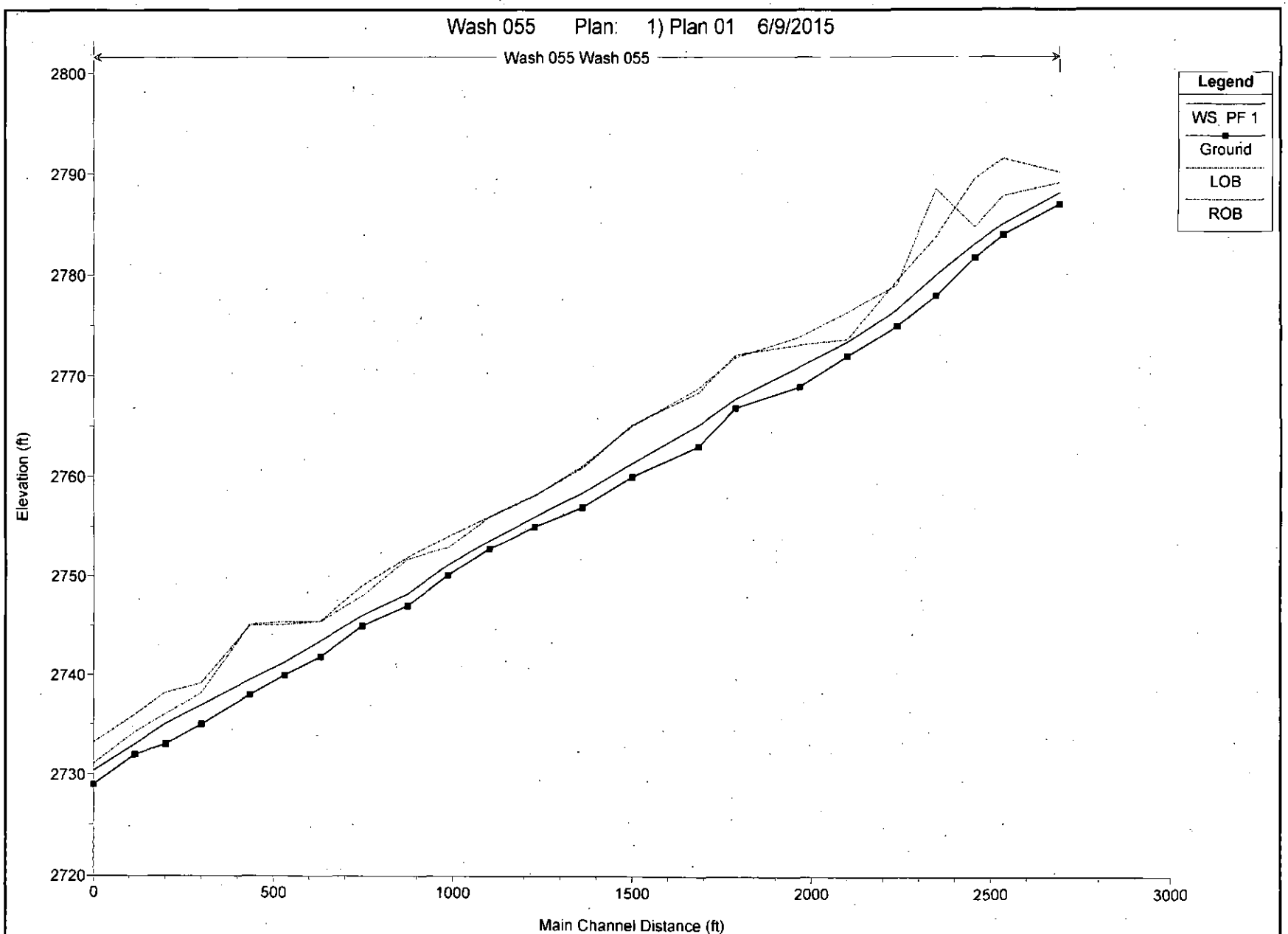

Wash 055 Plan: Plan 02 6/15/2015
River = Wash 055 Reach = Wash 055 RS = 1060.73
.035
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Wash 055 Plan: Plan 02 6/15/2015
River = Wash 055 Reach = Wash 055 RS = 934.69
.035
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta


Wash 055 Plan: Plan 02 6/15/2015
River = Wash 055 Reach = Wash 055 RS = 819.45
.035
Elevation (ft)
2745.5
2745.0
2744.5
2744.0
2743.5
2743.0
2742.5
2742.0
2741.5
0
20
40
60
80
100
120
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Wash 055 Plan: Plan 02 6/15/2015
River = Wash 055 Reach = Wash 055 RS = 719.25
.035
Elevation (ft)
2746
2745
2744
2743
2742
2741
2740
2739
0
50
100
150
200
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

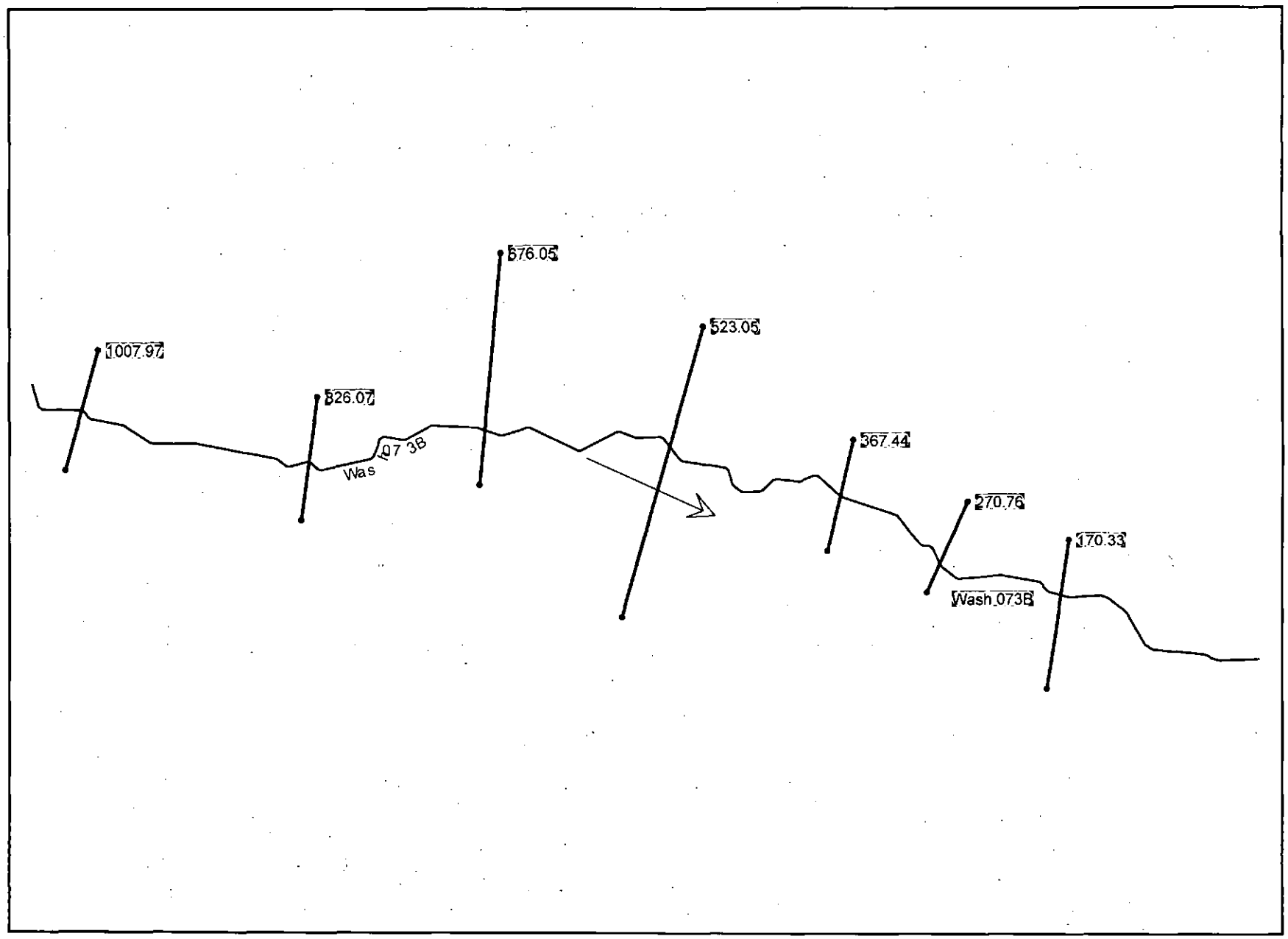

Wash 055 Plan: Plan 02 6/15/2015
River = Wash 055 Reach = Wash 055 RS = 622.5
.035
Elevation (ft)
2746
2745
2744
2743
2742
2741
2740
2739
2738
2737
0
50
100
150
200
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Wash 055 Plan: Plan 02 6/15/2015
River = Wash 055 Reach = Wash 055 RS = 487.65
.035
Elevation (ft)
2740
2739
2738
2737
2736
2735
2734
0
20
40
60
80
100
120
140
160
180
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta


Wash 055 Plan: Plan 02 6/15/2015
River = Wash 055 Reach = Wash 055 RS = 388.03
.035
Elevation (ft)
2739
2738
2737
2736
2735
2734
2733
0
20
40
60
80
100
120
140
160
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Wash 055 Plan: Plan 02 6/15/2015
River = Wash 055 Reach = Wash 055 RS = 302.78
.035
Elevation (ft)
2736
2735
2734
2733
2732
2731
0
20
40
60
80
100
120
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta


Wash 055 Plan: Plan 02 6/15/2015
River = Wash 055 Reach = Wash 055 RS = 188.06
.035
Elevation (ft)
2734
2733
2732
2731
2730
2729
2728
0
20
40
60
80
100
120
140
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

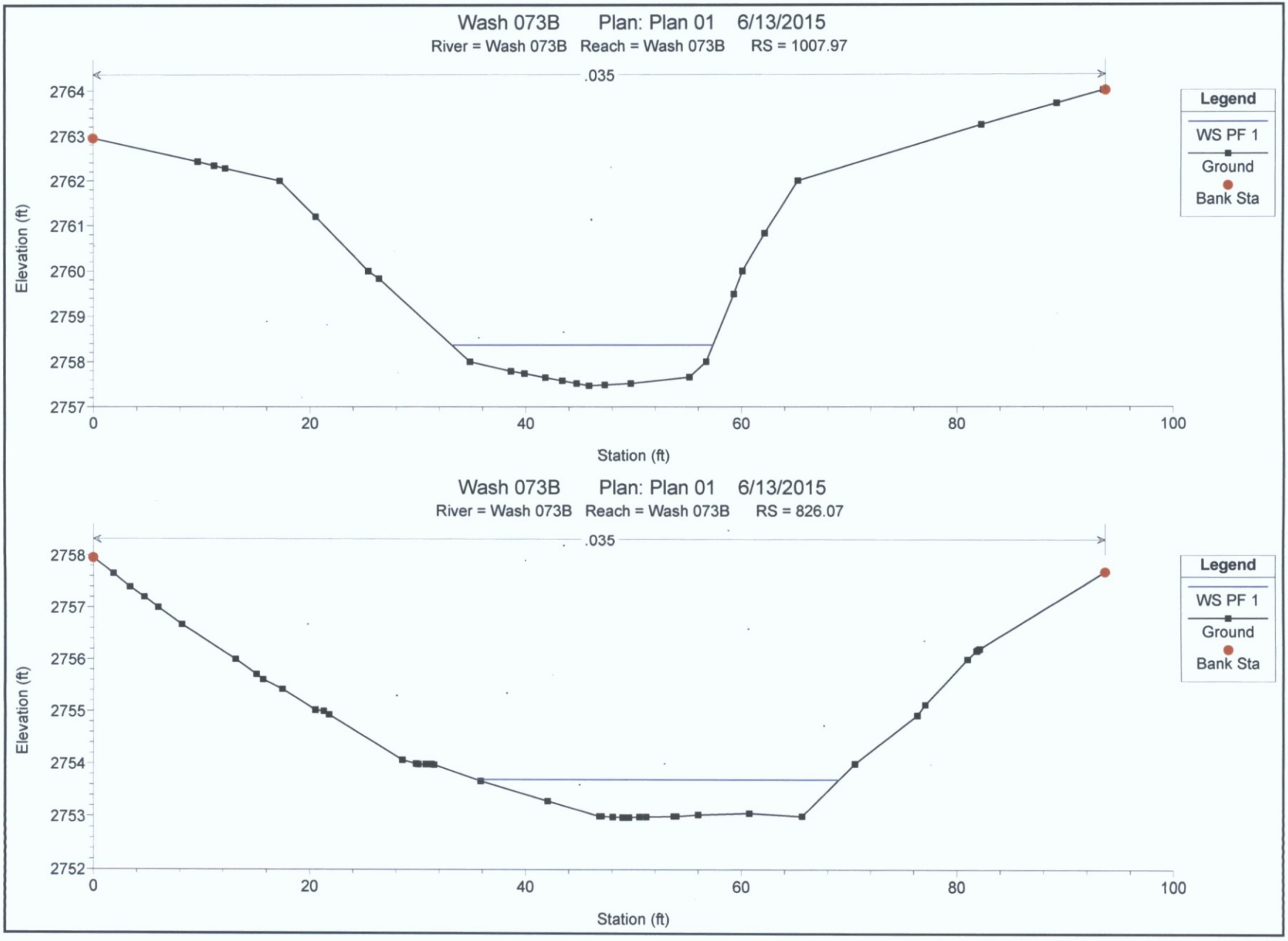

Wash 055 Plan: 1) Plan 01 6/9/2015
Wash 055 Wash 055
Legend
WS PF 1
Ground
LOB
ROB
Elevation (ft)
2800
2790
2780
2770
2760
2750
2740
2730
2720
0
500
1000
1500
2000
2500
3000
Main Channel Distance (ft)

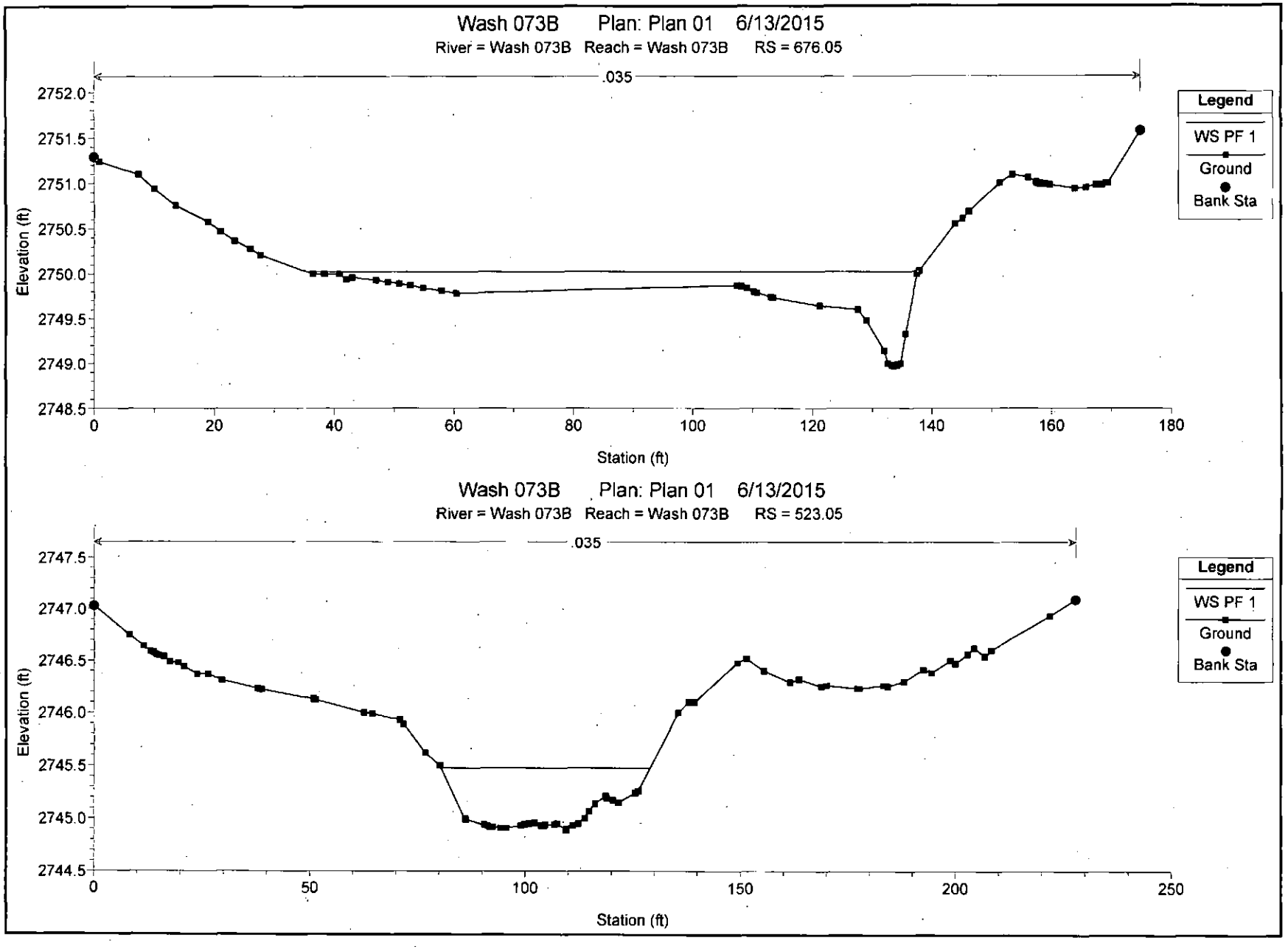
POST-DEVELOPMENT WASH 073B HEC-RAS

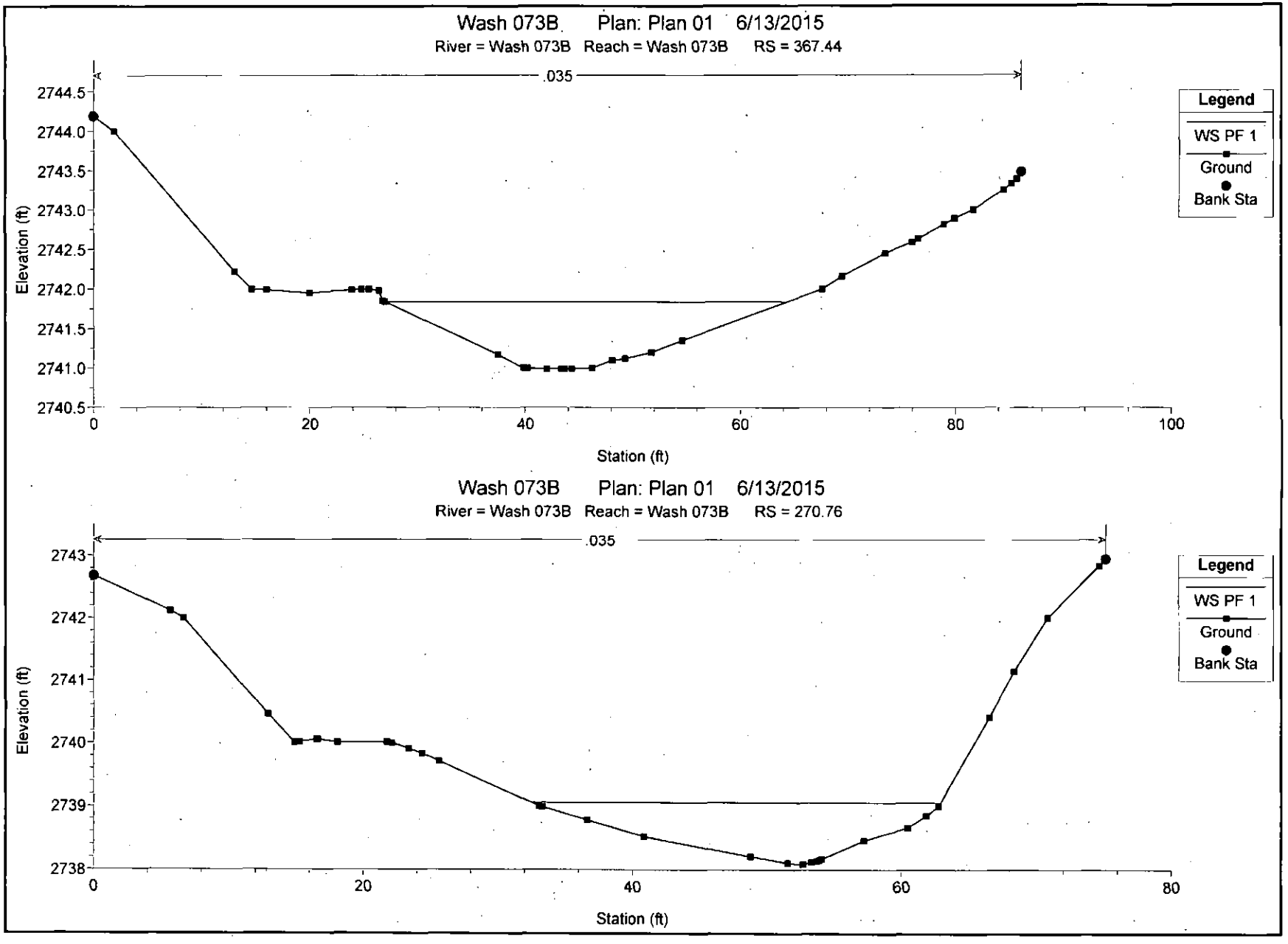

1007.97
526.07
Was
07 3B
576.05
523.05
367.44
270.76
Wash 073B
170.33

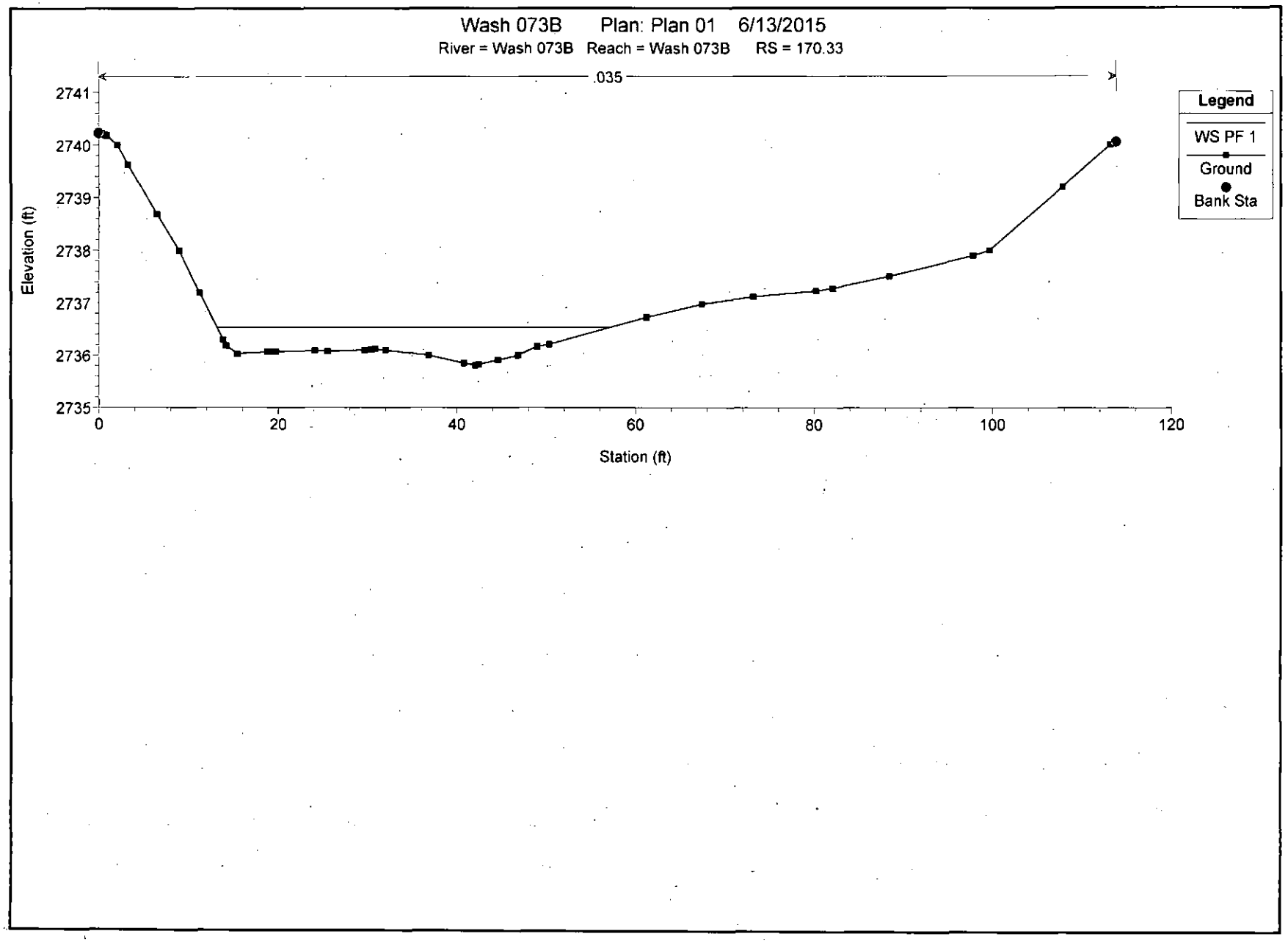
HEC-RAS Plan: Plan 01 River: Wash 073B Reach: Wash 073B Profile: PF 1

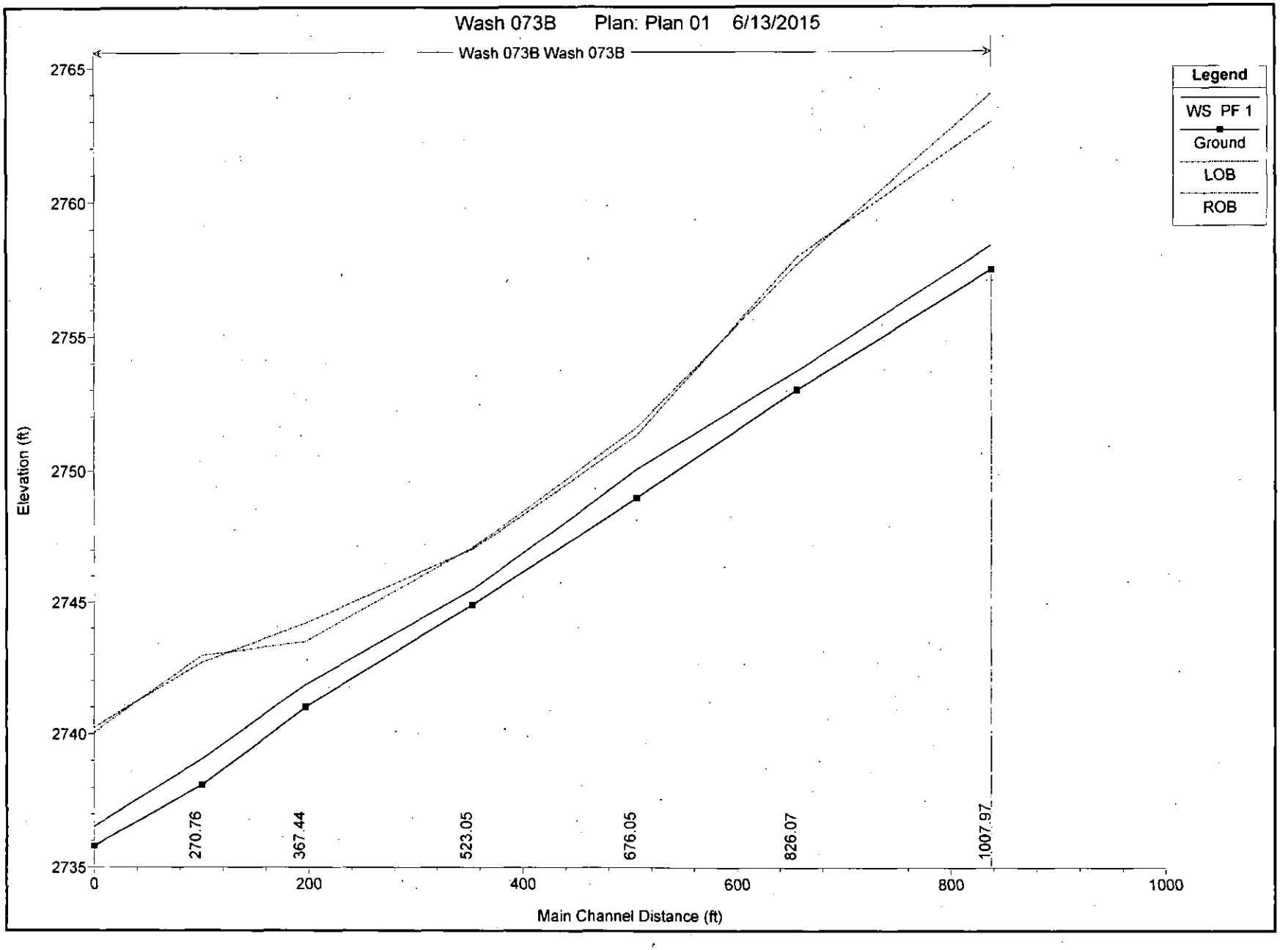
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Wash 073B	1007.97	PF 1	74.00	2757.47	2758.37	2758.37	2758.70	0.021042	4.64	15.95	24.22	1.01
Wash 073B	826.07	PF 1	74.00	2752.98	2753.69	2753.69	2753.96	0.022178	4.15	17.85	33.53	1.00
Wash 073B	676.05	PF 1	74.00	2748.97	2750.02	2750.02	2750.15	0.028708	2.87	25.81	102.38	1.01
Wash 073B	523.05	PF 1	74.00	2744.89	2745.47	2745.47	2745.68	0.023251	3.63	20.38	48.47	0.99
Wash 073B	367.44	PF 1	74.00	2740.99	2741.83	2741.83	2742.08	0.022914	4.02	18.40	37.10	1.01
Wash 073B	270.76	PF 1	74.00	2738.09	2739.06	2739.06	2739.35	0.022428	4.32	17.12	30.45	1.02
Wash 073B	170.33	PF 1	74.00	2735.81	2736.53	2736.53	2736.76	0.024107	3.81	19.40	43.98	1.01


Wash 073B Plan: Plan 01 6/13/2015
River = Wash 073B Reach = Wash 073B RS = 1007.97
.035
Elevation (ft)
2764
2763
2762
2761
2760
2759
2758
2757
0
20
40
60
80
100
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
Wash 073B Plan: Plan 01 6/13/2015
River = Wash 073B Reach = Wash 073B RS = 826.07
.035
Elevation (ft)
2758
2757
2756
2755
2754
2753
2752
0
20
40
60
80
100
Station (ft)
Legend
WS PF 1
Ground
Bank Sta

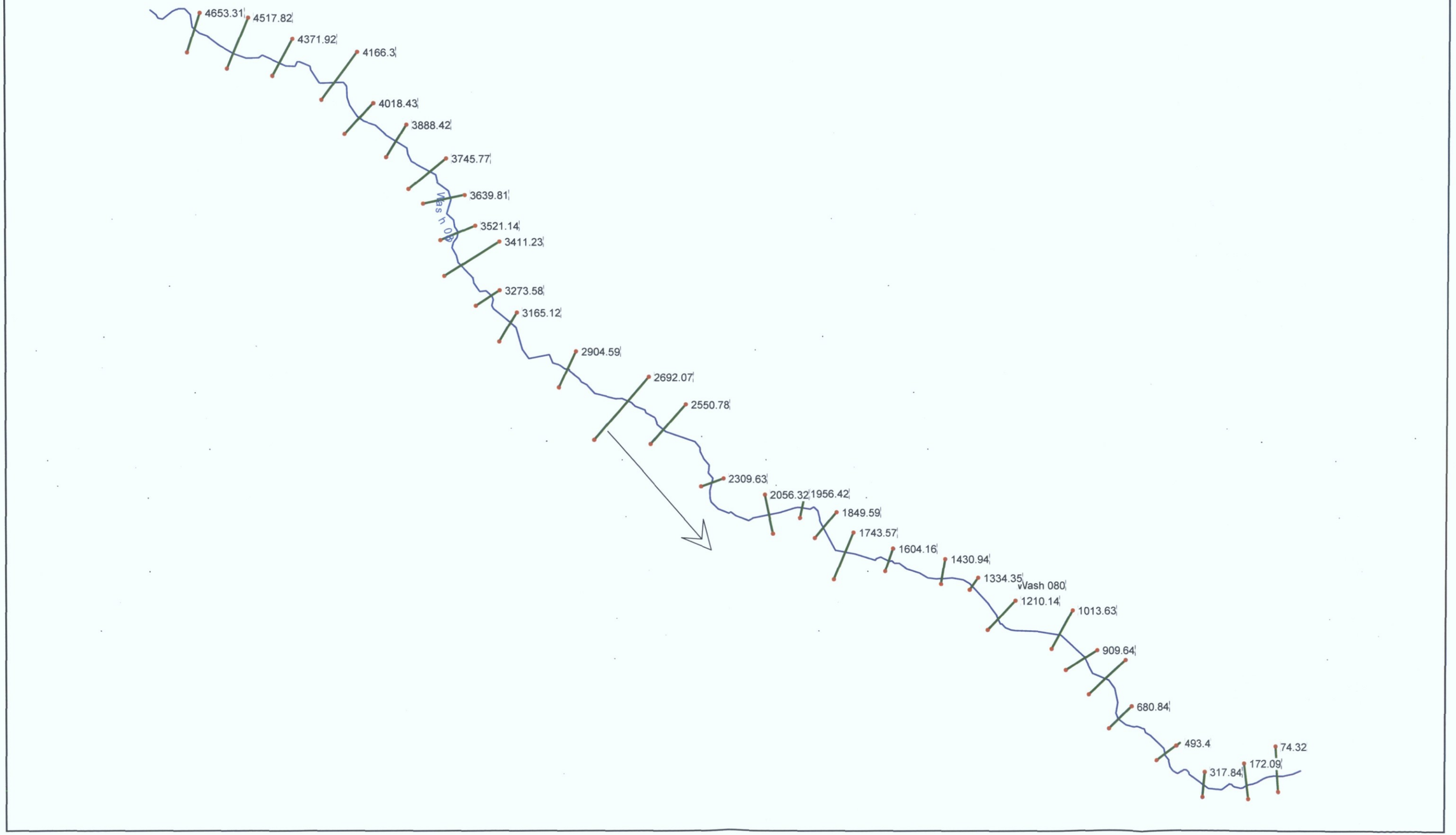

Wash 073B Plan: Plan 01 6/13/2015
River = Wash 073B Reach = Wash 073B RS = 676.05
.035
Elevation (ft)
2752.0
2751.5
2751.0
2750.5
2750.0
2749.5
2749.0
2748.5
0
20
40
60
80
100
120
140
160
180
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
Wash 073B Plan: Plan 01 6/13/2015
River = Wash 073B Reach = Wash 073B RS = 523.05
.035
Elevation (ft)
2747.5
2747.0
2746.5
2746.0
2745.5
2745.0
2744.5
0
50
100
150
200
250
Station (ft)
Legend
WS PF 1
Ground
Bank Sta


Wash 073B Plan: Plan 01 6/13/2015
River = Wash 073B Reach = Wash 073B RS = 367.44
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2744.5
2744.0
2743.5
2743.0
2742.5
2742.0
2741.5
2741.0
2740.5
0
20
40
60
80
100
Wash 073B Plan: Plan 01 6/13/2015
River = Wash 073B Reach = Wash 073B RS = 270.76
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2743
2742
2741
2740
2739
2738
0
20
40
60
80


Wash 073B Plan: Plan 01 6/13/2015
River = Wash 073B Reach = Wash 073B RS = 170.33
.035
Elevation (ft)
2741
2740
2739
2738
2737
2736
2735
0
20
40
60
80
100
120
Station (ft)
Legend
WS PF 1
Ground
Bank Sta

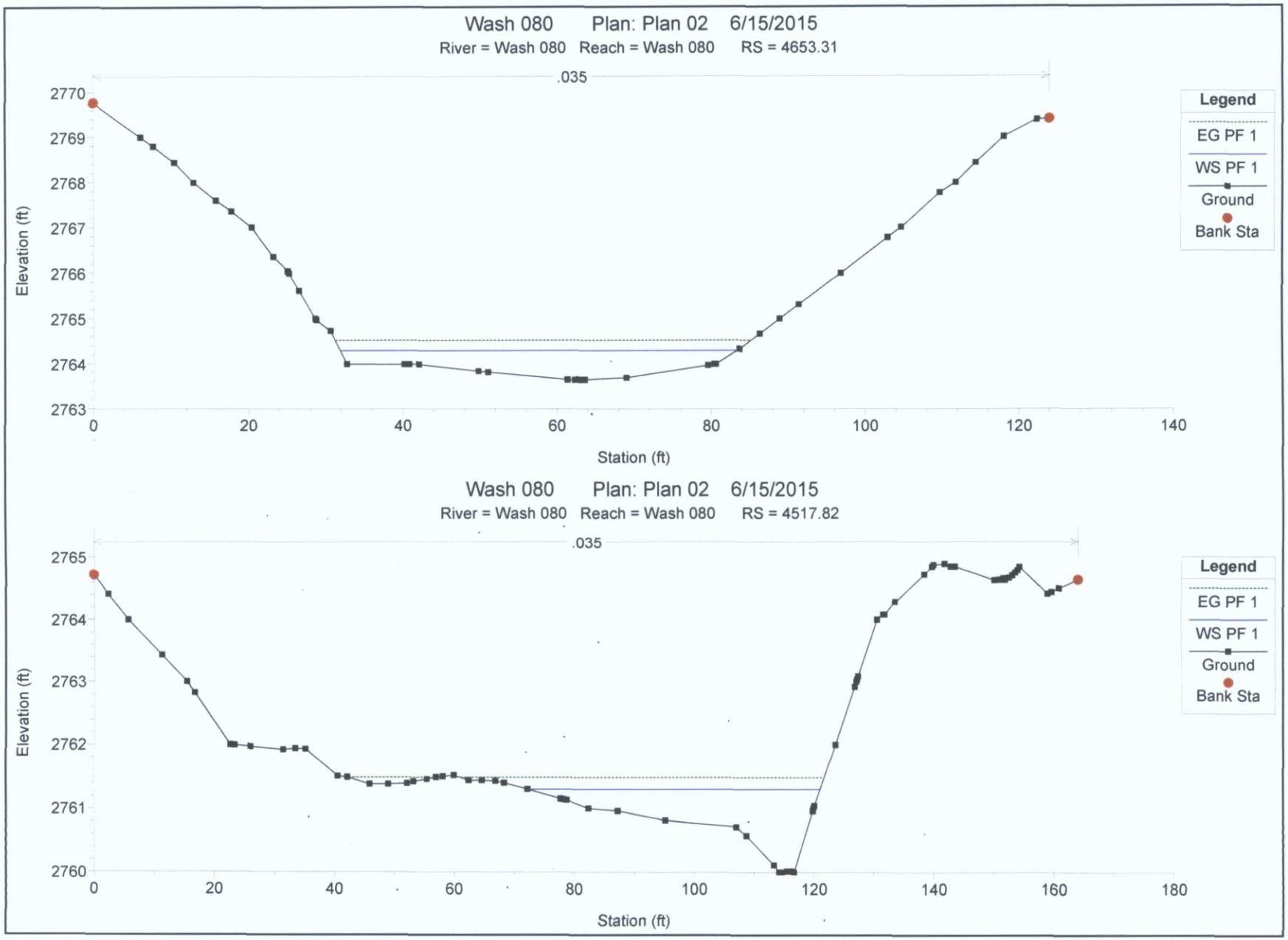

Wash 073B Plan: Plan 01 6/13/2015
Wash 073B Wash 073B
Legend
WS PF 1
Ground
LOB
ROB
Elevation (ft)
2765
2760
2755
2750
2745
2740
2735
0
200
400
600
800
1000
Main Channel Distance (ft)
270.76
367.44
523.05
676.05
826.07
1007.97

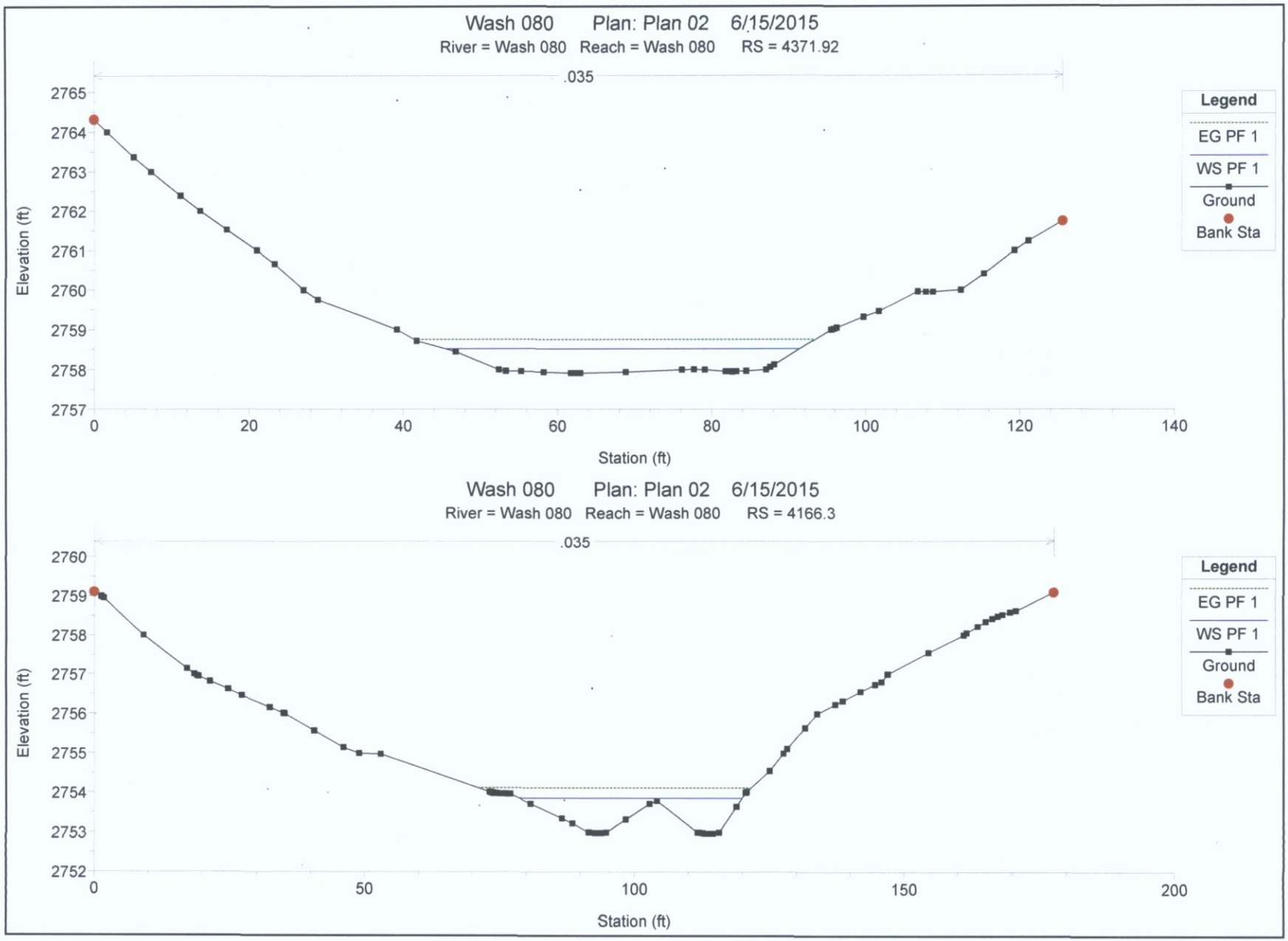
POST-DEVELOPMENT WASH 080 HEC-RAS

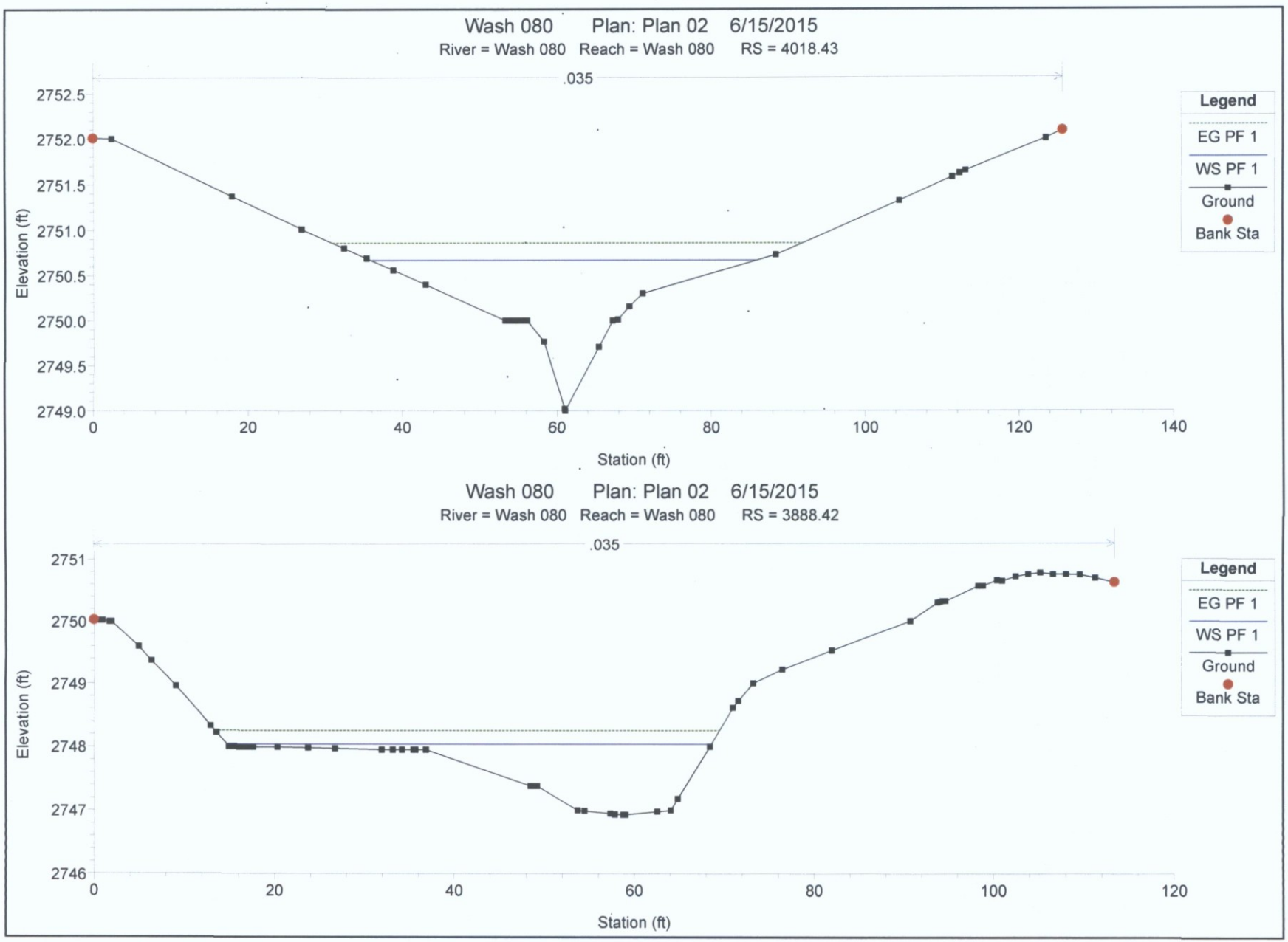

4653.31
4517.82
4371.92
4166.3
4018.43
3888.42
3745.77
3639.81
Wash 090
3521.14
3411.23
3273.58
3165.12
2904.59
2692.07
2550.78
2309.63
2056.32
1956.42
1849.59
1743.57
1604.16
1430.94
1334.35
Wash 080
1210.14
1013.63
909.64
680.84
493.4
317.84
172.09
74.32

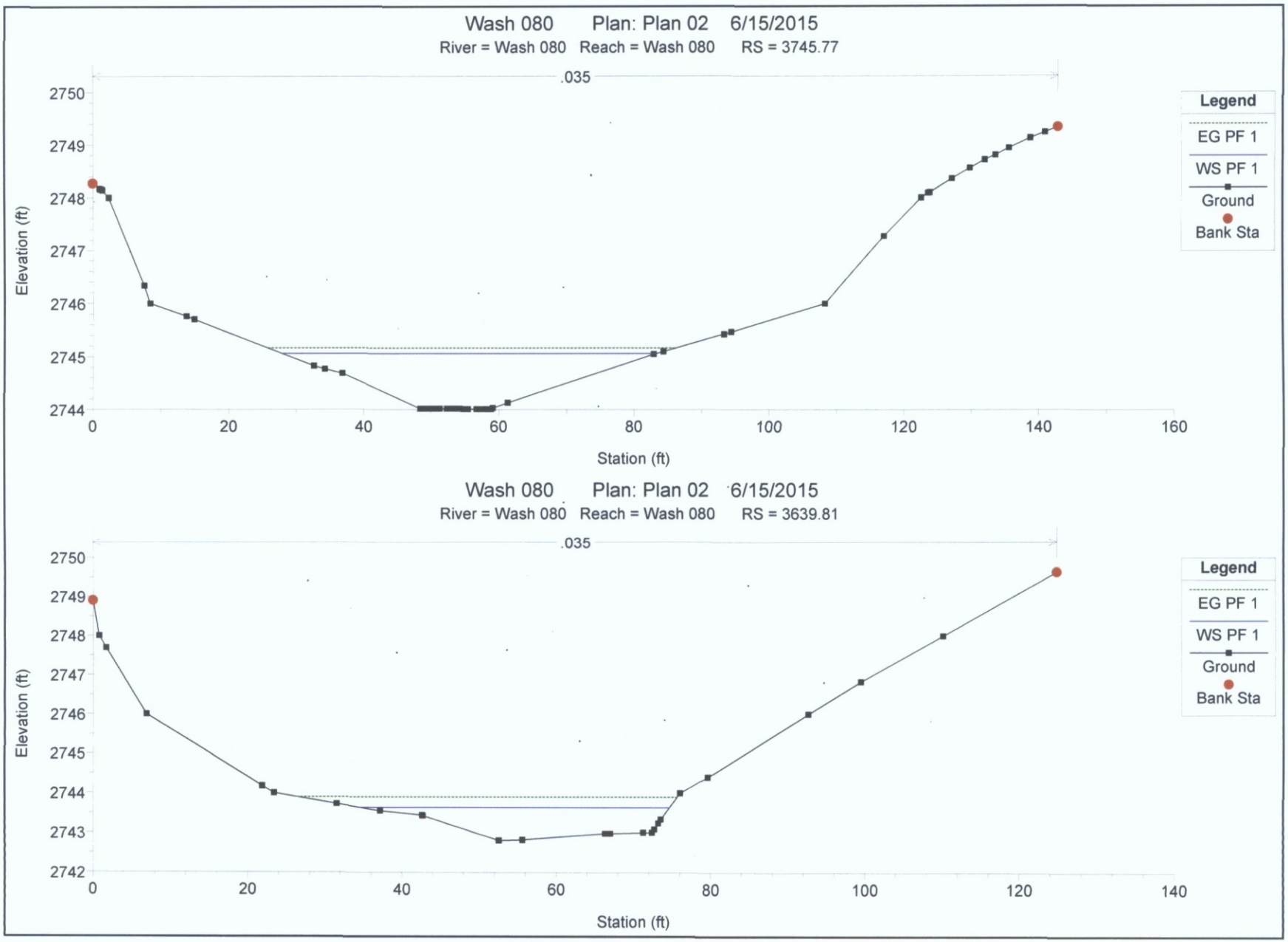
HEC-RAS Plan: Plan 02 River: Wash 080 Reach: Wash 080 Profile: PF 1

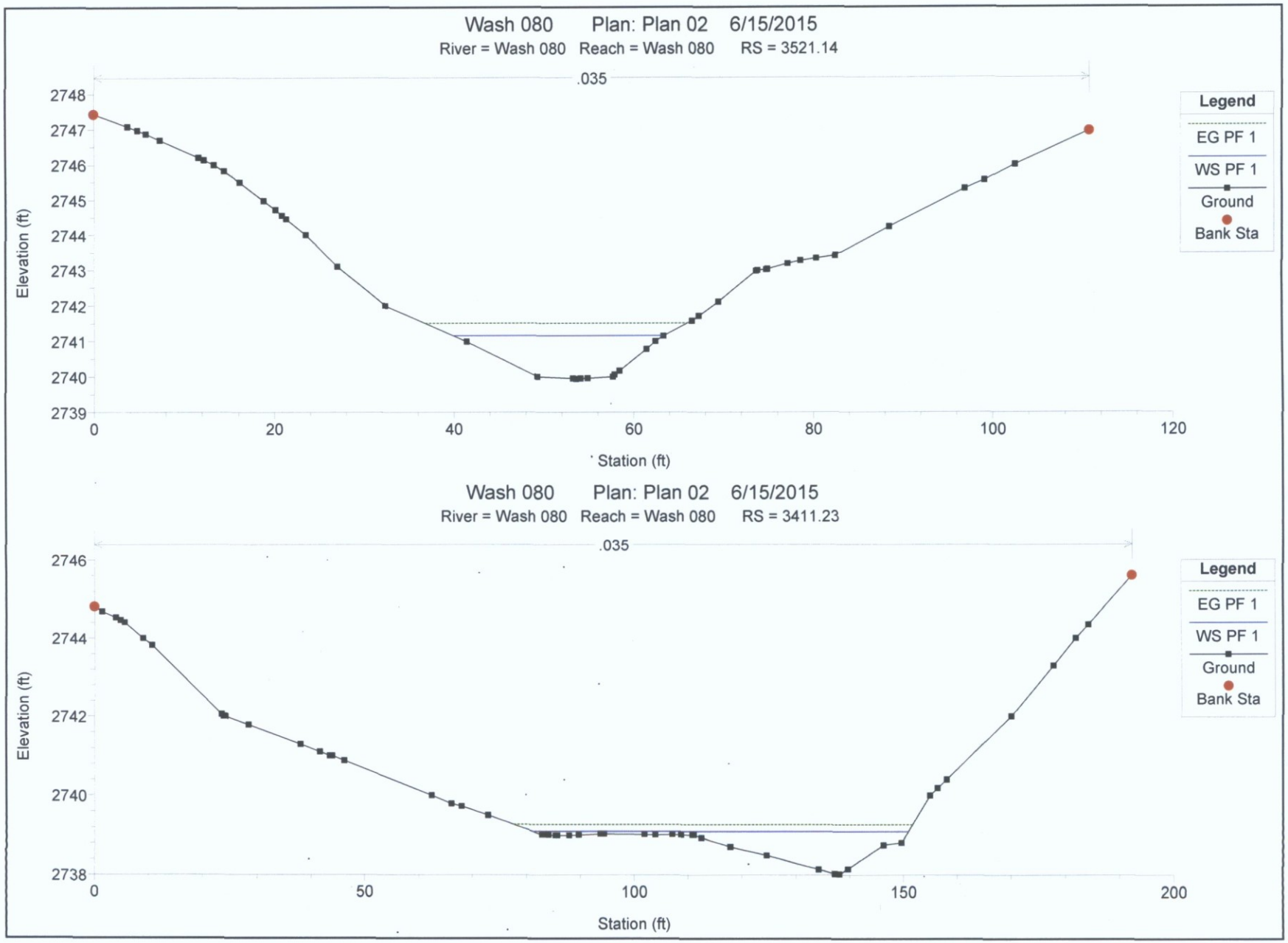
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Wash 080	4653.31	PF 1	87.00	2763.64	2764.30	2764.30	2764.52	0.023861	3.81	22.84	51.52	1.01
Wash 080	4517.82	PF 1	87.00	2760.00	2761.30	2761.23	2761.48	0.016142	3.46	25.14	48.70	0.85
Wash 080	4371.92	PF 1	87.00	2757.92	2758.52	2758.51	2758.76	0.021954	3.89	22.38	46.03	0.98
Wash 080	4166.3	PF 1	87.00	2752.98	2753.86	2753.86	2754.13	0.023036	4.11	21.16	41.32	1.01
Wash 080	4018.43	PF 1	87.00	2749.00	2750.67	2750.61	2750.86	0.017391	3.50	24.84	49.97	0.88
Wash 080	3888.42	PF 1	87.00	2746.93	2748.04	2748.04	2748.25	0.023288	3.71	23.43	53.84	0.99
Wash 080	3745.77	PF 1	87.00	2744.01	2745.06		2745.17	0.007255	2.59	33.60	55.39	0.59
Wash 080	3639.81	PF 1	87.00	2742.80	2743.64	2743.64	2743.90	0.022450	4.13	21.08	40.23	1.00
Wash 080	3521.14	PF 1	87.00	2739.94	2741.16	2741.11	2741.50	0.017044	4.70	18.50	23.47	0.93
Wash 080	3411.23	PF 1	87.00	2738.02	2739.09	2739.09	2739.27	0.023562	3.36	25.86	69.66	0.97
Wash 080	3273.58	PF 1	87.00	2733.91	2735.57		2735.84	0.013358	4.14	21.03	26.63	0.82
Wash 080	3165.12	PF 1	209.00	2732.94	2733.81	2733.77	2734.11	0.017183	4.39	47.62	67.83	0.92
Wash 080	2904.59	PF 1	209.00	2727.99	2728.93	2728.93	2729.35	0.019445	5.15	40.56	49.75	1.01
Wash 080	2692.07	PF 1	235.00	2723.44	2724.30	2724.29	2724.52	0.023421	3.78	62.12	139.72	1.00
Wash 080	2550.78	PF 1	235.00	2719.96	2720.99	2720.99	2721.29	0.022253	4.35	54.01	94.79	1.02
Wash 080	2309.63	PF 1	235.00	2715.00	2717.70		2717.92	0.003646	3.71	63.27	35.72	0.49
Wash 080	2056.32	PF 1	235.00	2713.00	2715.42	2715.42	2716.14	0.016660	6.81	34.51	24.36	1.01
Wash 080	1956.42	PF 1	235.00	2708.96	2711.91	2711.91	2712.67	0.016774	7.02	33.49	22.31	1.01
Wash 080	1849.59	PF 1	235.00	2704.96	2706.76	2706.76	2707.22	0.019501	5.45	43.11	48.54	1.02
Wash 080	1743.57	PF 1	282.00	2702.97	2704.56	2704.45	2704.83	0.013847	4.20	67.17	86.94	0.84
Wash 080	1604.16	PF 1	282.00	2700.81	2702.11	2702.11	2702.58	0.018694	5.49	51.34	55.60	1.01
Wash 080	1430.94	PF 1	282.00	2695.75	2698.20	2698.20	2698.87	0.017107	6.56	42.98	32.98	1.01
Wash 080	1334.35	PF 1	282.00	2693.99	2696.32	2696.32	2697.01	0.016640	6.68	42.23	30.57	1.00
Wash 080	1210.14	PF 1	282.00	2692.00	2693.48	2693.48	2693.93	0.019194	5.37	52.51	60.07	1.01
Wash 080	1013.63	PF 1	282.00	2686.67	2689.24	2689.24	2690.29	0.016328	8.22	34.29	16.45	1.00
Wash 080	909.64	PF 1	282.00	2685.00	2686.85	2686.85	2687.57	0.016464	6.82	41.32	28.85	1.01
Wash 080	816.97	PF 1	282.00	2684.40	2685.25	2685.25	2685.59	0.021044	4.65	60.61	92.23	1.01
Wash 080	680.84	PF 1	282.00	2678.00	2680.07	2680.07	2680.50	0.020416	5.23	53.95	67.24	1.03
Wash 080	493.4	PF 1	282.00	2673.91	2675.39	2675.39	2675.97	0.017538	6.10	46.25	40.68	1.01
Wash 080	317.84	PF 1	282.00	2670.25	2672.06	2672.06	2672.69	0.017011	6.39	44.16	35.33	1.01
Wash 080	172.09	PF 1	282.00	2665.98	2668.50	2668.50	2669.03	0.018332	5.88	47.95	45.81	1.01
Wash 080	74.32	PF 1	282.00	2663.98	2665.13	2665.13	2665.61	0.018290	5.58	50.57	52.66	1.00

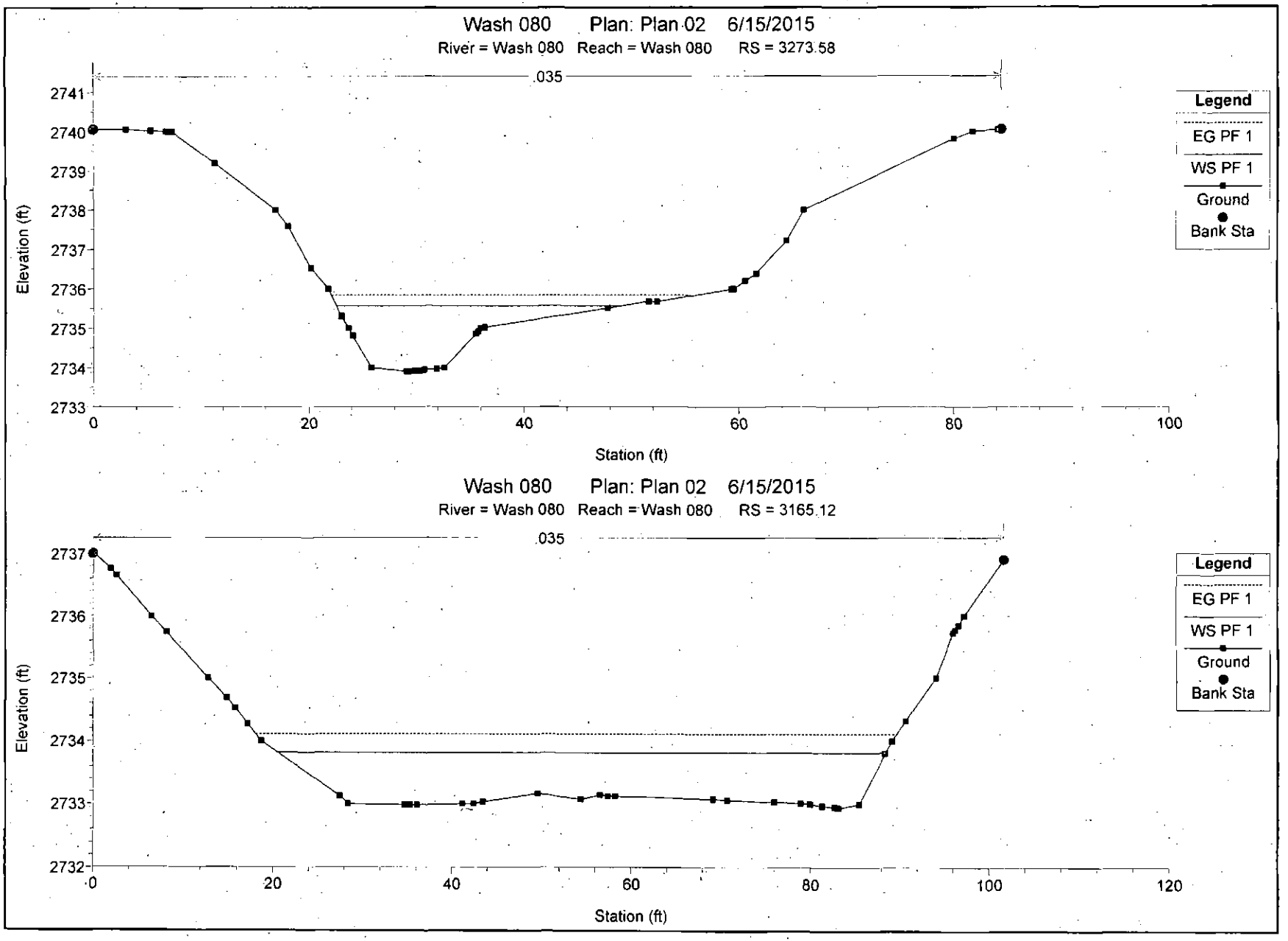

Wash 080 Plan: Plan 02 6/15/2015
River = Wash 080 Reach = Wash 080 RS = 4653.31
.035
Elevation (ft)
2770
2769
2768
2767
2766
2765
2764
2763
0
20
40
60
80
100
120
140
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Wash 080 Plan: Plan 02 6/15/2015
River = Wash 080 Reach = Wash 080 RS = 4517.82
.035
Elevation (ft)
2765
2764
2763
2762
2761
2760
0
20
40
60
80
100
120
140
160
180
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

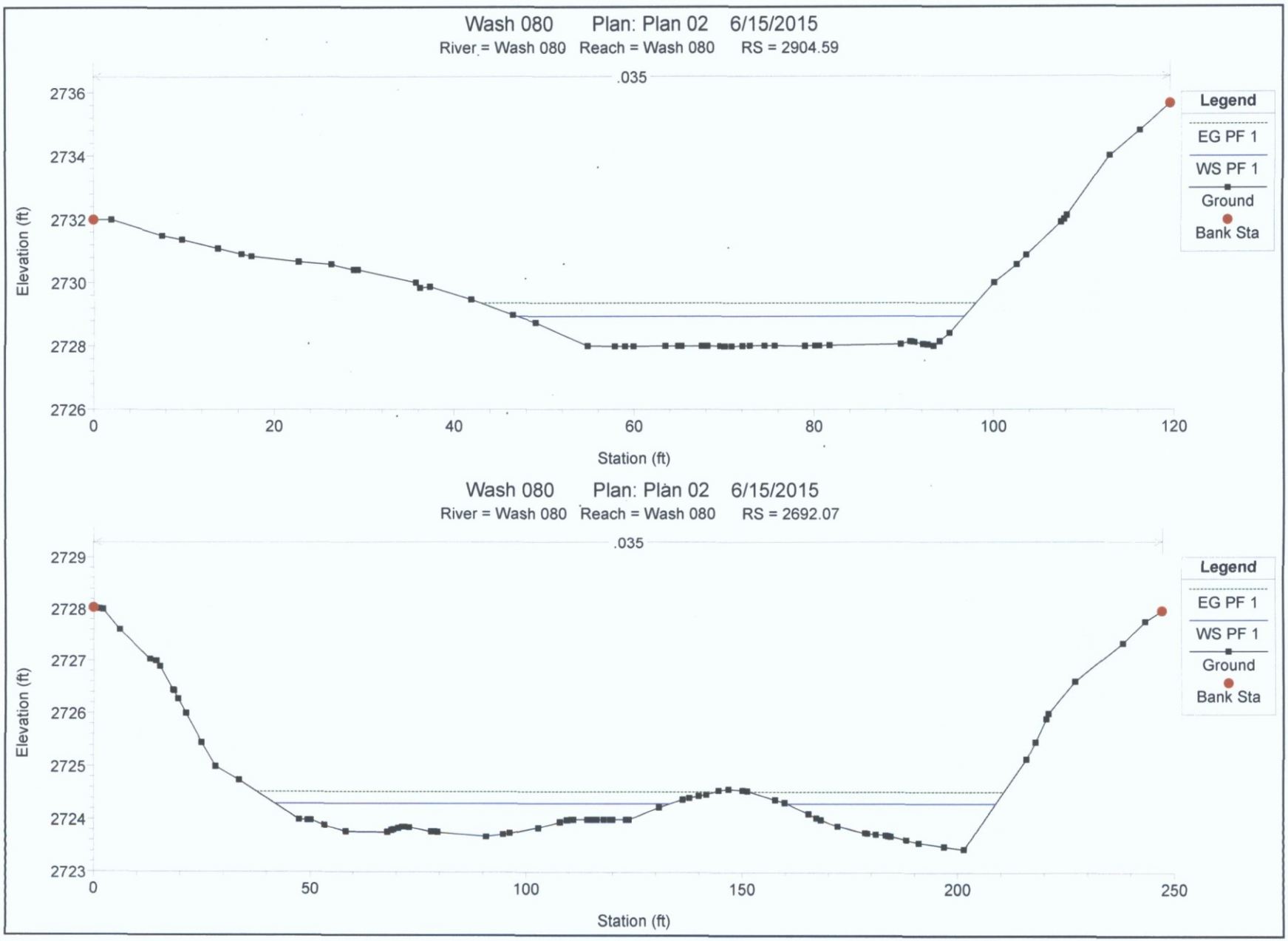

Wash 080 Plan: Plan 02 6/15/2015
River = Wash 080 Reach = Wash 080 RS = 4371.92
.035
Elevation (ft)
2765
2764
2763
2762
2761
2760
2759
2758
2757
0
20
40
60
80
100
120
140
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Wash 080 Plan: Plan 02 6/15/2015
River = Wash 080 Reach = Wash 080 RS = 4166.3
.035
Elevation (ft)
2760
2759
2758
2757
2756
2755
2754
2753
2752
0
50
100
150
200
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

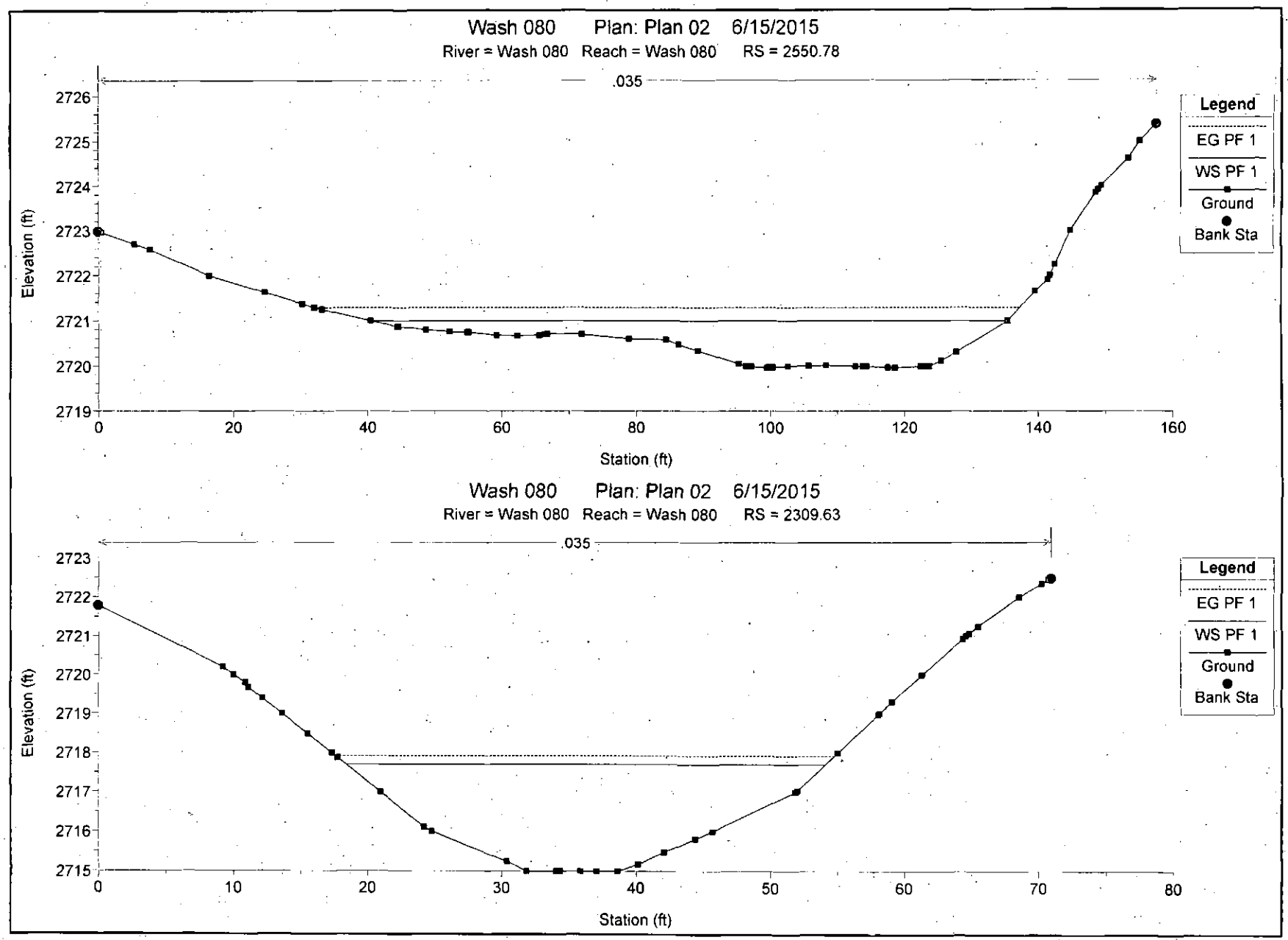

Wash 080 Plan: Plan 02 6/15/2015
River = Wash 080 Reach = Wash 080 RS = 4018.43
.035
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Wash 080 Plan: Plan 02 6/15/2015
River = Wash 080 Reach = Wash 080 RS = 3888.42
.035
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

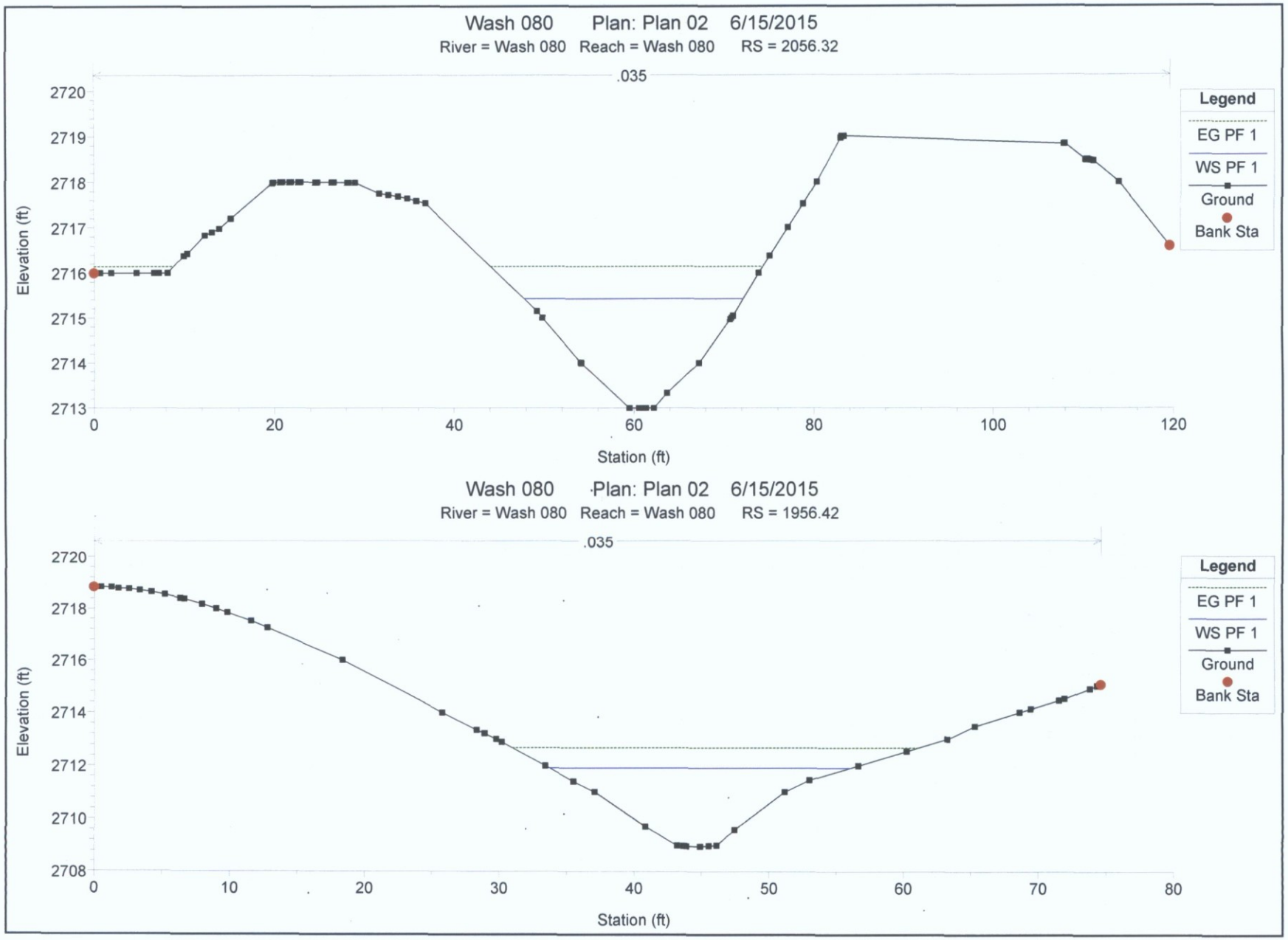

Wash 080 Plan: Plan 02 6/15/2015
River = Wash 080 Reach = Wash 080 RS = 3745.77
.035
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Wash 080 Plan: Plan 02 6/15/2015
River = Wash 080 Reach = Wash 080 RS = 3639.81
.035
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

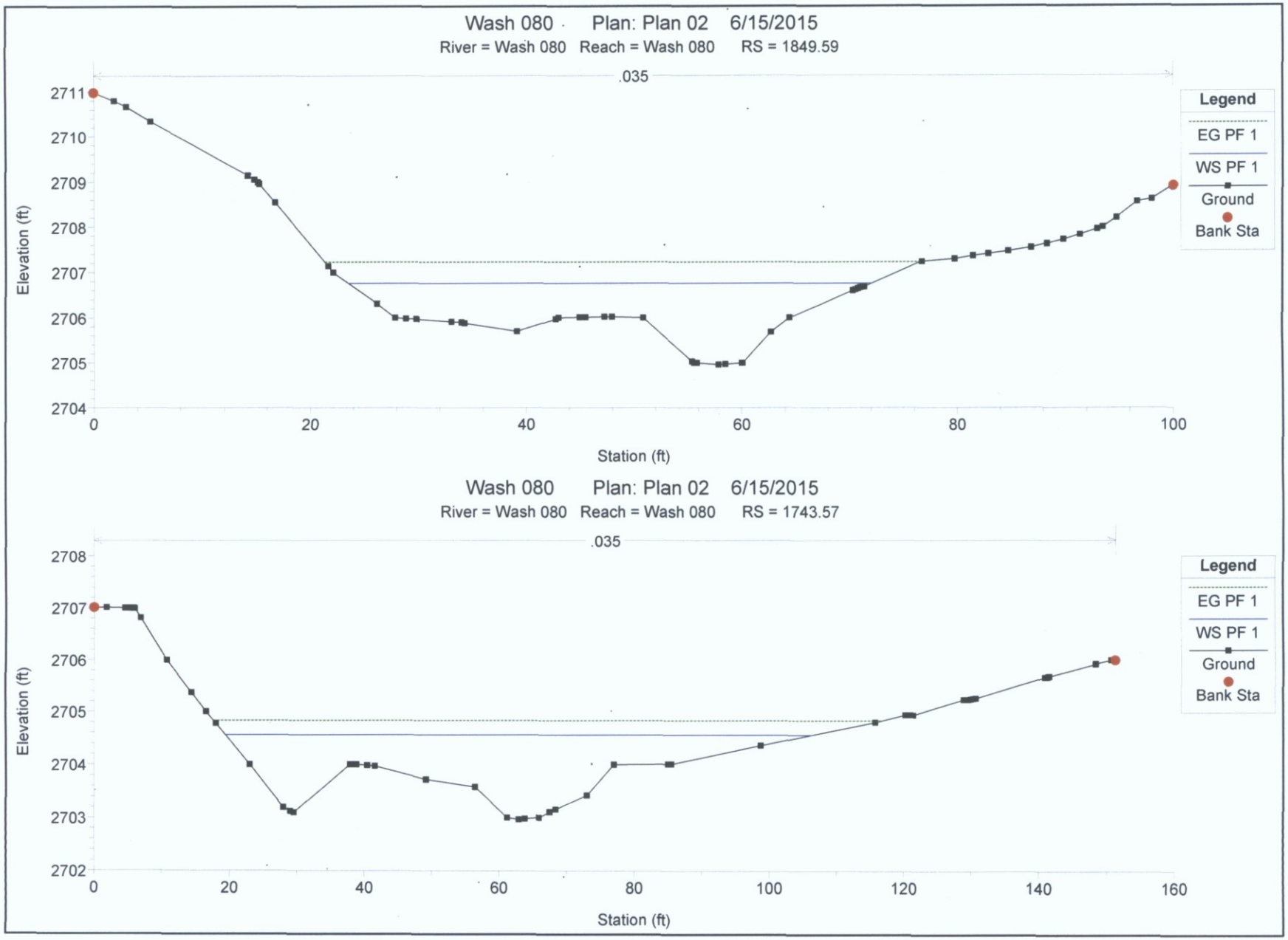

Wash 080 Plan: Plan 02 6/15/2015
River = Wash 080 Reach = Wash 080 RS = 3521.14
.035
Elevation (ft)
2748
2747
2746
2745
2744
2743
2742
2741
2740
2739
0
20
40
60
80
100
120
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Wash 080 Plan: Plan 02 6/15/2015
River = Wash 080 Reach = Wash 080 RS = 3411.23
.035
Elevation (ft)
2746
2744
2742
2740
2738
0
50
100
150
200
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

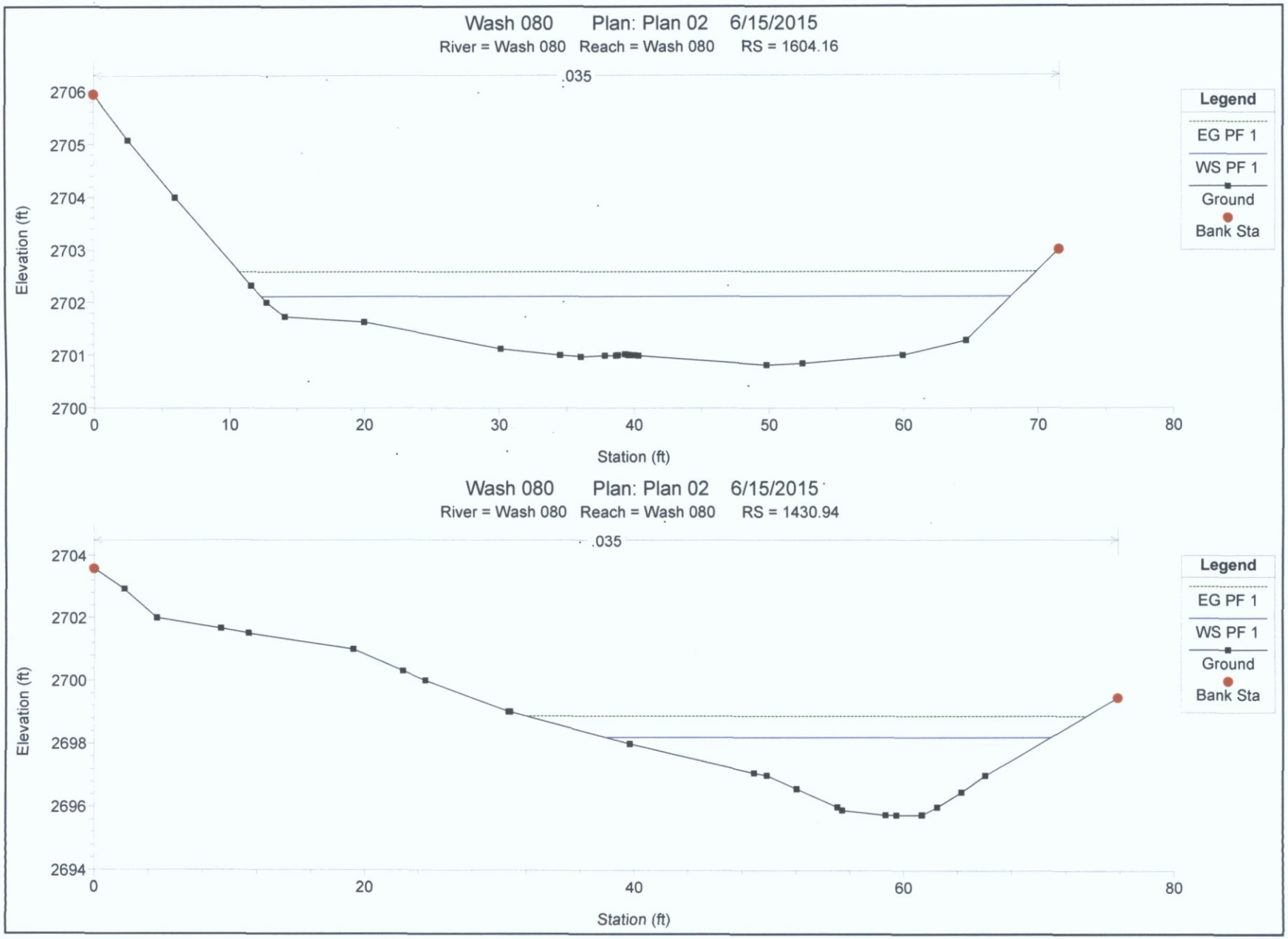

Wash 080 Plan: Plan 02 6/15/2015
River = Wash 080 Reach = Wash 080 RS = 3273.58
.035
Elevation (ft)
2741
2740
2739
2738
2737
2736
2735
2734
2733
0
20
40
60
80
100
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Wash 080 Plan: Plan 02 6/15/2015
River = Wash 080 Reach = Wash 080 RS = 3165.12
.035
Elevation (ft)
2737
2736
2735
2734
2733
2732
0
20
40
60
80
100
120
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

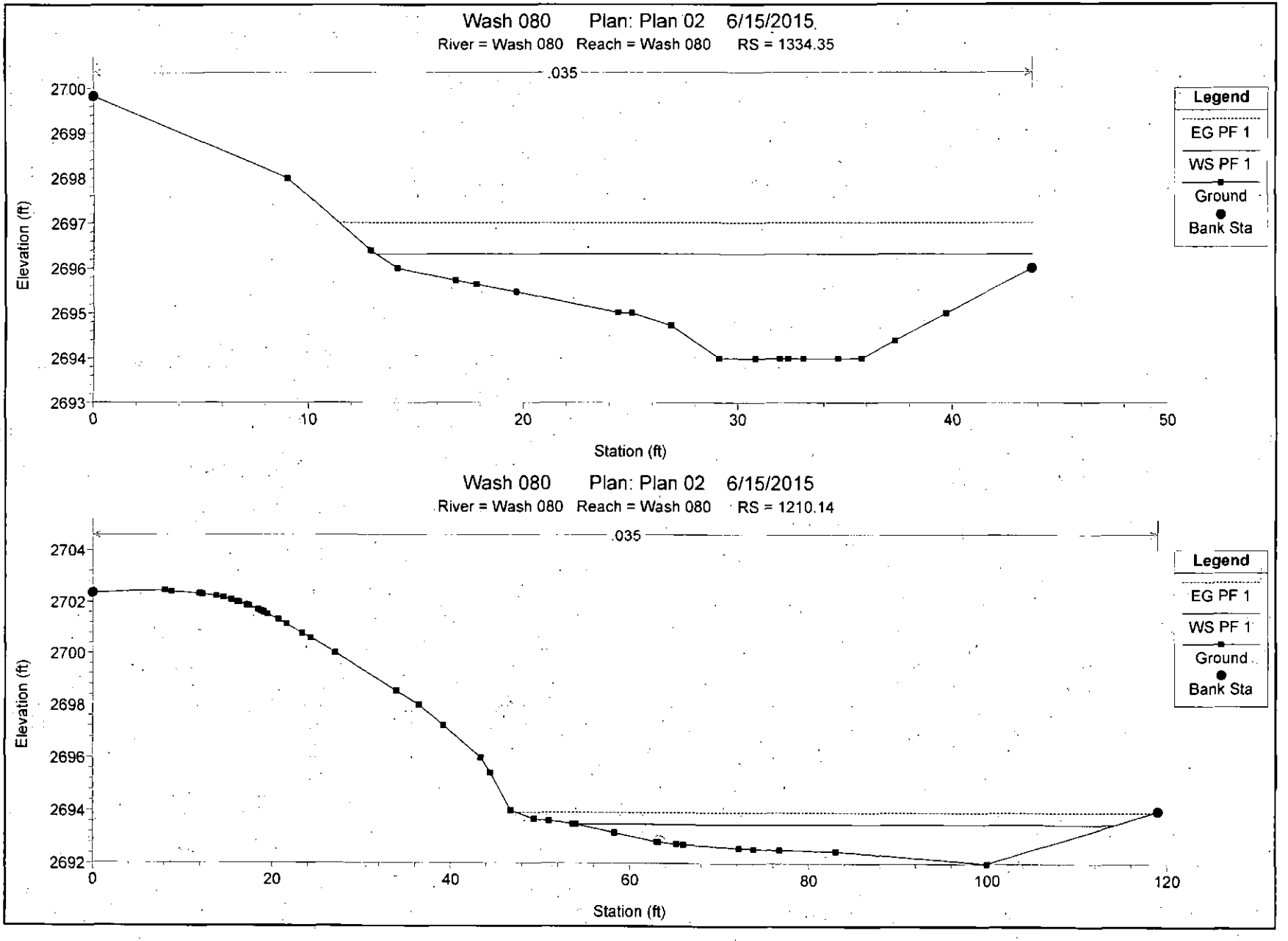

Wash 080 Plan: Plan 02 6/15/2015
River = Wash 080 Reach = Wash 080 RS = 2904.59
.035
Elevation (ft)
2736
2734
2732
2730
2728
2726
0
20
40
60
80
100
120
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Wash 080 Plan: Plan 02 6/15/2015
River = Wash 080 Reach = Wash 080 RS = 2692.07
.035
Elevation (ft)
2729
2728
2727
2726
2725
2724
2723
0
50
100
150
200
250
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

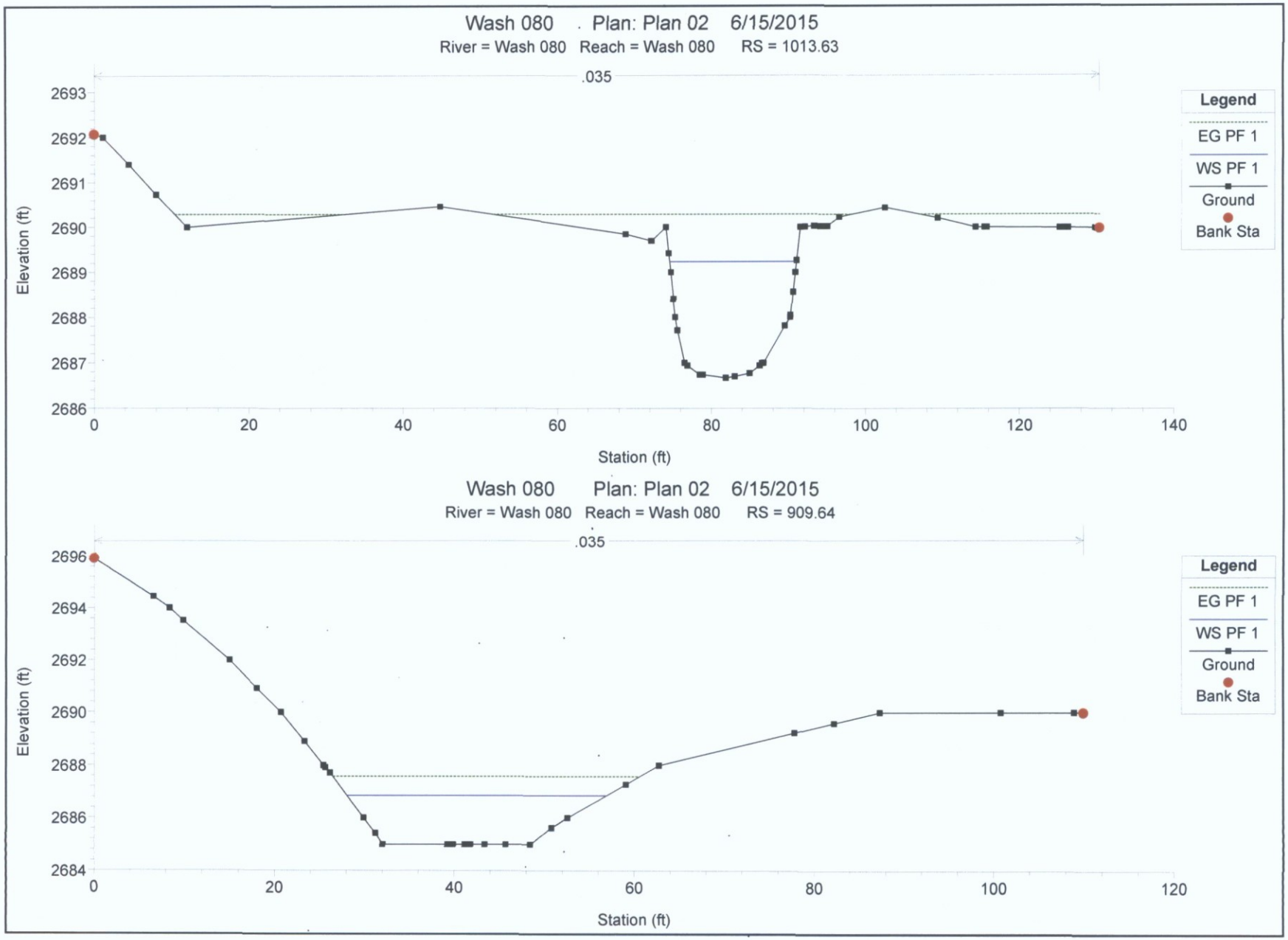

Wash 080 Plan: Plan 02 6/15/2015
River = Wash 080 Reach = Wash 080 RS = 2550.78
.035
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Wash 080 Plan: Plan 02 6/15/2015
River = Wash 080 Reach = Wash 080 RS = 2309.63
.035
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

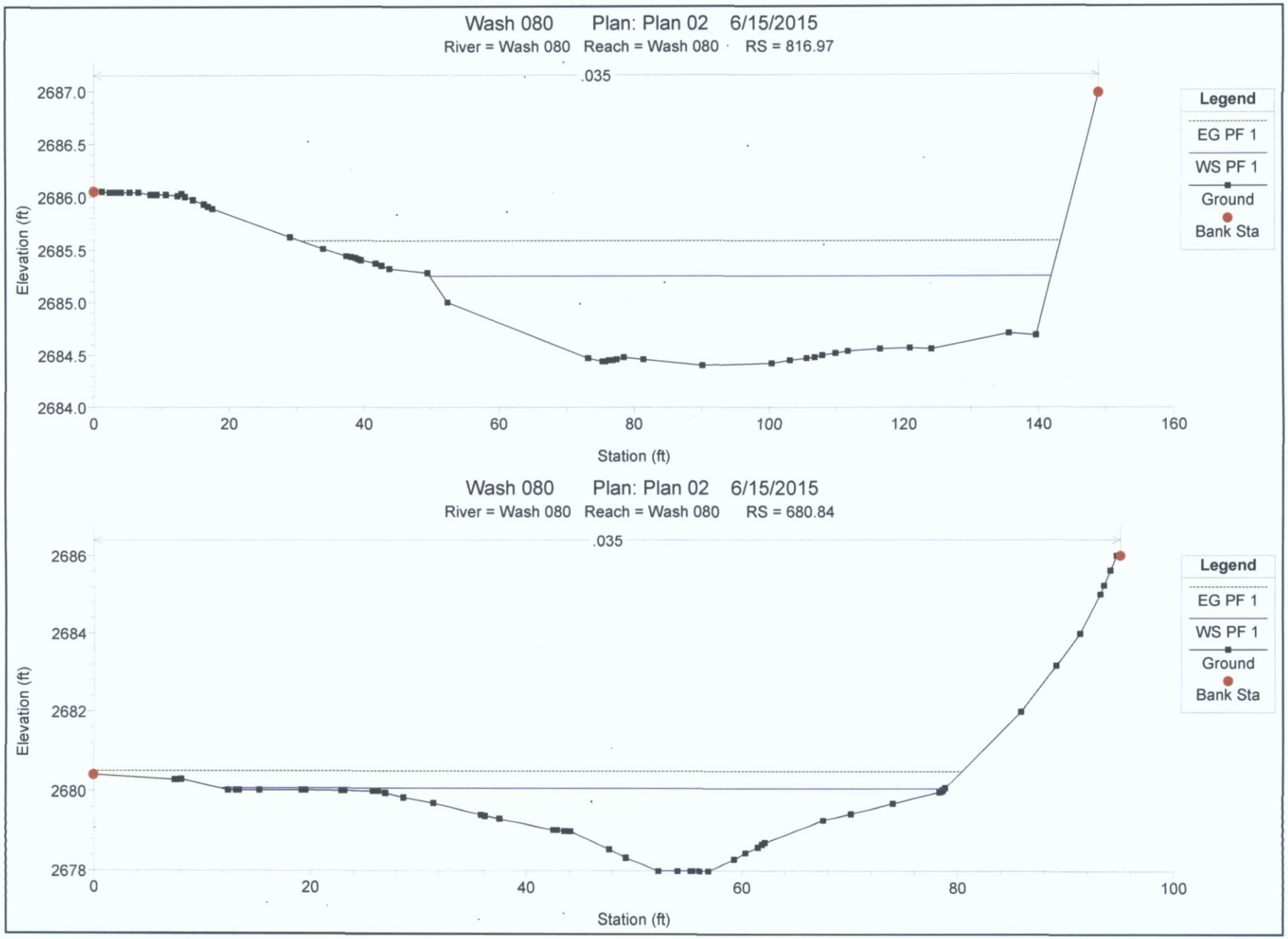

Wash 080 Plan: Plan 02 6/15/2015
River = Wash 080 Reach = Wash 080 RS = 2056.32
.035
Elevation (ft)
2720
2719
2718
2717
2716
2715
2714
2713
0
20
40
60
80
100
120
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Wash 080 Plan: Plan 02 6/15/2015
River = Wash 080 Reach = Wash 080 RS = 1956.42
.035
Elevation (ft)
2720
2718
2716
2714
2712
2710
2708
0
10
20
30
40
50
60
70
80
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

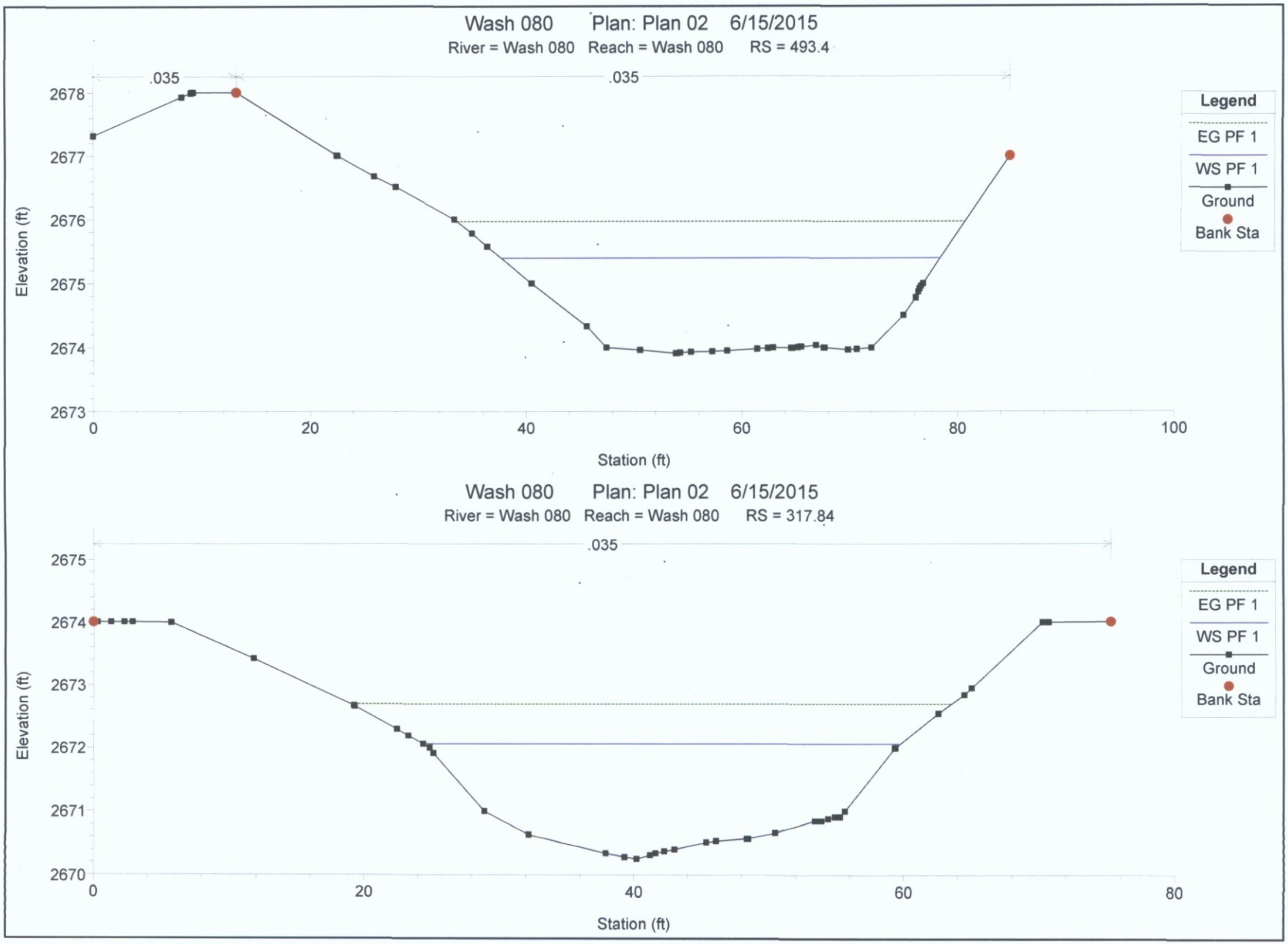

Wash 080 Plan: Plan 02 6/15/2015
River = Wash 080 Reach = Wash 080 RS = 1849.59
.035
Elevation (ft)
2711
2710
2709
2708
2707
2706
2705
2704
0
20
40
60
80
100
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Wash 080 Plan: Plan 02 6/15/2015
River = Wash 080 Reach = Wash 080 RS = 1743.57
.035
Elevation (ft)
2708
2707
2706
2705
2704
2703
2702
0
20
40
60
80
100
120
140
160
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

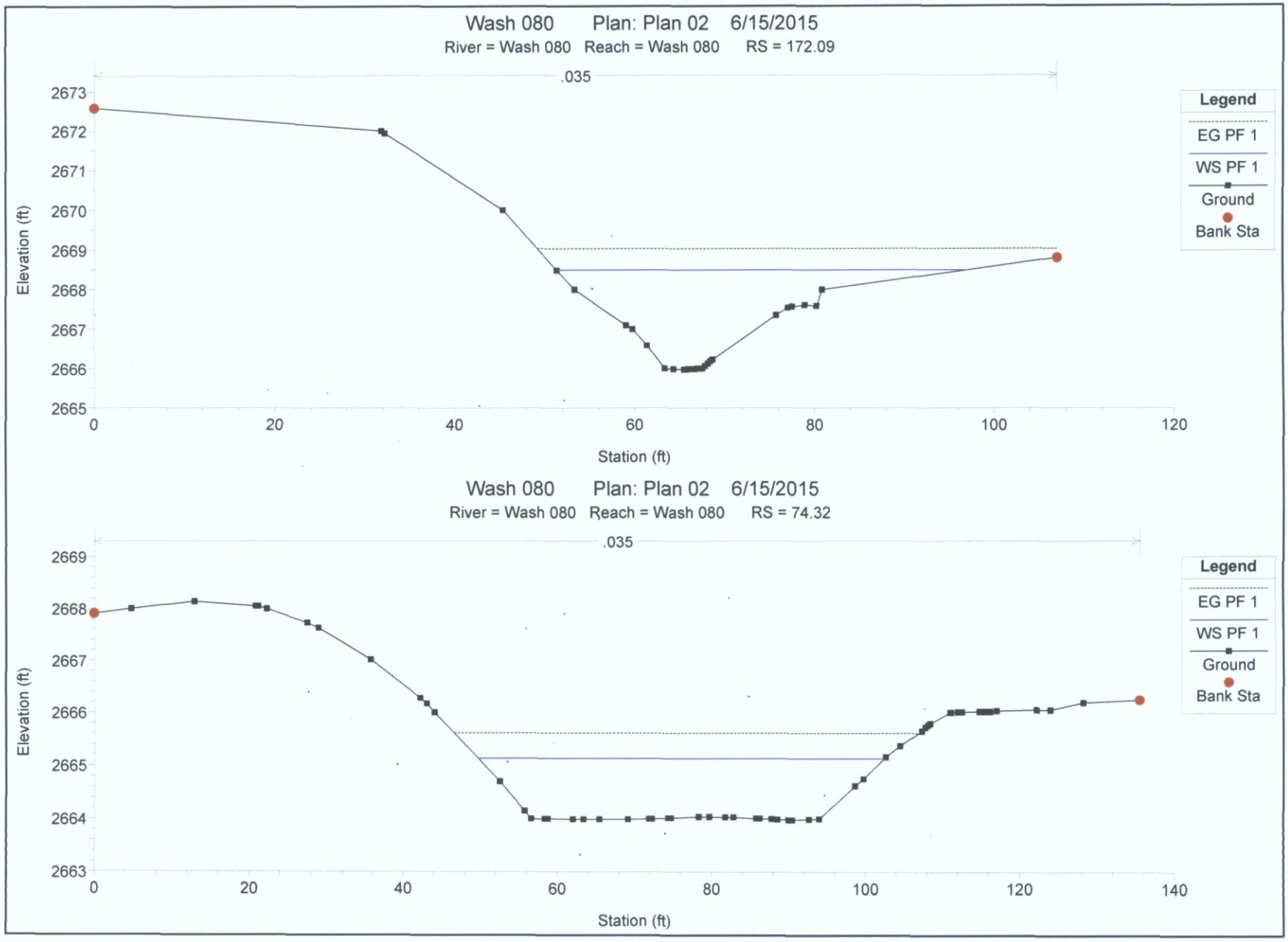

Wash 080 Plan: Plan 02 6/15/2015
River = Wash 080 Reach = Wash 080 RS = 1604.16
.035
Elevation (ft)
2706
2705
2704
2703
2702
2701
2700
0
10
20
30
40
50
60
70
80
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Wash 080 Plan: Plan 02 6/15/2015
River = Wash 080 Reach = Wash 080 RS = 1430.94
.035
Elevation (ft)
2704
2702
2700
2698
2696
2694
0
20
40
60
80
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

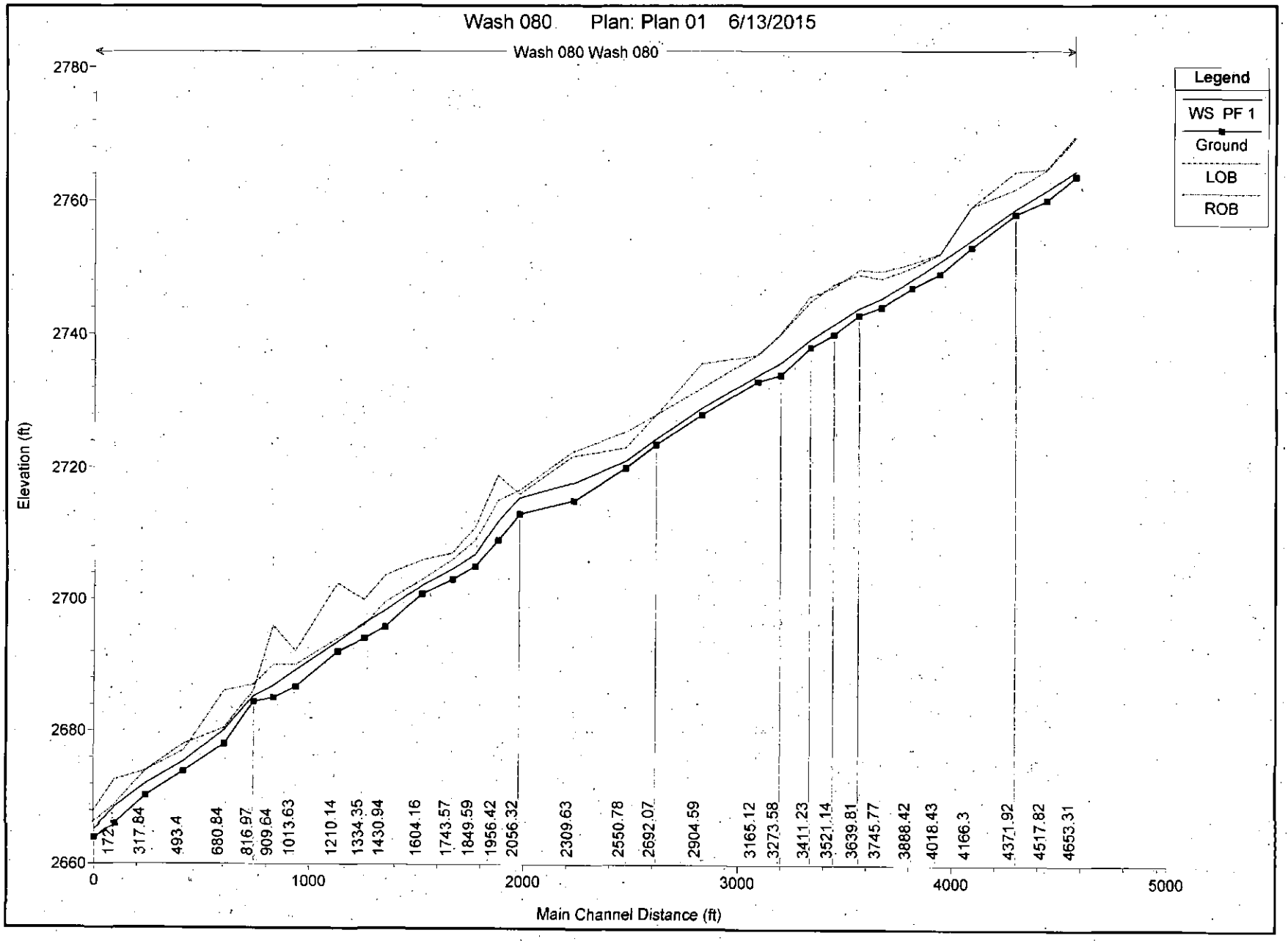

Wash 080 Plan: Plan 02 6/15/2015
River = Wash 080 Reach = Wash 080 RS = 1334.35
.035
Elevation (ft)
2700
2699
2698
2697
2696
2695
2694
2693
0
10
20
30
40
50
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Wash 080 Plan: Plan 02 6/15/2015
River = Wash 080 Reach = Wash 080 RS = 1210.14
.035
Elevation (ft)
2704
2702
2700
2698
2696
2694
2692
0
20
40
60
80
100
120
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta


Wash 080 Plan: Plan 02 6/15/2015
River = Wash 080 Reach = Wash 080 RS = 1013.63
.035
Elevation (ft)
2693
2692
2691
2690
2689
2688
2687
2686
0
20
40
60
80
100
120
140
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Wash 080 Plan: Plan 02 6/15/2015
River = Wash 080 Reach = Wash 080 RS = 909.64
.035
Elevation (ft)
2696
2694
2692
2690
2688
2686
2684
0
20
40
60
80
100
120
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

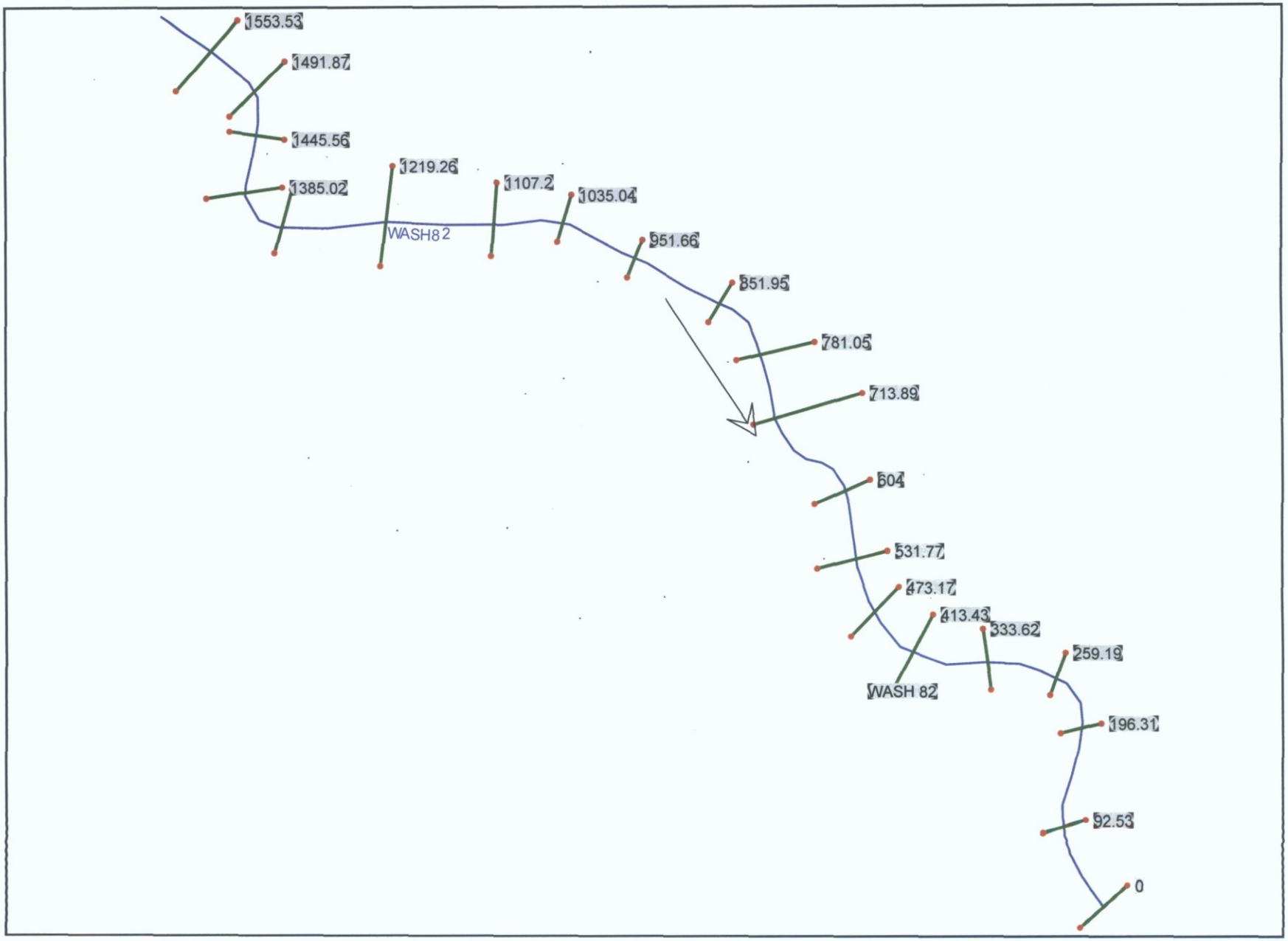

Wash 080 Plan: Plan 02 6/15/2015
River = Wash 080 Reach = Wash 080 RS = 816.97
.035
Elevation (ft)
2687.0
2686.5
2686.0
2685.5
2685.0
2684.5
2684.0
0
20
40
60
80
100
120
140
160
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Wash 080 Plan: Plan 02 6/15/2015
River = Wash 080 Reach = Wash 080 RS = 680.84
.035
Elevation (ft)
2686
2684
2682
2680
2678
0
20
40
60
80
100
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta


Wash 080 Plan: Plan 02 6/15/2015
River = Wash 080 Reach = Wash 080 RS = 493.4
.035
.035
2678
2677
2676
2675
2674
2673
Elevation (ft)
0
20
40
60
80
100
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Wash 080 Plan: Plan 02 6/15/2015
River = Wash 080 Reach = Wash 080 RS = 317.84
.035
2675
2674
2673
2672
2671
2670
Elevation (ft)
0
20
40
60
80
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta


Wash 080 Plan: Plan 02 6/15/2015
River = Wash 080 Reach = Wash 080 RS = 172.09
.035
Elevation (ft)
2673
2672
2671
2670
2669
2668
2667
2666
2665
0
20
40
60
80
100
120
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Wash 080 Plan: Plan 02 6/15/2015
River = Wash 080 Reach = Wash 080 RS = 74.32
.035
Elevation (ft)
2669
2668
2667
2666
2665
2664
2663
0
20
40
60
80
100
120
140
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

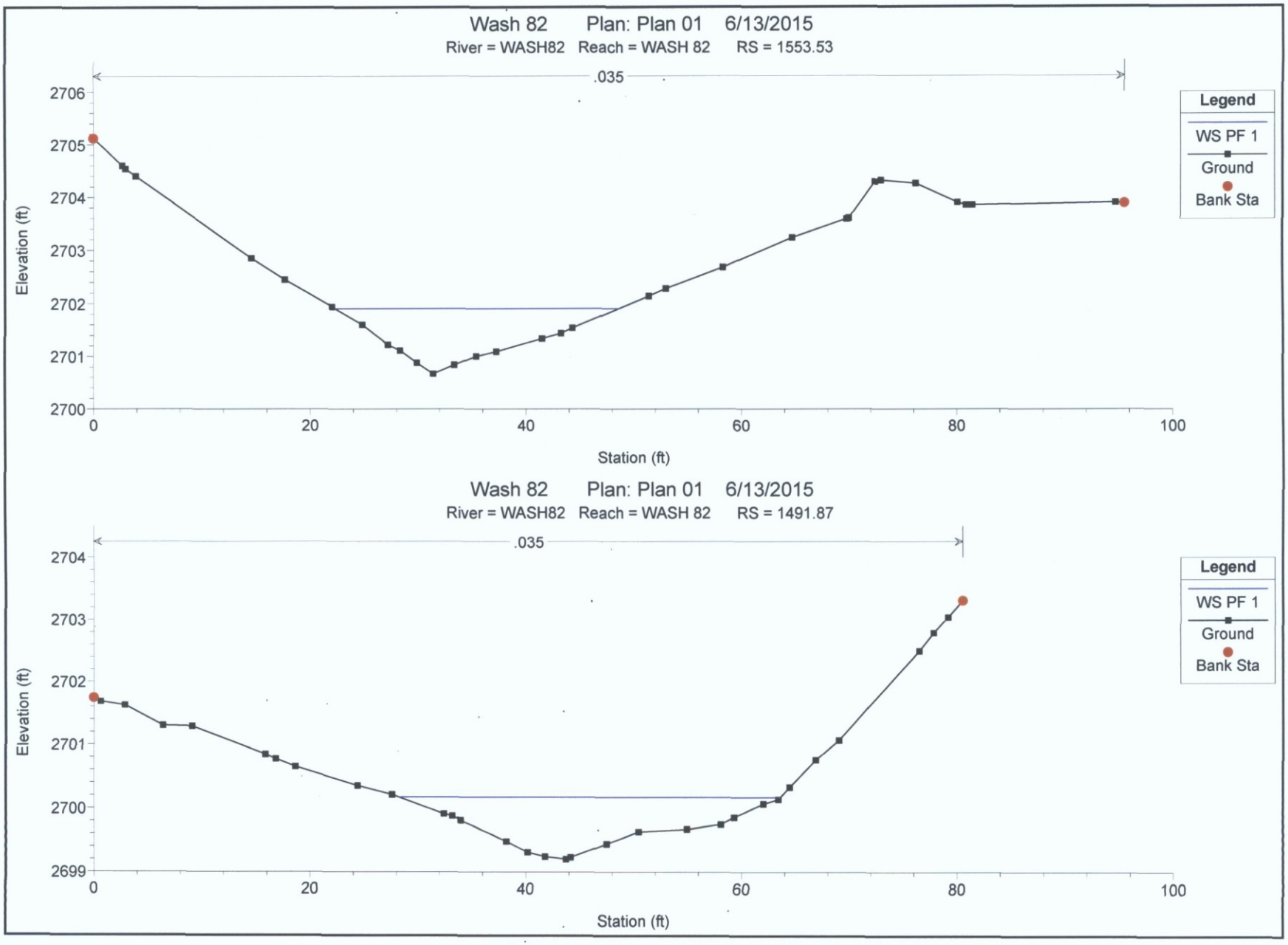

Wash 080 Plan: Plan 01 6/13/2015
Wash 080 Wash 080
Legend
WS PF 1
Ground
LOB
ROB
Elevation (ft)
2780
2760
2740
2720
2700
2680
2660
0
1000
2000
3000
4000
5000
Main Channel Distance (ft)
172
317.84
493.4
680.84
816.97
909.64
1013.63
1210.14
1334.35
1430.94
1604.16
1743.57
1849.59
1956.42
2056.32
2309.63
2550.78
2692.07
2904.59
3165.12
3273.58
3411.23
3521.14
3639.81
3745.77
3888.42
4018.43
4166.3
4371.92
4517.82
4653.31

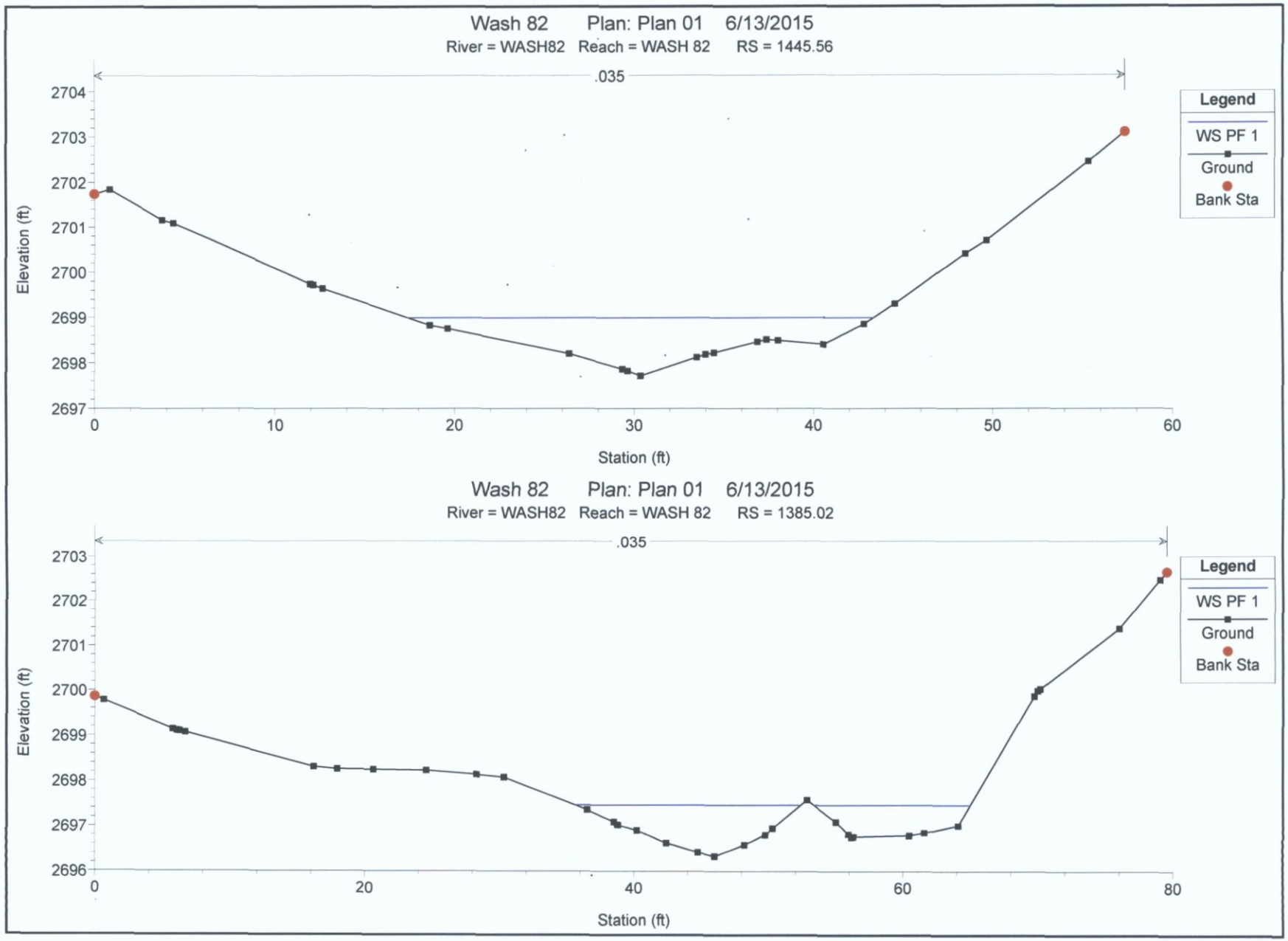
POST-DEVELOPMENT WASH 082 HEC-RAS

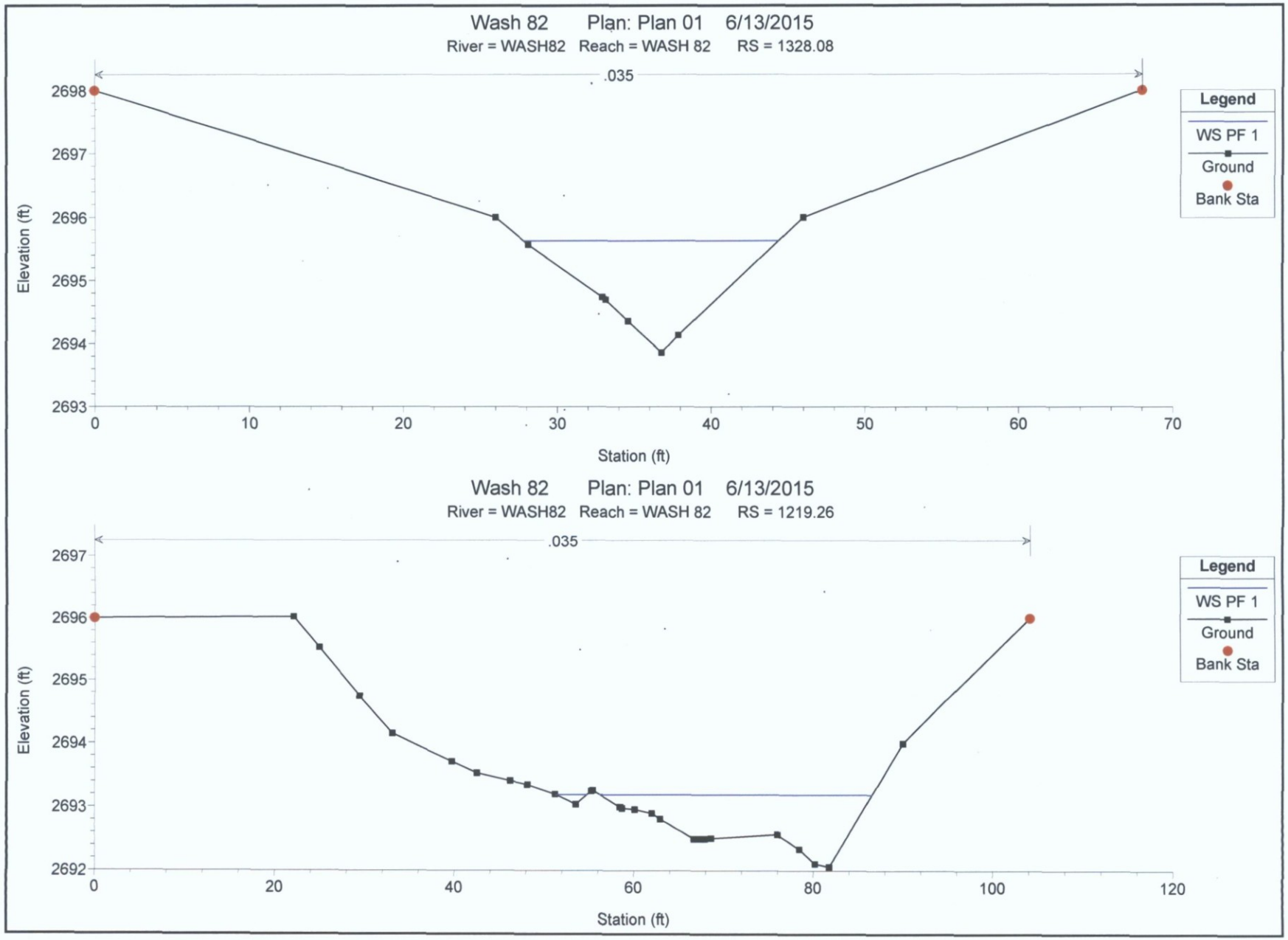

1553.53
1491.87
1445.56
1385.02
1219.26
1107.2
1035.04
951.66
WASH82
851.95
781.05
713.89
604
531.77
473.17
413.43
333.62
259.19
WASH 82
196.31
92.53
0

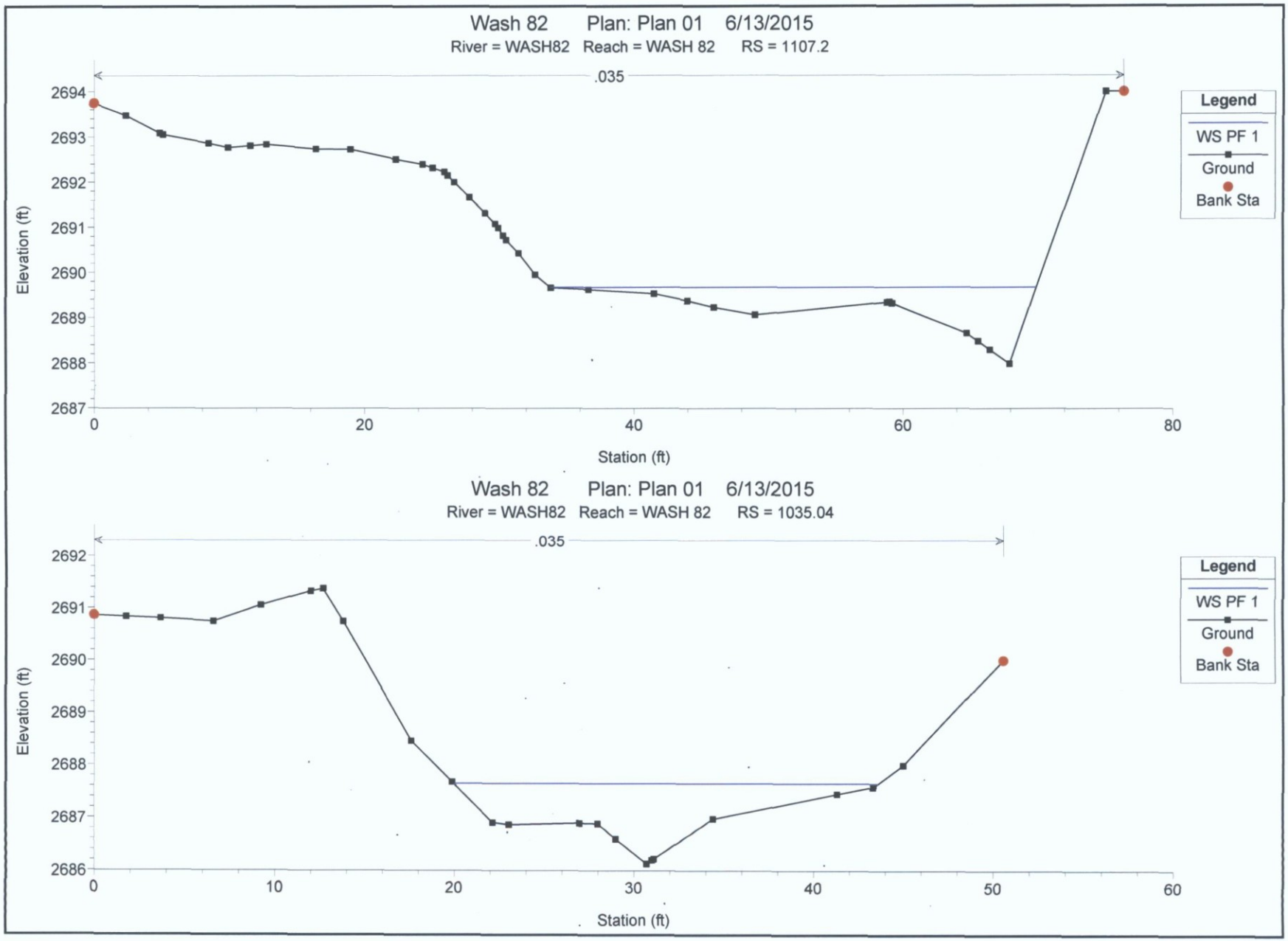
HEC-RAS Plan: Plan 01 River: WASH82 Reach: WASH 82 Profile: PF 1

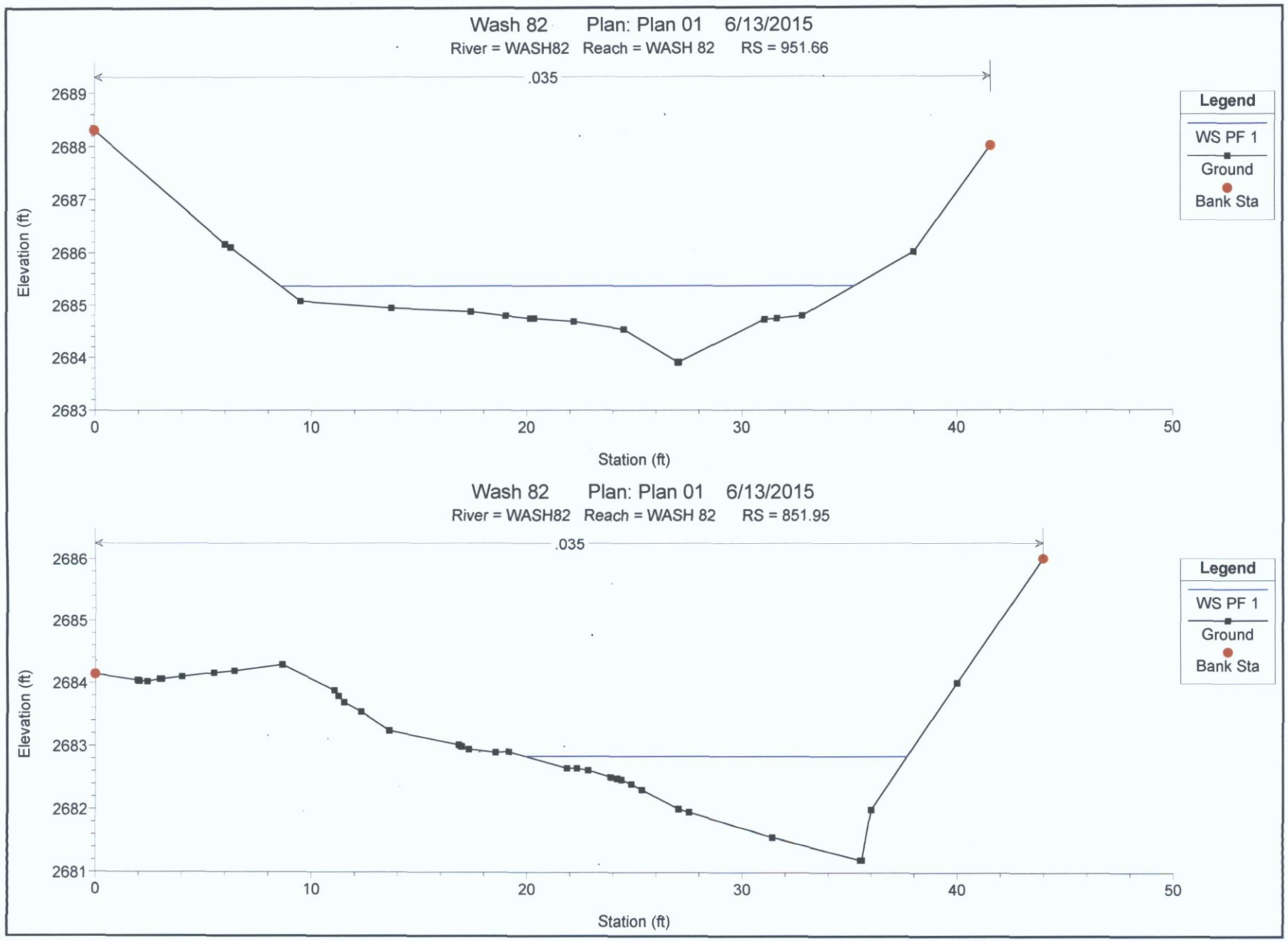
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
WASH 82	1553.53	PF 1	74.00	2700.67	2701.90	2701.90	2702.22	0.021522	4.53	16.35	26.25	1.01
WASH 82	1491.87	PF 1	74.00	2699.20	2700.17	2700.17	2700.43	0.023133	4.11	17.99	35.33	1.02
WASH 82	1445.56	PF 1	74.00	2697.71	2698.99	2698.99	2699.31	0.021238	4.53	16.35	25.95	1.00
WASH 82	1385.02	PF 1	74.00	2696.33	2697.46	2697.46	2697.76	0.022158	4.42	16.75	28.28	1.01
WASH 82	1328.08	PF 1	74.00	2693.86	2695.63	2695.63	2696.06	0.019966	5.28	14.00	16.56	1.01
WASH 82	1219.26	PF 1	74.00	2692.06	2693.19	2693.19	2693.46	0.022928	4.17	17.74	33.75	1.01
WASH 82	1107.2	PF 1	74.00	2687.99	2689.67	2689.67	2689.94	0.024922	4.14	17.89	36.15	1.04
WASH 82	1035.04	PF 1	74.00	2686.13	2687.64	2687.64	2687.99	0.022265	4.75	15.57	23.61	1.03
WASH 82	951.66	PF 1	74.00	2683.90	2685.36	2685.36	2685.66	0.020580	4.43	16.70	26.65	0.99
WASH 82	851.95	PF 1	74.00	2681.20	2682.84	2682.84	2683.25	0.021032	5.18	14.28	17.73	1.02
WASH 82	781.05	PF 1	74.00	2679.61	2680.78	2680.71	2681.09	0.015710	4.40	16.80	22.10	0.89
WASH 82	713.89	PF 1	74.00	2677.90	2679.44	2679.44	2679.91	0.019231	5.51	13.43	14.38	1.00
WASH 82	604	PF 1	74.00	2675.40	2676.51	2676.51	2676.91	0.020285	5.05	14.66	18.85	1.01
WASH 82	531.77	PF 1	74.00	2673.43	2674.61		2674.78	0.014314	3.29	22.46	42.85	0.80
WASH 82	473.17	PF 1	74.00	2672.84	2673.49	2673.49	2673.70	0.024499	3.65	20.29	49.84	1.01
WASH 82	413.43	PF 1	74.00	2670.48	2671.72	2671.66	2671.92	0.017973	3.57	20.72	41.55	0.89
WASH 82	333.62	PF 1	74.00	2668.30	2670.04	2670.04	2670.34	0.021812	4.39	16.86	28.43	1.00
WASH 82	259.19	PF 1	74.00	2667.12	2668.40	2668.32	2668.74	0.014787	4.62	16.00	18.54	0.88
WASH 82	196.31	PF 1	74.00	2666.24	2667.52		2667.84	0.013875	4.51	16.41	18.71	0.85
WASH 82	92.53	PF 1	74.00	2664.49	2665.68	2665.68	2666.13	0.019435	5.39	13.73	15.40	1.01
WASH 82	0	PF 1	74.00	2662.53	2663.67	2663.60	2663.88	0.016031	3.71	19.95	34.67	0.86

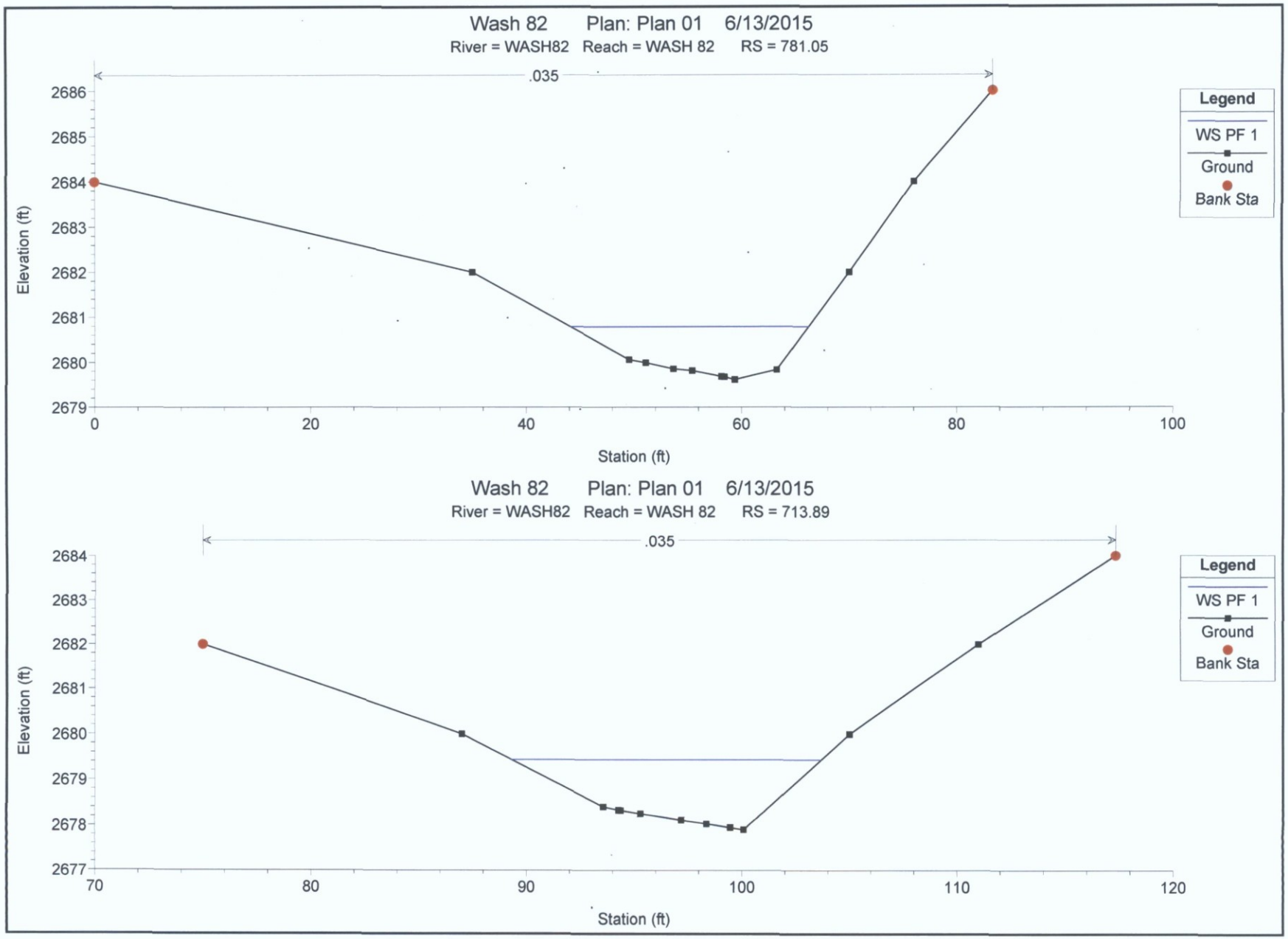

Wash 82 Plan: Plan 01 6/13/2015
River = WASH82 Reach = WASH 82 RS = 1553.53
.035
Elevation (ft)
2706
2705
2704
2703
2702
2701
2700
0
20
40
60
80
100
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
Wash 82 Plan: Plan 01 6/13/2015
River = WASH82 Reach = WASH 82 RS = 1491.87
.035
Elevation (ft)
2704
2703
2702
2701
2700
2699
0
20
40
60
80
100
Station (ft)
Legend
WS PF 1
Ground
Bank Sta

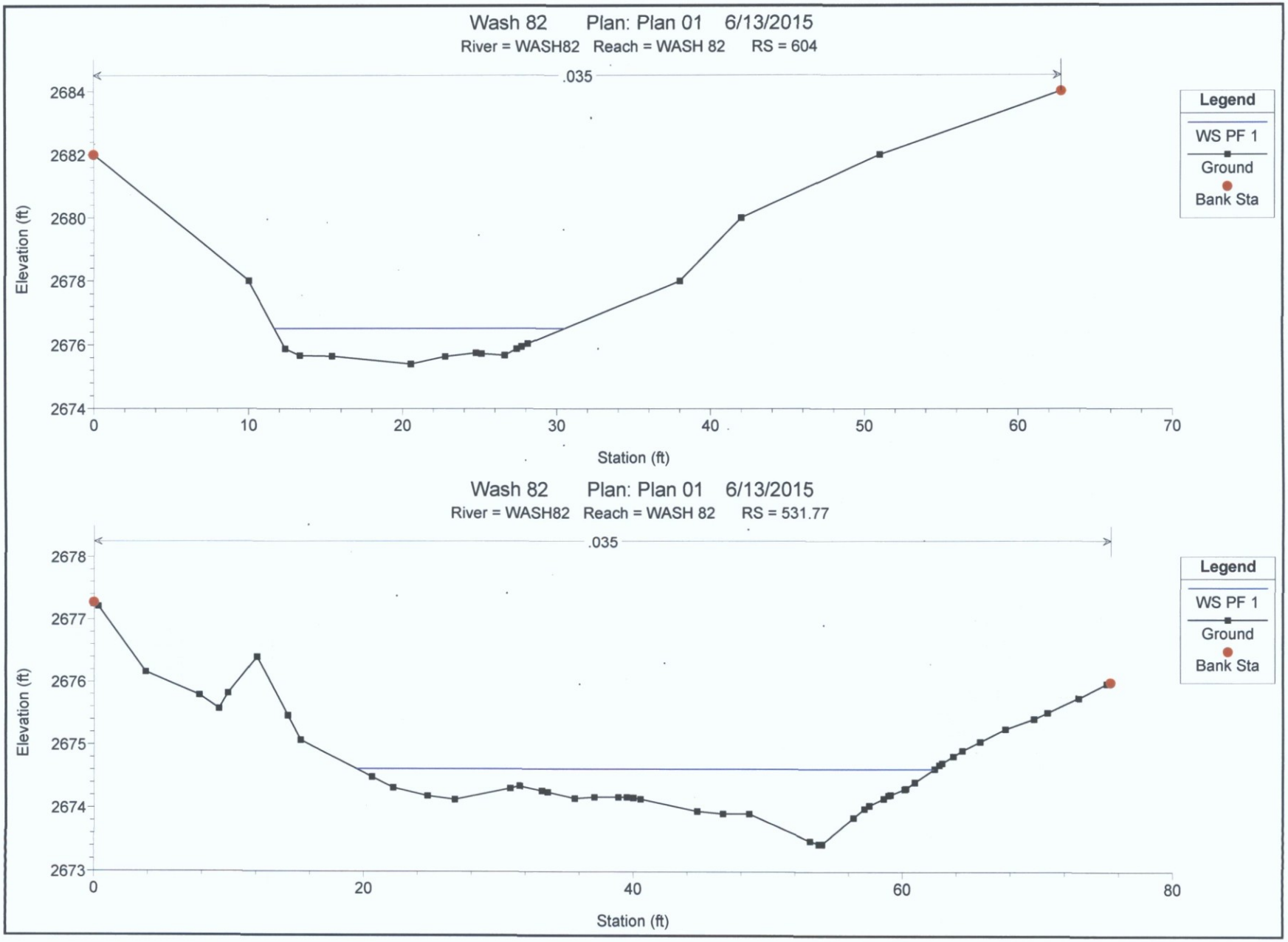

Wash 82 Plan: Plan 01 6/13/2015
River = WASH82 Reach = WASH 82 RS = 1445.56
.035
Elevation (ft)
2704
2703
2702
2701
2700
2699
2698
2697
0
10
20
30
40
50
60
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
Wash 82 Plan: Plan 01 6/13/2015
River = WASH82 Reach = WASH 82 RS = 1385.02
.035
Elevation (ft)
2703
2702
2701
2700
2699
2698
2697
2696
0
20
40
60
80
Station (ft)
Legend
WS PF 1
Ground
Bank Sta

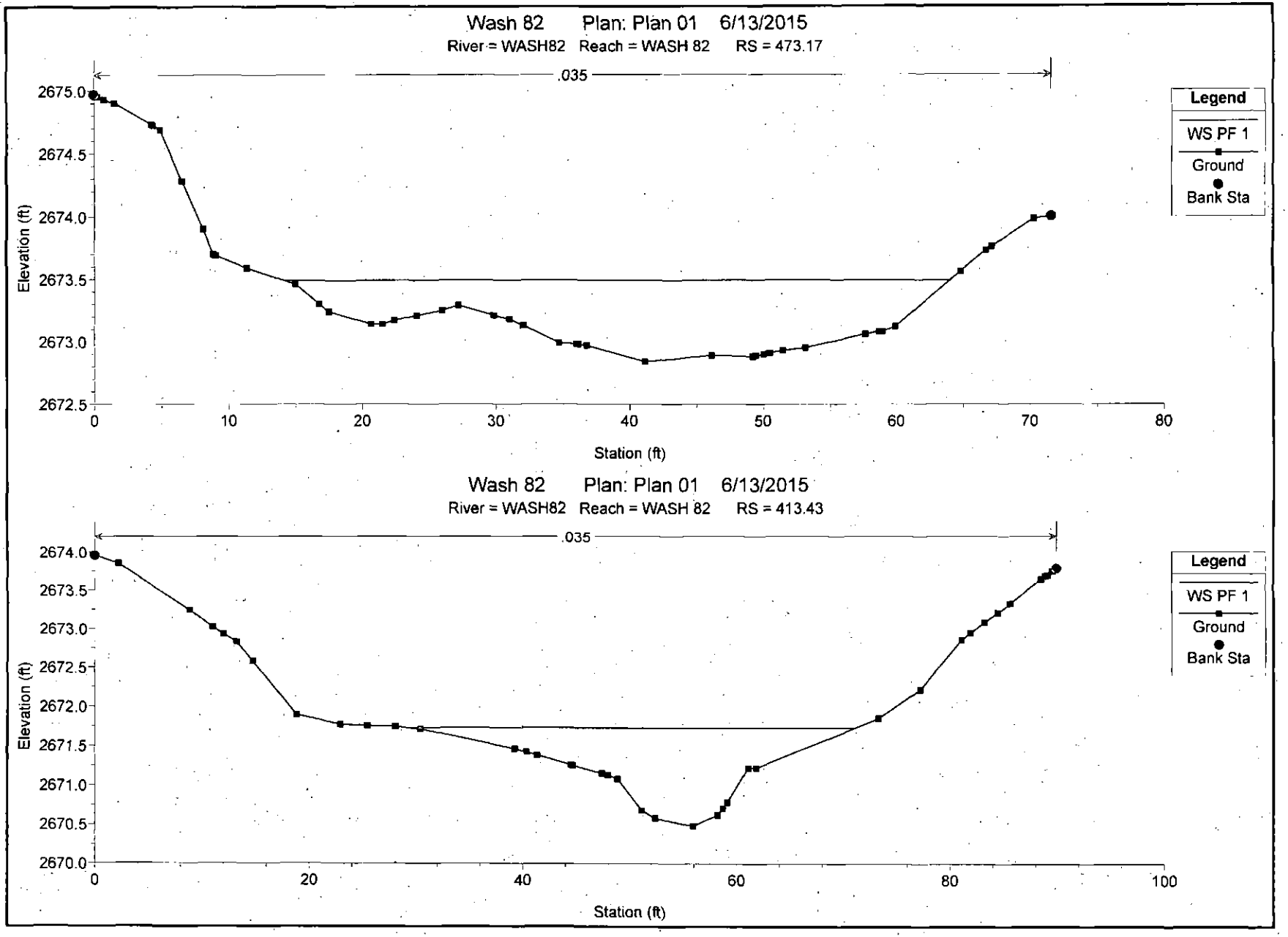

Wash 82 Plan: Plan 01 6/13/2015
River = WASH82 Reach = WASH 82 RS = 1328.08
.035
Elevation (ft)
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
Wash 82 Plan: Plan 01 6/13/2015
River = WASH82 Reach = WASH 82 RS = 1219.26
.035
Elevation (ft)
Station (ft)
Legend
WS PF 1
Ground
Bank Sta

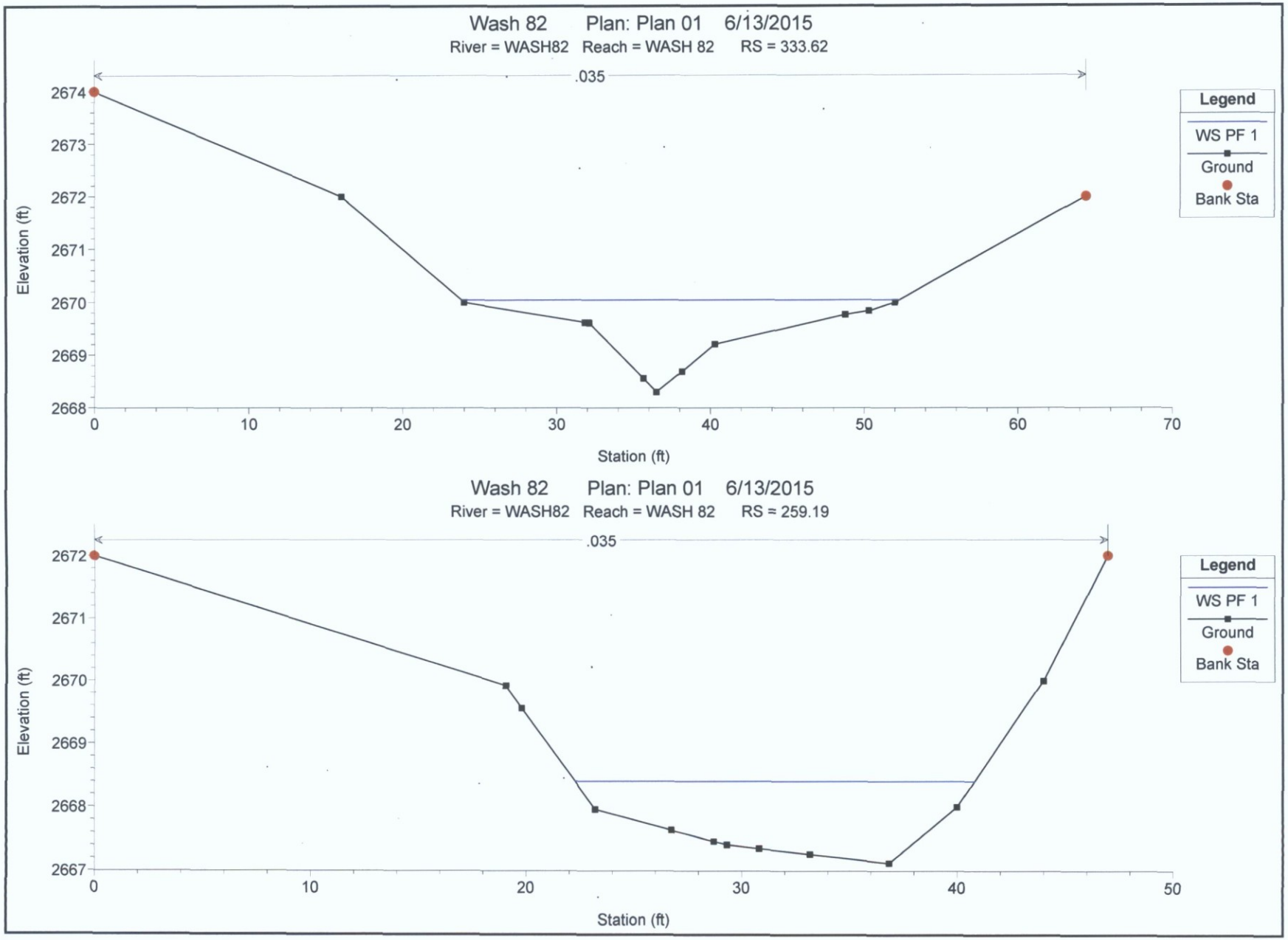

Wash 82 Plan: Plan 01 6/13/2015
River = WASH82 Reach = WASH 82 RS = 1107.2
.035
Elevation (ft)
2694
2693
2692
2691
2690
2689
2688
2687
0
20
40
60
80
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
Wash 82 Plan: Plan 01 6/13/2015
River = WASH82 Reach = WASH 82 RS = 1035.04
.035
Elevation (ft)
2692
2691
2690
2689
2688
2687
2686
0
10
20
30
40
50
60
Station (ft)
Legend
WS PF 1
Ground
Bank Sta

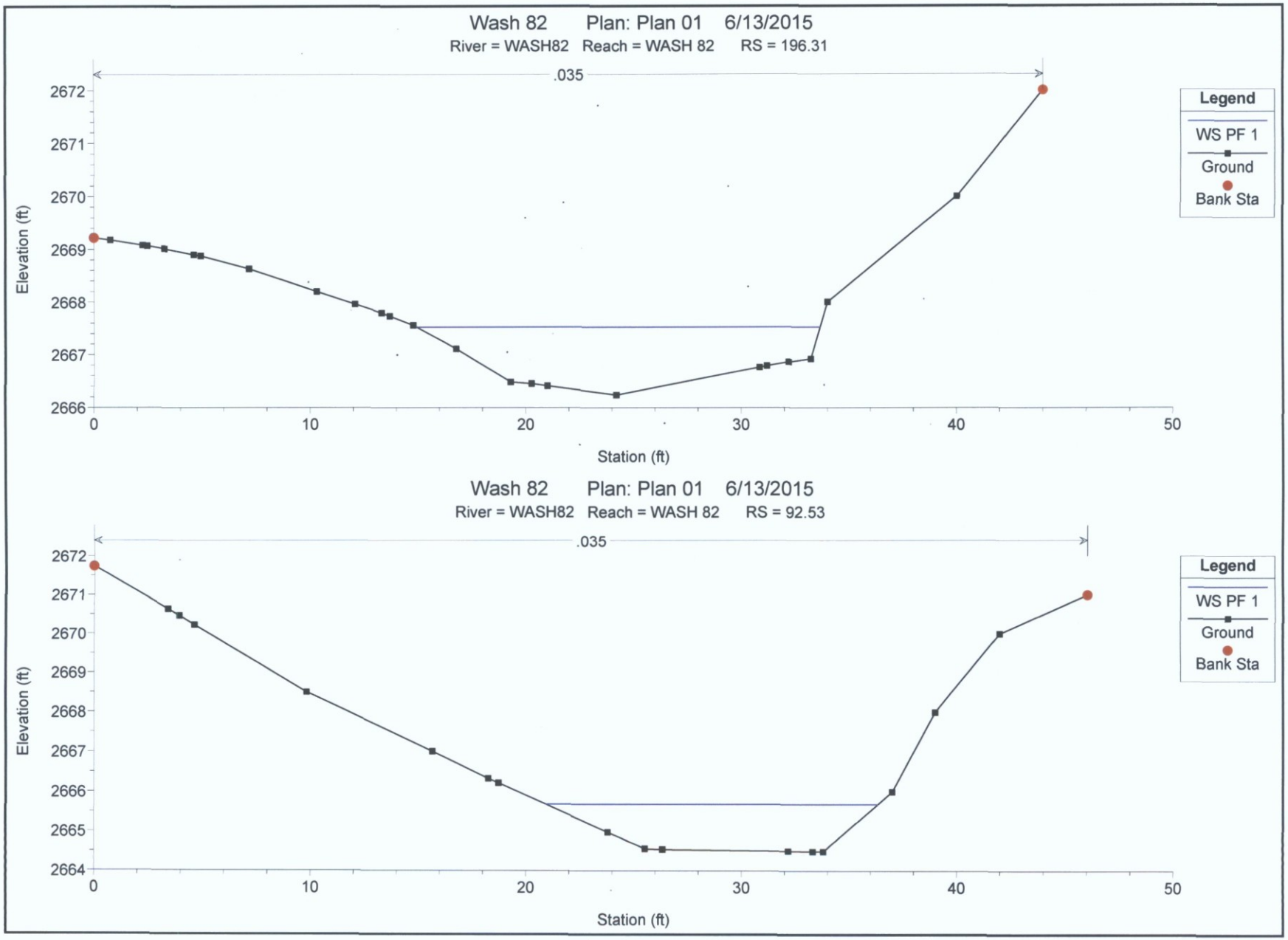

Wash 82 Plan: Plan 01 6/13/2015
River = WASH82 Reach = WASH 82 RS = 951.66
.035
Elevation (ft)
2689
2688
2687
2686
2685
2684
2683
0
10
20
30
40
50
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
Wash 82 Plan: Plan 01 6/13/2015
River = WASH82 Reach = WASH 82 RS = 851.95
.035
Elevation (ft)
2686
2685
2684
2683
2682
2681
0
10
20
30
40
50
Station (ft)
Legend
WS PF 1
Ground
Bank Sta

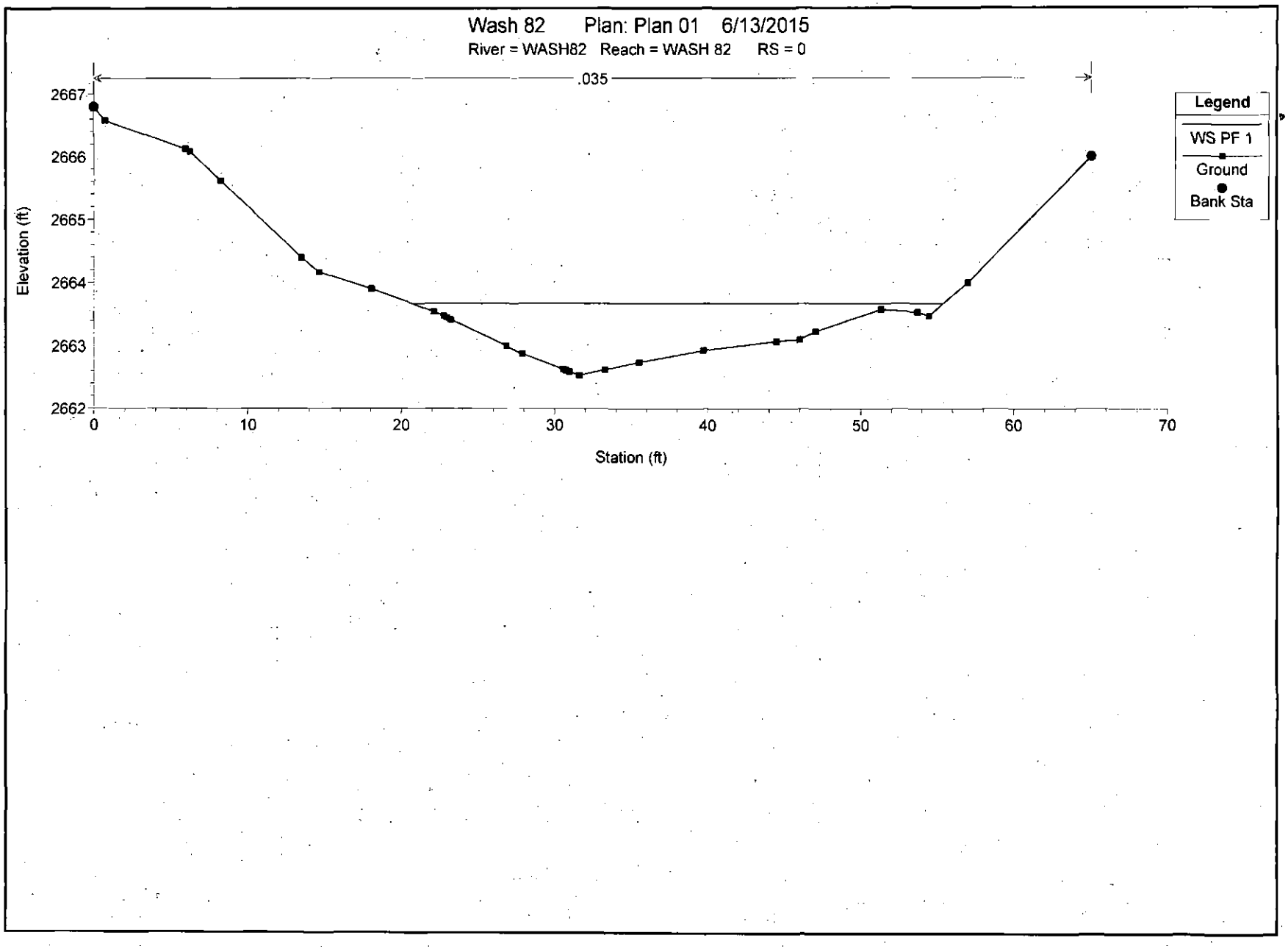

Wash 82 Plan: Plan 01 6/13/2015
River = WASH82 Reach = WASH 82 RS = 781.05
.035
Elevation (ft)
2686
2685
2684
2683
2682
2681
2680
2679
0
20
40
60
80
100
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
Wash 82 Plan: Plan 01 6/13/2015
River = WASH82 Reach = WASH 82 RS = 713.89
.035
Elevation (ft)
2684
2683
2682
2681
2680
2679
2678
2677
70
80
90
100
110
120
Station (ft)
Legend
WS PF 1
Ground
Bank Sta

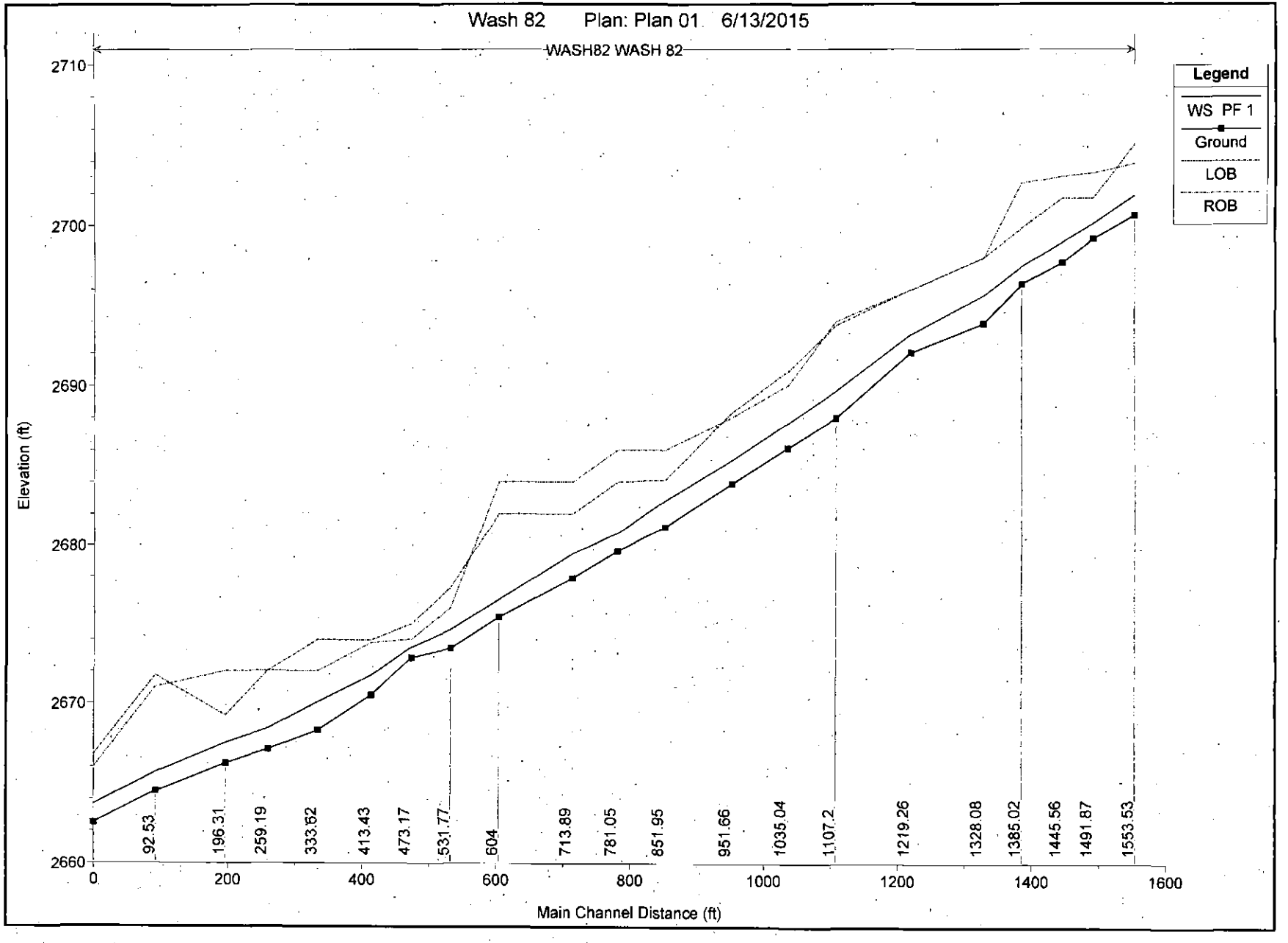

Wash 82 Plan: Plan 01 6/13/2015
River = WASH82 Reach = WASH 82 RS = 604
.035
Elevation (ft)
2684
2682
2680
2678
2676
2674
0
10
20
30
40
50
60
70
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
Wash 82 Plan: Plan 01 6/13/2015
River = WASH82 Reach = WASH 82 RS = 531.77
.035
Elevation (ft)
2678
2677
2676
2675
2674
2673
0
20
40
60
80
Station (ft)
Legend
WS PF 1
Ground
Bank Sta


Wash 82 Plan: Plan 01 6/13/2015
River = WASH82 Reach = WASH 82 RS = 473.17
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2675.0
2674.5
2674.0
2673.5
2673.0
2672.5
0
10
20
30
40
50
60
70
80
Wash 82 Plan: Plan 01 6/13/2015
River = WASH82 Reach = WASH 82 RS = 413.43
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2674.0
2673.5
2673.0
2672.5
2672.0
2671.5
2671.0
2670.5
2670.0
0
20
40
60
80
100

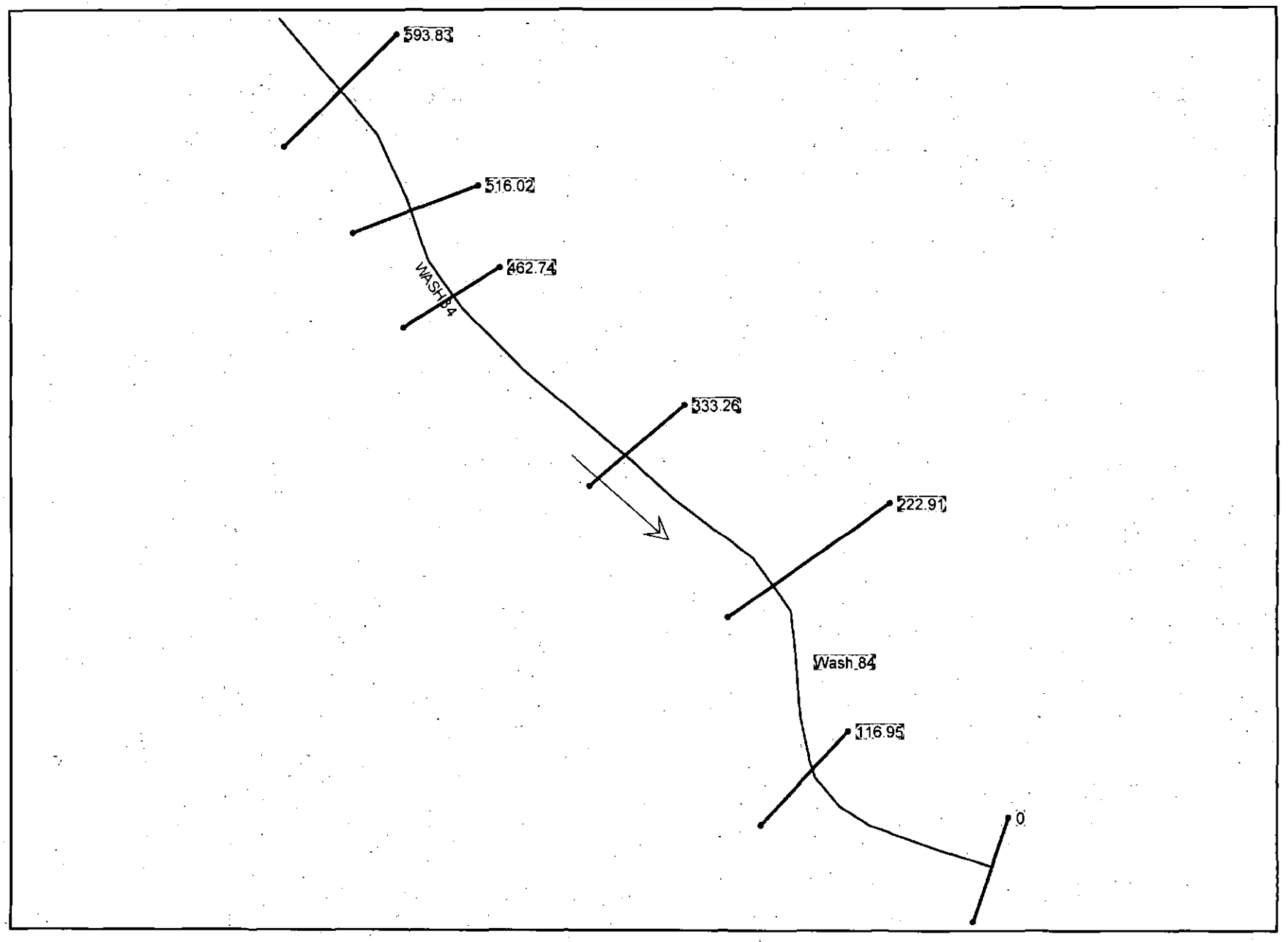

Wash 82 Plan: Plan 01 6/13/2015
River = WASH82 Reach = WASH 82 RS = 333.62
.035
Elevation (ft)
2674
2673
2672
2671
2670
2669
2668
0
10
20
30
40
50
60
70
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
Wash 82 Plan: Plan 01 6/13/2015
River = WASH82 Reach = WASH 82 RS = 259.19
.035
Elevation (ft)
2672
2671
2670
2669
2668
2667
0
10
20
30
40
50
Station (ft)
Legend
WS PF 1
Ground
Bank Sta


Wash 82 Plan: Plan 01 6/13/2015
River = WASH82 Reach = WASH 82 RS = 196.31
.035
Elevation (ft)
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
Wash 82 Plan: Plan 01 6/13/2015
River = WASH82 Reach = WASH 82 RS = 92.53
.035
Elevation (ft)
Station (ft)
Legend
WS PF 1
Ground
Bank Sta


Wash 82 Plan: Plan 01 6/13/2015
River = WASH82 Reach = WASH 82 RS = 0
.035
Elevation (ft)
2667
2666
2665
2664
2663
2662
0
10
20
30
40
50
60
70
Station (ft)
Legend
WS PF 1
Ground
Bank Sta

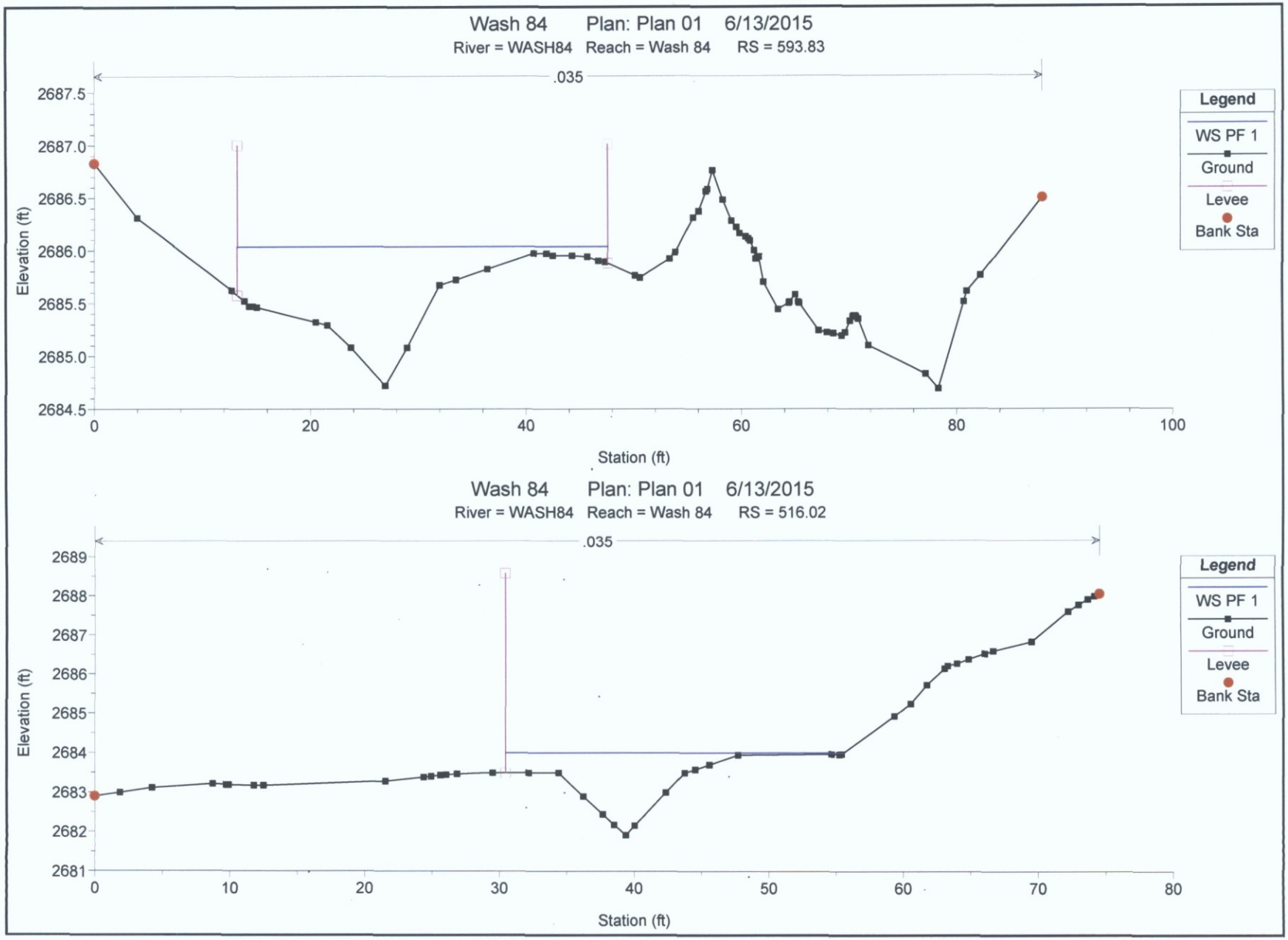

Wash 82 Plan: Plan 01 6/13/2015
WASH82 WASH 82
Legend
WS PF 1
Ground
LOB
ROB
Elevation (ft)
2710
2700
2690
2680
2670
2660
0
200
400
600
800
1000
1200
1400
1600
Main Channel Distance (ft)
92.53
196.31
259.19
333.62
413.43
473.17
531.77
604
713.89
781.05
851.95
951.66
1035.04
1107.2
1219.26
1328.08
1385.02
1445.56
1491.87
1553.53

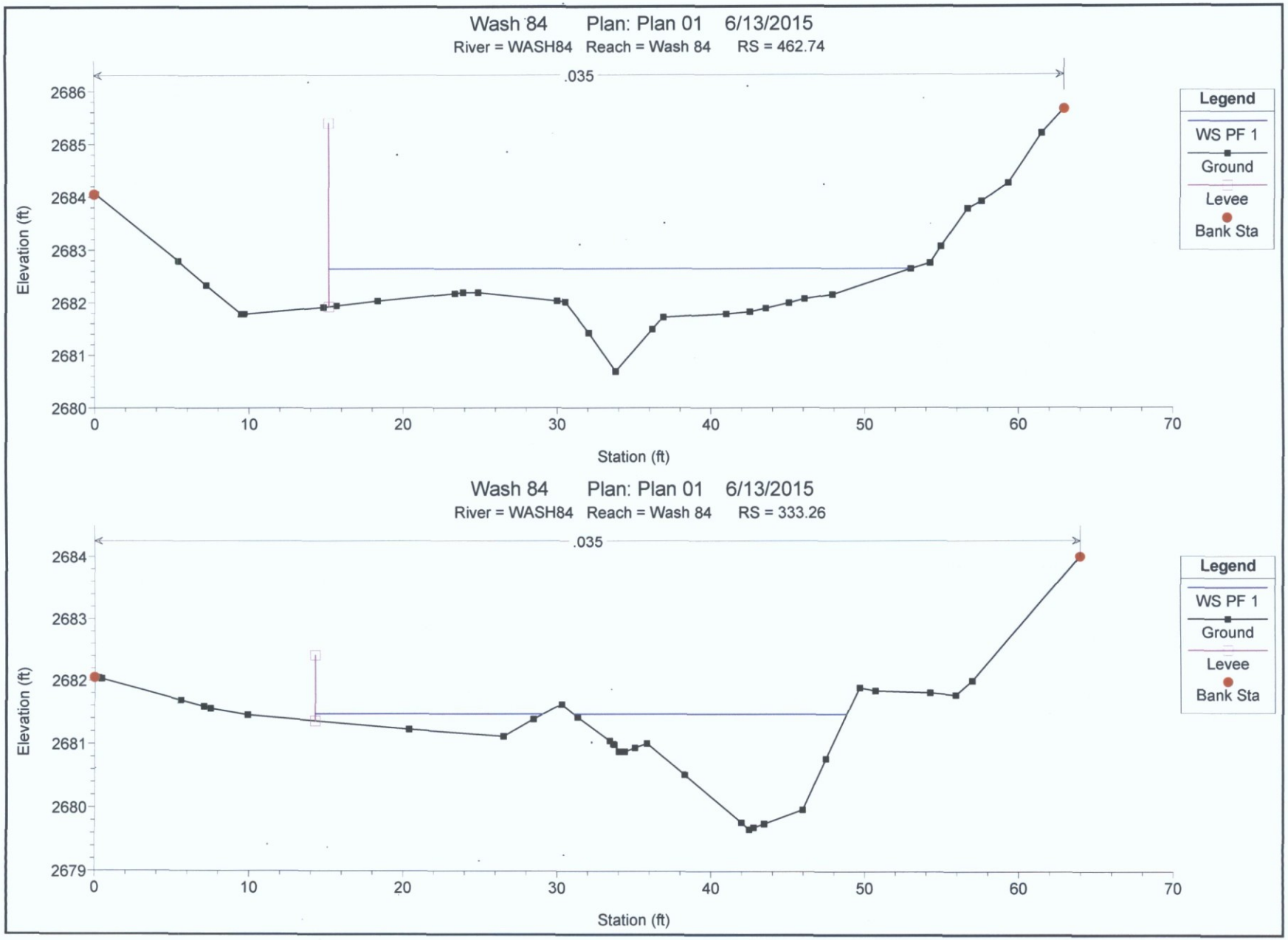
POST-DEVELOPMENT WASH 084 HEC-RAS

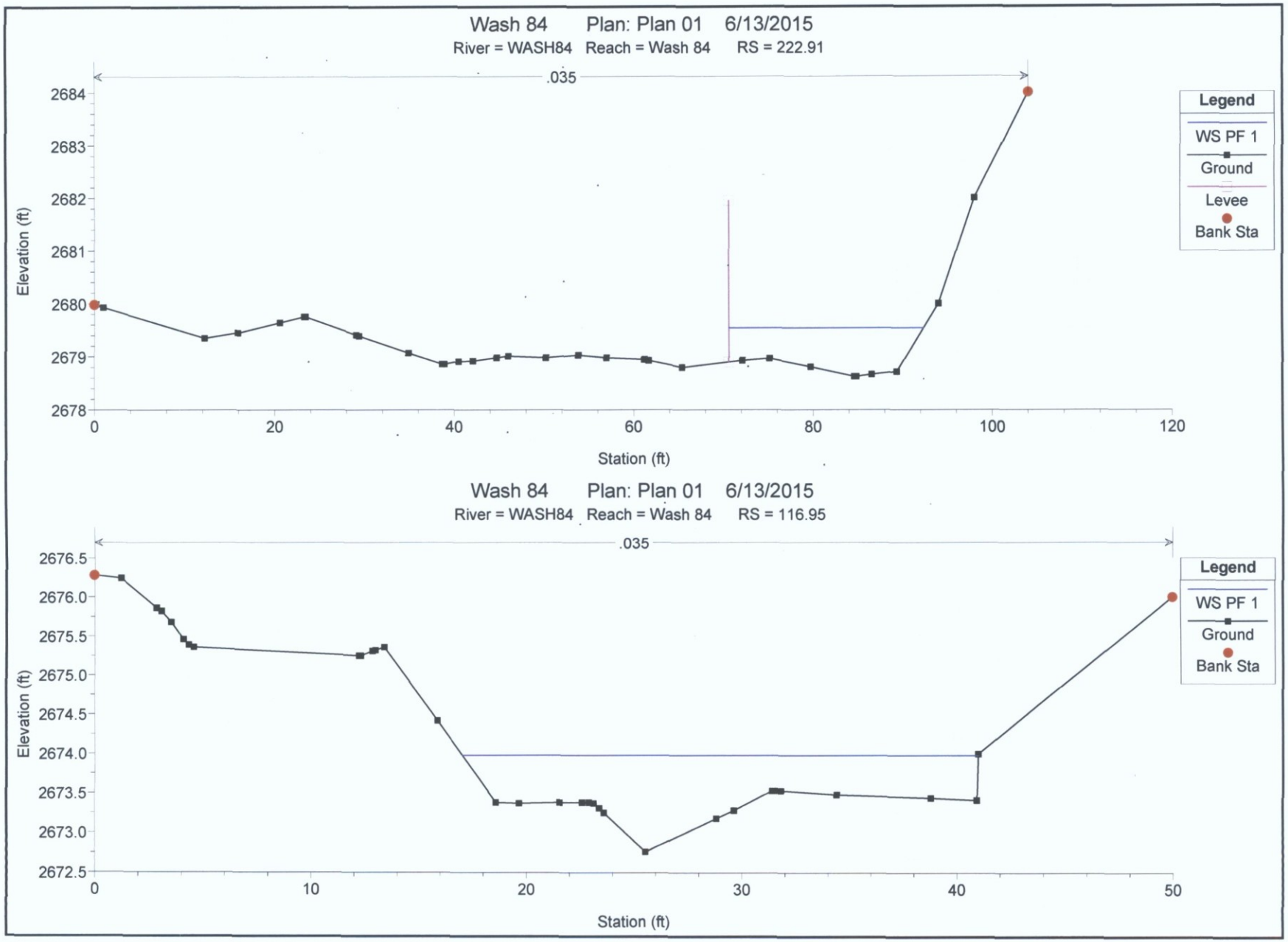

593.83
516.02
462.74
WASH_84
333.26
222.91
Wash_84
116.95
0

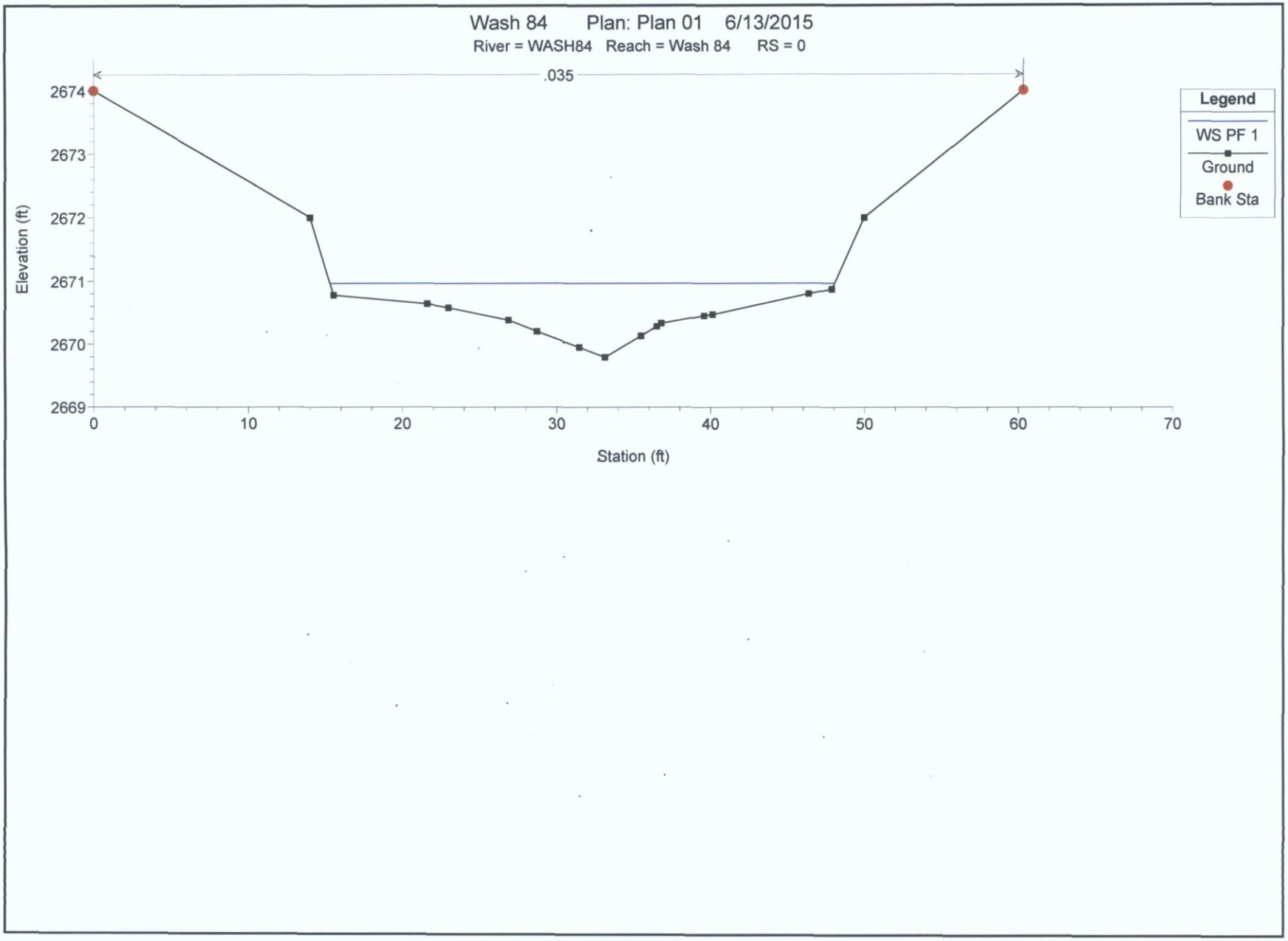
HEC-RAS Plan: Plan 01 River: WASH84 Reach: Wash 84 Profile: PF 1

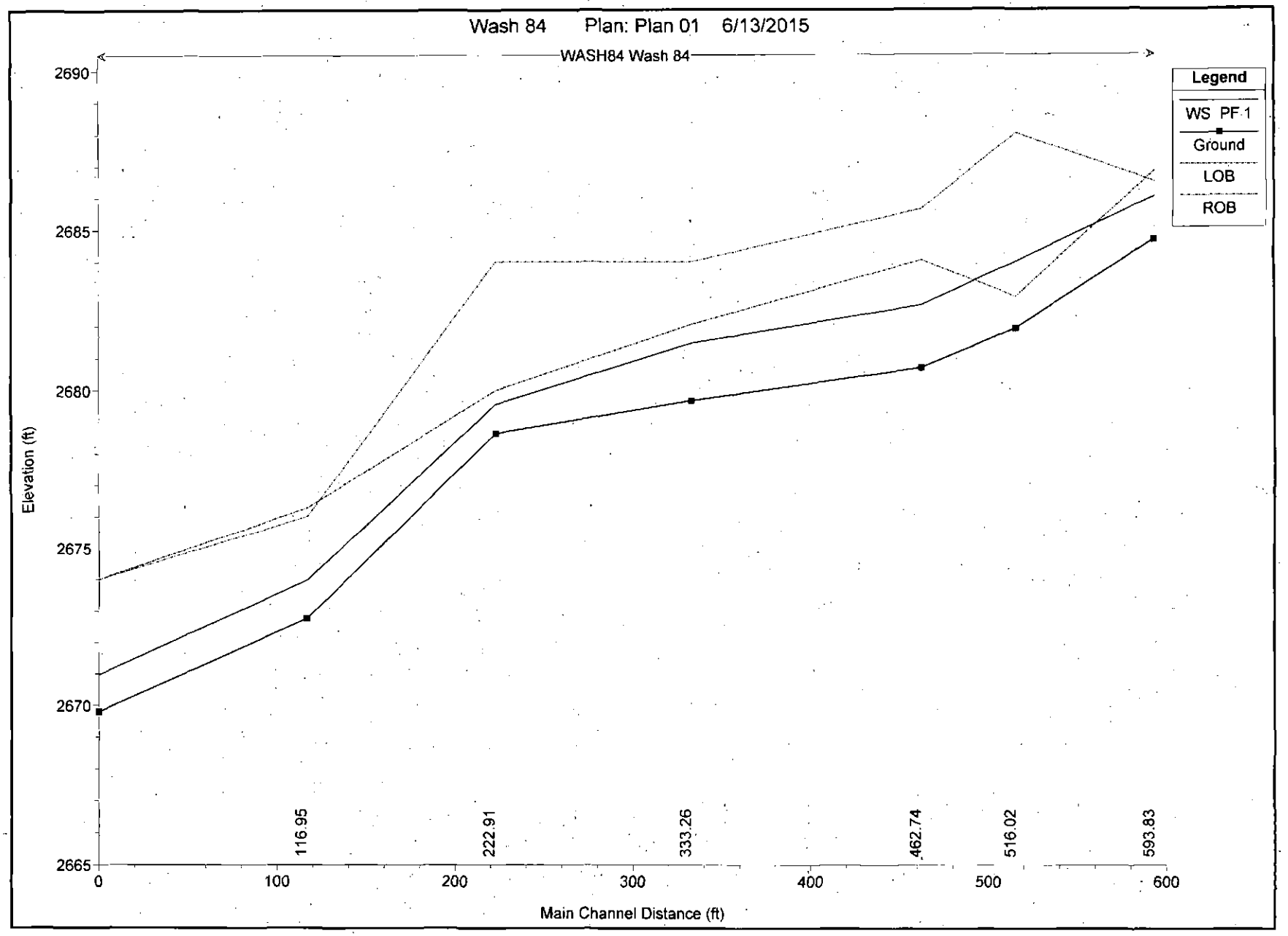
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Wash 84	593.83	PF 1	70.00	2684.69	2686.03	2686.03	2686.28	0.022203	3.99	17.56	34.38	0.98
Wash 84	516.02	PF 1	70.00	2681.91	2683.99	2683.99	2684.31	0.022334	4.49	15.58	25.09	1.00
Wash 84	462.74	PF 1	70.00	2680.69	2682.65	2682.39	2682.75	0.006124	2.60	26.97	37.88	0.54
Wash 84	333.26	PF 1	70.00	2679.66	2681.47	2681.35	2681.65	0.012566	3.44	20.38	32.51	0.76
Wash 84	222.91	PF 1	70.00	2678.63	2679.54	2679.54	2679.88	0.020845	4.68	14.97	21.70	0.99
Wash 84	116.95	PF 1	70.00	2672.76	2673.98	2673.98	2674.31	0.022546	4.61	15.19	23.96	1.02
Wash 84	0	PF 1	70.00	2669.79	2670.97	2670.97	2671.23	0.022907	4.13	16.96	32.77	1.01


Wash 84 Plan: Plan 01 6/13/2015
River = WASH84 Reach = Wash 84 RS = 593.83
.035
Elevation (ft)
2687.5
2687.0
2686.5
2686.0
2685.5
2685.0
2684.5
0
20
40
60
80
100
Station (ft)
Legend
WS PF 1
Ground
Levee
Bank Sta
Wash 84 Plan: Plan 01 6/13/2015
River = WASH84 Reach = Wash 84 RS = 516.02
.035
Elevation (ft)
2689
2688
2687
2686
2685
2684
2683
2682
2681
0
10
20
30
40
50
60
70
80
Station (ft)
Legend
WS PF 1
Ground
Levee
Bank Sta

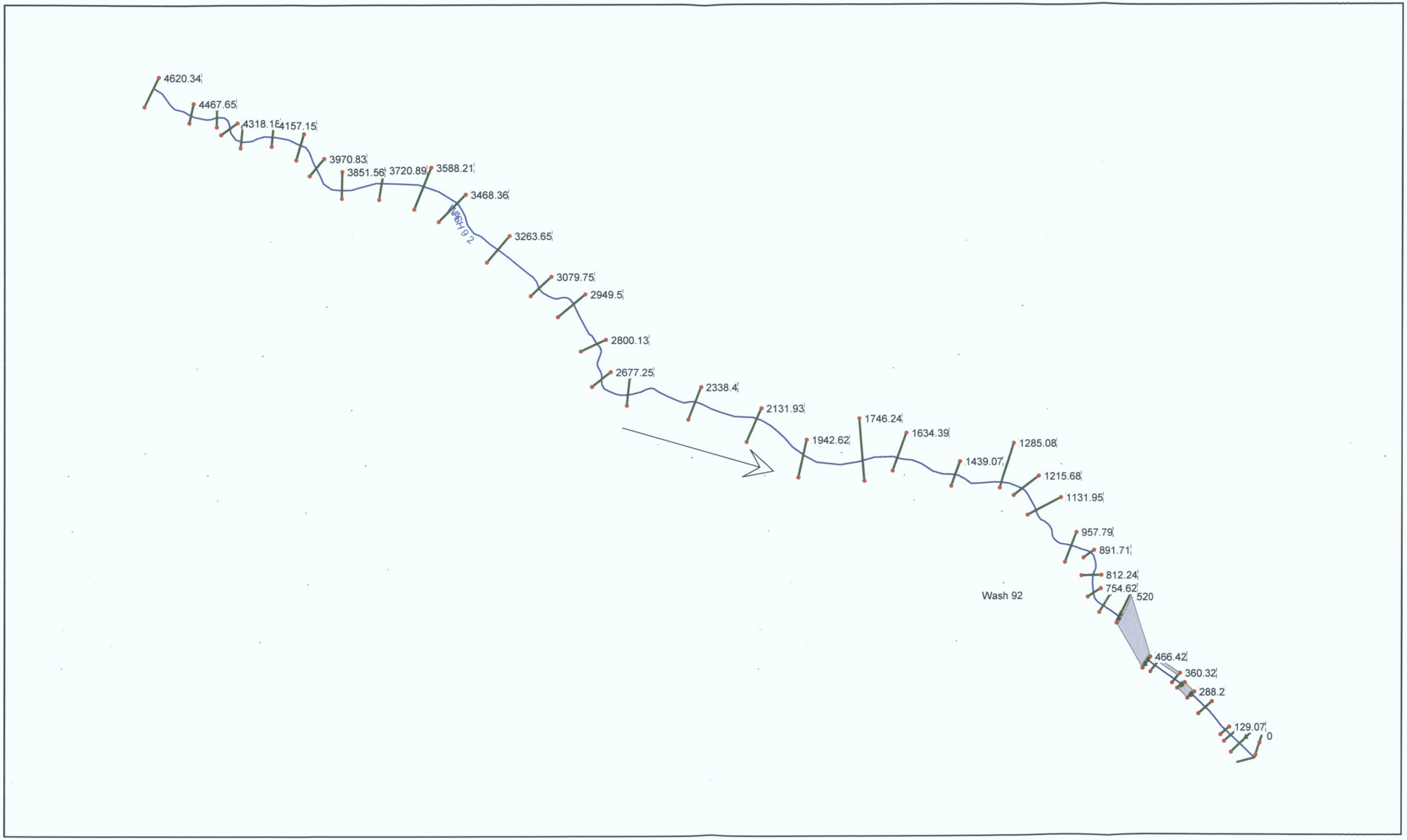

Wash 84 Plan: Plan 01 6/13/2015
River = WASH84 Reach = Wash 84 RS = 462.74
.035
Elevation (ft)
Station (ft)
Legend
WS PF 1
Ground
Levee
Bank Sta
Wash 84 Plan: Plan 01 6/13/2015
River = WASH84 Reach = Wash 84 RS = 333.26
.035
Elevation (ft)
Station (ft)
Legend
WS PF 1
Ground
Levee
Bank Sta


Wash 84 Plan: Plan 01 6/13/2015
River = WASH84 Reach = Wash 84 RS = 222.91
.035
Elevation (ft)
2684
2683
2682
2681
2680
2679
2678
0
20
40
60
80
100
120
Station (ft)
Legend
WS PF 1
Ground
Levee
Bank Sta
Wash 84 Plan: Plan 01 6/13/2015
River = WASH84 Reach = Wash 84 RS = 116.95
.035
Elevation (ft)
2676.5
2676.0
2675.5
2675.0
2674.5
2674.0
2673.5
2673.0
2672.5
0
10
20
30
40
50
Station (ft)
Legend
WS PF 1
Ground
Bank Sta


Wash 84 Plan: Plan 01 6/13/2015
River = WASH84 Reach = Wash 84 RS = 0
.035
Elevation (ft)
2674
2673
2672
2671
2670
2669
0
10
20
30
40
50
60
70
Station (ft)
Legend
WS PF 1
Ground
Bank Sta


Wash 84 Plan: Plan 01 6/13/2015
WASH84 Wash 84
Legend
WS PF 1
Ground
LOB
ROB
Elevation (ft)
2690
2685
2680
2675
2670
2665
116.95
222.91
333.26
462.74
516.02
593.83
0
100
200
300
400
500
600
Main Channel Distance (ft)

POST-DEVELOPMENT WASH 092 HEC-RAS

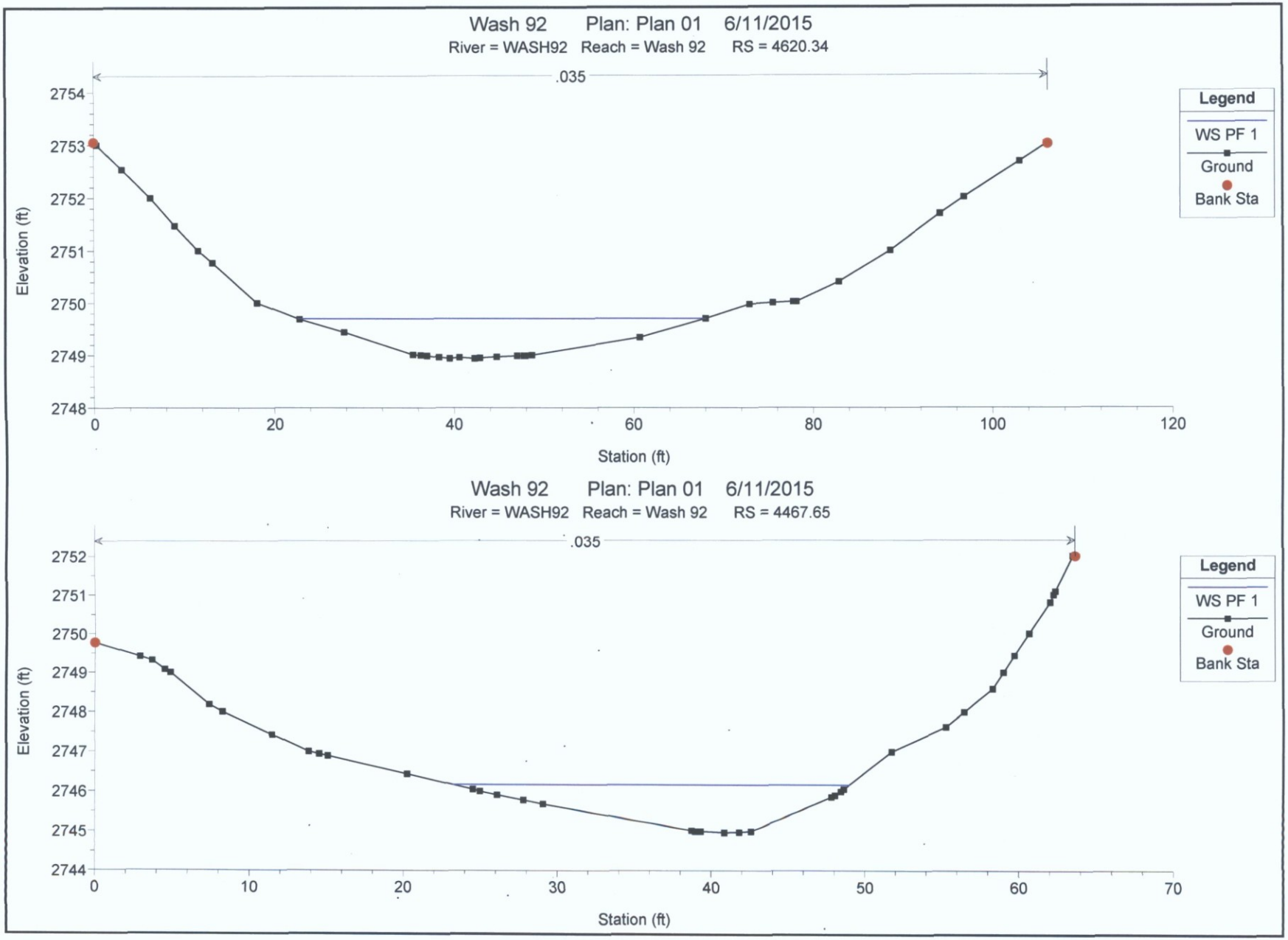

4620.34
4467.65
4318.18
4157.15
3970.83
3851.56
3720.89
3588.21
3468.36
WASH 92
3263.65
3079.75
2949.5
2800.13
2677.25
2338.4
2131.93
1942.62
1746.24
1634.39
1439.07
1285.08
1215.68
1131.95
957.79
891.71
812.24
754.62
520
466.42
360.32
288.2
129.07
0
Wash 92

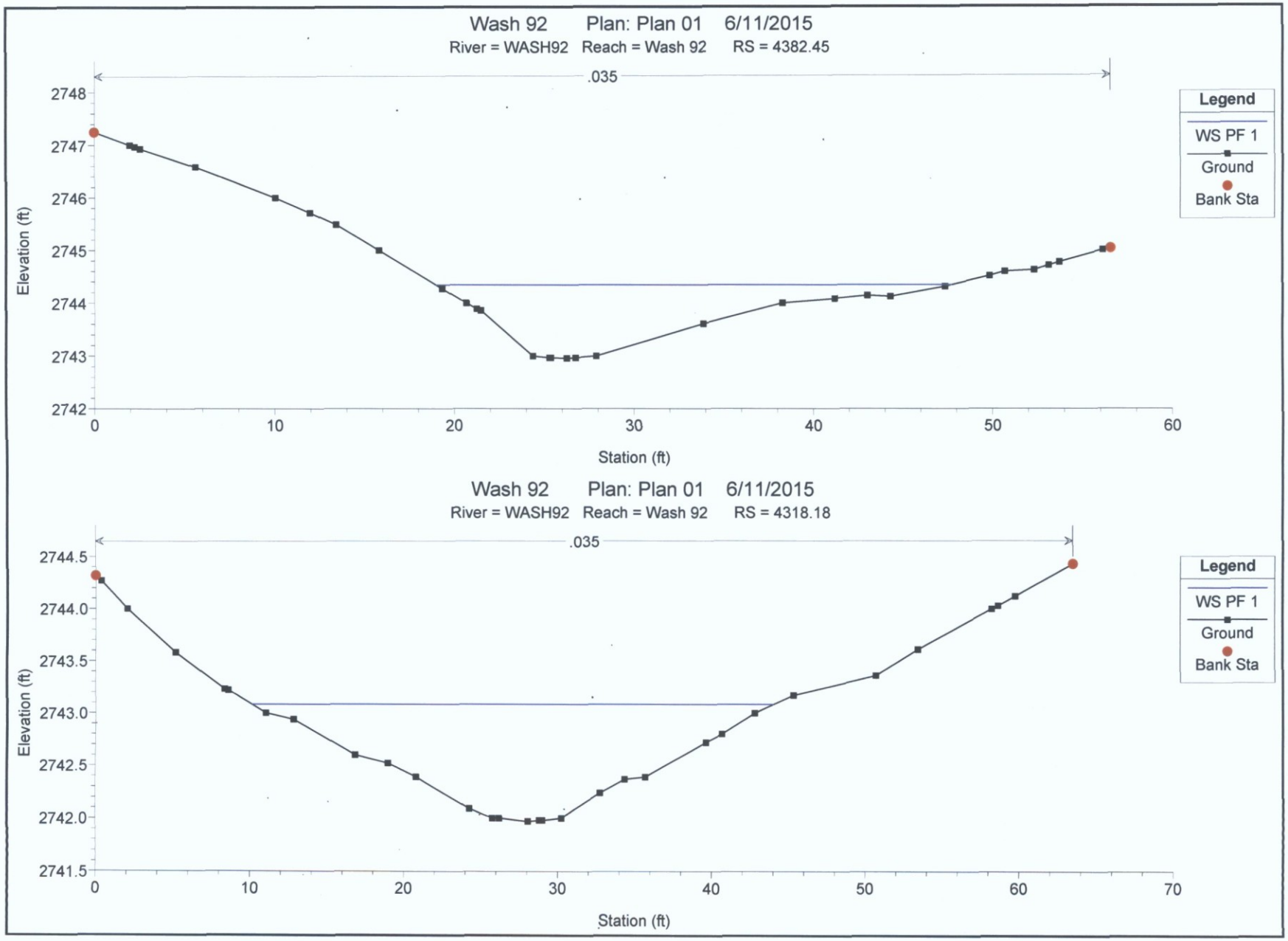
HEC-RAS Plan: Plan 01 River: WASH92 Reach: Wash 92 Profile: PF 1

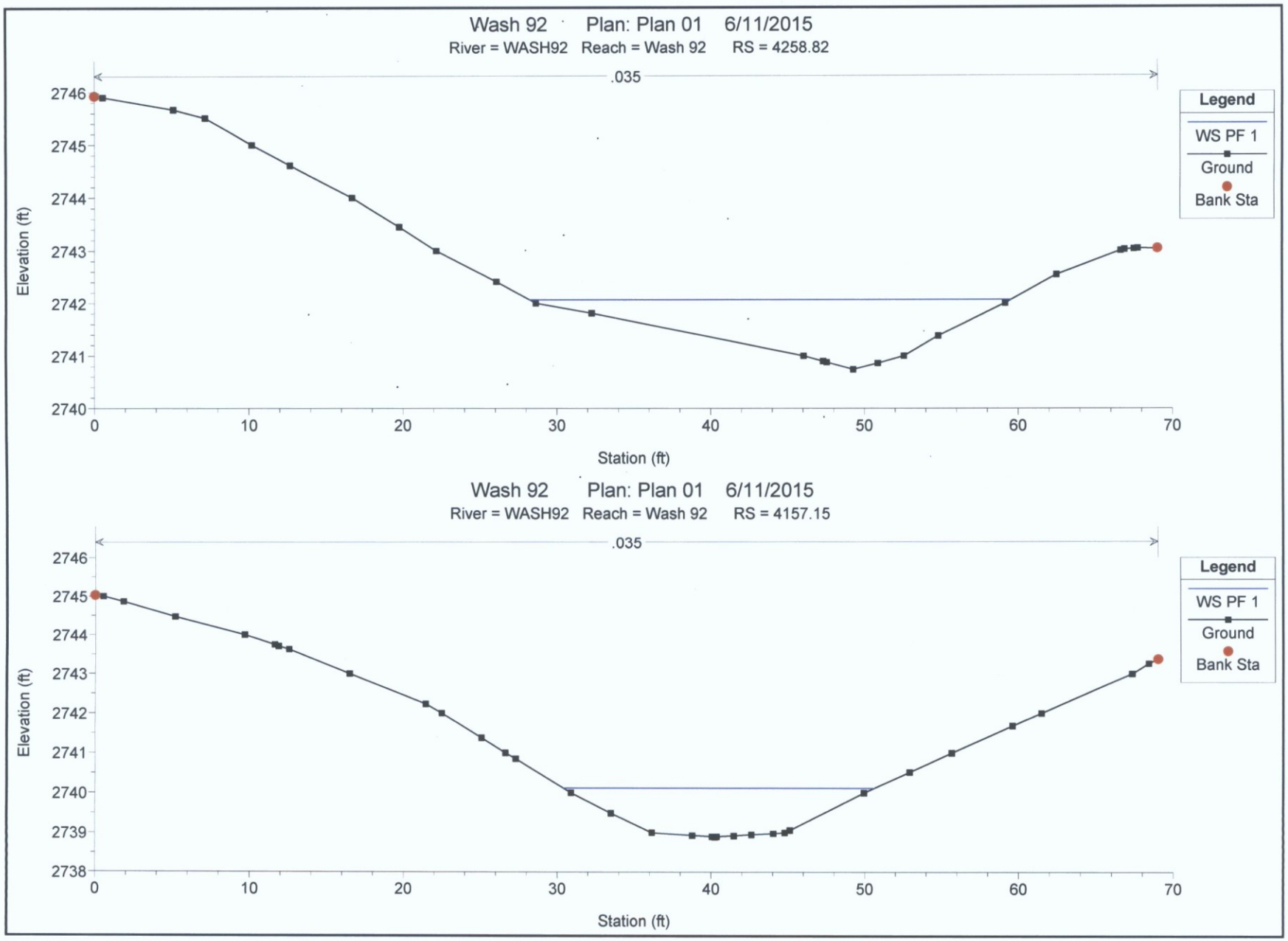
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Wash 92	4620.34	PF 1	86.00	2748.94	2749.70	2749.70	2749.94	0.023369	3.96	21.70	45.43	1.01
Wash 92	4467.65	PF 1	86.00	2744.97	2746.17	2746.17	2746.52	0.020895	4.80	17.92	25.75	1.01
Wash 92	4382.45	PF 1	86.00	2742.96	2744.34	2744.34	2744.67	0.021679	4.64	18.53	28.73	1.02
Wash 92	4318.18	PF 1	86.00	2741.97	2743.08	2743.05	2743.35	0.018984	4.19	20.55	33.87	0.95
Wash 92	4258.82	PF 1	86.00	2740.74	2742.06	2742.00	2742.32	0.015862	4.09	21.03	31.31	0.88
Wash 92	4157.15	PF 1	86.00	2738.89	2740.12	2740.12	2740.53	0.019556	5.18	16.62	20.20	1.01
Wash 92	4063.44	PF 1	86.00	2736.00	2737.44	2737.44	2737.88	0.019271	5.34	16.10	18.37	1.01
Wash 92	3970.83	PF 1	86.00	2733.83	2735.05	2735.01	2735.39	0.017143	4.63	18.58	24.29	0.93
Wash 92	3851.56	PF 1	150.00	2730.91	2732.75	2732.74	2733.14	0.019729	5.00	29.97	38.42	1.00
Wash 92	3720.89	PF 1	150.00	2728.93	2730.14	2730.14	2730.50	0.020632	4.76	31.54	45.71	1.01
Wash 92	3588.21	PF 1	150.00	2726.33	2727.23	2727.23	2727.46	0.023846	3.86	38.87	86.01	1.01
Wash 92	3468.36	PF 1	150.00	2722.23	2723.90	2723.77	2724.22	0.013136	4.58	32.75	35.61	0.84
Wash 92	3263.65	PF 1	150.00	2719.00	2720.52	2720.52	2720.98	0.019276	5.49	27.31	30.11	1.02
Wash 92	3079.75	PF 1	199.00	2713.94	2715.50	2715.50	2716.02	0.018181	5.82	34.20	33.01	1.01
Wash 92	2949.5	PF 1	199.00	2710.98	2713.00	2712.94	2713.49	0.015354	5.58	35.66	32.27	0.94
Wash 92	2800.13	PF 1	199.00	2707.99	2710.40	2710.40	2710.99	0.018054	6.15	32.37	28.40	1.02
Wash 92	2677.25	PF 1	199.00	2705.96	2707.71	2707.71	2708.24	0.018241	5.83	34.14	32.92	1.01
Wash 92	2566.63	PF 1	199.00	2702.97	2705.23	2705.23	2705.92	0.017716	6.63	30.00	22.28	1.01
Wash 92	2338.4	PF 1	199.00	2698.92	2700.46	2700.39	2700.90	0.014899	5.28	37.67	36.37	0.91
Wash 92	2131.93	PF 1	199.00	2695.88	2696.96	2696.96	2697.31	0.020217	4.77	41.75	59.34	1.00
Wash 92	1942.62	PF 1	199.00	2689.89	2690.79	2690.77	2691.04	0.020291	4.02	49.56	91.33	0.96
Wash 92	1746.24	PF 1	199.00	2685.00	2686.57	2686.57	2686.82	0.022868	3.98	49.98	101.94	1.00
Wash 92	1634.39	PF 1	243.00	2682.96	2684.35	2684.28	2684.65	0.015436	4.37	55.62	73.36	0.88
Wash 92	1439.07	PF 1	243.00	2678.99	2680.83	2680.83	2681.39	0.017842	5.98	40.67	37.29	1.01
Wash 92	1285.08	PF 1	243.00	2675.55	2676.65		2676.75	0.006067	2.57	94.40	137.30	0.55
Wash 92	1215.68	PF 1	243.00	2673.98	2675.72	2675.66	2676.08	0.015878	4.77	50.90	59.94	0.91
Wash 92	1131.95	PF 1	243.00	2672.00	2674.23	2674.23	2674.58	0.020070	4.78	50.88	71.34	1.00
Wash 92	957.79	PF 1	243.00	2668.91	2670.36	2670.33	2670.86	0.016723	5.69	42.73	40.23	0.97
Wash 92	891.71	PF 1	243.00	2666.98	2669.34	2669.22	2669.87	0.013425	5.82	41.73	31.85	0.90
Wash 92	812.24	PF 1	243.00	2665.83	2667.96	2667.96	2668.66	0.016772	6.74	36.03	26.00	1.01
Wash 92	754.62	PF 1	243.00	2663.99	2666.89		2667.22	0.008012	4.60	52.85	39.15	0.70
Wash 92	700.87	PF 1	253.00	2662.92	2665.98	2665.98	2666.57	0.017934	6.18	40.94	34.67	1.00
Wash 92	637.32	PF 1	253.00	2662.00	2665.11	2663.89	2665.47	0.002800	4.79	52.86	49.78	0.48

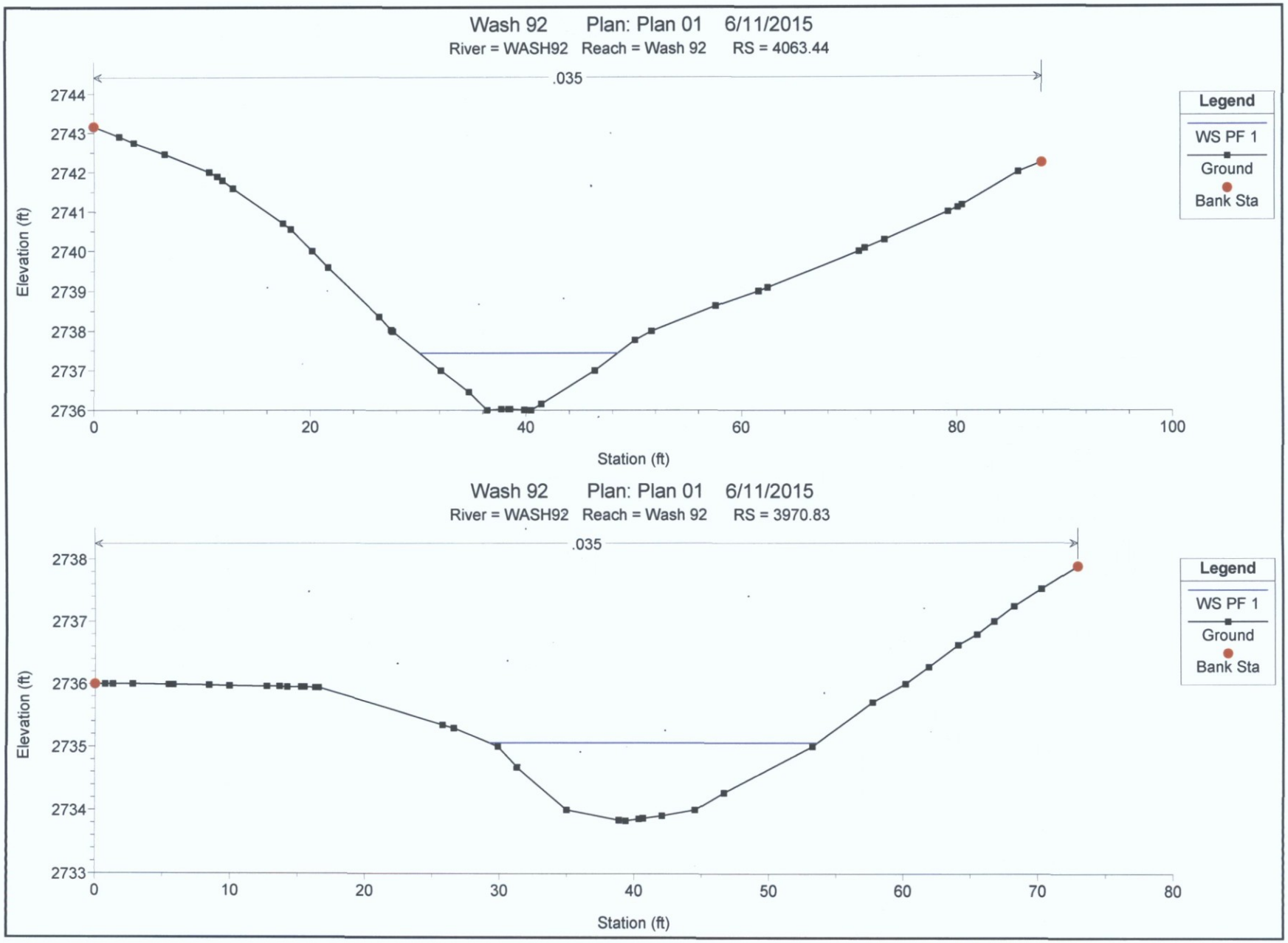
HEC-RAS Plan: Plan 01 River: WASH92 Reach: Wash 92 Profile: PF 1 (Continued)

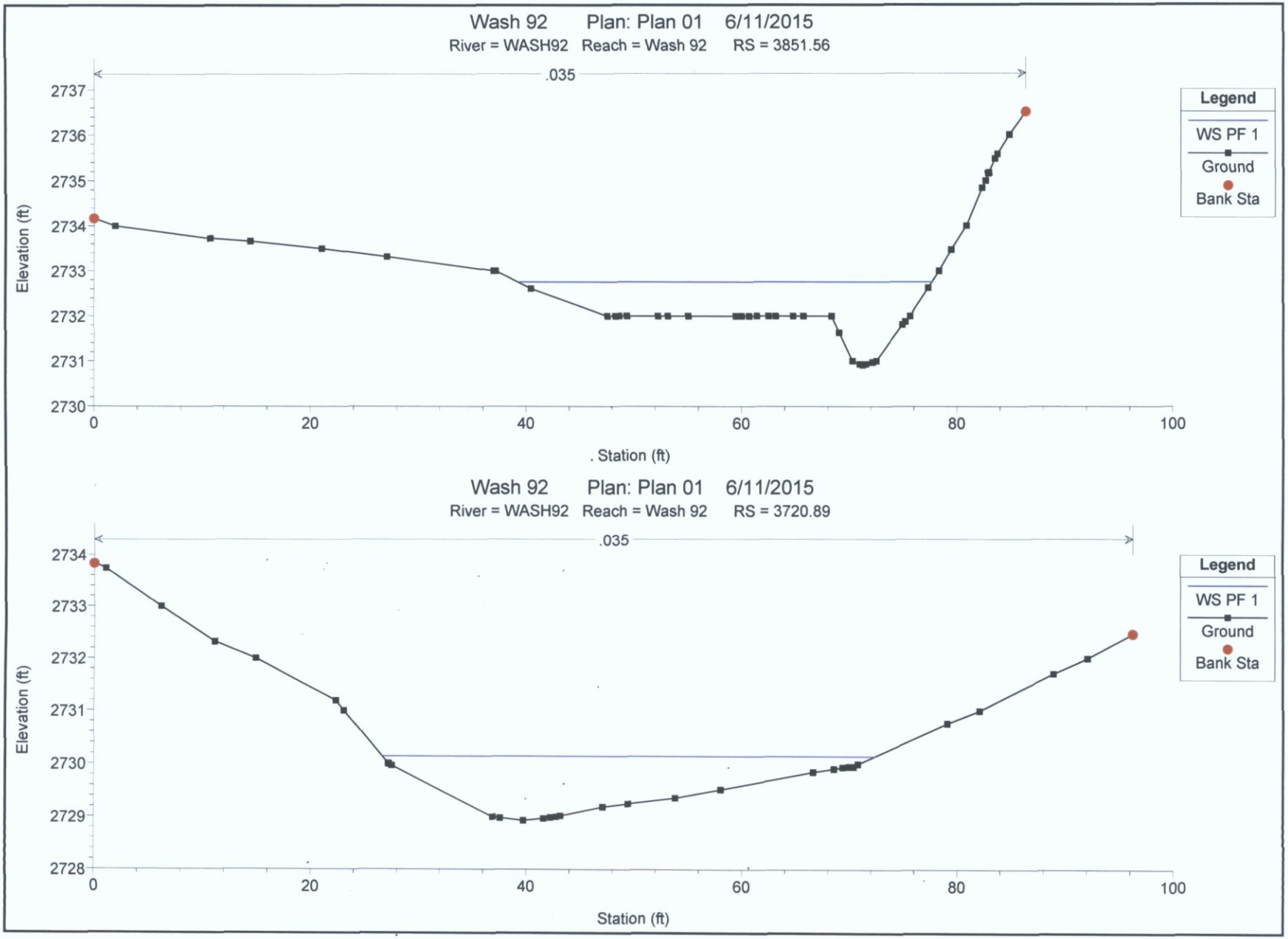
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Wash 92	520		Culvert									
Wash 92	466.42	PF 1	253.00	2658.00	2660.03	2659.90	2660.86	0.011699	7.35	34.42	32.15	0.91
Wash 92	437.64	PF 1	253.00	2657.70	2660.32		2660.43	0.001626	2.62	96.55	50.00	0.33
Wash 92	400		Lat Struct									
Wash 92	360.32	PF 1	104.83	2657.00	2660.27		2660.31	0.000526	1.62	64.64	28.81	0.19
Wash 92	331.87	PF 1	104.83	2656.70	2659.50	2658.81	2660.11	0.005454	6.23	16.82	26.99	0.66
Wash 92	300		Culvert									
Wash 92	288.2	PF 1	104.83	2656.00	2658.11	2658.11	2659.18	0.014081	8.28	12.65	24.06	1.01
Wash 92	227.45	PF 1	104.83	2653.90	2655.09	2655.09	2655.49	0.019780	5.08	20.63	26.09	1.01
Wash 92	129.07	PF 1	104.83	2652.00	2653.28		2653.56	0.011479	4.23	24.81	27.49	0.78
Wash 92	105.51	PF 1	104.83	2651.99	2653.08		2653.27	0.010778	3.45	30.35	43.57	0.73
Wash 92	66.39	PF 1	104.83	2651.74	2652.42	2652.42	2652.67	0.021815	4.06	25.82	78.06	0.99
Wash 92	0	PF 1	104.83	2649.99	2650.88	2650.85	2651.09	0.020018	3.66	28.84	61.11	0.93

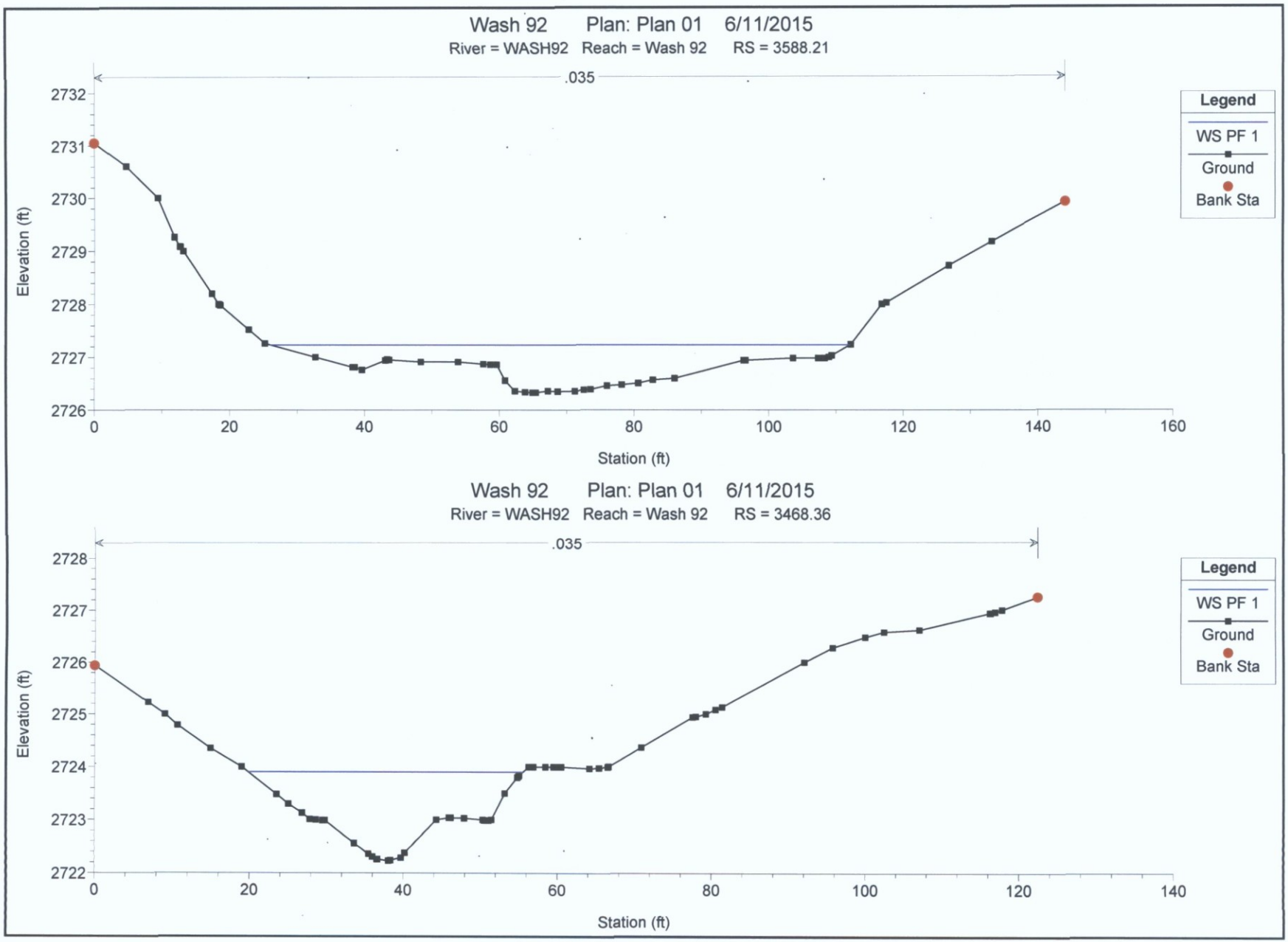

Wash 92 Plan: Plan 01 6/11/2015
River = WASH92 Reach = Wash 92 RS = 4620.34
.035
Elevation (ft)
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
Wash 92 Plan: Plan 01 6/11/2015
River = WASH92 Reach = Wash 92 RS = 4467.65
.035
Elevation (ft)
Station (ft)
Legend
WS PF 1
Ground
Bank Sta

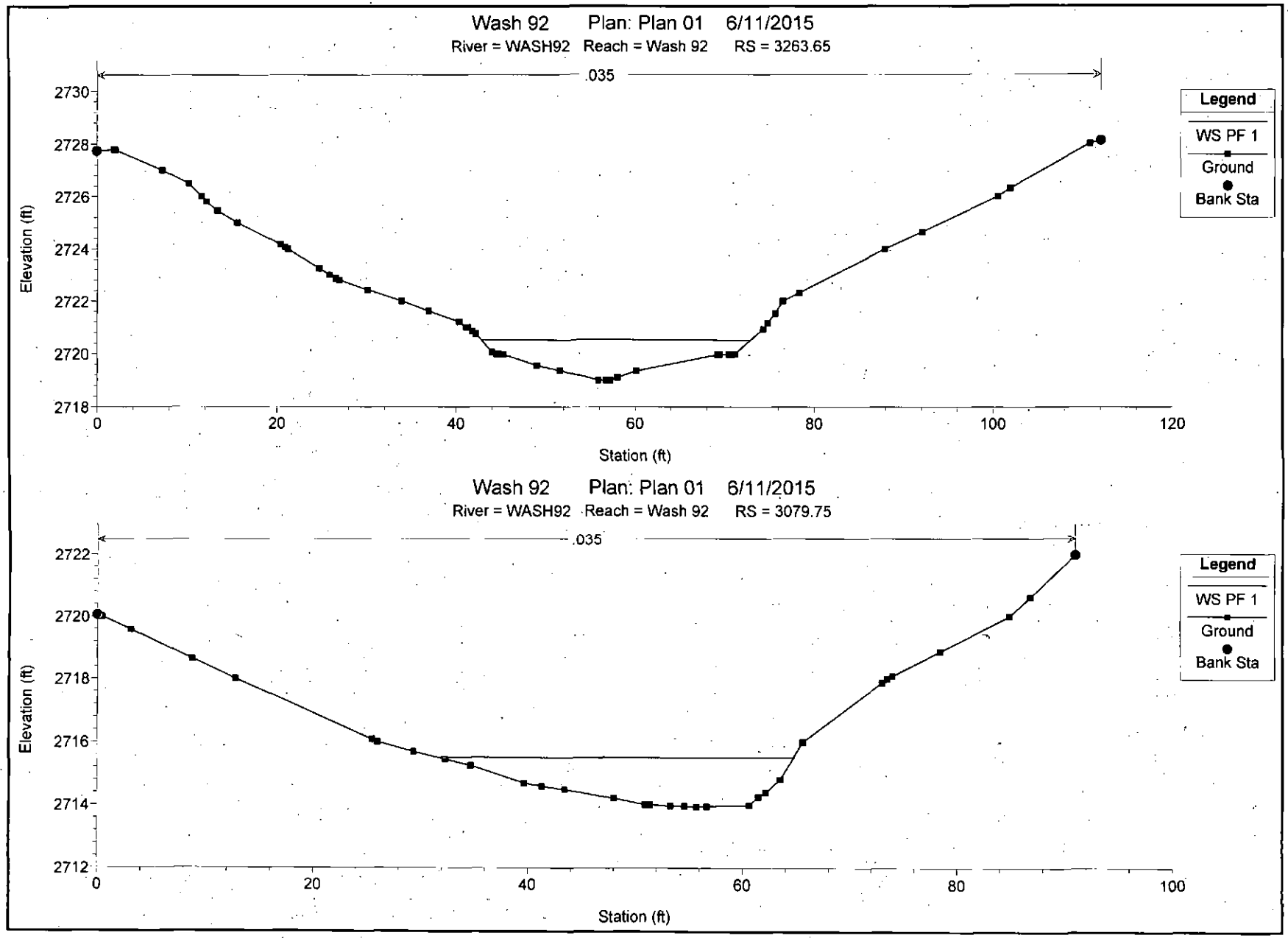

Wash 92 Plan: Plan 01 6/11/2015
River = WASH92 Reach = Wash 92 RS = 4382.45
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Wash 92 Plan: Plan 01 6/11/2015
River = WASH92 Reach = Wash 92 RS = 4318.18
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

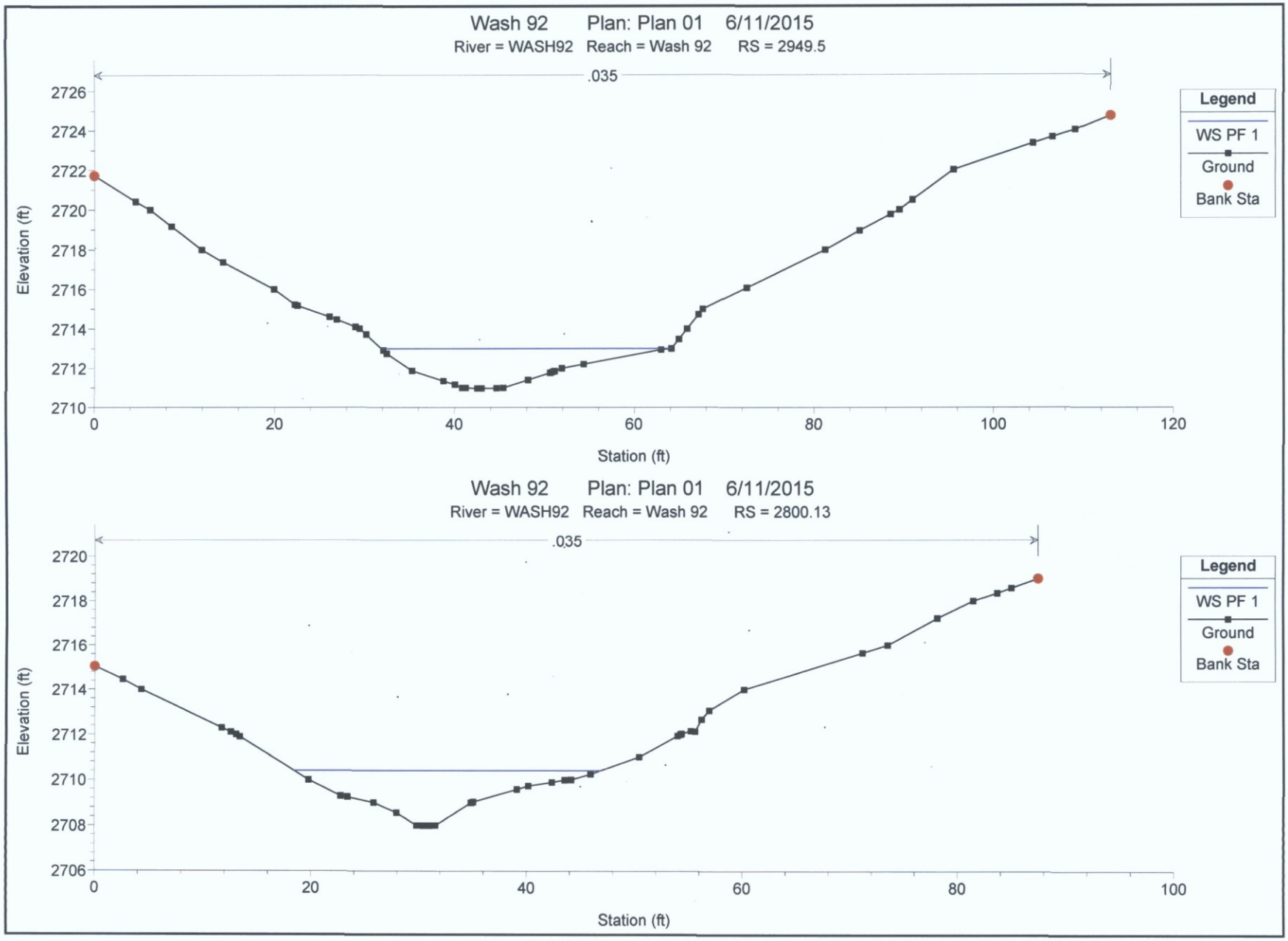

Wash 92 Plan: Plan 01 6/11/2015
River = WASH92 Reach = Wash 92 RS = 4258.82
.035
Elevation (ft)
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
Wash 92 Plan: Plan 01 6/11/2015
River = WASH92 Reach = Wash 92 RS = 4157.15
.035
Elevation (ft)
Station (ft)
Legend
WS PF 1
Ground
Bank Sta

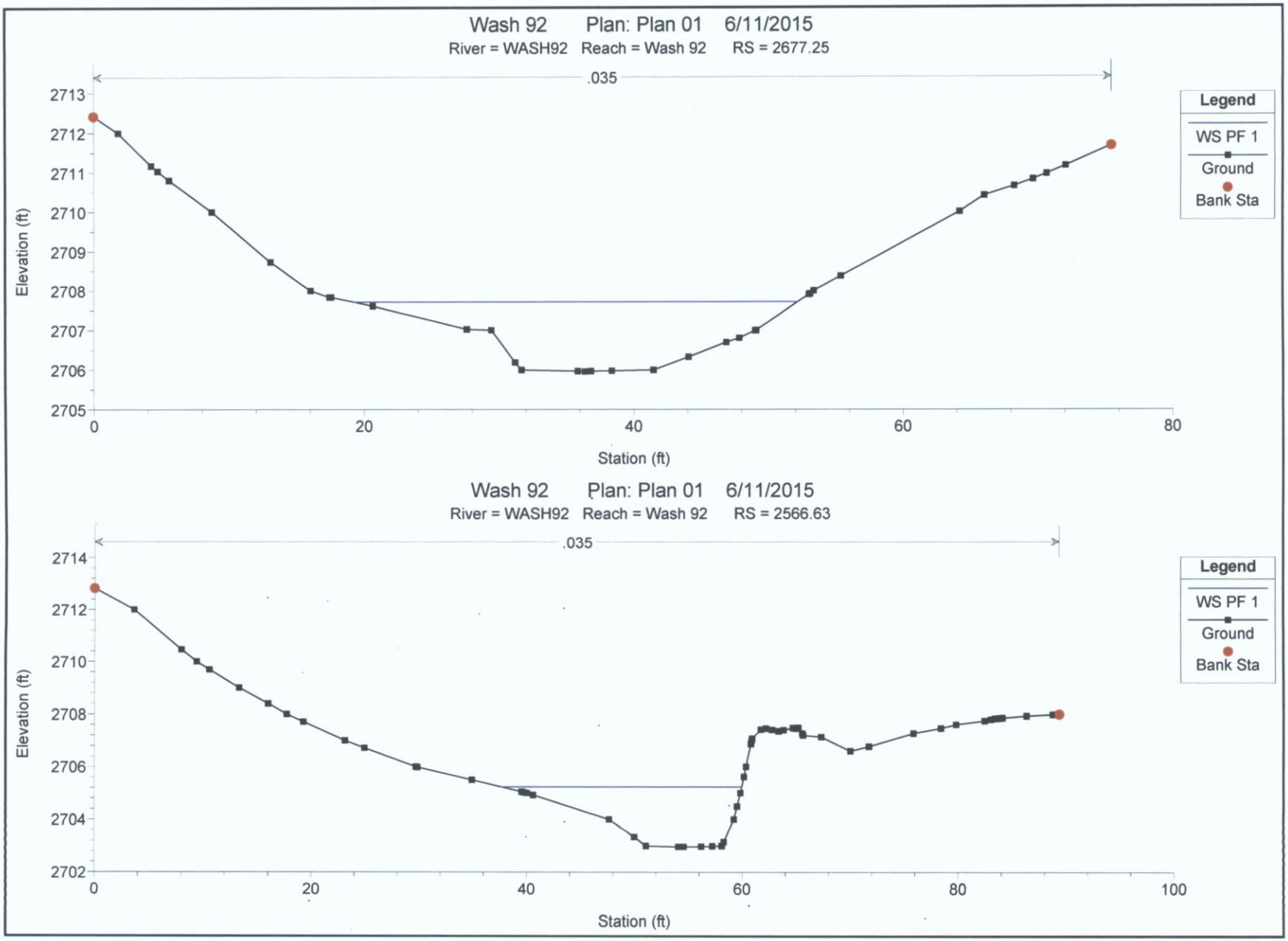

Wash 92 Plan: Plan 01 6/11/2015
River = WASH92 Reach = Wash 92 RS = 4063.44
.035
Elevation (ft)
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
Wash 92 Plan: Plan 01 6/11/2015
River = WASH92 Reach = Wash 92 RS = 3970.83
.035
Elevation (ft)
Station (ft)
Legend
WS PF 1
Ground
Bank Sta

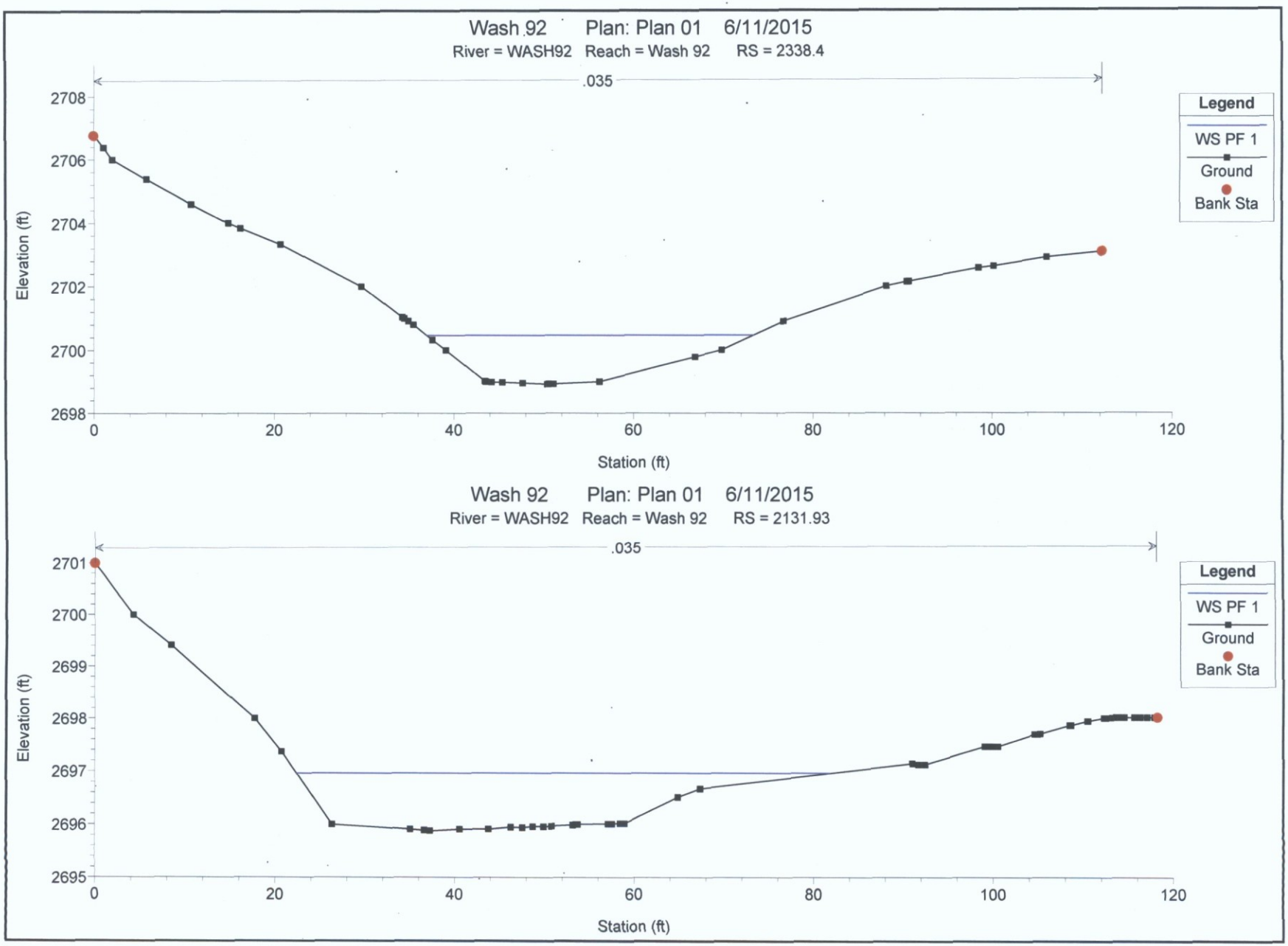

Wash 92 Plan: Plan 01 6/11/2015
River = WASH92 Reach = Wash 92 RS = 3851.56
.035
Elevation (ft)
2737
2736
2735
2734
2733
2732
2731
2730
0
20
40
60
80
100
. Station (ft)
Legend
WS PF 1
Ground
Bank Sta
Wash 92 Plan: Plan 01 6/11/2015
River = WASH92 Reach = Wash 92 RS = 3720.89
.035
Elevation (ft)
2734
2733
2732
2731
2730
2729
2728
0
20
40
60
80
100
Station (ft)
Legend
WS PF 1
Ground
Bank Sta

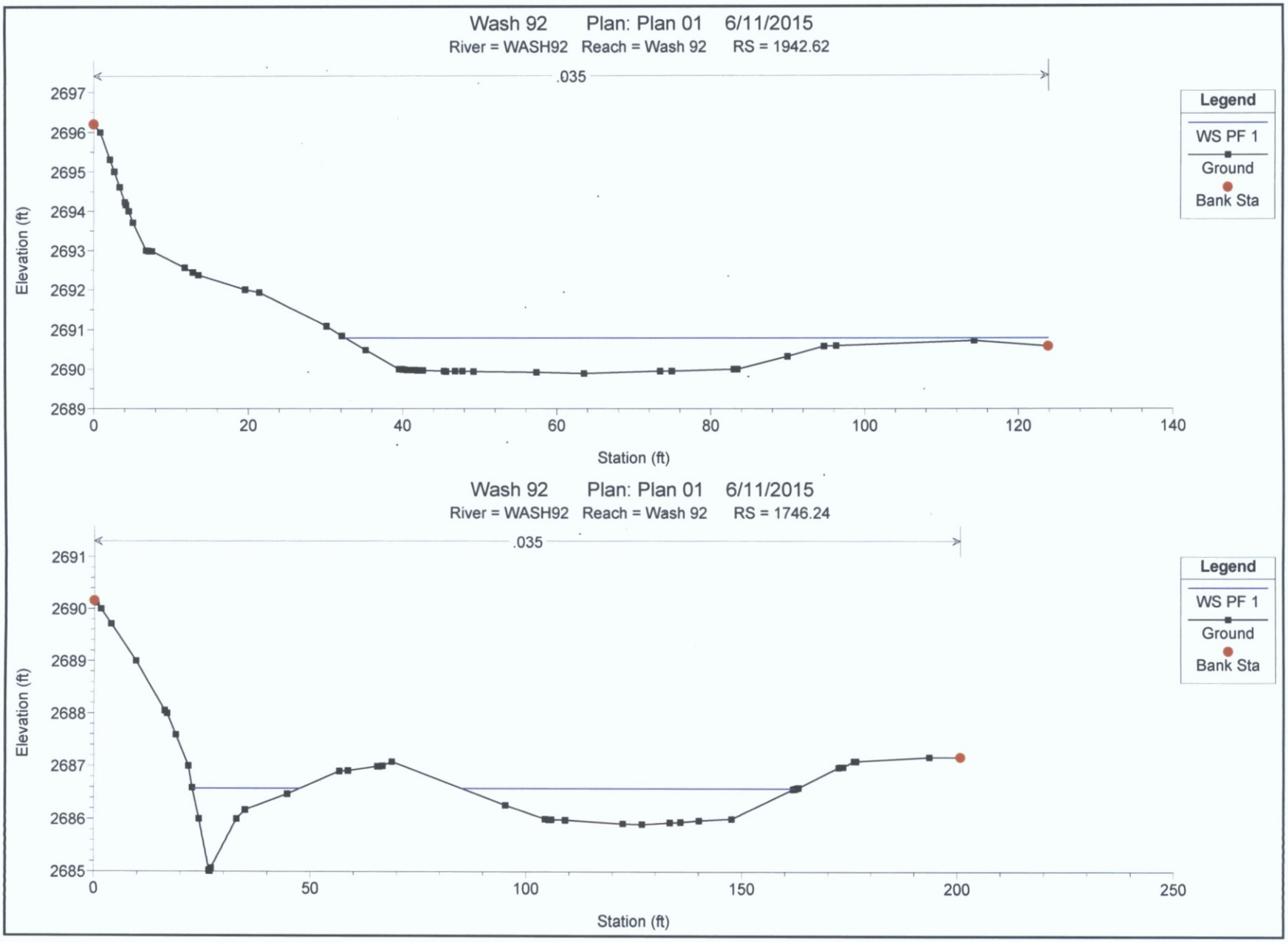

Wash 92 Plan: Plan 01 6/11/2015
River = WASH92 Reach = Wash 92 RS = 3588.21
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2732
2731
2730
2729
2728
2727
2726
0
20
40
60
80
100
120
140
160
Wash 92 Plan: Plan 01 6/11/2015
River = WASH92 Reach = Wash 92 RS = 3468.36
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2728
2727
2726
2725
2724
2723
2722
0
20
40
60
80
100
120
140

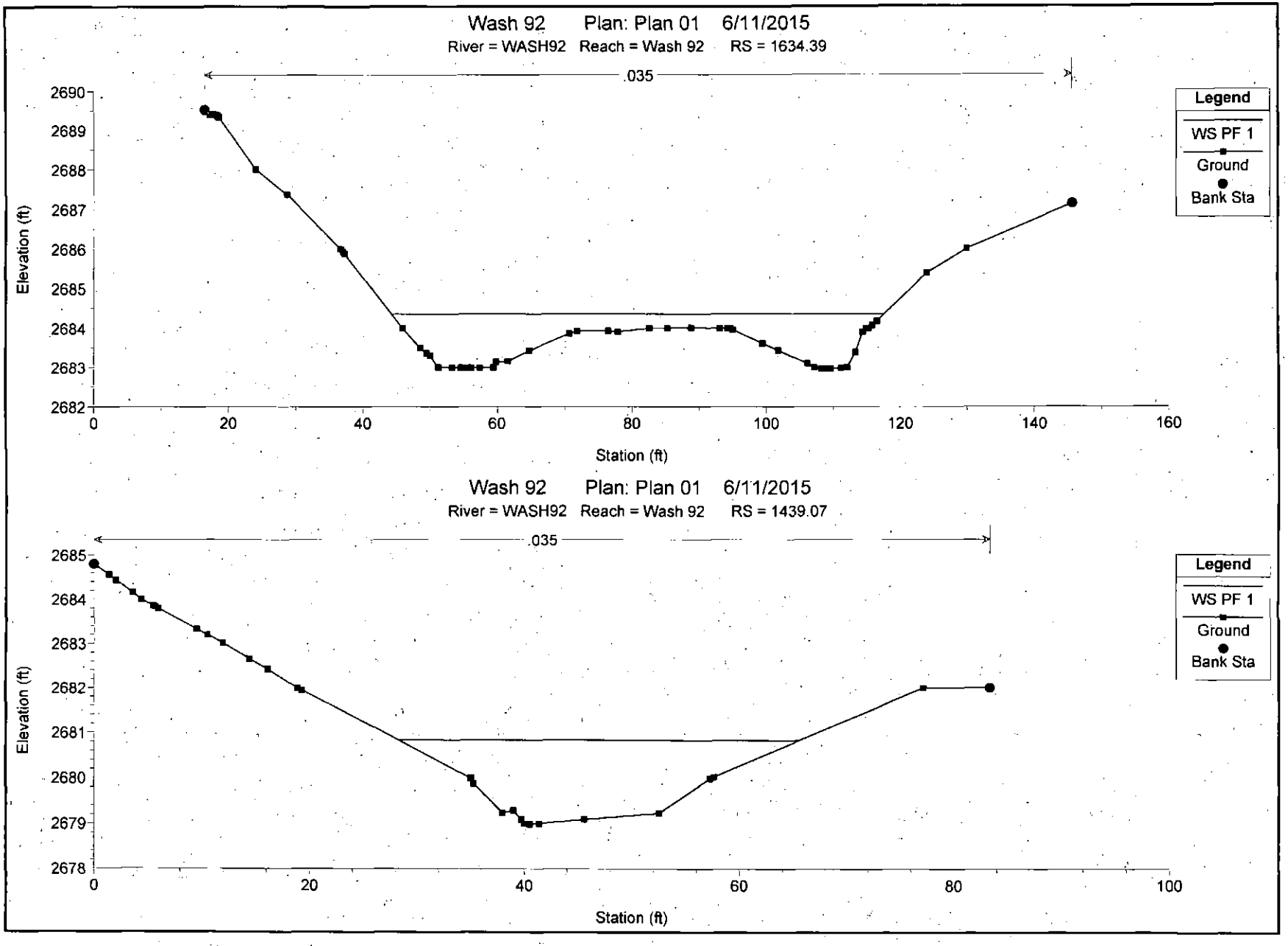

Wash 92 Plan: Plan 01 6/11/2015
River = WASH92 Reach = Wash 92 RS = 3263.65
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2730
2728
2726
2724
2722
2720
2718
0
20
40
60
80
100
120
Wash 92 Plan: Plan 01 6/11/2015
River = WASH92 Reach = Wash 92 RS = 3079.75
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2722
2720
2718
2716
2714
2712
0
20
40
60
80
100

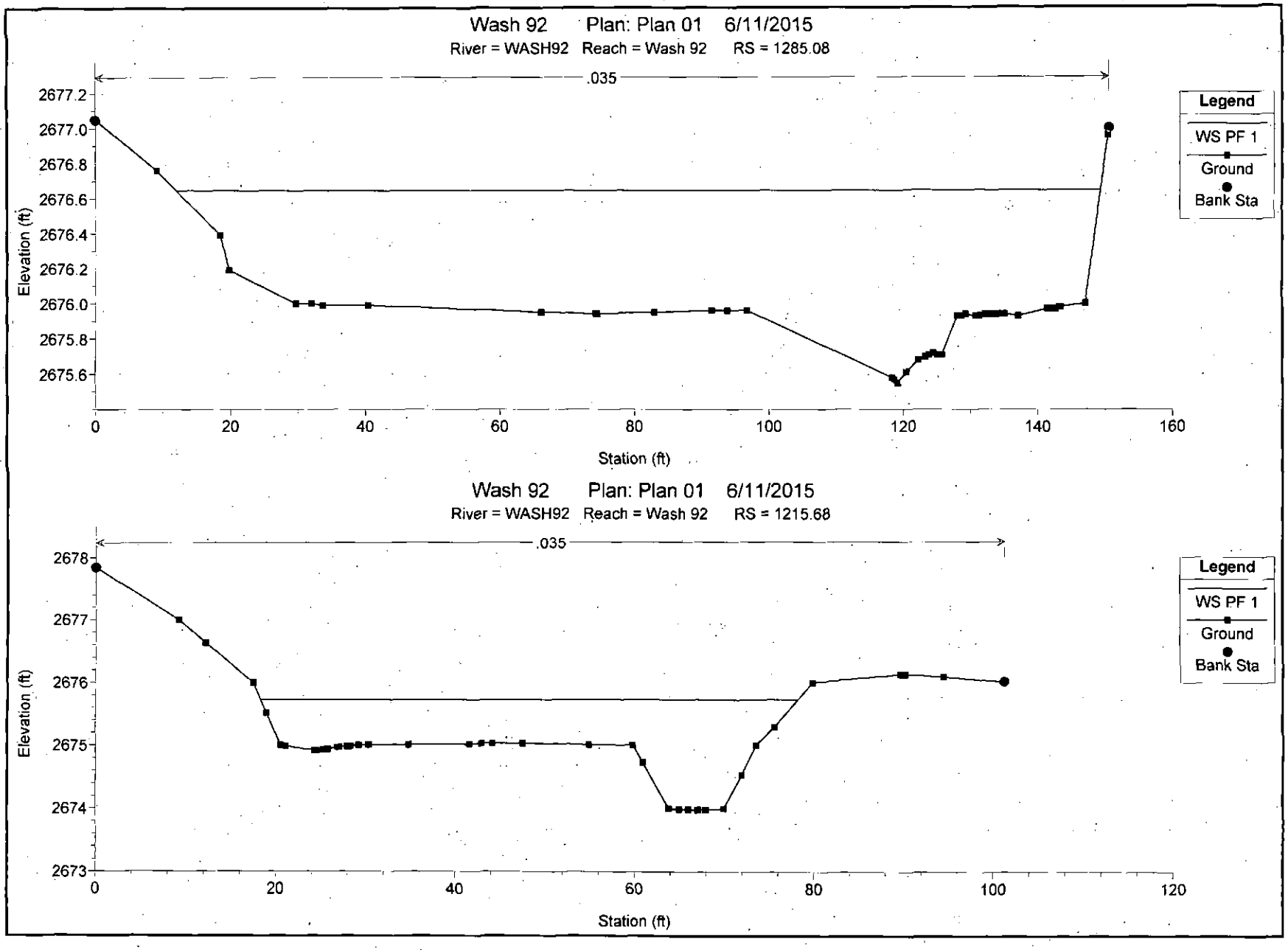

Wash 92 Plan: Plan 01 6/11/2015
River = WASH92 Reach = Wash 92 RS = 2949.5
.035
Elevation (ft)
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
Wash 92 Plan: Plan 01 6/11/2015
River = WASH92 Reach = Wash 92 RS = 2800.13
.035
Elevation (ft)
Station (ft)
Legend
WS PF 1
Ground
Bank Sta

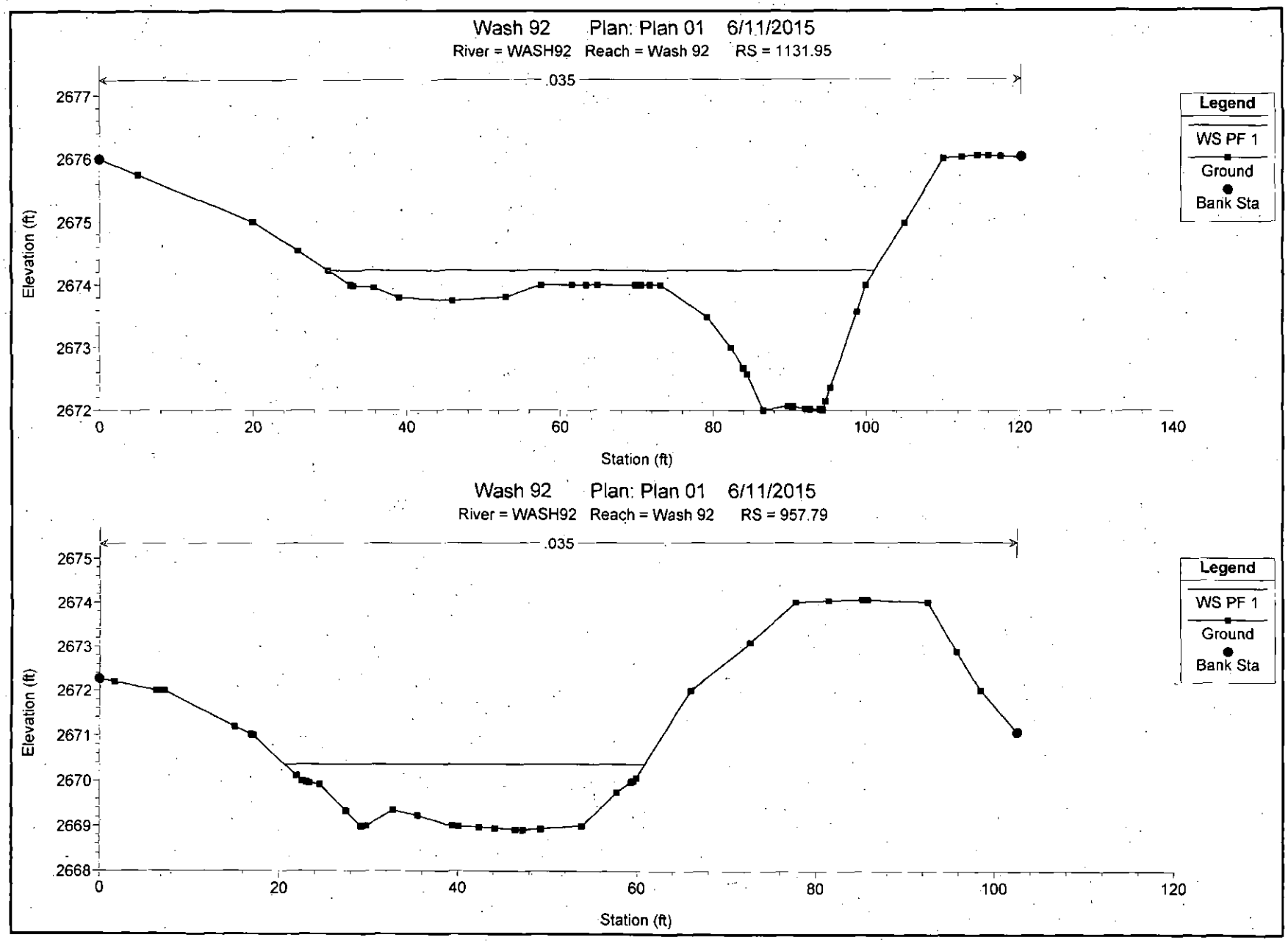

Wash 92 Plan: Plan 01 6/11/2015
River = WASH92 Reach = Wash 92 RS = 2677.25
.035
Elevation (ft)
2713
2712
2711
2710
2709
2708
2707
2706
2705
0
20
40
60
80
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
Wash 92 Plan: Plan 01 6/11/2015
River = WASH92 Reach = Wash 92 RS = 2566.63
.035
Elevation (ft)
2714
2712
2710
2708
2706
2704
2702
0
20
40
60
80
100
Station (ft)
Legend
WS PF 1
Ground
Bank Sta

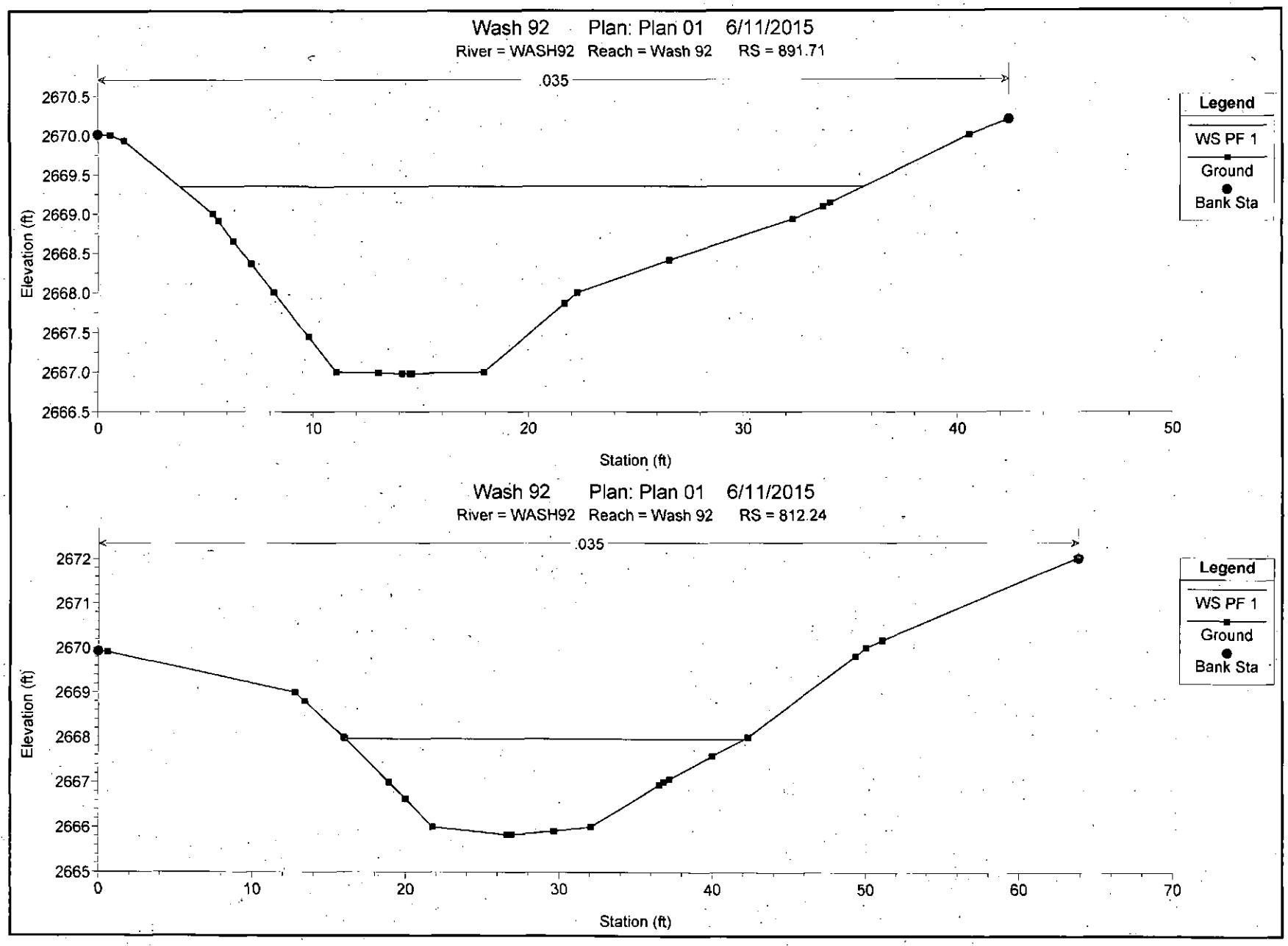

Wash 92 Plan: Plan 01 6/11/2015
River = WASH92 Reach = Wash 92 RS = 2338.4
.035
Elevation (ft)
2708
2706
2704
2702
2700
2698
0
20
40
60
80
100
120
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
Wash 92 Plan: Plan 01 6/11/2015
River = WASH92 Reach = Wash 92 RS = 2131.93
.035
Elevation (ft)
2701
2700
2699
2698
2697
2696
2695
0
20
40
60
80
100
120
Station (ft)
Legend
WS PF 1
Ground
Bank Sta

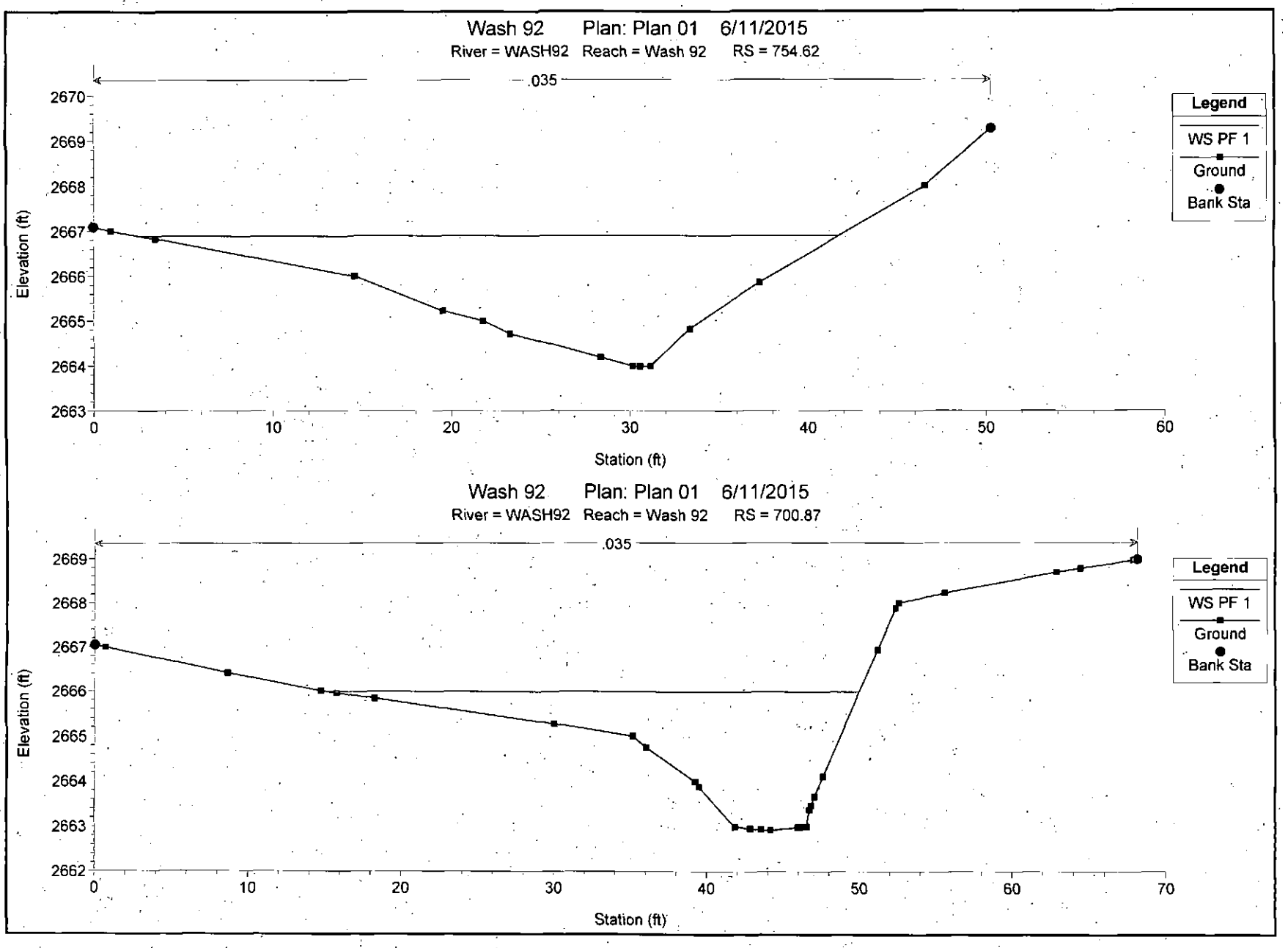

Wash 92 Plan: Plan 01 6/11/2015
River = WASH92 Reach = Wash 92 RS = 1942.62
.035
Elevation (ft)
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
Wash 92 Plan: Plan 01 6/11/2015
River = WASH92 Reach = Wash 92 RS = 1746.24
.035
Elevation (ft)
Station (ft)
Legend
WS PF 1
Ground
Bank Sta

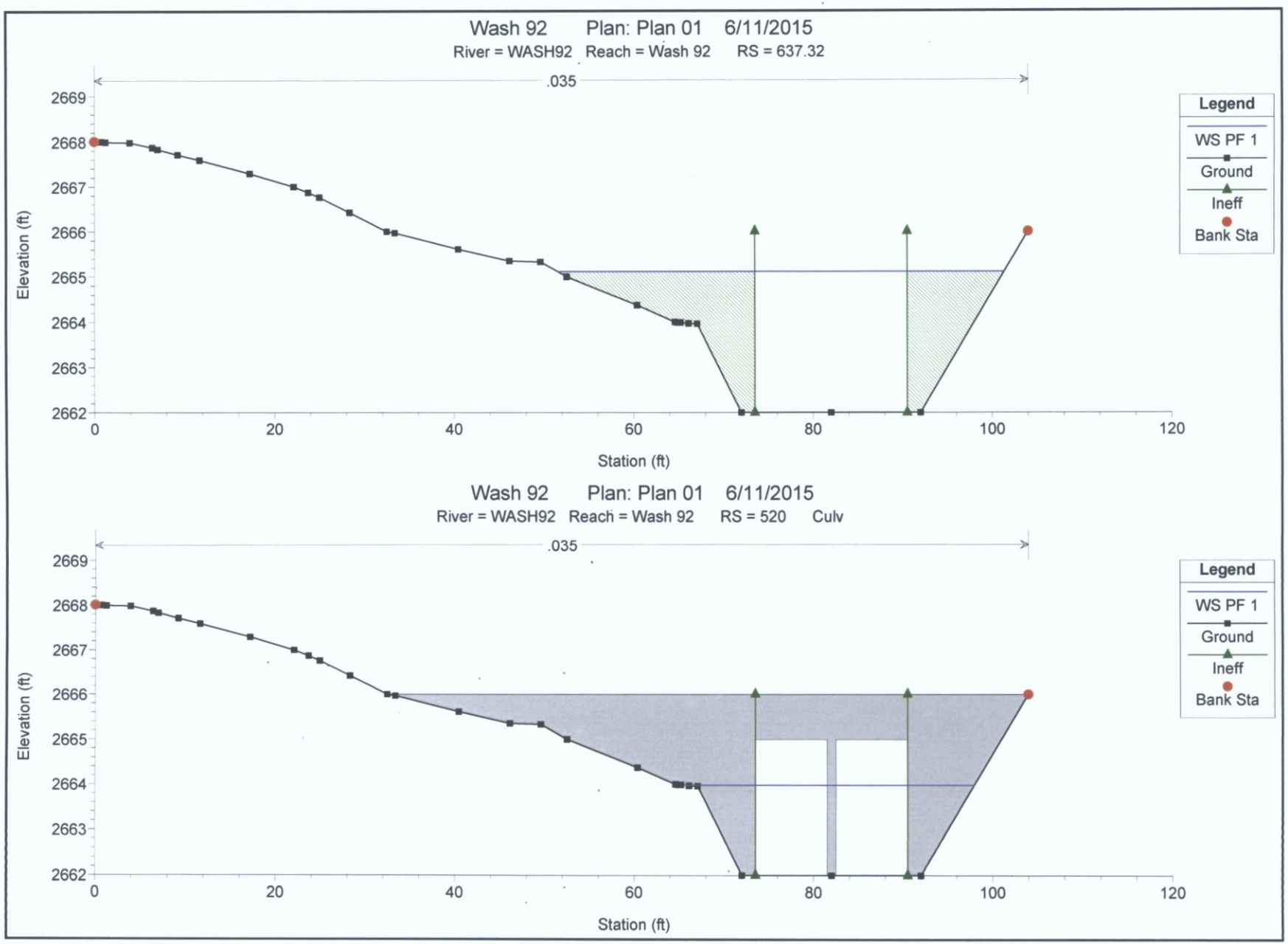

Wash 92 Plan: Plan 01 6/11/2015
River = WASH92 Reach = Wash 92 RS = 1634.39
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2690
2689
2688
2687
2686
2685
2684
2683
2682
0
20
40
60
80
100
120
140
160
Wash 92 Plan: Plan 01 6/11/2015
River = WASH92 Reach = Wash 92 RS = 1439.07
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2685
2684
2683
2682
2681
2680
2679
2678
0
20
40
60
80
100

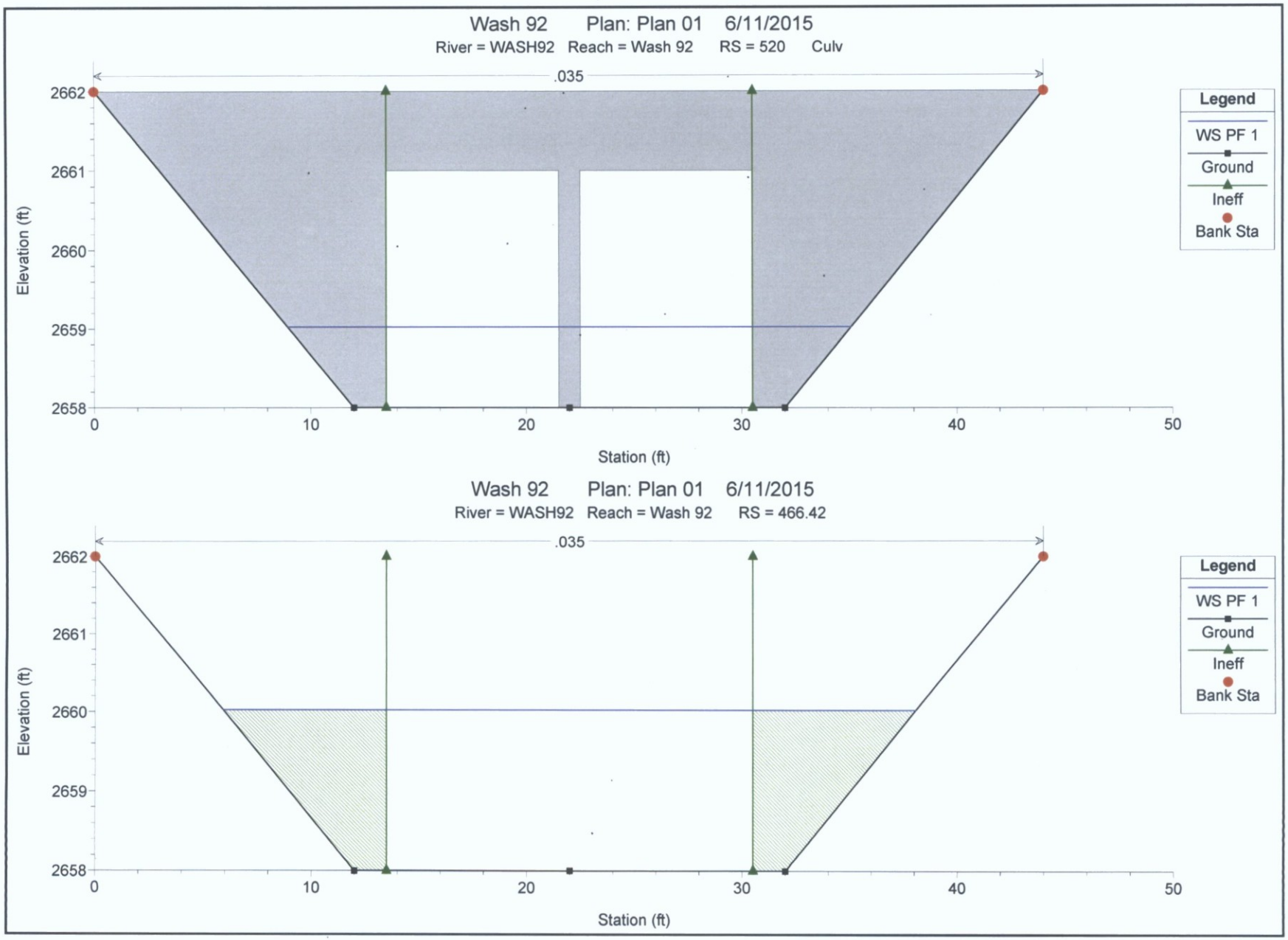

Wash 92 Plan: Plan 01 6/11/2015
River = WASH92 Reach = Wash 92 RS = 1285.08
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Wash 92 Plan: Plan 01 6/11/2015
River = WASH92 Reach = Wash 92 RS = 1215.68
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

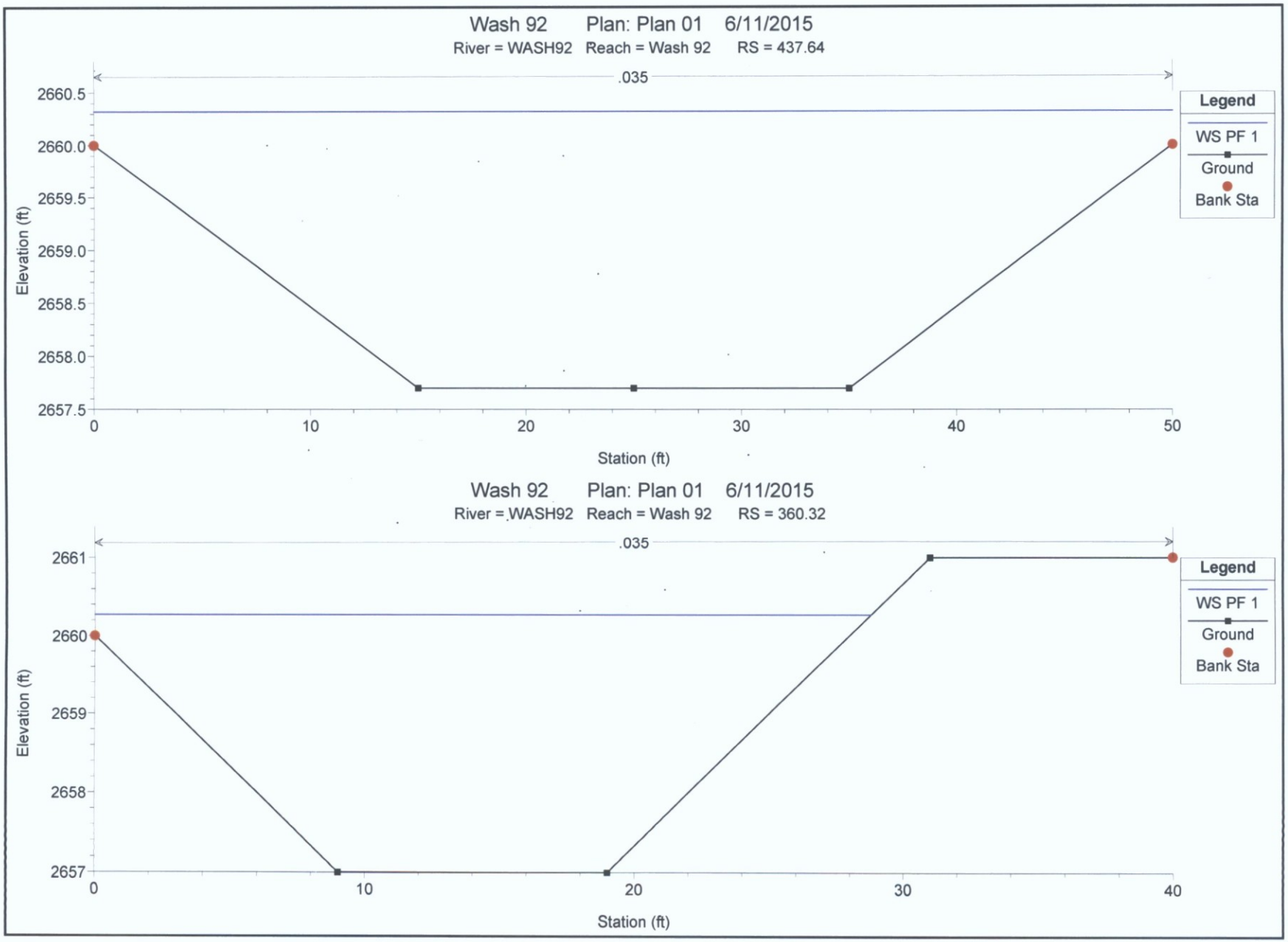

Wash 92 Plan: Plan 01 6/11/2015
River = WASH92 Reach = Wash 92 RS = 1131.95
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2677
2676
2675
2674
2673
2672
0
20
40
60
80
100
120
140
Wash 92 Plan: Plan 01 6/11/2015
River = WASH92 Reach = Wash 92 RS = 957.79
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2675
2674
2673
2672
2671
2670
2669
2668
0
20
40
60
80
100
120

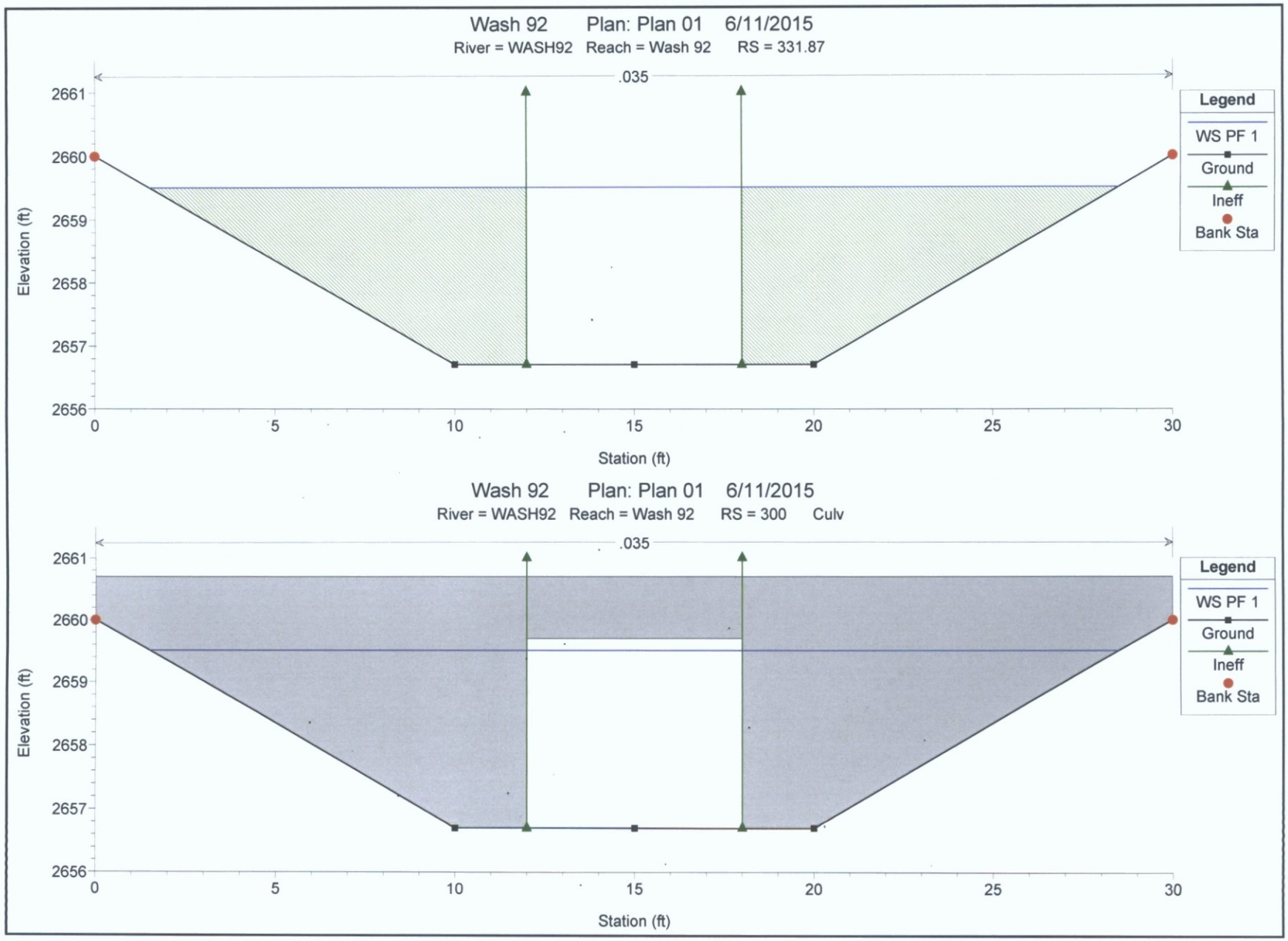

Wash 92 Plan: Plan 01 6/11/2015
River = WASH92 Reach = Wash 92 RS = 891.71
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Wash 92 Plan: Plan 01 6/11/2015
River = WASH92 Reach = Wash 92 RS = 812.24
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

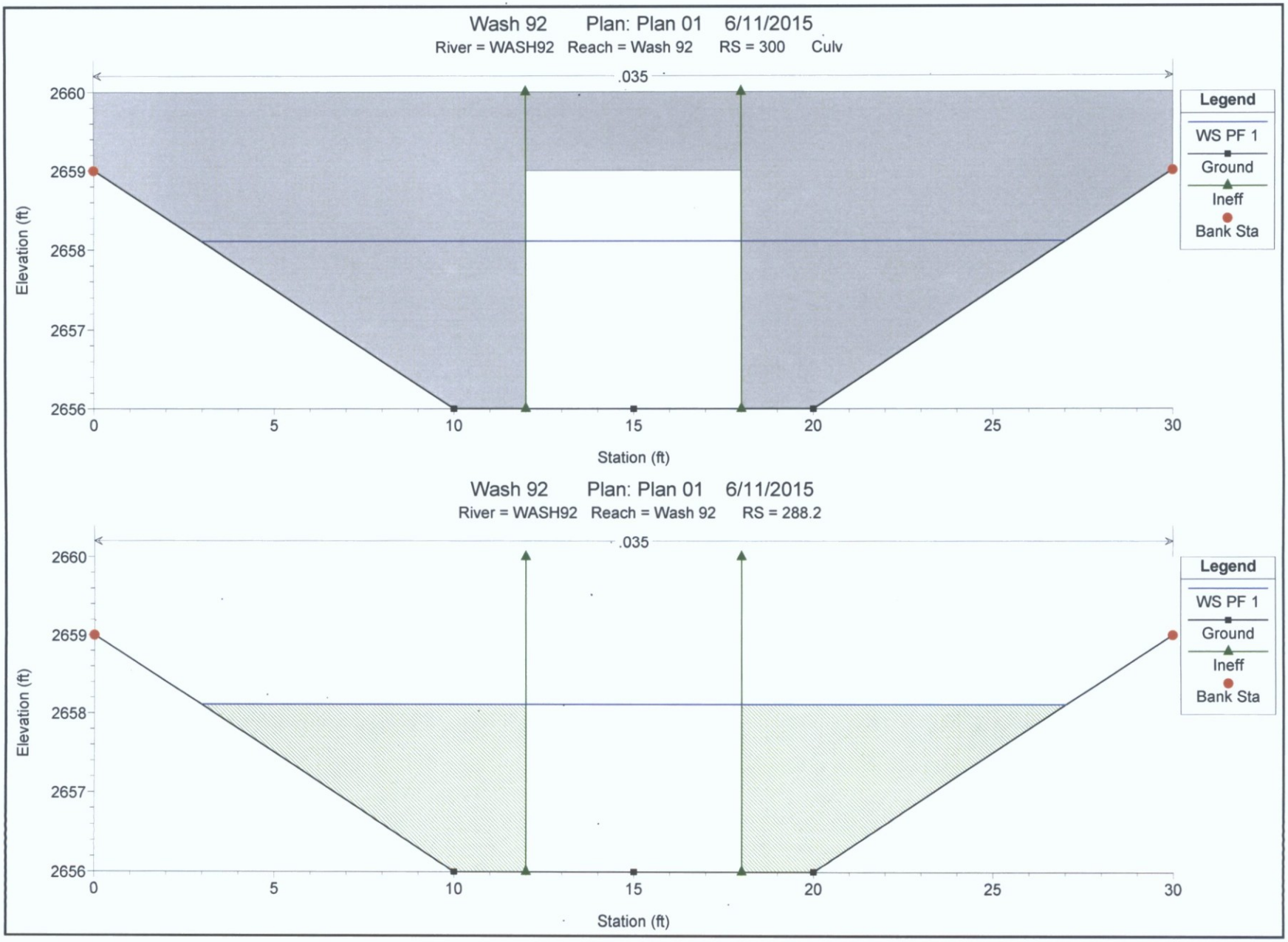

Wash 92 Plan: Plan 01 6/11/2015
River = WASH92 Reach = Wash 92 RS = 754.62
.035
Elevation (ft)
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
Wash 92 Plan: Plan 01 6/11/2015
River = WASH92 Reach = Wash 92 RS = 700.87
.035
Elevation (ft)
Station (ft)
Legend
WS PF 1
Ground
Bank Sta

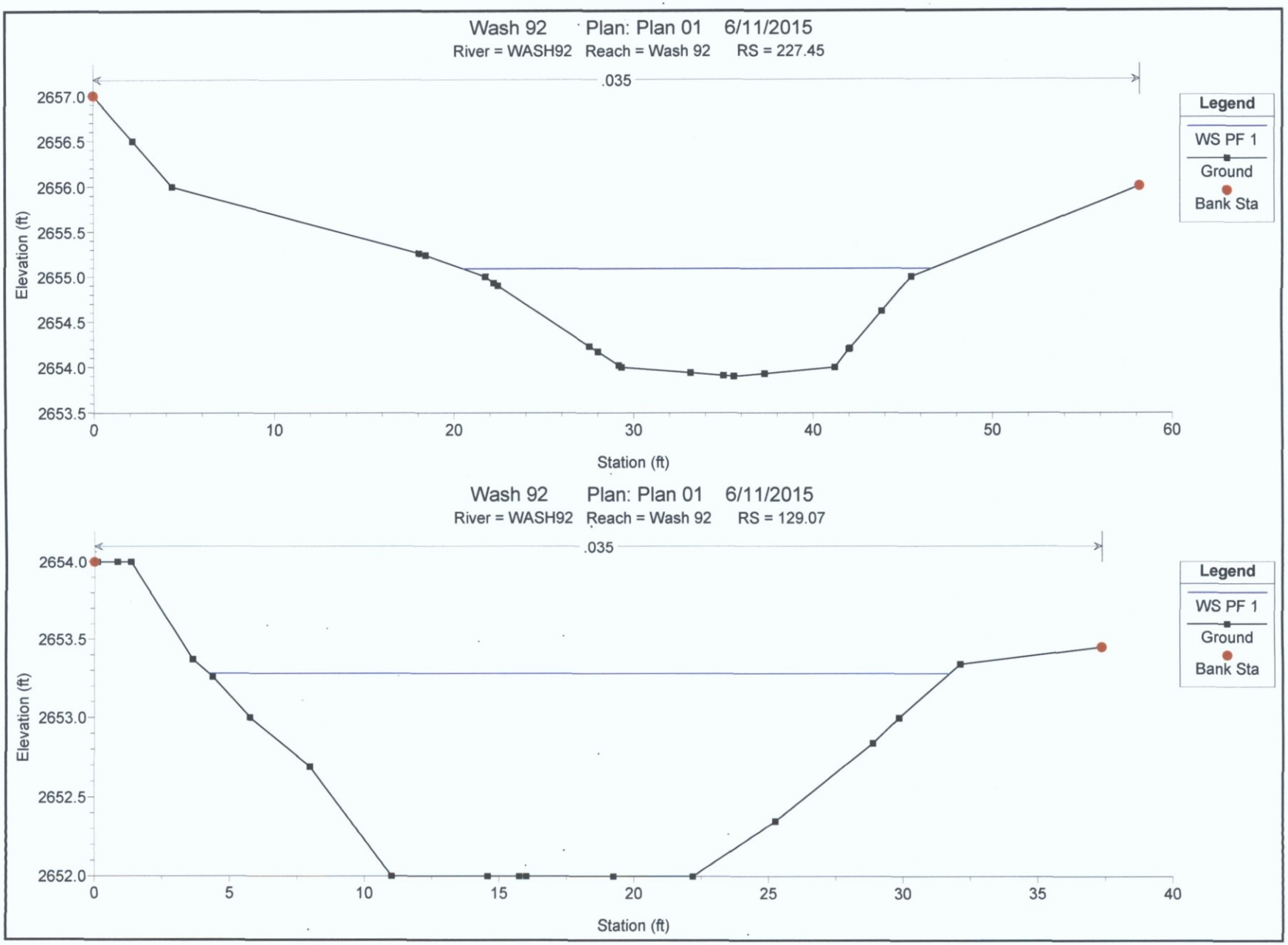

Wash 92 Plan: Plan 01 6/11/2015
River = WASH92 Reach = Wash 92 RS = 637.32
.035
Elevation (ft)
2669
2668
2667
2666
2665
2664
2663
2662
0
20
40
60
80
100
120
Station (ft)
Legend
WS PF 1
Ground
Ineff
Bank Sta
Wash 92 Plan: Plan 01 6/11/2015
River = WASH92 Reach = Wash 92 RS = 520 Culv
.035
Elevation (ft)
2669
2668
2667
2666
2665
2664
2663
2662
0
20
40
60
80
100
120
Station (ft)
Legend
WS PF 1
Ground
Ineff
Bank Sta

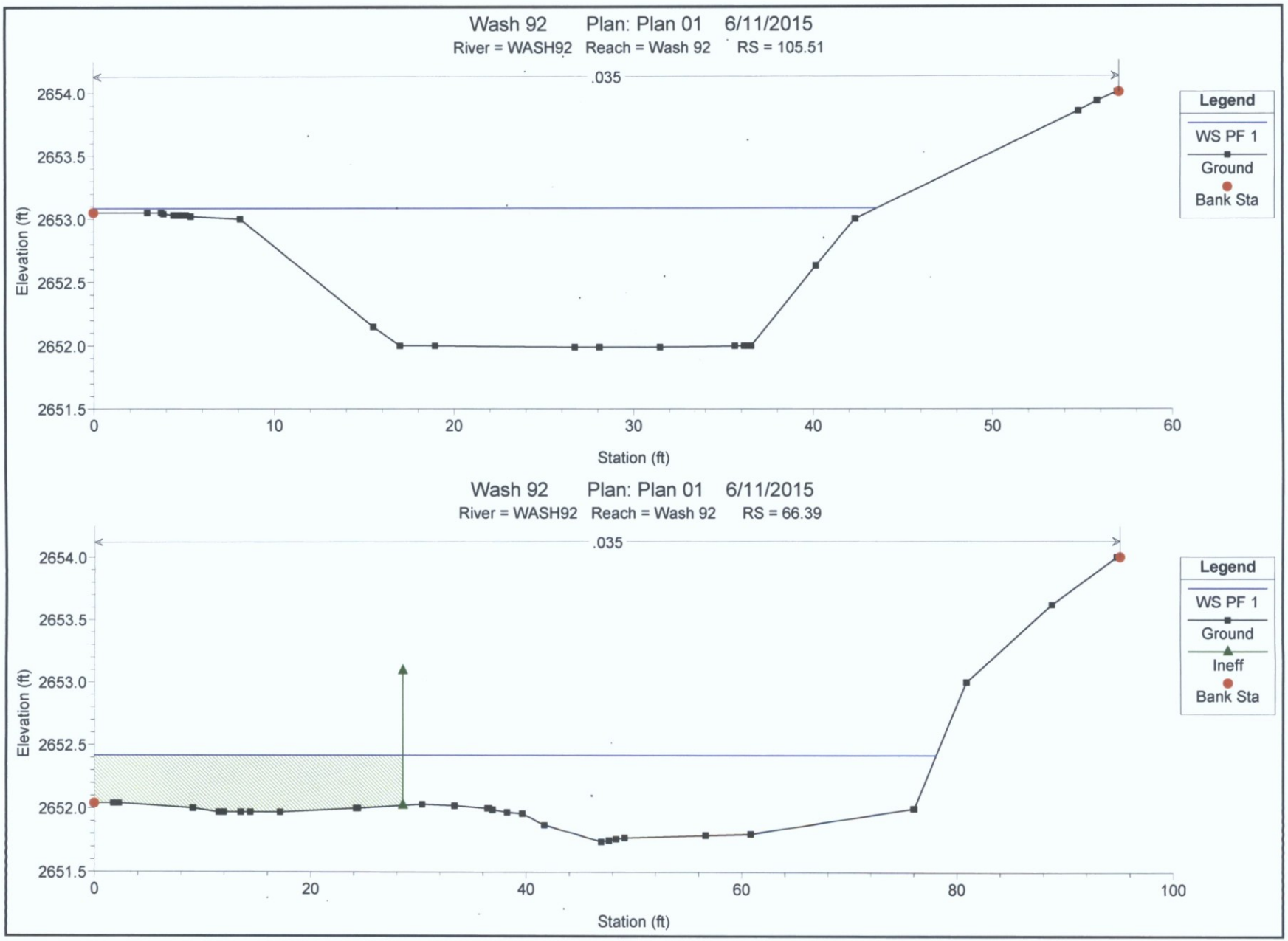

Wash 92 Plan: Plan 01 6/11/2015
River = WASH92 Reach = Wash 92 RS = 520 Culv
.035
2662
2661
2660
2659
2658
Elevation (ft)
0
10
20
30
40
50
Station (ft)
Legend
WS PF 1
Ground
Ineff
Bank Sta
Wash 92 Plan: Plan 01 6/11/2015
River = WASH92 Reach = Wash 92 RS = 466.42
.035
2662
2661
2660
2659
2658
Elevation (ft)
0
10
20
30
40
50
Station (ft)
Legend
WS PF 1
Ground
Ineff
Bank Sta

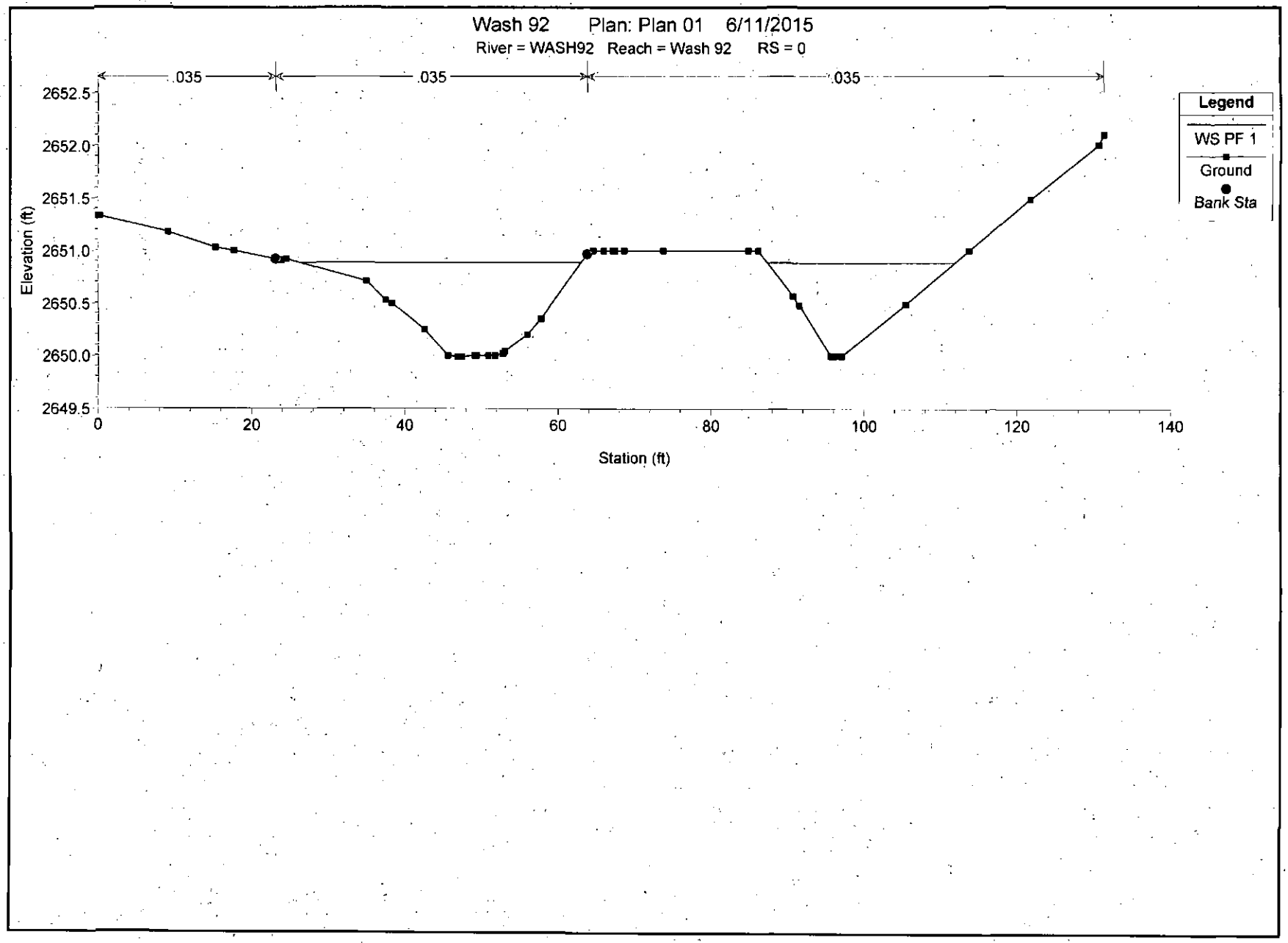

Wash 92 Plan: Plan 01 6/11/2015
River = WASH92 Reach = Wash 92 RS = 437.64
.035
Elevation (ft)
2660.5
2660.0
2659.5
2659.0
2658.5
2658.0
2657.5
0
10
20
30
40
50
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
Wash 92 Plan: Plan 01 6/11/2015
River = WASH92 Reach = Wash 92 RS = 360.32
.035
Elevation (ft)
2661
2660
2659
2658
2657
0
10
20
30
40
Station (ft)
Legend
WS PF 1
Ground
Bank Sta


Wash 92 Plan: Plan 01 6/11/2015
River = WASH92 Reach = Wash 92 RS = 331.87
.035
Elevation (ft)
2661
2660
2659
2658
2657
2656
0
5
10
15
20
25
30
Station (ft)
Legend
WS PF 1
Ground
Ineff
Bank Sta
Wash 92 Plan: Plan 01 6/11/2015
River = WASH92 Reach = Wash 92 RS = 300 Culv
.035
Elevation (ft)
2661
2660
2659
2658
2657
2656
0
5
10
15
20
25
30
Station (ft)
Legend
WS PF 1
Ground
Ineff
Bank Sta


Wash 92 Plan: Plan 01 6/11/2015
River = WASH92 Reach = Wash 92 RS = 300 Culv
.035
Elevation (ft)
2660
2659
2658
2657
2656
0
5
10
15
20
25
30
Station (ft)
Legend
WS PF 1
Ground
Ineff
Bank Sta
Wash 92 Plan: Plan 01 6/11/2015
River = WASH92 Reach = Wash 92 RS = 288.2
.035
Elevation (ft)
2660
2659
2658
2657
2656
0
5
10
15
20
25
30
Station (ft)
Legend
WS PF 1
Ground
Ineff
Bank Sta


Wash 92 Plan: Plan 01 6/11/2015
River = WASH92 Reach = Wash 92 RS = 227.45
.035
Elevation (ft)
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
Wash 92 Plan: Plan 01 6/11/2015
River = WASH92 Reach = Wash 92 RS = 129.07
.035
Elevation (ft)
Station (ft)
Legend
WS PF 1
Ground
Bank Sta


Wash 92 Plan: Plan 01 6/11/2015
River = WASH92 Reach = Wash 92 RS = 105.51
.035
Elevation (ft)
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
Wash 92 Plan: Plan 01 6/11/2015
River = WASH92 Reach = Wash 92 RS = 66.39
.035
Elevation (ft)
Station (ft)
Legend
WS PF 1
Ground
Ineff
Bank Sta


Wash 92 Plan: Plan 01 6/11/2015
River = WASH92 Reach = Wash 92 RS = 0
.035
.035
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2652.5
2652.0
2651.5
2651.0
2650.5
2650.0
2649.5
0
20
40
60
80
100
120
140
Station (ft)

Wash 92 Plan: Plan 01 6/11/2015

WASH92 Wash 92

Legend

WS PF 1

Ground

LOB

ROB

Elevation (ft)

2760

2740

2720

2700

2680

2660

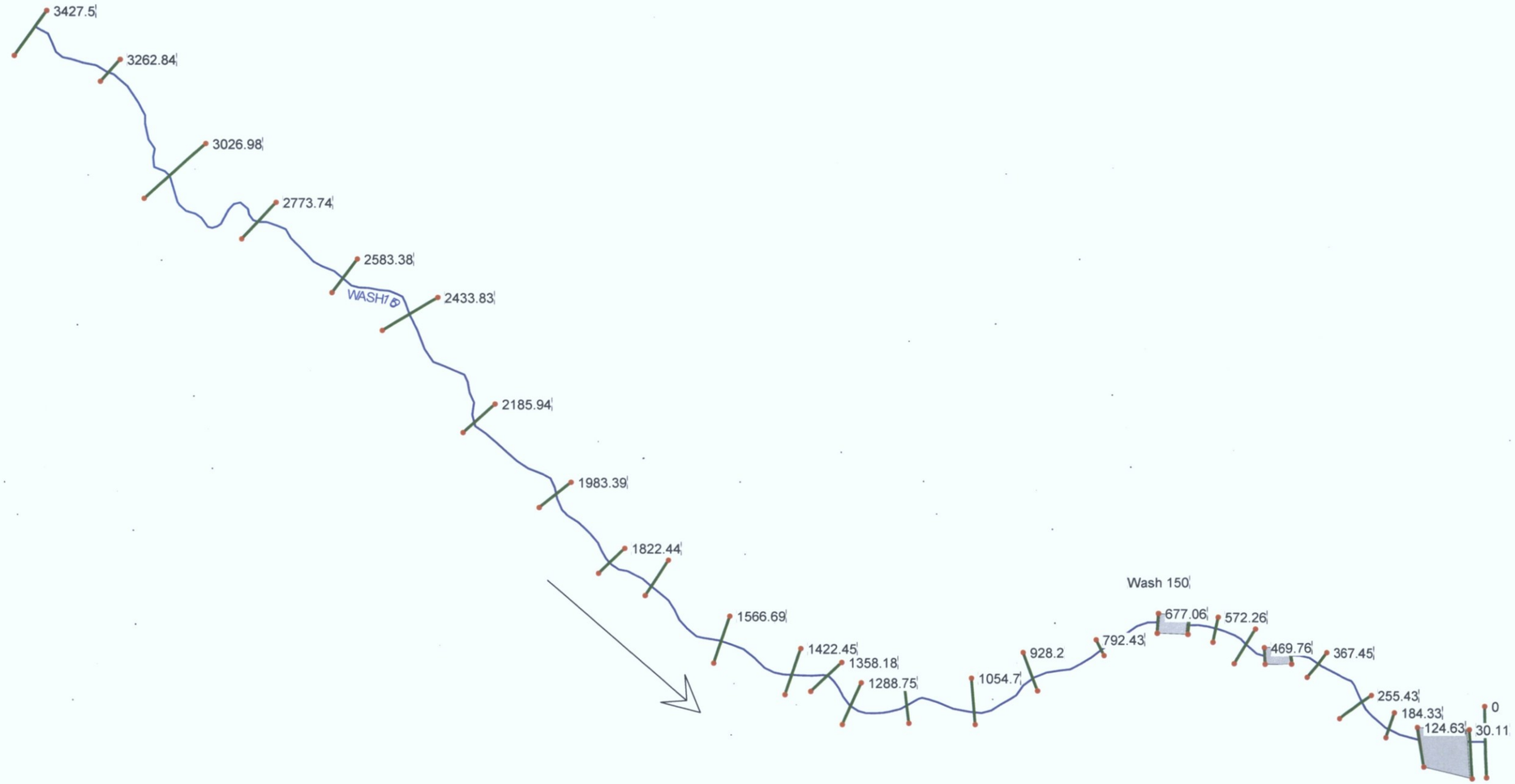
2640

66.39 129.07 227.45 288.2 300 437.64 520 700.87 754.62 812.24 891.71 957.79 1131.95 1215.68 1285.08 1439.07 1634.39 1746.24 1942.62 2131.93 2338.4 2566.63 2677.25 2800.13 2949.5 3079.75 3263.65 3468.36 3588.21 3720.89 3851.56 3970.83 4063.44 4157.15 4258.82 4318.18 4382.45 4467.65 4620.34

0 1000 2000 3000 4000 5000

Main Channel Distance (ft)

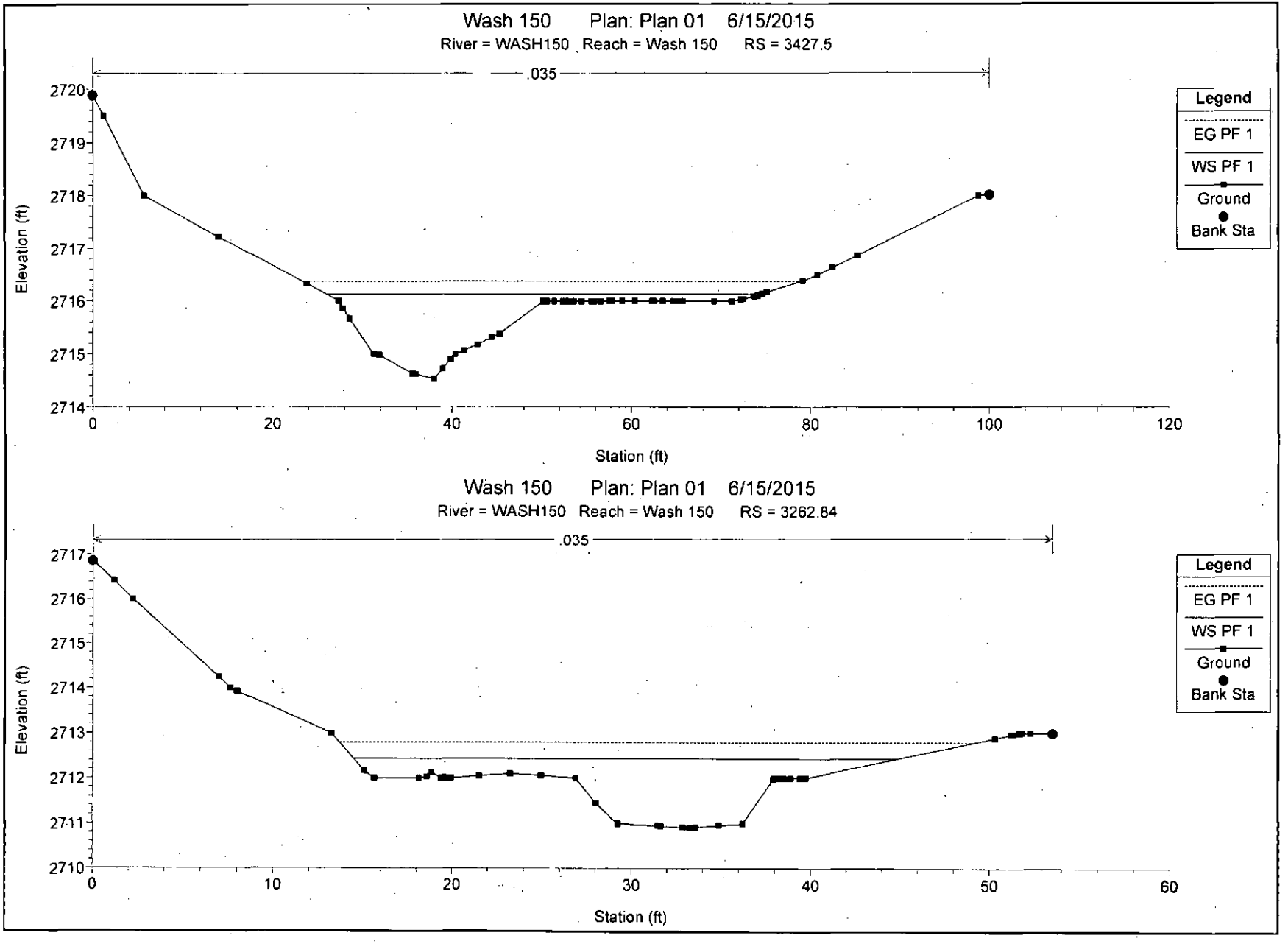
POST-DEVELOPMENT WASH 150 HEC-RAS

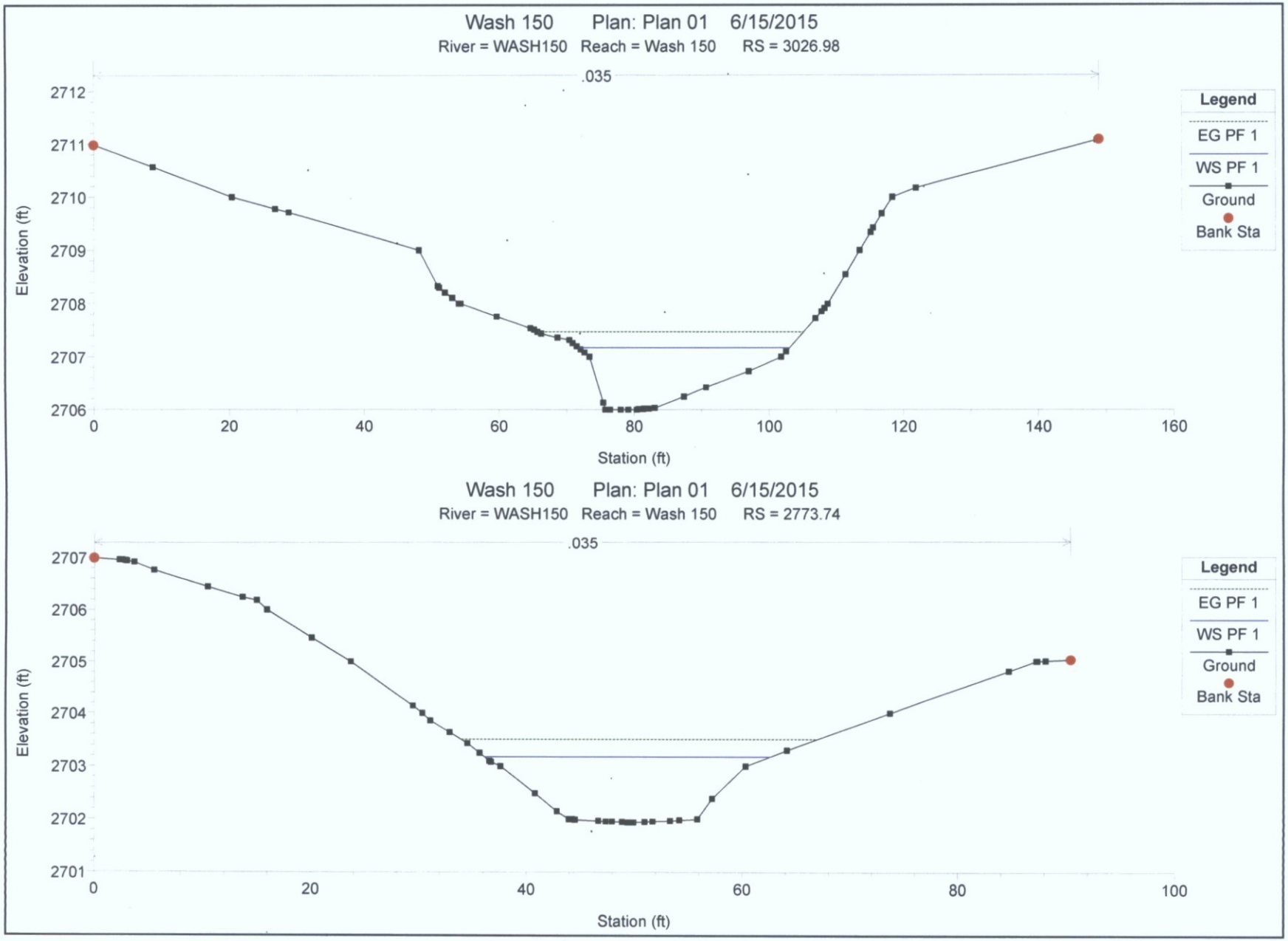

3427.5
3262.84
3026.98
2773.74
2583.38
WASH1
2433.83
2185.94
1983.39
1822.44
1566.69
1422.45
1358.18
1288.75
1054.7
928.2
Wash 150
792.43
677.06
572.26
469.76
367.45
255.43
184.33
124.63
0
30.11

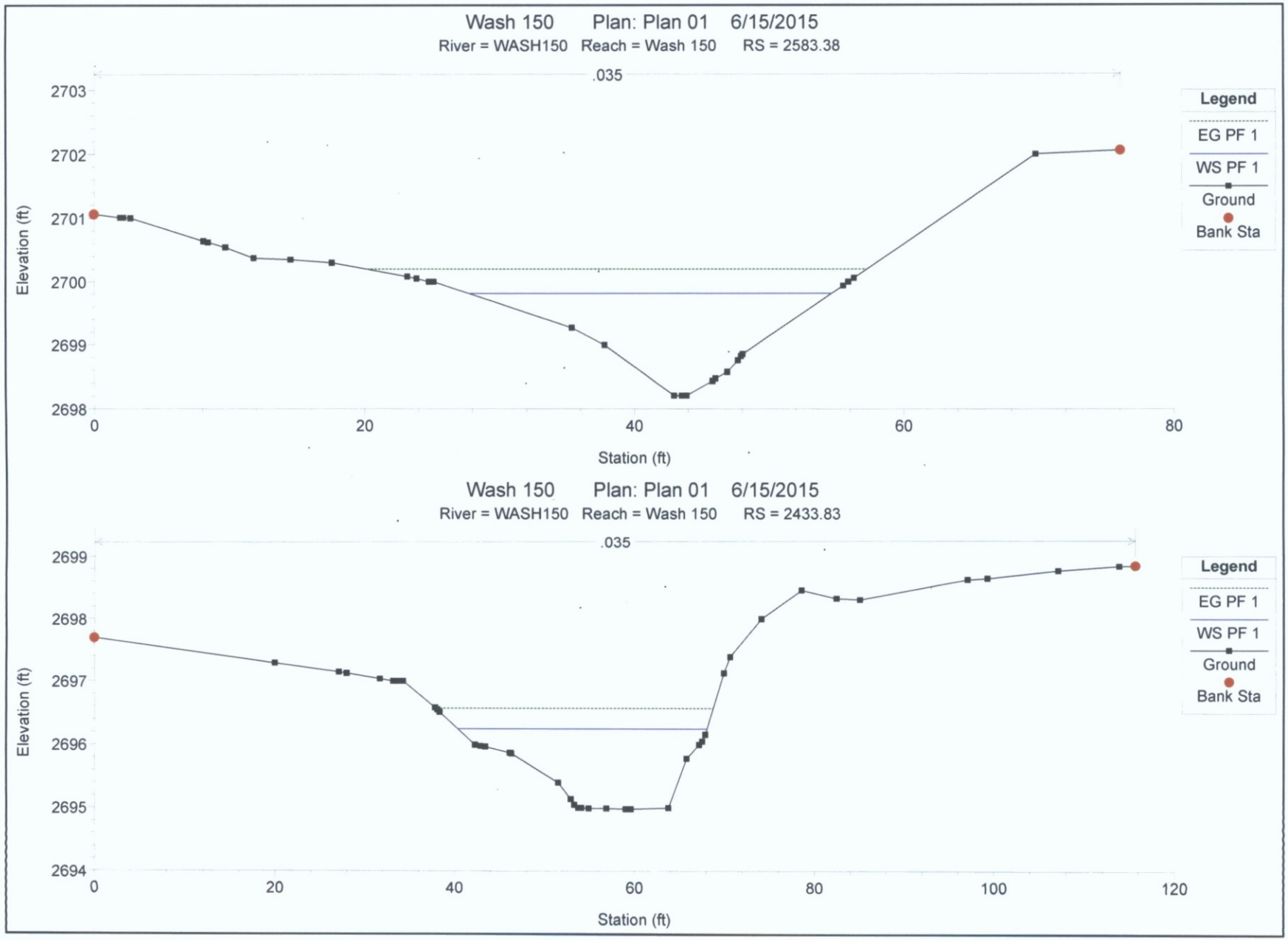


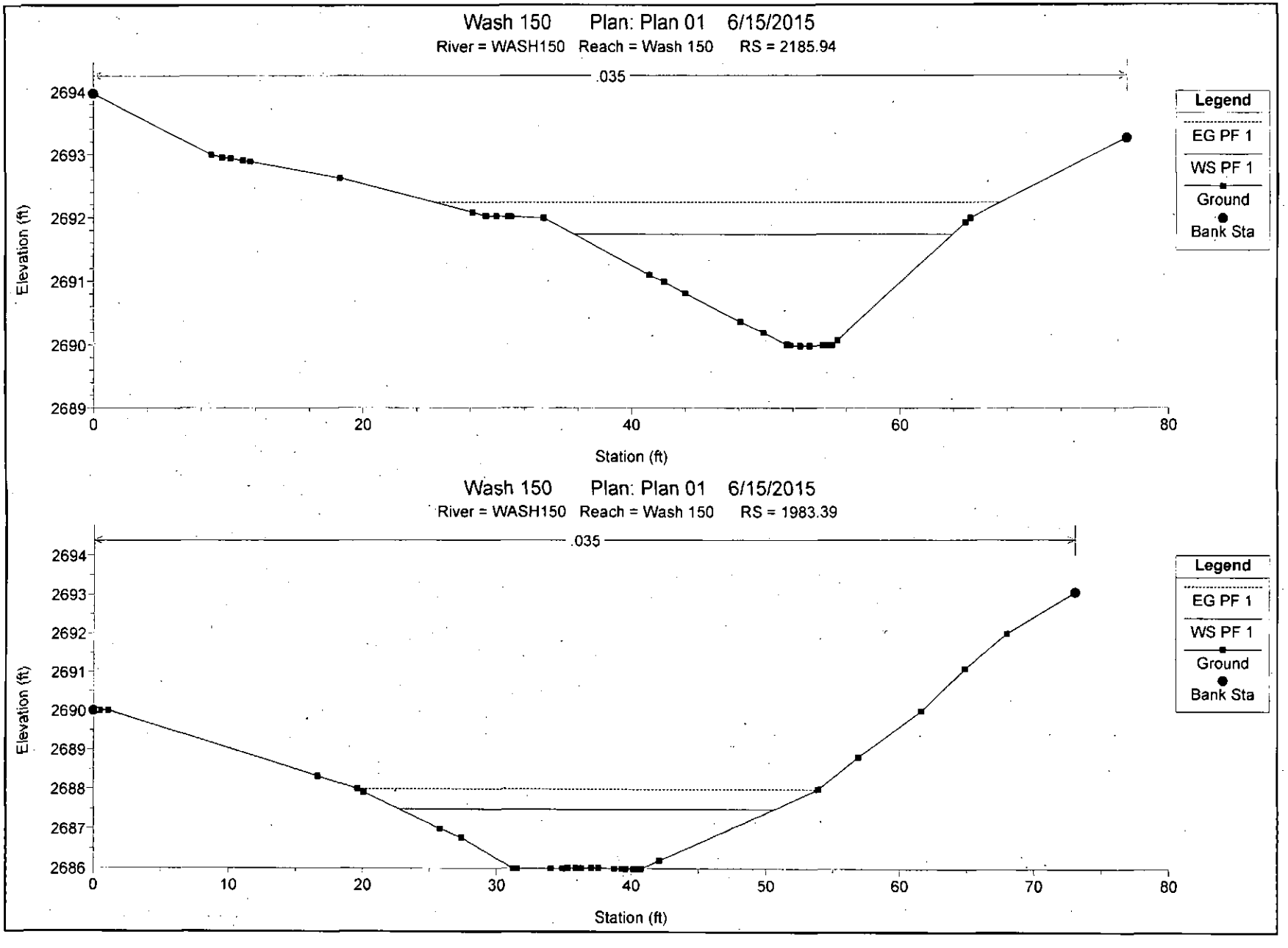
HEC-RAS Plan: Plan 01 River: WASH150 Reach: Wash 150 Profile: PF 1

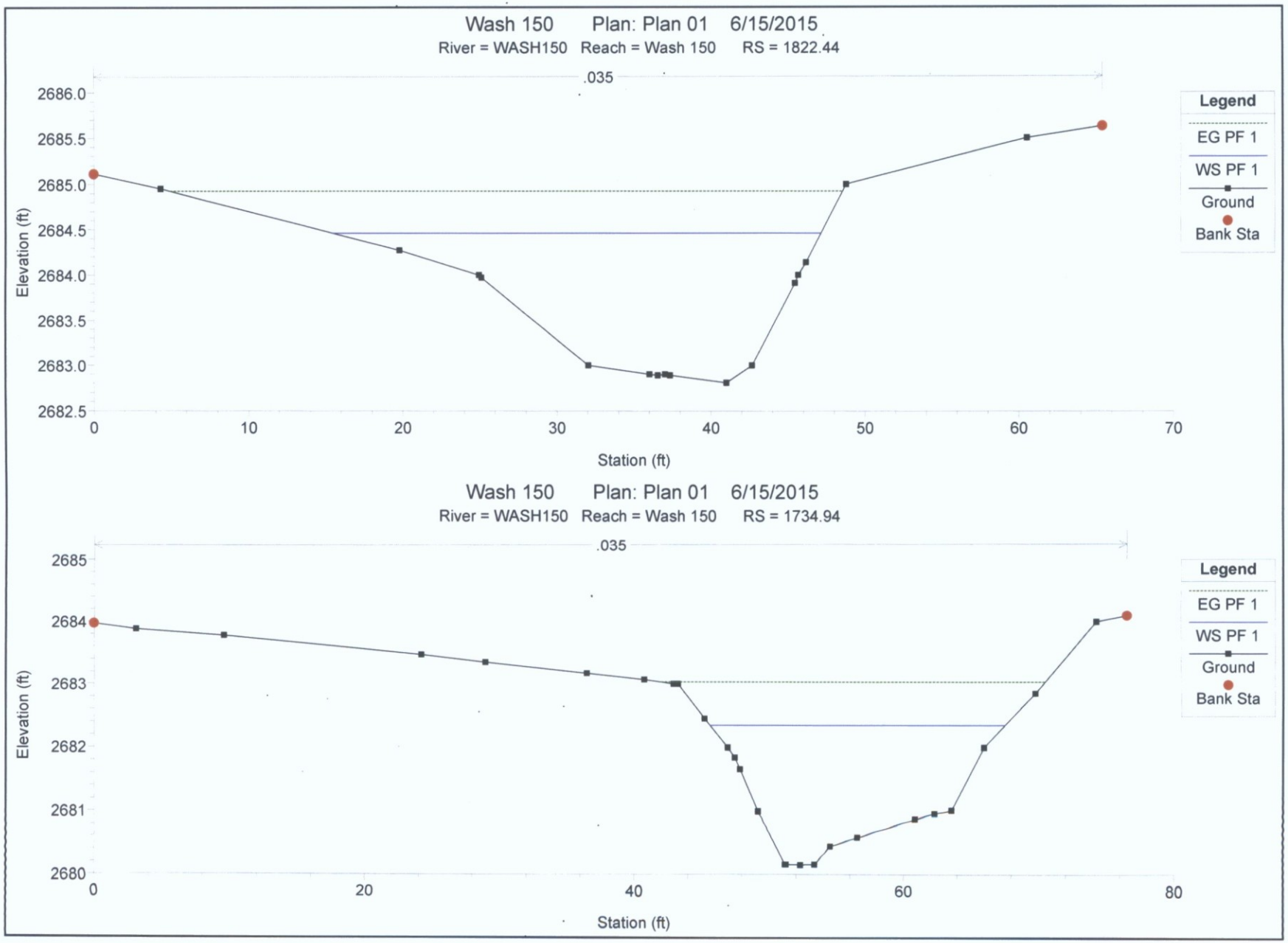
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Wash 150	3427.5	PF 1	100.00	2714.54	2716.13	2716.12	2716.38	0.021726	4.01	24.96	48.46	0.98
Wash 150	3262.84	PF 1	100.00	2710.91	2712.44	2712.44	2712.79	0.021742	4.80	20.81	30.34	1.02
Wash 150	3026.98	PF 1	100.00	2706.00	2707.17	2707.11	2707.47	0.016415	4.38	22.81	31.28	0.90
Wash 150	2773.74	PF 1	100.00	2701.94	2703.18	2703.09	2703.50	0.014950	4.56	21.95	26.48	0.88
Wash 150	2583.38	PF 1	100.00	2698.21	2699.81	2699.81	2700.20	0.020338	4.97	20.14	26.90	1.01
Wash 150	2433.83	PF 1	100.00	2694.98	2696.25	2696.18	2696.57	0.015628	4.53	22.08	27.73	0.89
Wash 150	2185.94	PF 1	157.00	2689.99	2691.74	2691.74	2692.24	0.018675	5.69	27.61	28.19	1.01
Wash 150	1983.39	PF 1	157.00	2686.00	2687.50	2687.50	2688.00	0.018417	5.69	27.61	27.92	1.01
Wash 150	1822.44	PF 1	157.00	2682.81	2684.46	2684.46	2684.92	0.019020	5.45	28.80	31.72	1.01
Wash 150	1734.94	PF 1	196.00	2680.15	2682.35	2682.35	2683.03	0.017184	6.64	29.51	21.91	1.01
Wash 150	1566.69	PF 1	196.00	2677.00	2678.85	2678.85	2679.39	0.018122	5.89	33.26	31.48	1.01
Wash 150	1422.45	PF 1	196.00	2674.85	2676.15		2676.43	0.012888	4.22	46.49	56.67	0.82
Wash 150	1358.18	PF 1	196.00	2673.63	2674.94	2674.94	2675.41	0.018903	5.52	35.48	38.33	1.01
Wash 150	1288.75	PF 1	196.00	2670.97	2672.83	2672.74	2673.21	0.014639	4.96	39.54	41.46	0.89
Wash 150	1181.92	PF 1	196.00	2669.00	2670.94	2670.94	2671.45	0.018657	5.72	34.24	34.63	1.01
Wash 150	1054.7	PF 1	196.00	2665.98	2668.20	2668.20	2668.72	0.018567	5.77	33.99	33.64	1.01
Wash 150	928.2	PF 1	196.00	2662.95	2665.23	2665.23	2665.68	0.018223	5.36	36.54	39.84	0.99
Wash 150	792.43	PF 1	196.00	2660.00	2662.34	2662.34	2662.86	0.018360	5.77	33.98	32.02	0.99
Wash 150	677.06	PF 1	192.00	2657.50	2660.30	2658.87	2660.38	0.001119	2.35	81.58	35.81	0.27
Wash 150	640		Culvert									
Wash 150	621.72	PF 1	192.00	2656.95	2658.47	2658.47	2659.18	0.017566	6.76	28.42	20.27	1.01
Wash 150	572.26	PF 1	192.00	2654.98	2657.85		2658.14	0.004991	4.32	44.40	24.76	0.57
Wash 150	509.99	PF 1	192.00	2654.00	2657.88		2657.96	0.001047	2.32	82.68	36.35	0.27
Wash 150	469.76	PF 1	192.00	2655.00	2657.68	2656.53	2657.88	0.002667	3.65	52.67	22.35	0.42
Wash 150	440		Culvert									
Wash 150	420.99	PF 1	192.00	2654.00	2655.53	2655.53	2656.24	0.017464	6.78	28.32	20.06	1.01
Wash 150	367.45	PF 1	192.00	2650.97	2652.92		2653.30	0.010705	4.95	38.82	32.19	0.79
Wash 150	255.43	PF 1	192.00	2649.81	2651.44	2651.35	2651.91	0.014392	5.52	34.77	30.41	0.91
Wash 150	184.33	PF 1	192.00	2648.94	2650.22	2650.22	2650.76	0.017955	5.92	32.41	30.10	1.01
Wash 150	124.63	PF 1	192.00	2646.00	2647.79	2646.93	2647.89	0.002065	2.60	73.91	46.72	0.36
Wash 150	50		Culvert									
Wash 150	30.11	PF 1	192.00	2645.75	2646.68	2646.68	2647.12	0.019046	5.31	36.15	41.59	1.00
Wash 150	0	PF 1	192.00	2645.02	2646.06	2645.71	2646.14	0.005005	2.32	82.60	121.22	0.50

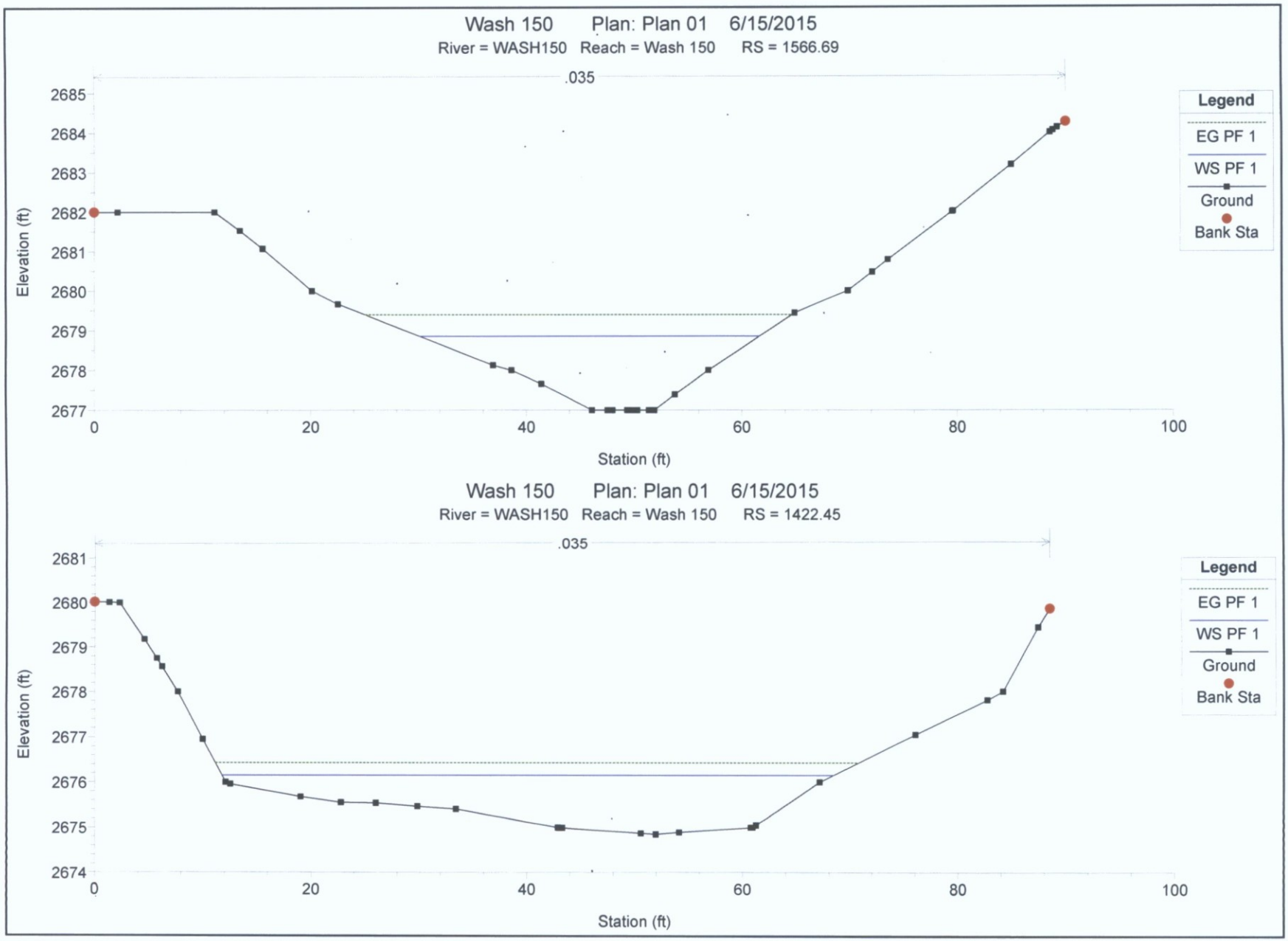

Wash 150 Plan: Plan 01 6/15/2015
River = WASH150 Reach = Wash 150 RS = 3427.5
.035
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Wash 150 Plan: Plan 01 6/15/2015
River = WASH150 Reach = Wash 150 RS = 3262.84
.035
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

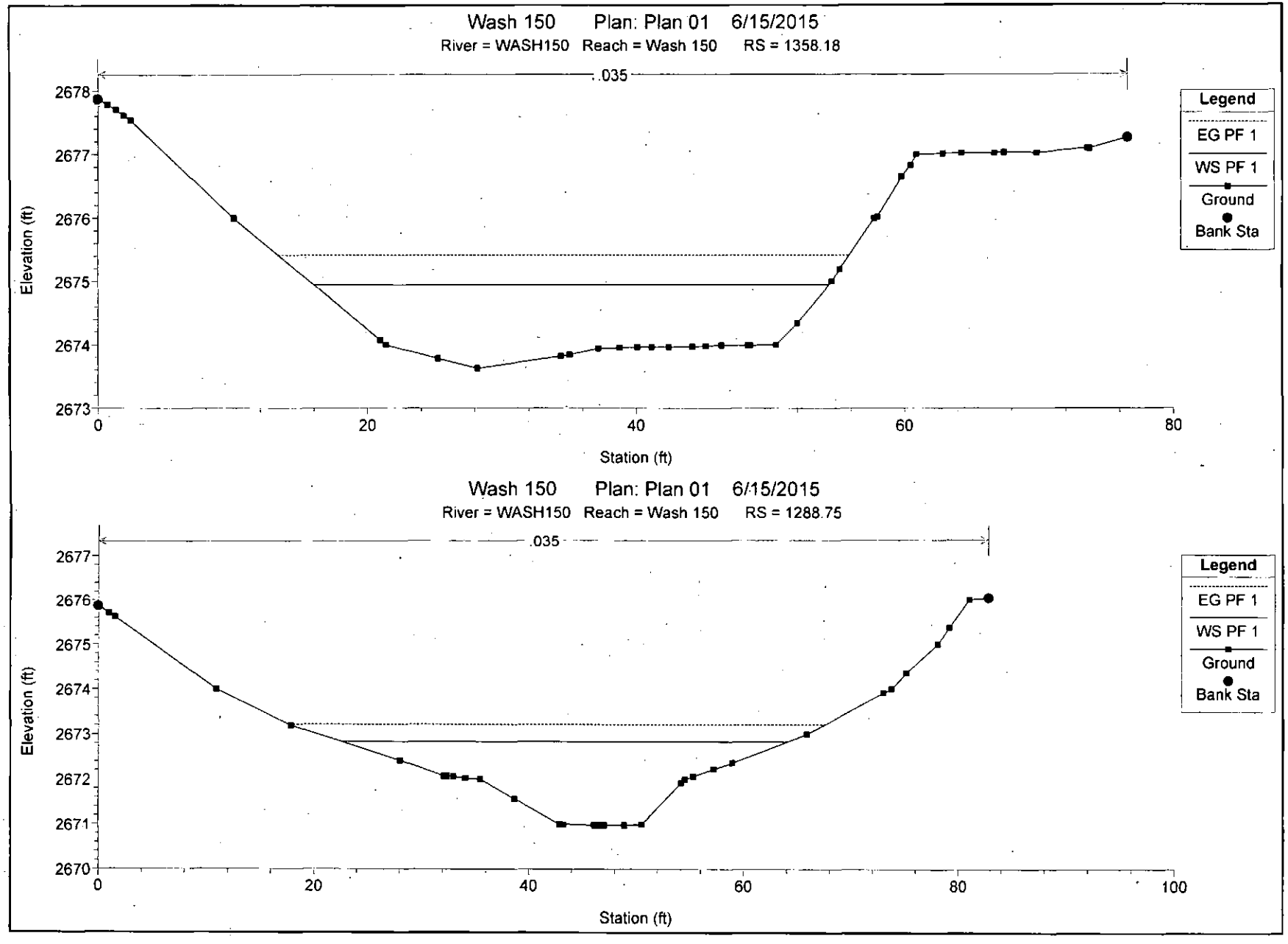

Wash 150 Plan: Plan 01 6/15/2015
River = WASH150 Reach = Wash 150 RS = 3026.98
.035
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Wash 150 Plan: Plan 01 6/15/2015
River = WASH150 Reach = Wash 150 RS = 2773.74
.035
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

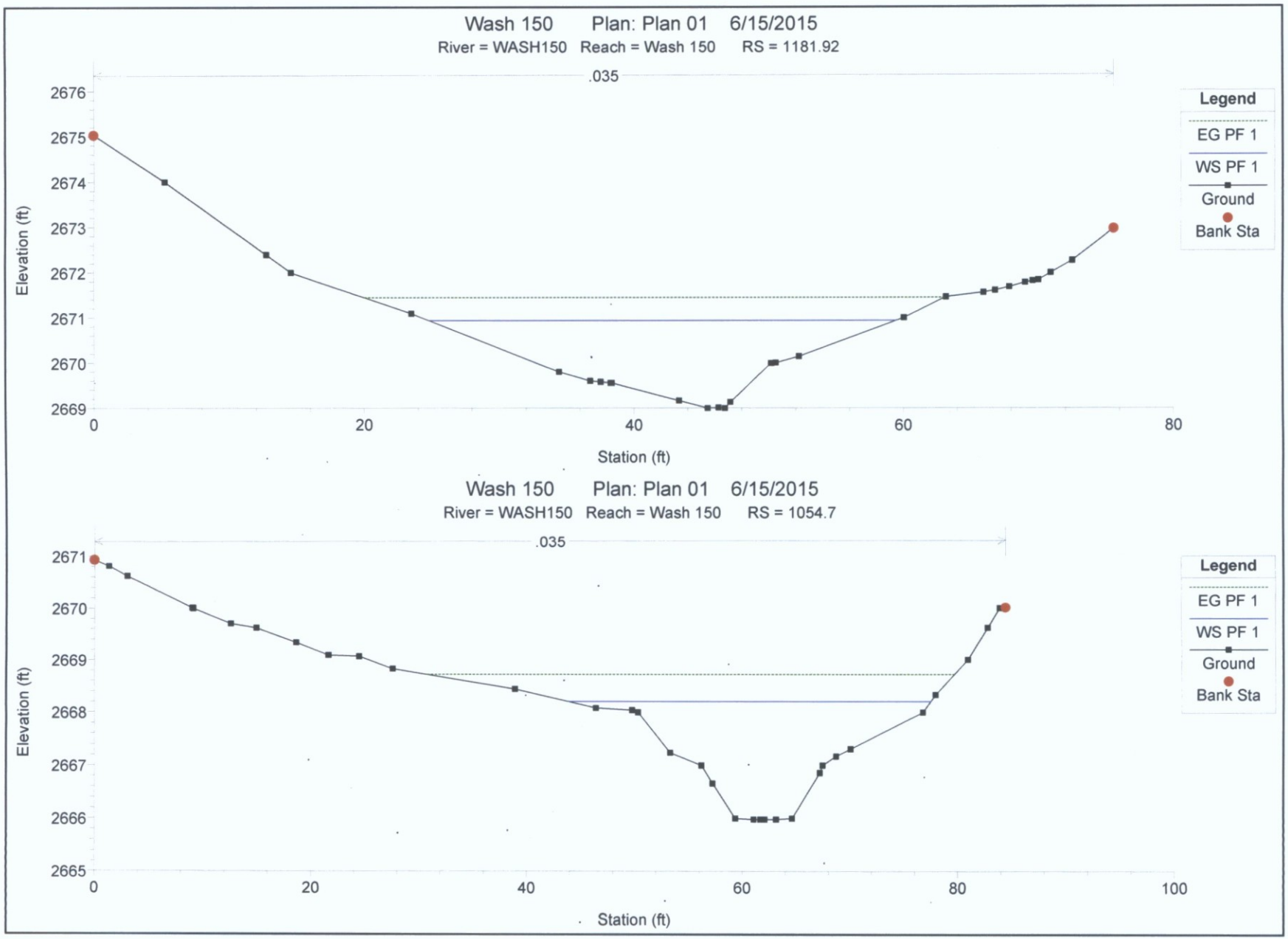

Wash 150 Plan: Plan 01 6/15/2015
River = WASH150 Reach = Wash 150 RS = 2583.38
.035
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Wash 150 Plan: Plan 01 6/15/2015
River = WASH150 Reach = Wash 150 RS = 2433.83
.035
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

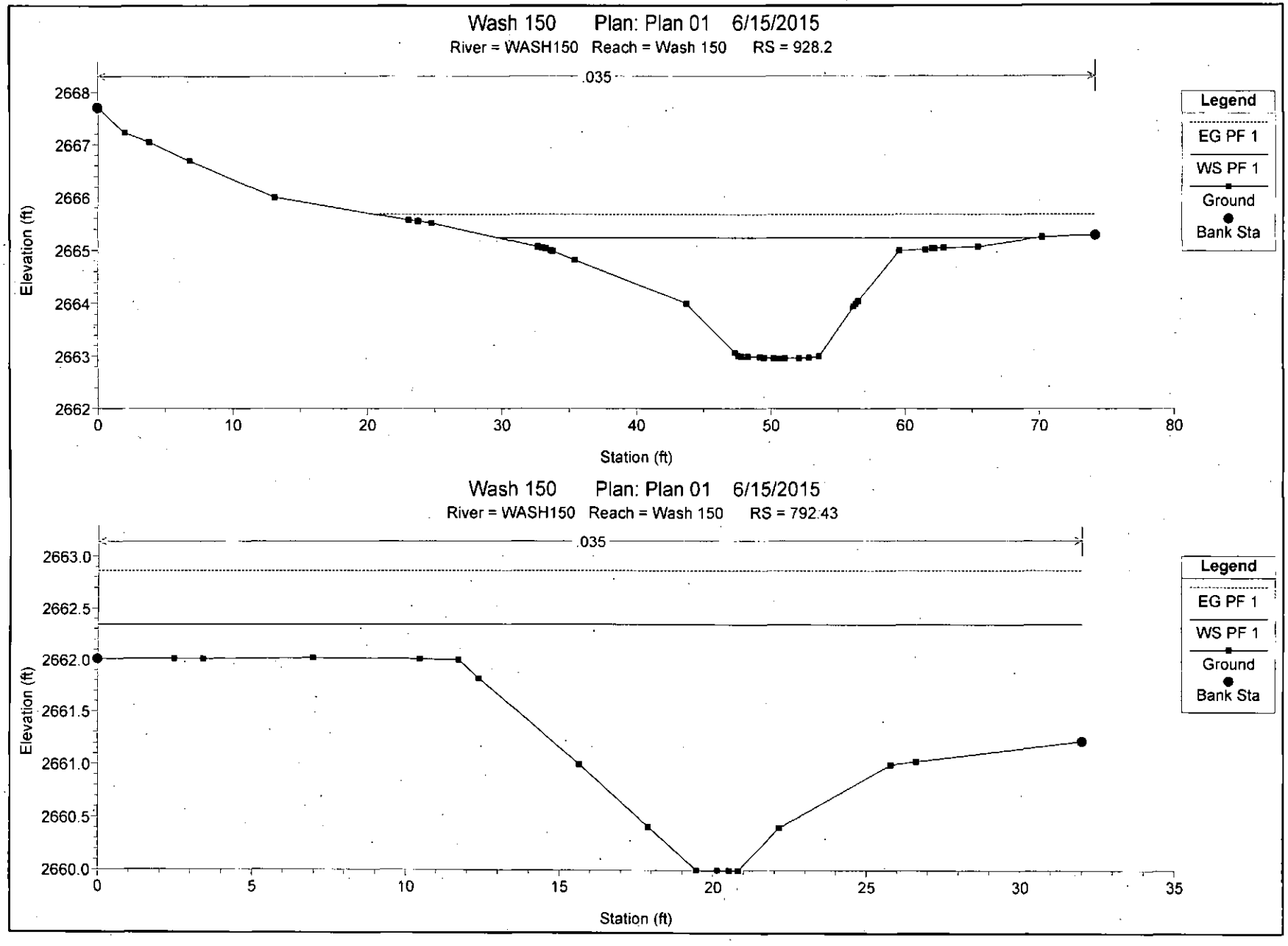

Wash 150 Plan: Plan 01 6/15/2015
River = WASH150 Reach = Wash 150 RS = 2185.94
.035
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Wash 150 Plan: Plan 01 6/15/2015
River = WASH150 Reach = Wash 150 RS = 1983.39
.035
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

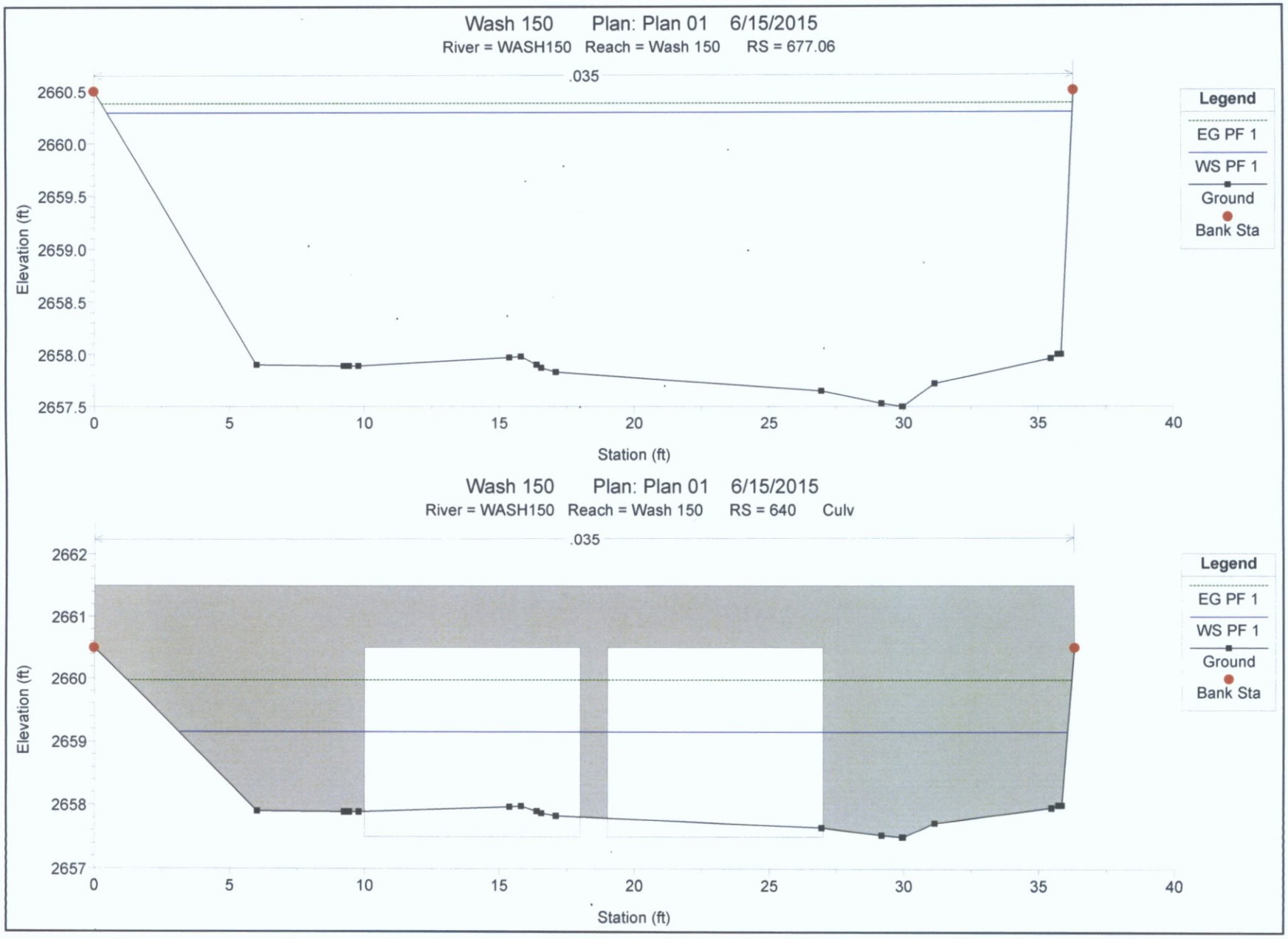

Wash 150 Plan: Plan 01 6/15/2015
River = WASH150 Reach = Wash 150 RS = 1822.44
.035
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Wash 150 Plan: Plan 01 6/15/2015
River = WASH150 Reach = Wash 150 RS = 1734.94
.035
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

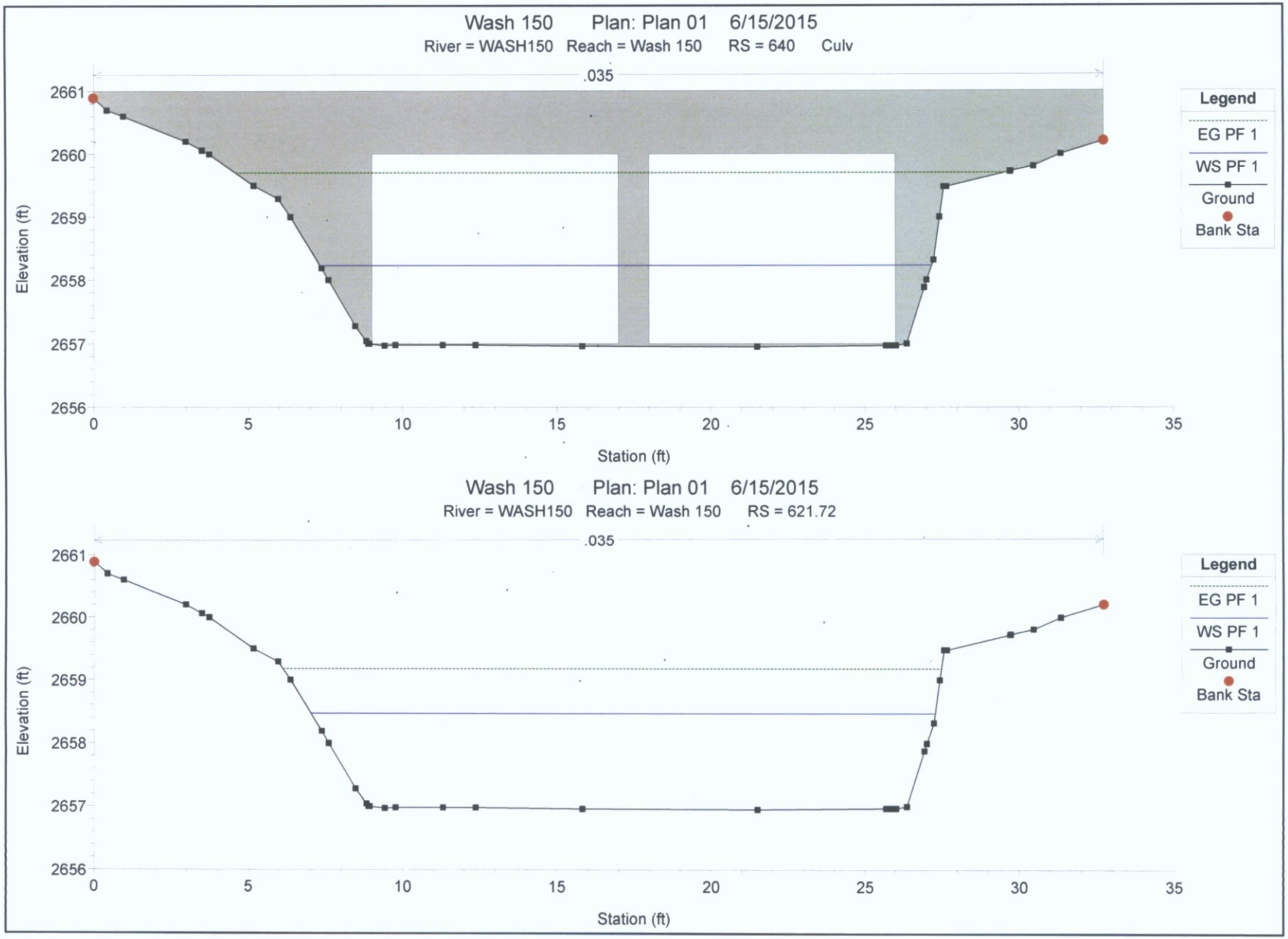

Wash 150 Plan: Plan 01 6/15/2015
River = WASH150 Reach = Wash 150 RS = 1566.69
.035
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Wash 150 Plan: Plan 01 6/15/2015
River = WASH150 Reach = Wash 150 RS = 1422.45
.035
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

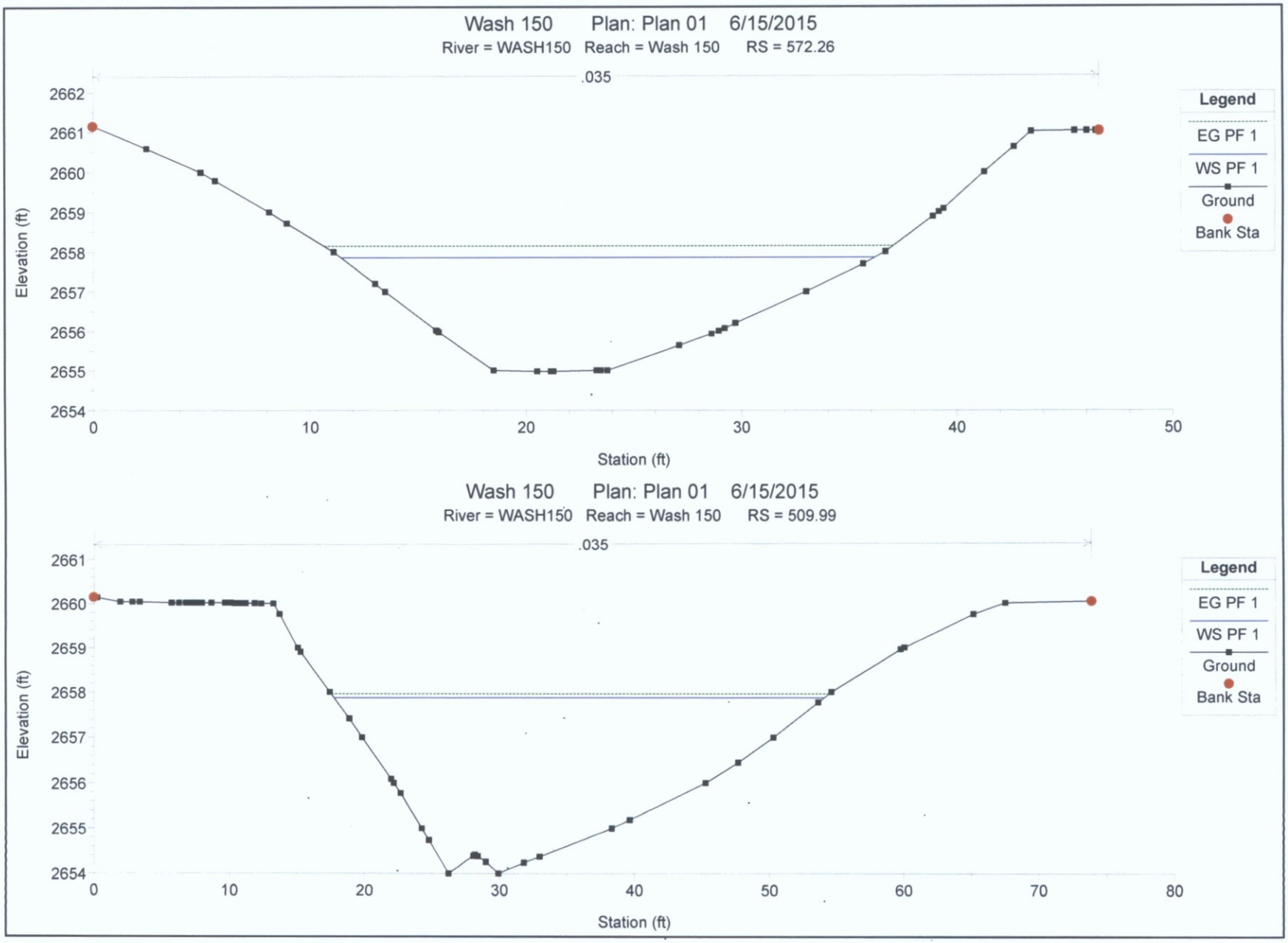

Wash 150 Plan: Plan 01 6/15/2015
River = WASH150 Reach = Wash 150 RS = 1358.18
.035
Elevation (ft)
2678
2677
2676
2675
2674
2673
0
20
40
60
80
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Wash 150 Plan: Plan 01 6/15/2015
River = WASH150 Reach = Wash 150 RS = 1288.75
.035
Elevation (ft)
2677
2676
2675
2674
2673
2672
2671
2670
0
20
40
60
80
100
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

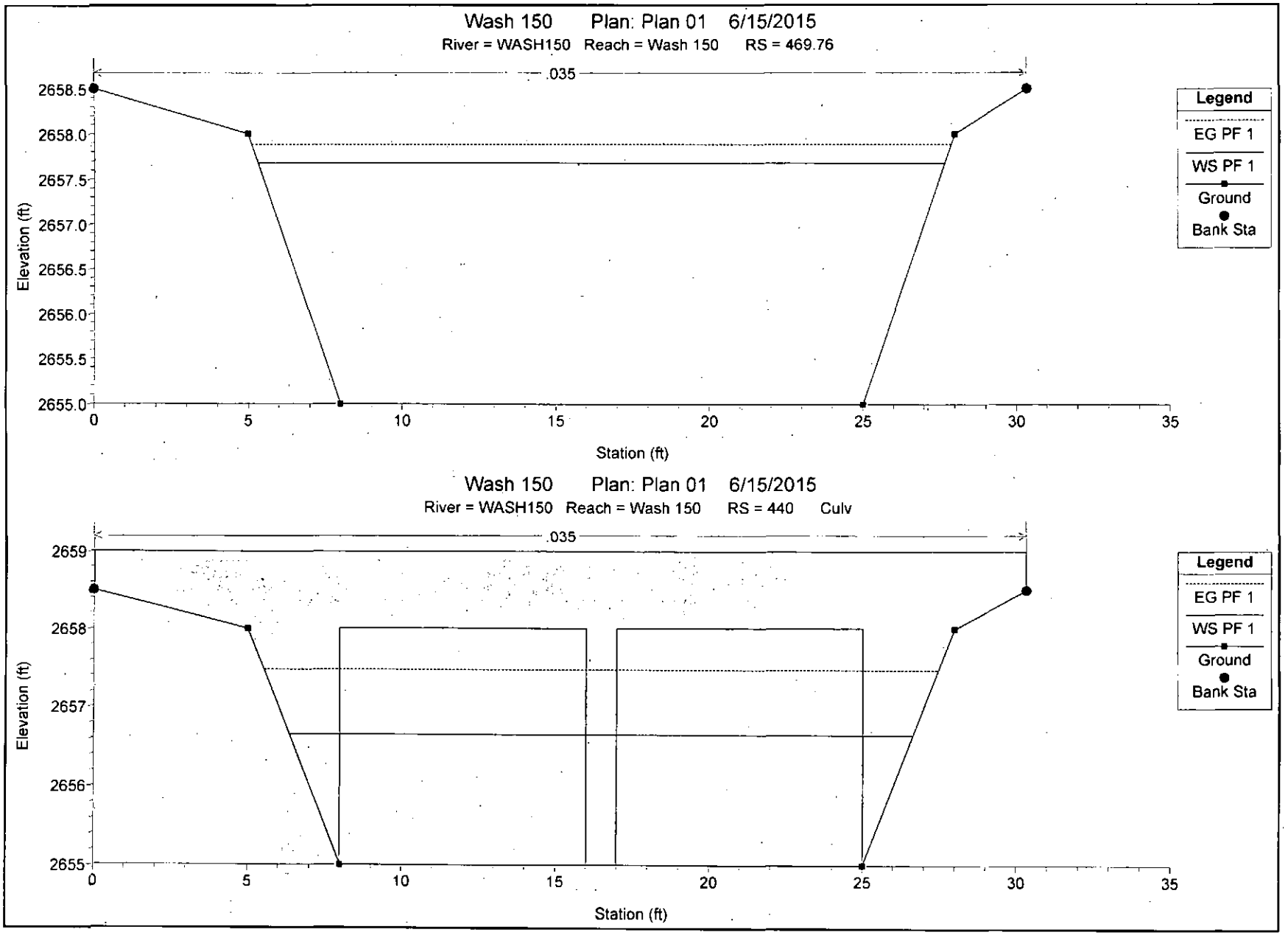

Wash 150 Plan: Plan 01 6/15/2015
River = WASH150 Reach = Wash 150 RS = 1181.92
.035
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Wash 150 Plan: Plan 01 6/15/2015
River = WASH150 Reach = Wash 150 RS = 1054.7
.035
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

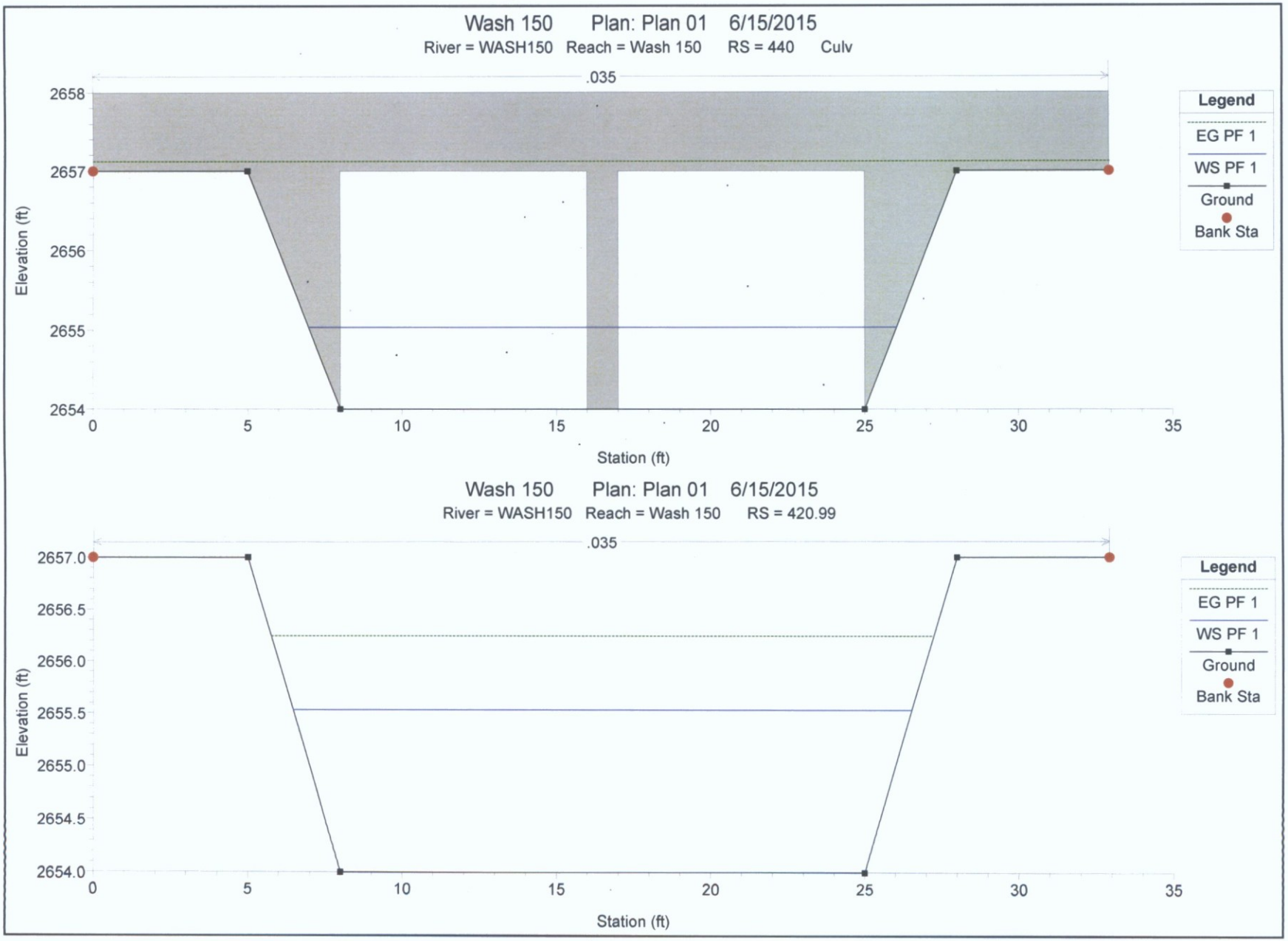

Wash 150 Plan: Plan 01 6/15/2015
River = WASH150 Reach = Wash 150 RS = 928.2
.035
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Wash 150 Plan: Plan 01 6/15/2015
River = WASH150 Reach = Wash 150 RS = 792.43
.035
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

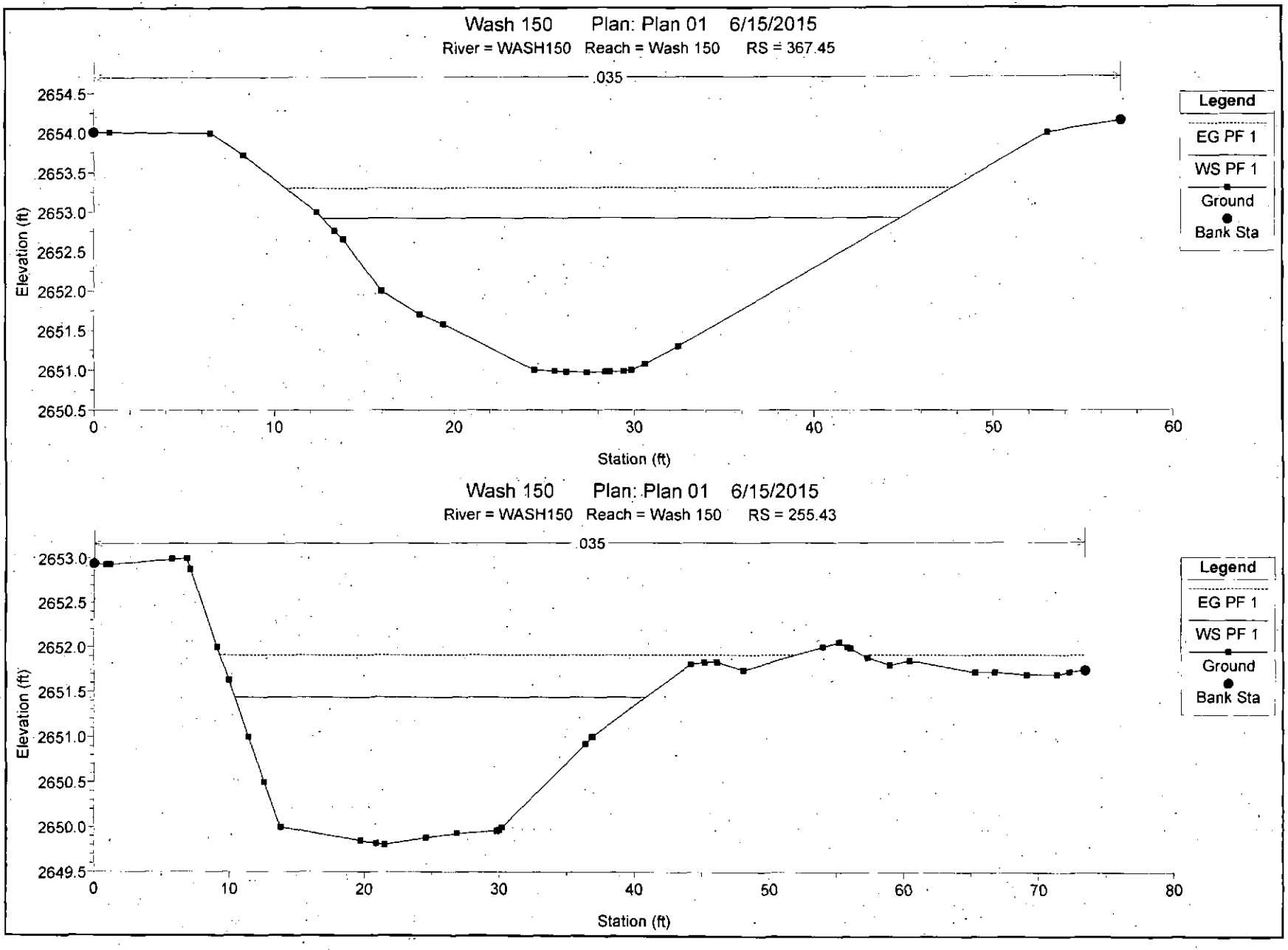

Wash 150 Plan: Plan 01 6/15/2015
River = WASH150 Reach = Wash 150 RS = 677.06
.035
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Wash 150 Plan: Plan 01 6/15/2015
River = WASH150 Reach = Wash 150 RS = 640 Culv
.035
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

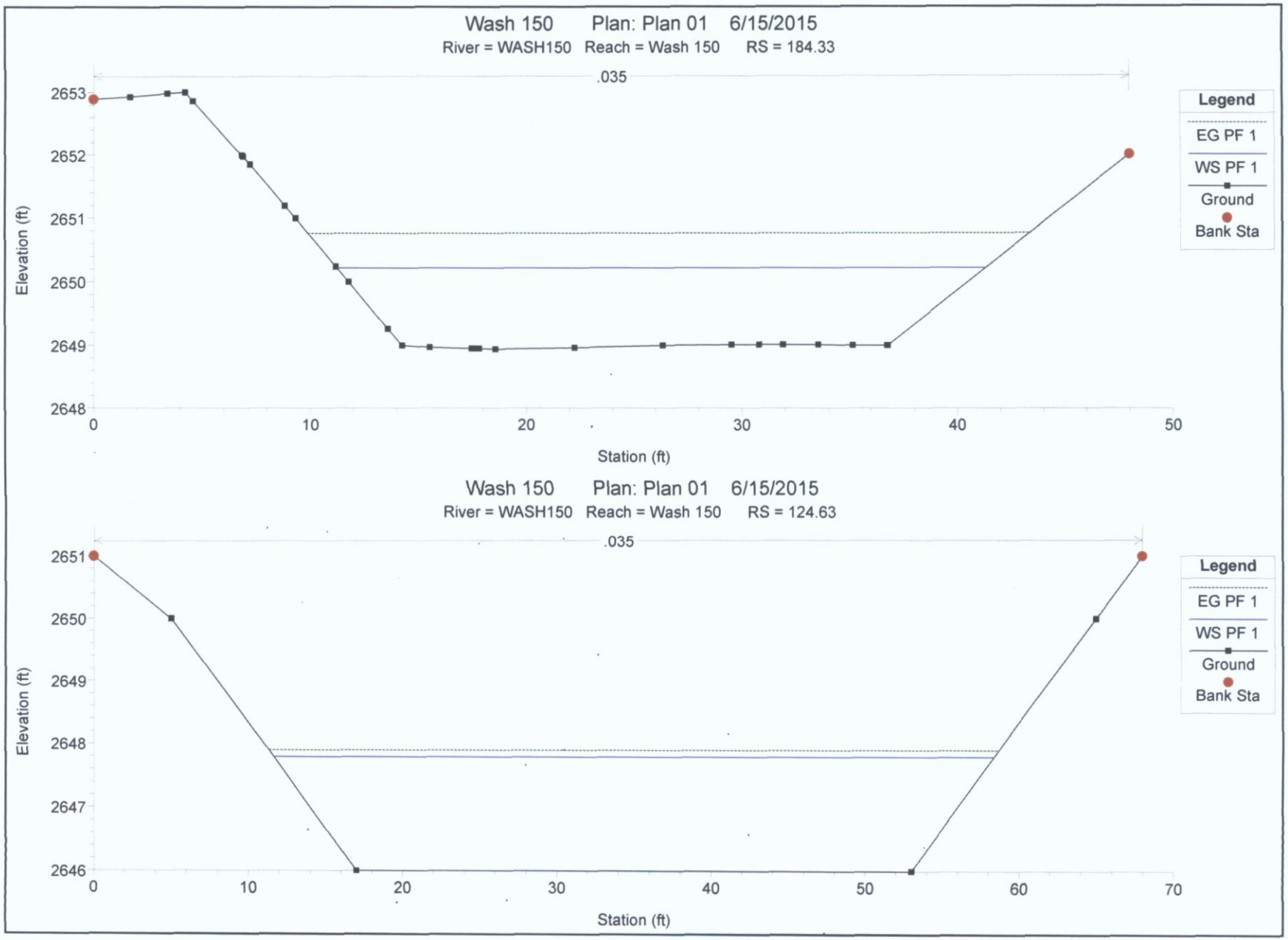

Wash 150 Plan: Plan 01 6/15/2015
River = WASH150 Reach = Wash 150 RS = 640 Culv
.035
Elevation (ft)
2661
2660
2659
2658
2657
2656
0
5
10
15
20
25
30
35
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Wash 150 Plan: Plan 01 6/15/2015
River = WASH150 Reach = Wash 150 RS = 621.72
.035
Elevation (ft)
2661
2660
2659
2658
2657
2656
0
5
10
15
20
25
30
35
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

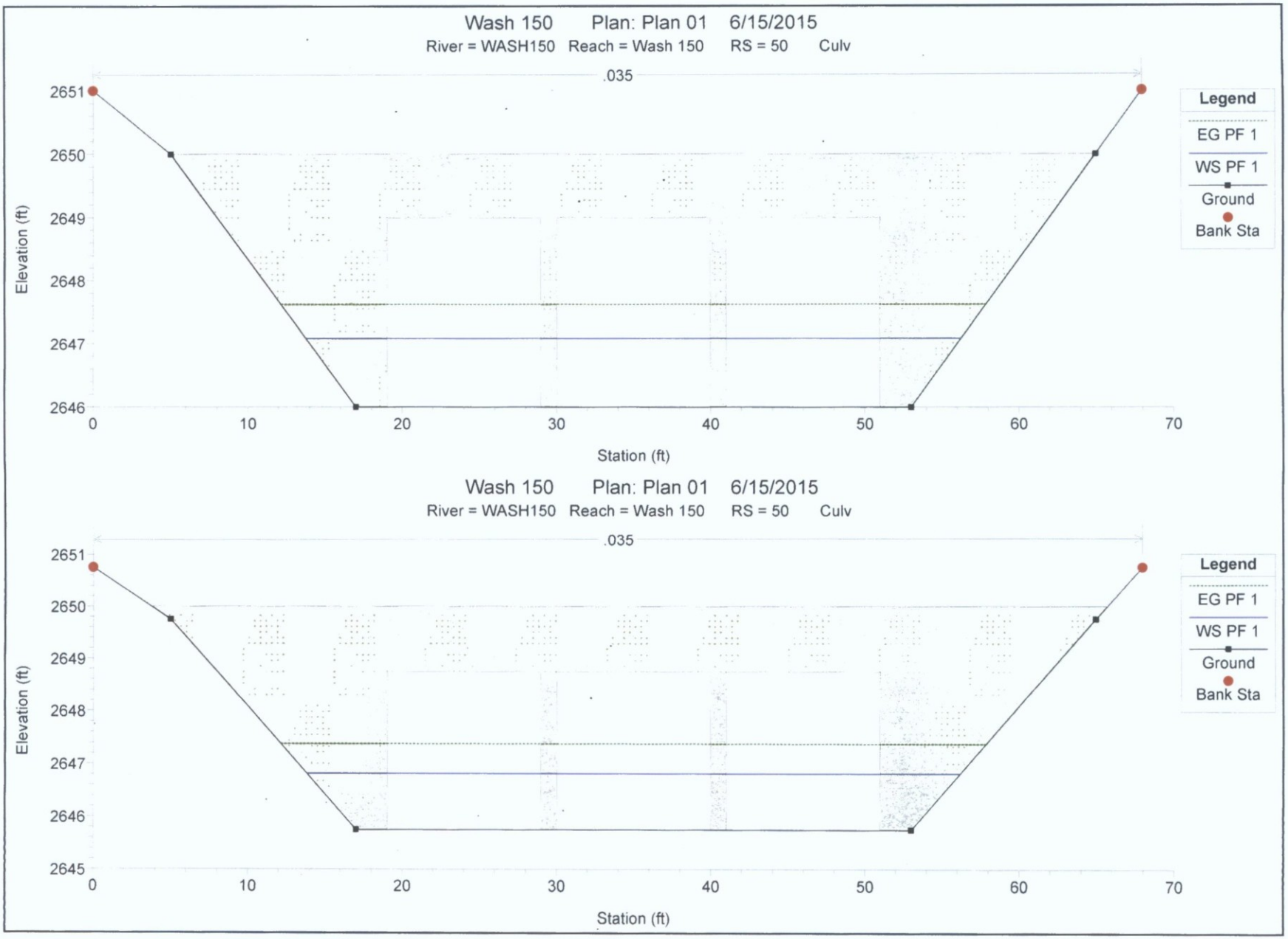

Wash 150 Plan: Plan 01 6/15/2015
River = WASH150 Reach = Wash 150 RS = 572.26
.035
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Wash 150 Plan: Plan 01 6/15/2015
River = WASH150 Reach = Wash 150 RS = 509.99
.035
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

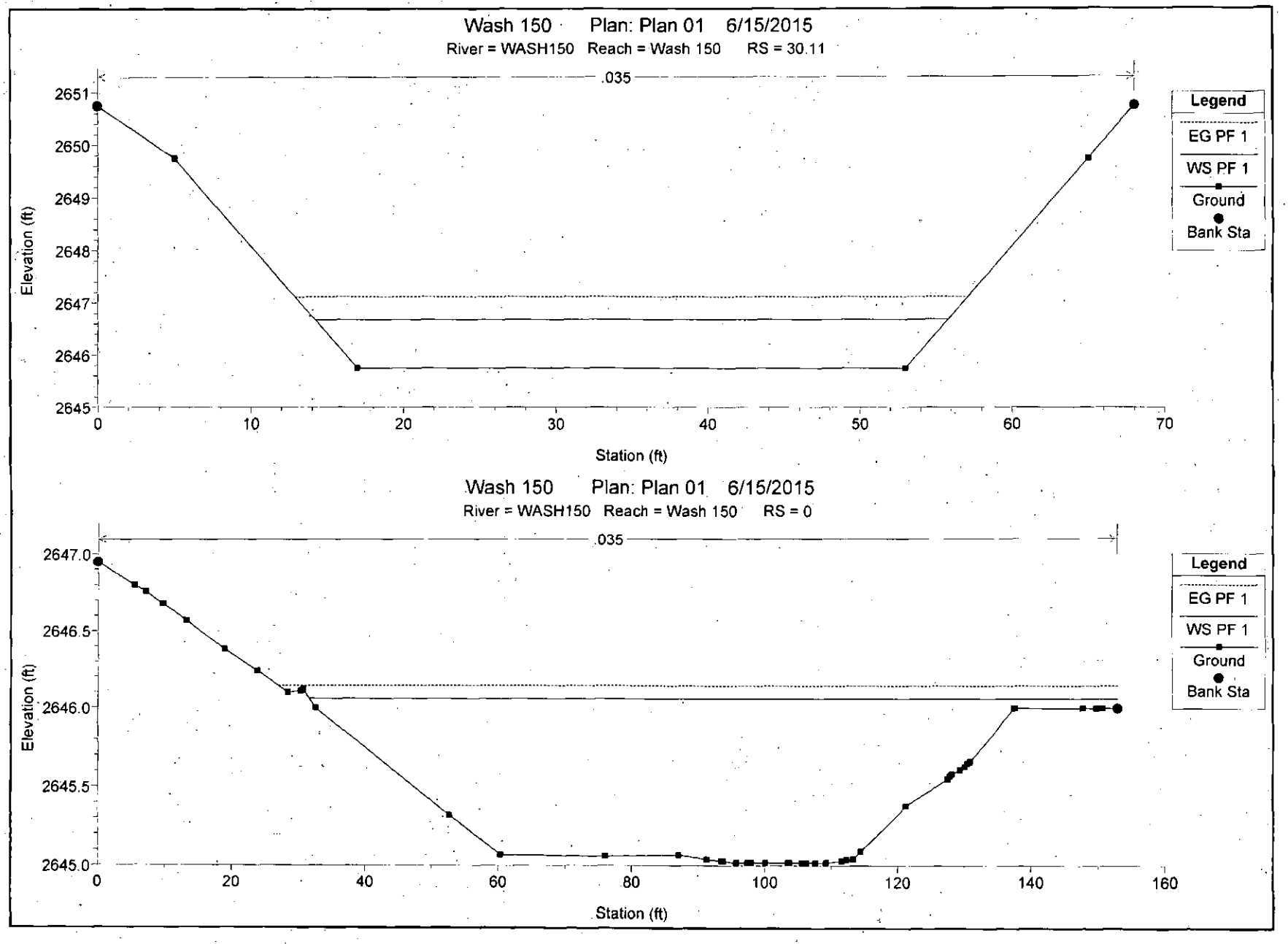

Wash 150 Plan: Plan 01 6/15/2015
River = WASH150 Reach = Wash 150 RS = 469.76
.035
Elevation (ft)
2658.5
2658.0
2657.5
2657.0
2656.5
2656.0
2655.5
2655.0
0
5
10
15
20
25
30
35
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Wash 150 Plan: Plan 01 6/15/2015
River = WASH150 Reach = Wash 150 RS = 440 Culv
.035
Elevation (ft)
2659
2658
2657
2656
2655
0
5
10
15
20
25
30
35
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta


Wash 150 Plan: Plan 01 6/15/2015
River = WASH150 Reach = Wash 150 RS = 440 Culv
.035
2658
2657
2656
2655
2654
Elevation (ft)
0
5
10
15
20
25
30
35
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Wash 150 Plan: Plan 01 6/15/2015
River = WASH150 Reach = Wash 150 RS = 420.99
.035
2657.0
2656.5
2656.0
2655.5
2655.0
2654.5
2654.0
Elevation (ft)
0
5
10
15
20
25
30
35
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

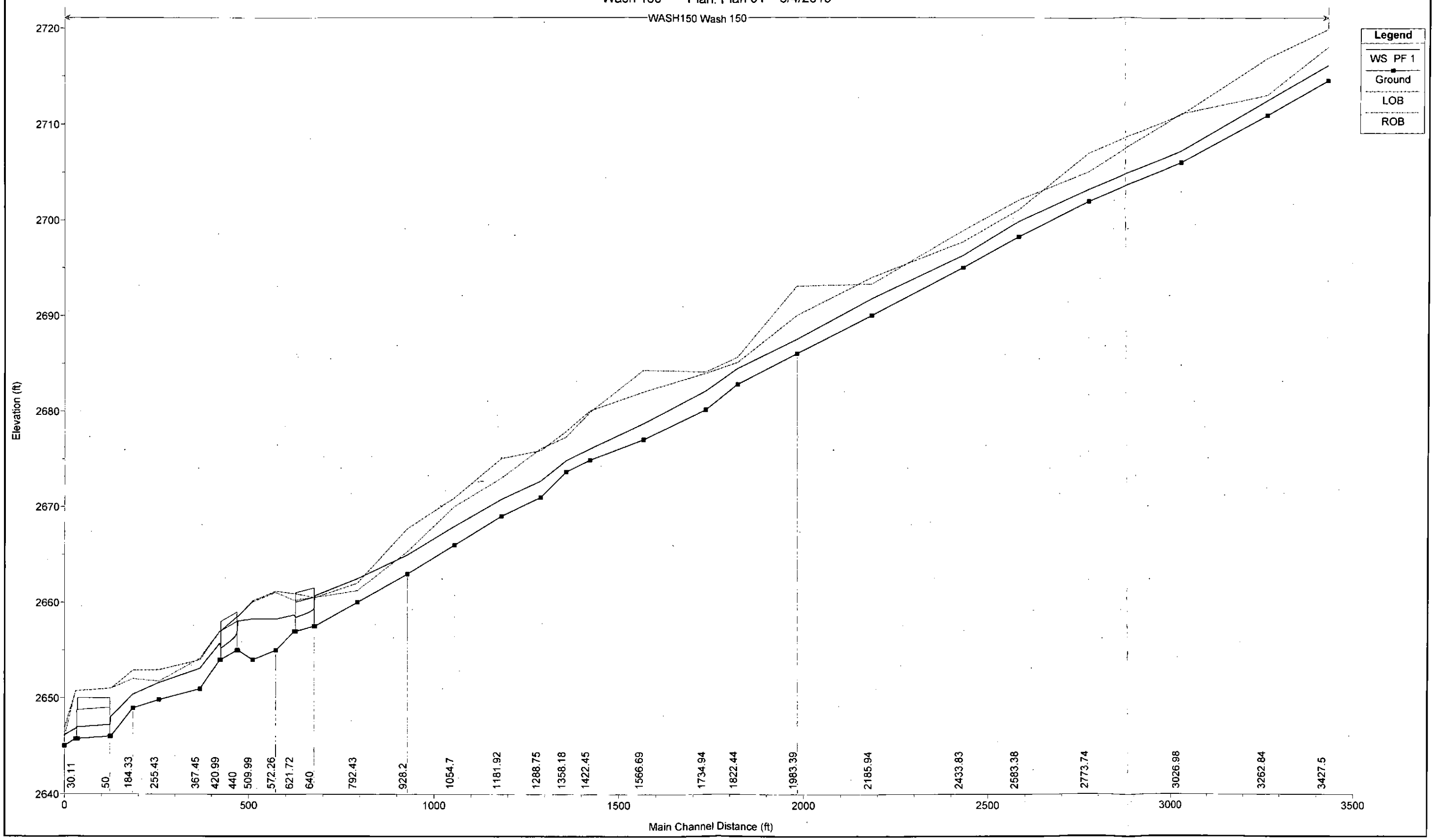

Wash 150 Plan: Plan 01 6/15/2015
River = WASH150 Reach = Wash 150 RS = 367.45
.035
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Wash 150 Plan: Plan 01 6/15/2015
River = WASH150 Reach = Wash 150 RS = 255.43
.035
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta


Wash 150 Plan: Plan 01 6/15/2015
River = WASH150 Reach = Wash 150 RS = 184.33
.035
Elevation (ft)
2653
2652
2651
2650
2649
2648
0
10
20
30
40
50
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Wash 150 Plan: Plan 01 6/15/2015
River = WASH150 Reach = Wash 150 RS = 124.63
.035
Elevation (ft)
2651
2650
2649
2648
2647
2646
0
10
20
30
40
50
60
70
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta


Wash 150 Plan: Plan 01 6/15/2015
River = WASH150 Reach = Wash 150 RS = 50 Culv
.035
Elevation (ft)
2651
2650
2649
2648
2647
2646
0
10
20
30
40
50
60
70
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Wash 150 Plan: Plan 01 6/15/2015
River = WASH150 Reach = Wash 150 RS = 50 Culv
.035
Elevation (ft)
2651
2650
2649
2648
2647
2646
2645
0
10
20
30
40
50
60
70
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta


Wash 150 Plan: Plan 01 6/15/2015
River = WASH150 Reach = Wash 150 RS = 30.11
.035
Elevation (ft)
2651
2650
2649
2648
2647
2646
2645
0
10
20
30
40
50
60
70
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Wash 150 Plan: Plan 01 6/15/2015
River = WASH150 Reach = Wash 150 RS = 0
.035
Elevation (ft)
2647.0
2646.5
2646.0
2645.5
2645.0
0
20
40
60
80
100
120
140
160
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta

Wash 150 Plan: Plan 01 6/4/2015

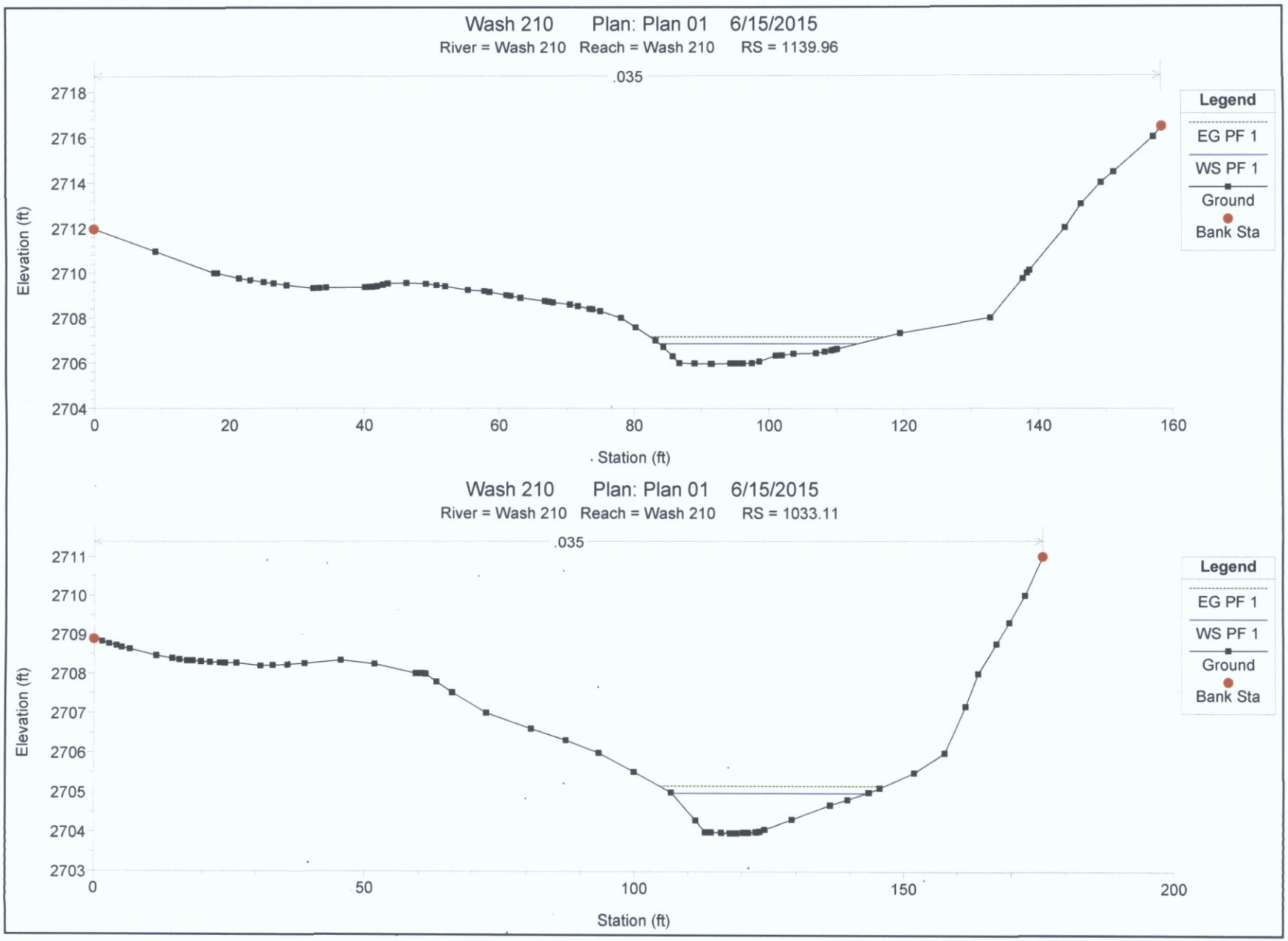


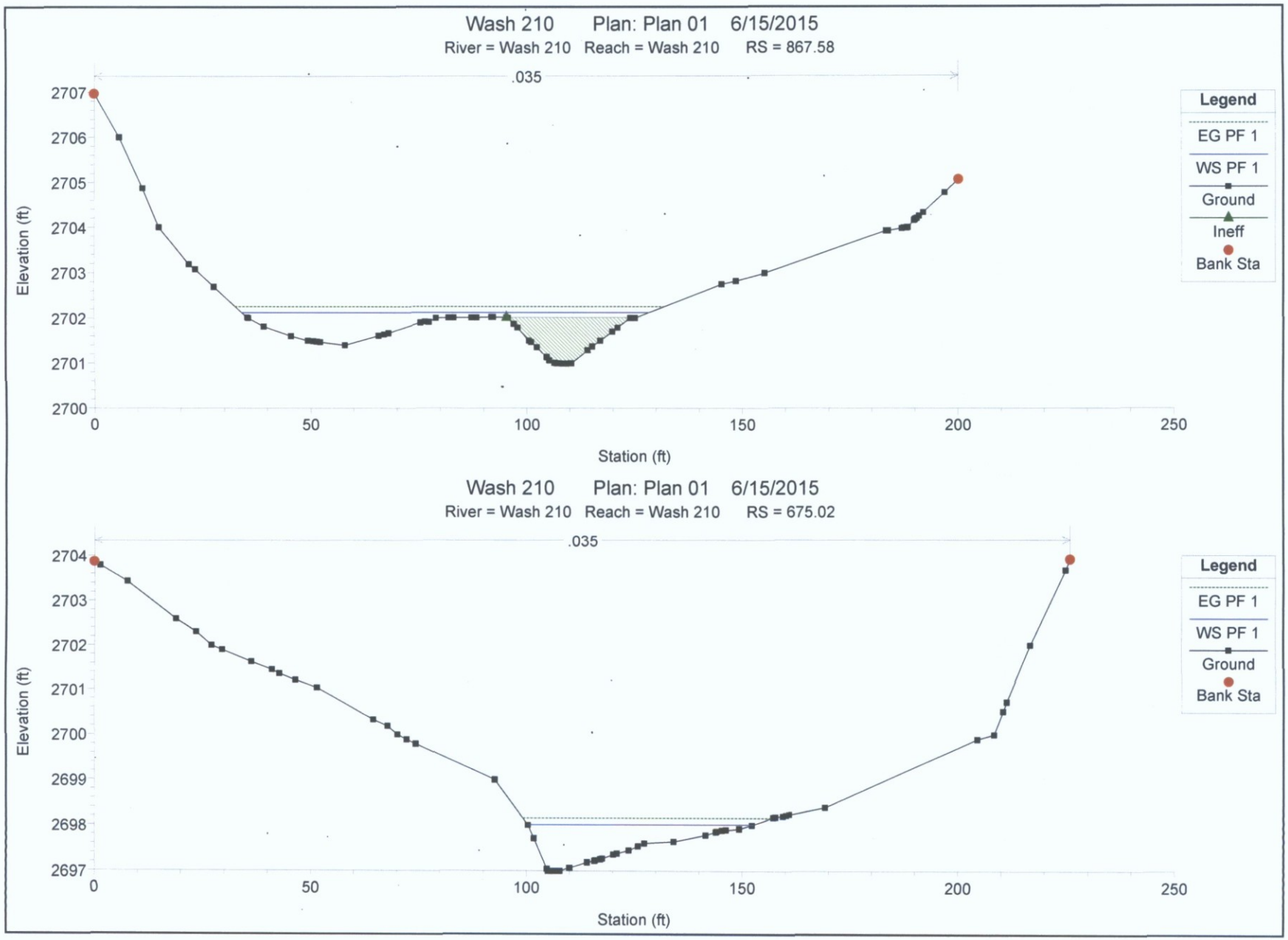
POST-DEVELOPMENT WASH 210 HEC-RAS

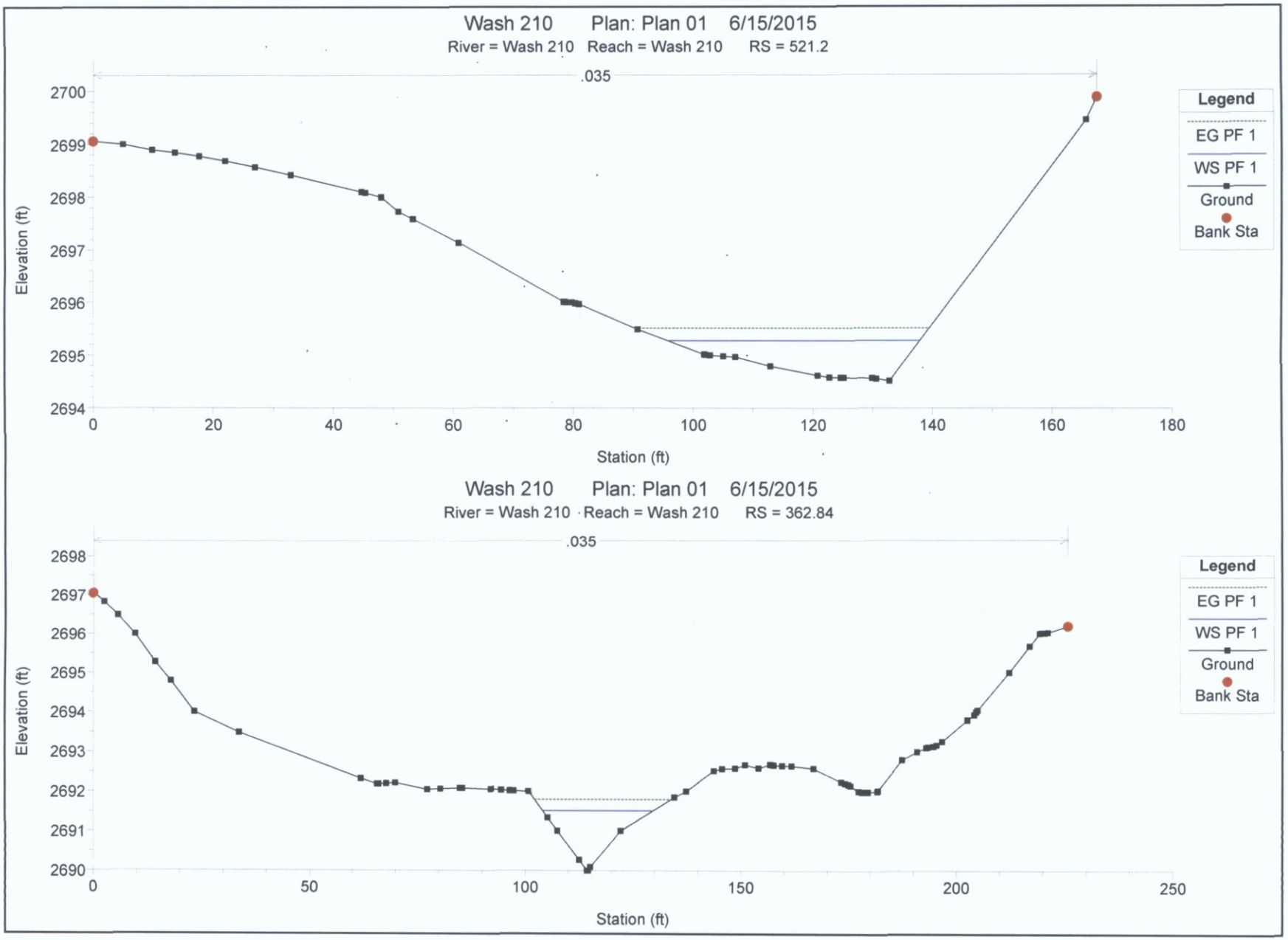
1139.96
1033.11
867.58
Wash 20
575.02
521.2
362.84
Wash 210
222.7
138.19
28.08

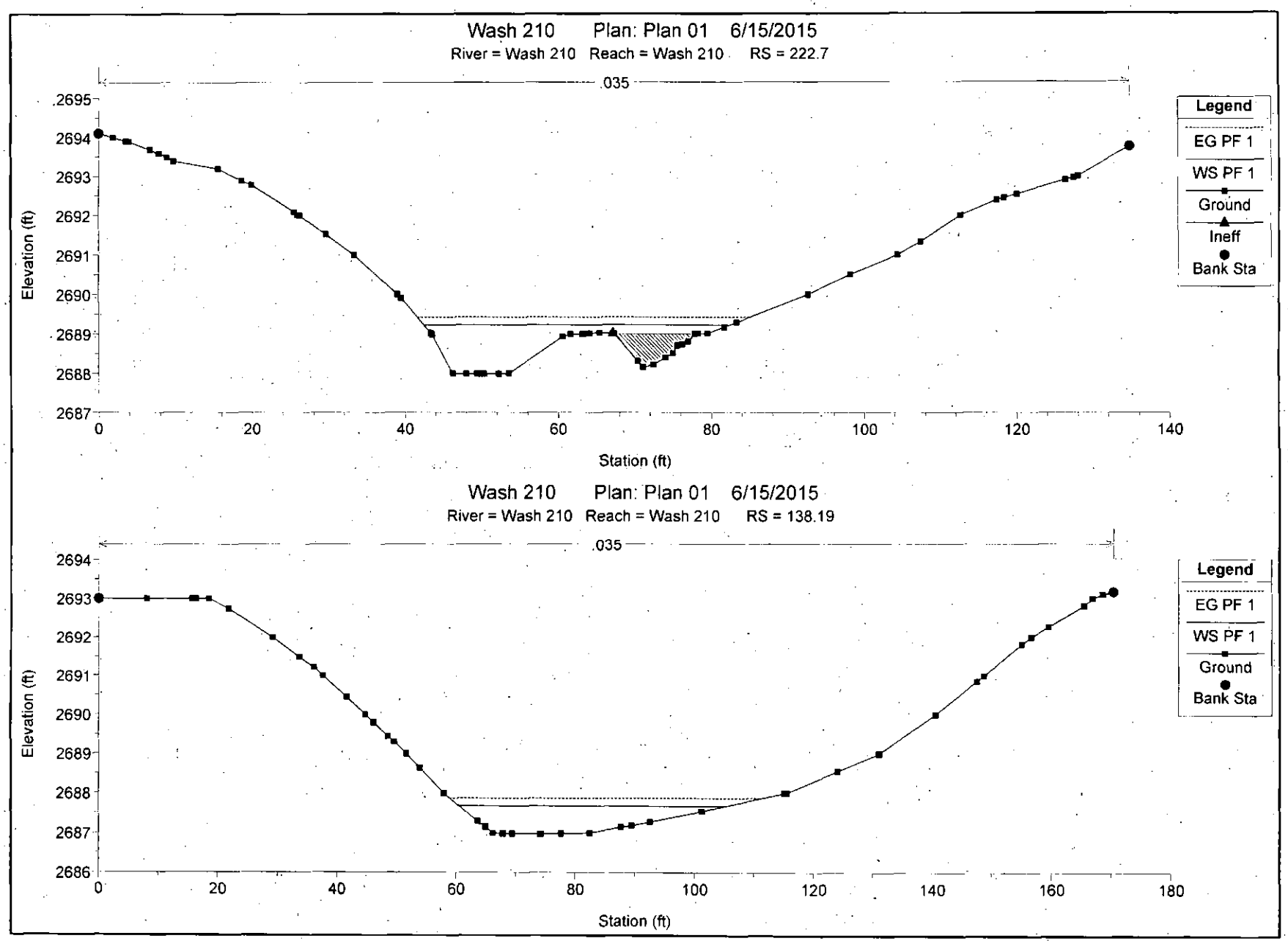
HEC-RAS Plan: Plan 01 River: Wash 210 Reach: Wash 210 Profile: PF 1

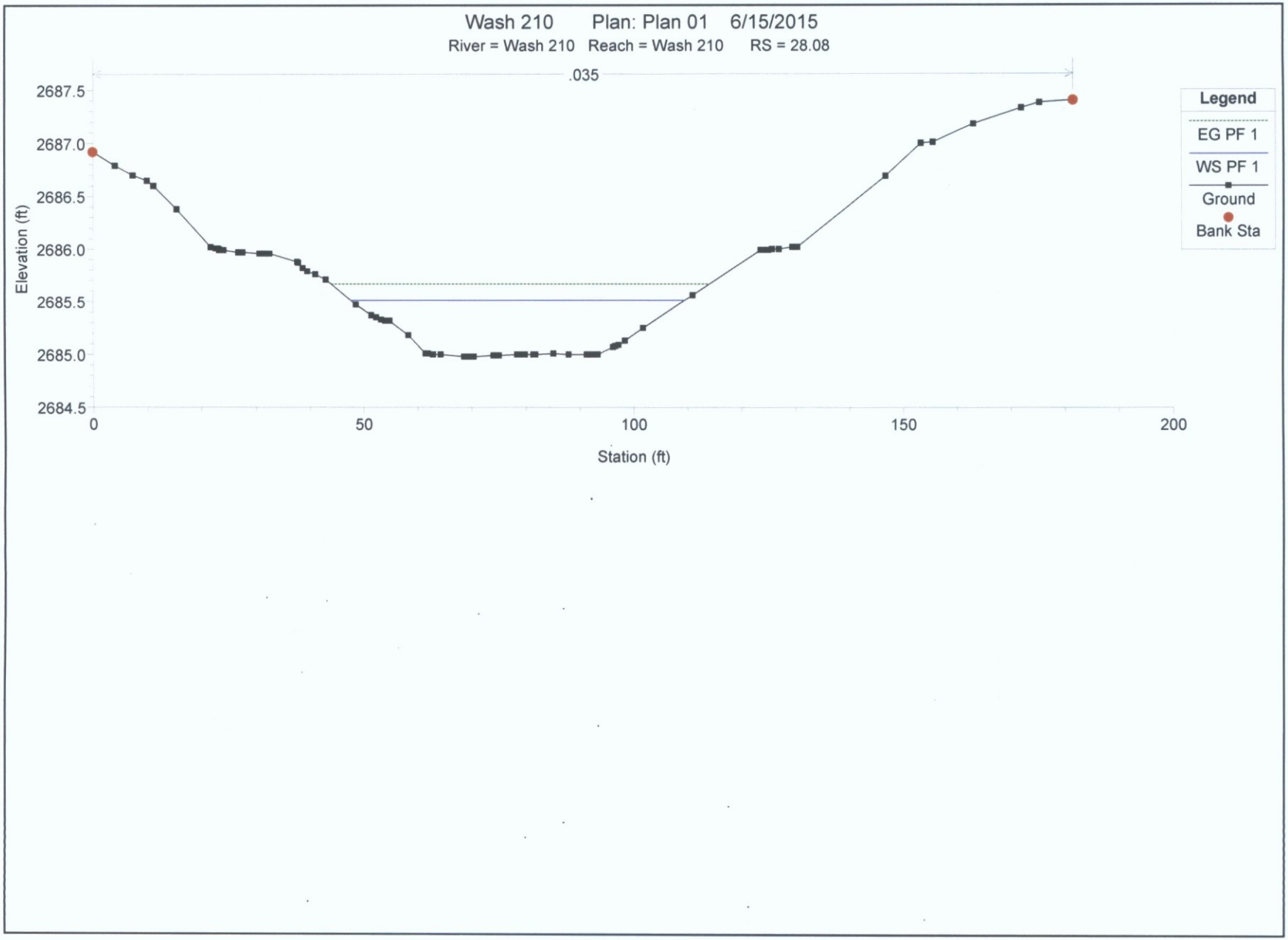
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Wash 210	1139.96	PF 1	76.00	2705.96	2706.86	2706.86	2707.16	0.021552	4.37	17.39	29.47	1.00
Wash 210	1033.11	PF 1	76.00	2703.98	2704.99		2705.17	0.012181	3.39	22.40	36.26	0.76
Wash 210	867.58	PF 1	76.00	2700.99	2702.12	2702.12	2702.26	0.027464	2.96	25.70	94.24	1.00
Wash 210	675.02	PF 1	76.00	2697.00	2698.01	2697.91	2698.15	0.012876	2.98	25.49	52.24	0.75
Wash 210	521.2	PF 1	76.00	2694.52	2695.28	2695.28	2695.51	0.023626	3.90	19.48	42.10	1.01
Wash 210	362.84	PF 1	76.00	2690.00	2691.52	2691.45	2691.80	0.016623	4.27	17.80	25.66	0.90
Wash 210	222.7	PF 1	76.00	2687.99	2689.23	2689.17	2689.43	0.017005	3.59	21.16	40.04	0.87
Wash 210	138.19	PF 1	76.00	2686.98	2687.68	2687.65	2687.88	0.019924	3.62	20.98	44.60	0.93
Wash 210	28.08	PF 1	76.00	2684.98	2685.51	2685.48	2685.67	0.020004	3.18	23.88	61.90	0.90

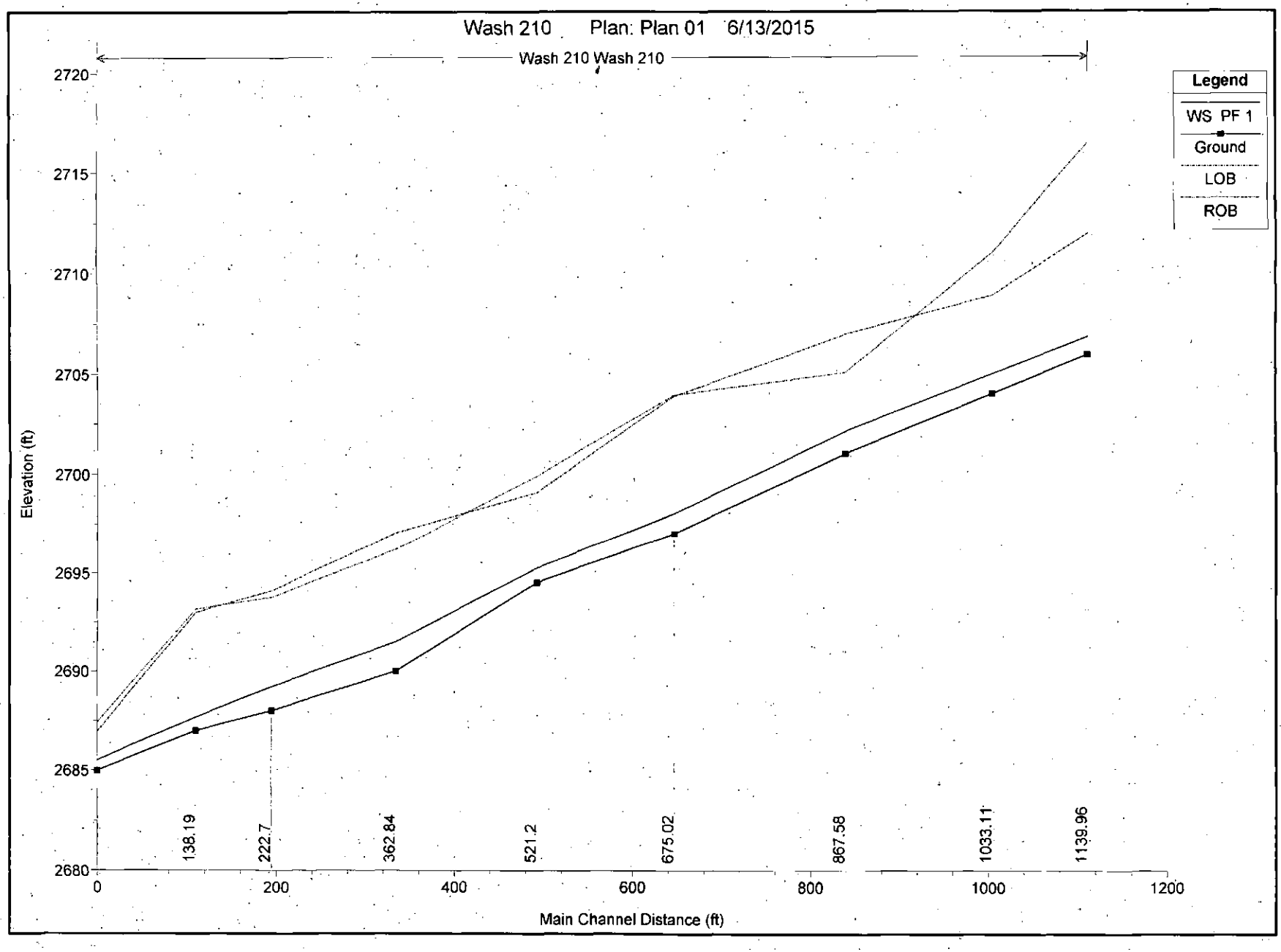

Wash 210 Plan: Plan 01 6/15/2015
River = Wash 210 Reach = Wash 210 RS = 1139.96
.035
Elevation (ft)
2718
2716
2714
2712
2710
2708
2706
2704
0
20
40
60
80
100
120
140
160
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Wash 210 Plan: Plan 01 6/15/2015
River = Wash 210 Reach = Wash 210 RS = 1033.11
.035
Elevation (ft)
2711
2710
2709
2708
2707
2706
2705
2704
2703
0
50
100
150
200
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta


Wash 210 Plan: Plan 01 6/15/2015
River = Wash 210 Reach = Wash 210 RS = 867.58
.035
Elevation (ft)
2707
2706
2705
2704
2703
2702
2701
2700
0
50
100
150
200
250
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Ineff
Bank Sta
Wash 210 Plan: Plan 01 6/15/2015
River = Wash 210 Reach = Wash 210 RS = 675.02
.035
Elevation (ft)
2704
2703
2702
2701
2700
2699
2698
2697
0
50
100
150
200
250
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta


Wash 210 Plan: Plan 01 6/15/2015
River = Wash 210 Reach = Wash 210 RS = 521.2
.035
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Wash 210 Plan: Plan 01 6/15/2015
River = Wash 210 Reach = Wash 210 RS = 362.84
.035
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta


Wash 210 Plan: Plan 01 6/15/2015
River = Wash 210 Reach = Wash 210 RS = 222.7
.035
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Ineff
Bank Sta
Wash 210 Plan: Plan 01 6/15/2015
River = Wash 210 Reach = Wash 210 RS = 138.19
.035
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta


Wash 210 Plan: Plan 01 6/15/2015
River = Wash 210 Reach = Wash 210 RS = 28.08
.035
2687.5
2687.0
2686.5
2686.0
2685.5
2685.0
2684.5
Elevation (ft)
0
50
100
150
200
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta


Wash 210 Plan: Plan 01 6/13/2015
Wash 210 Wash 210
Legend
WS PF 1
Ground
LOB
ROB
Elevation (ft)
2720
2715
2710
2705
2700
2695
2690
2685
2680
138.19
222.7
362.84
521.2
675.02
867.58
1033.11
1139.96
0
200
400
600
800
1000
1200
Main Channel Distance (ft)

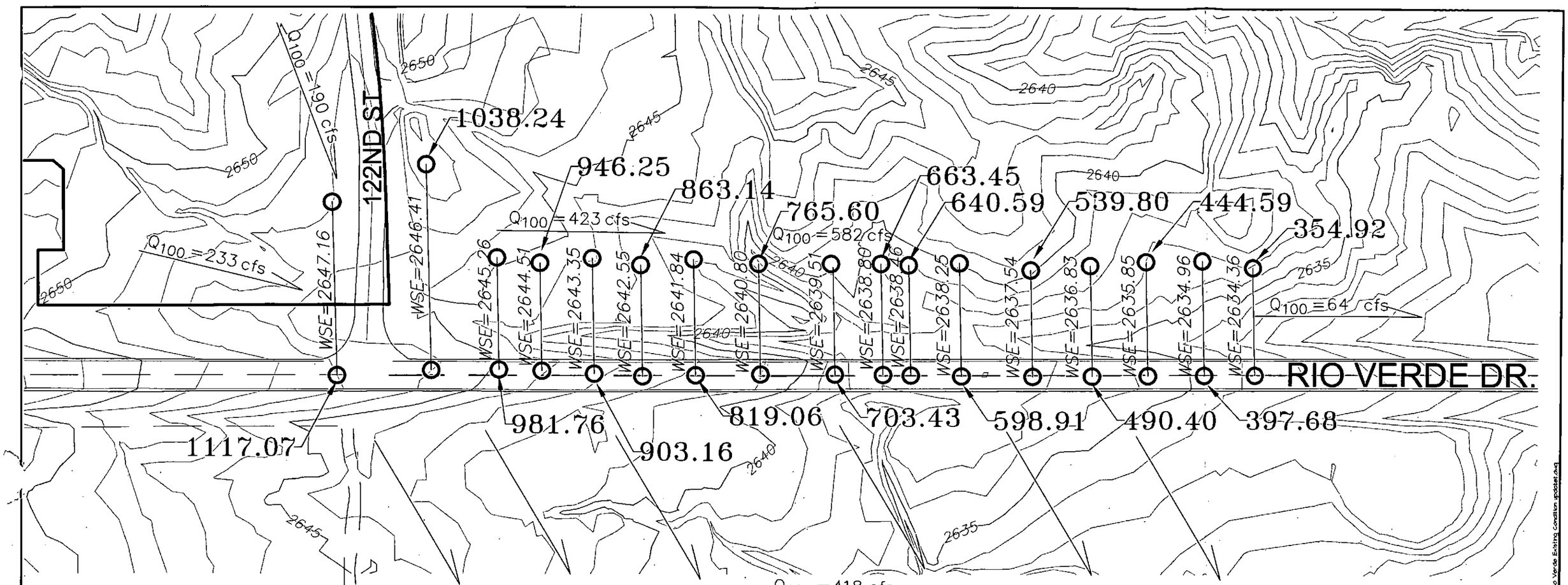
Existing & Post-Development

HEC-RAS Exhibits & Outputs for Rio Verde Drive

RIO VERDE DRIVE

EXISTING CONDITION

HEC-RAS



LEGEND

PROPERTY BOUNDARY

WSE=2688.5 — HEC-RAS CROSS-SECTION AND 100-YEAR, 6-HOUR WATER SURFACE ELEVATION

1133.62 — HEC-RAS RIVER STATION

Q_{100} = 26 cfs — 100-YEAR, 6-HOUR EXISTING CONDITION CONDITION PEAK FLOW RATE

N

0 80 160

Horz. 1 in. = 80 ft.

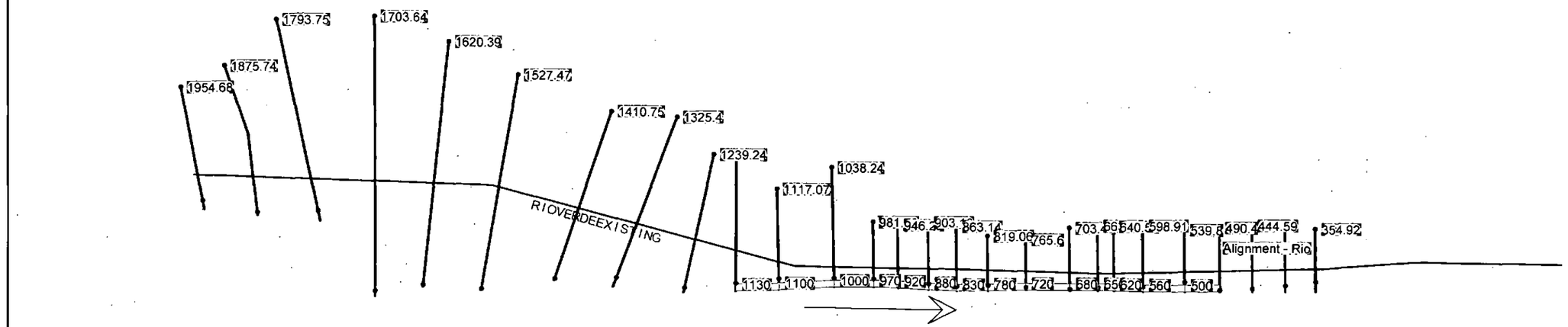
SCOTTSDALE NATIONAL GOLF CLUB

RIO VERDE DRIVE
EXISTING CONDITION
HEC-RAS EXHIBIT

WOOD/PATEL
2051 W. Northern Ave.
Phoenix, AZ 85021
(602) 335-8500
www.woodpatel.com

JOB NO. 144147

N:\JOBS\144147\Project Support\Reports\Drainage\Rio Verde Drive\HEC-RAS\ 144T-Rio Verde Existing Condition update.dwg

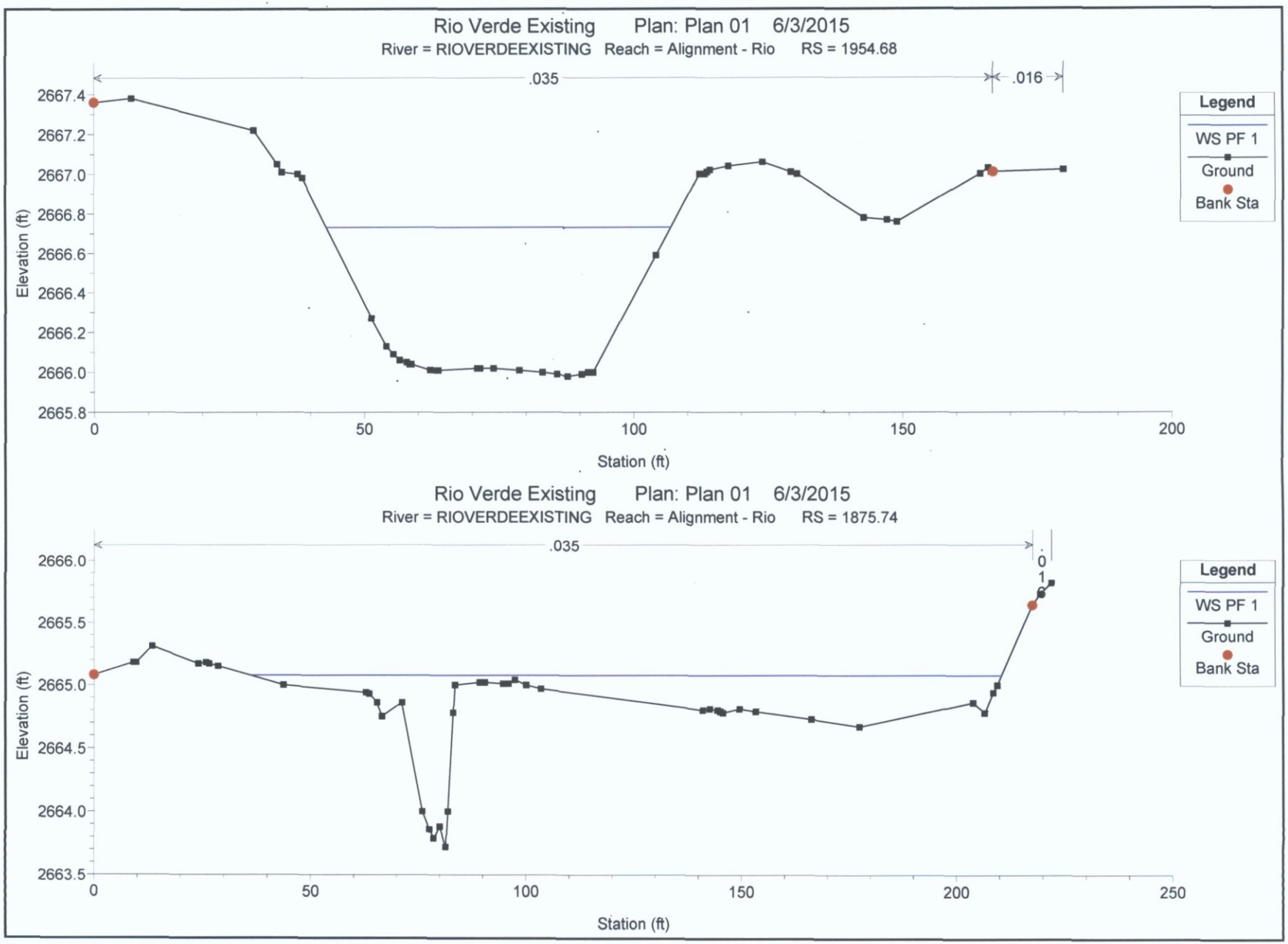

1793.75
1703.64
1620.39
1875.74
1954.68
1527.47
1410.75
1325.4
1239.24
1038.24
1117.07
981.5
946.2
903.1
863.14
819.06
765.6
703.56
640.5
598.91
539.84
490.4
444.59
354.92
RIOVERDEEXISTING
Alignment - Rio
1130
1100
1000
970
920
880
830
780
720
680
620
560
500

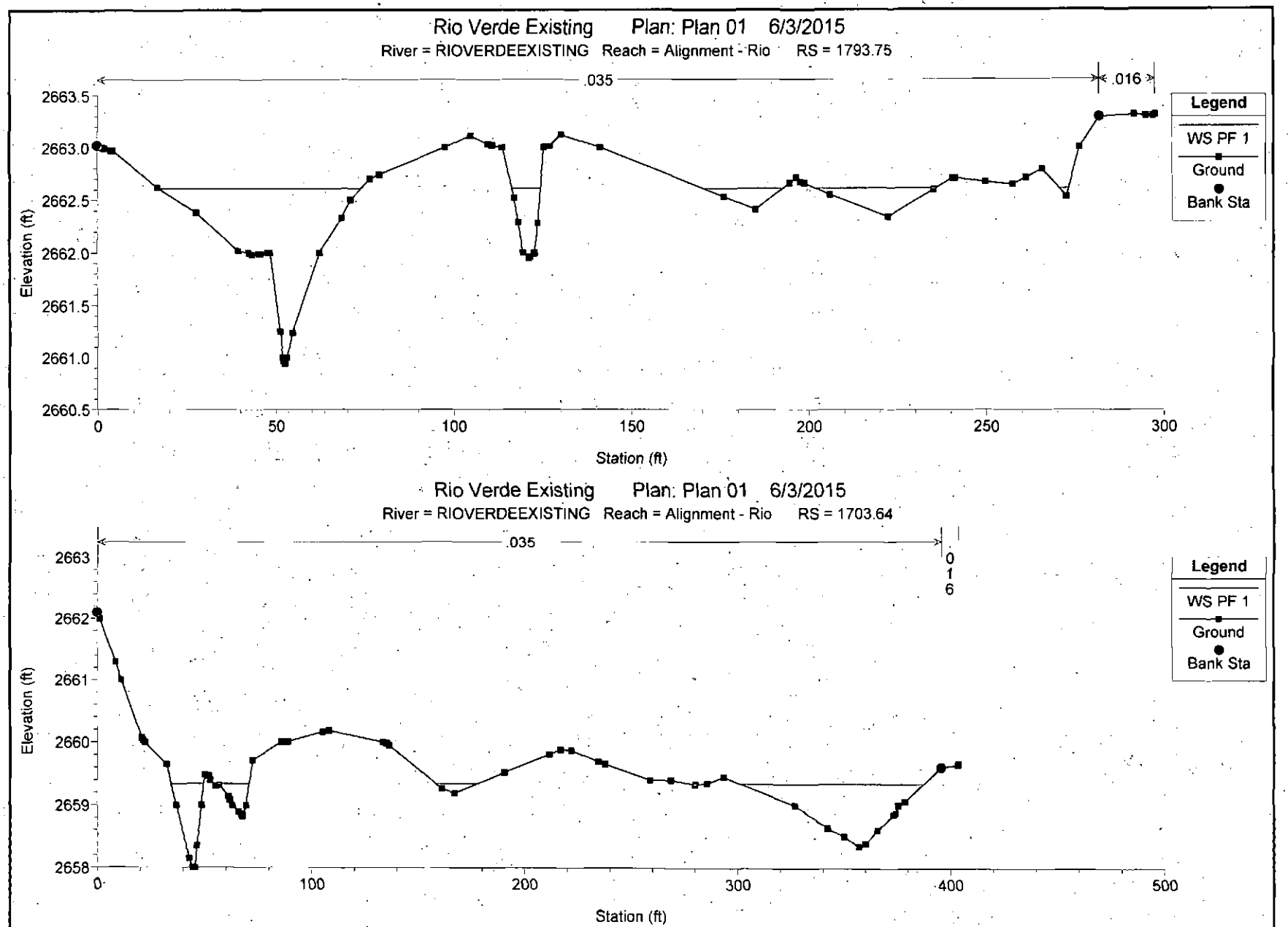
HEC-RAS Plan: Plan 01 River: RIOVERDEEXISTING Reach: Alignment - Rio Profile: PF 1

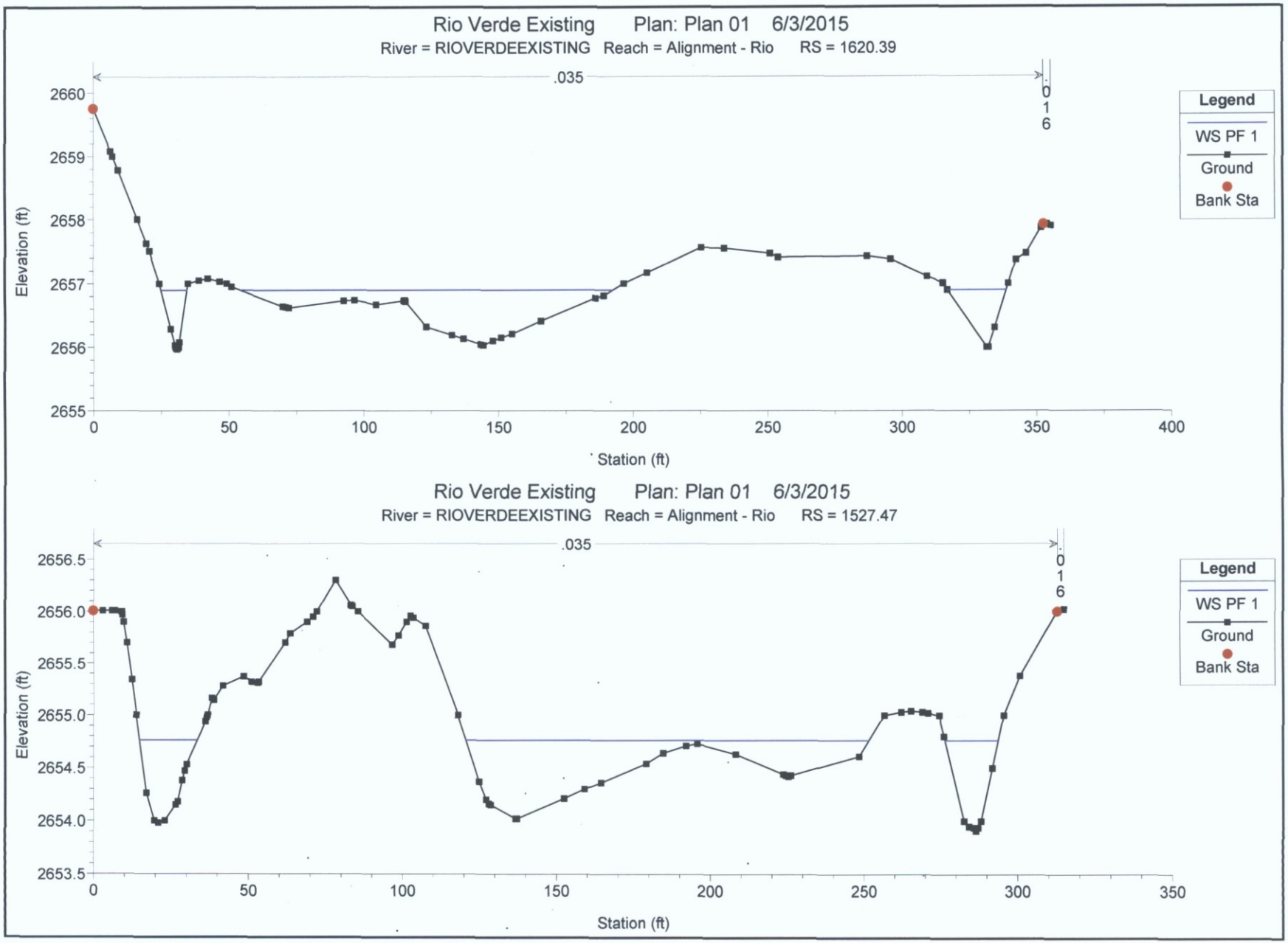
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Alignment - Rio	1954.68	PF 1	134.00	2665.98	2666.73	2666.67	2666.95	0.016314	3.70	36.17	64.02	0.87
Alignment - Rio	1875.74	PF 1	134.00	2663.72	2665.07	2665.07	2665.21	0.030298	2.99	44.87	174.14	1.04
Alignment - Rio	1793.75	PF 1	134.00	2660.94	2662.61	2662.61	2662.78	0.026063	3.27	40.92	123.46	1.00
Alignment - Rio	1703.64	PF 1	205.00	2658.00	2659.34	2659.34	2659.54	0.024368	3.61	56.73	140.50	1.00
Alignment - Rio	1620.39	PF 1	205.00	2655.97	2656.90	2656.86	2657.05	0.019387	3.13	65.45	169.38	0.89
Alignment - Rio	1527.47	PF 1	205.00	2653.91	2654.76	2654.76	2654.95	0.026377	3.46	59.31	166.85	1.02
Alignment - Rio	1410.75	PF 1	233.00	2650.93	2652.22	2652.19	2652.38	0.018990	3.13	74.40	189.58	0.88
Alignment - Rio	1325.4	PF 1	233.00	2649.00	2650.26	2650.26	2650.46	0.026975	3.65	63.86	168.52	1.04
Alignment - Rio	1239.24	PF 1	233.00	2647.00	2648.49	2648.10	2648.60	0.004957	2.68	86.81	101.87	0.51
Alignment - Rio	1179.38	PF 1	233.00	2646.85	2647.76	2647.76	2648.03	0.022439	4.23	55.14	101.70	1.01
Alignment - Rio	1130		Lat Struct									
Alignment - Rio	1117.07	PF 1	233.00	2645.00	2647.16		2647.19	0.001092	1.54	152.65	145.95	0.25
Alignment - Rio	1100		Lat Struct									
Alignment - Rio	1038.24	PF 1	391.40	2644.97	2646.41	2646.41	2646.84	0.018754	5.06	75.42	98.98	0.99
Alignment - Rio	1000		Lat Struct									
Alignment - Rio	981.76	PF 1	347.10	2642.98	2645.26	2645.26	2645.78	0.009889	3.94	73.84	80.56	0.73
Alignment - Rio	970		Lat Struct									
Alignment - Rio	946.25	PF 1	281.36	2641.79	2644.51	2644.51	2645.01	0.018897	5.39	50.88	58.31	1.00
Alignment - Rio	920		Lat Struct									
Alignment - Rio	903.16	PF 1	250.75	2640.86	2643.35	2643.35	2643.82	0.015857	5.53	45.52	48.79	0.94
Alignment - Rio	880		Lat Struct									
Alignment - Rio	863.14	PF 1	229.13	2639.79	2642.55		2642.86	0.011897	4.37	51.80	59.86	0.80
Alignment - Rio	830		Lat Struct									
Alignment - Rio	819.06	PF 1	214.77	2638.98	2641.84	2641.84	2642.25	0.016158	5.13	42.25	51.48	0.93
Alignment - Rio	780		Lat Struct									
Alignment - Rio	765.6	PF 1	213.35	2638.00	2640.80	2640.80	2641.24	0.018992	5.33	40.13	48.63	0.99
Alignment - Rio	720		Lat Struct									
Alignment - Rio	703.43	PF 1	340.83	2637.94	2639.51	2639.40	2639.90	0.012869	4.97	68.22	65.83	0.85
Alignment - Rio	680		Lat Struct									
Alignment - Rio	663.45	PF 1	271.64	2637.32	2638.80	2638.80	2639.39	0.011391	5.11	48.49	40.34	0.82
Alignment - Rio	650		Lat Struct									
Alignment - Rio	640.59	PF 1	188.16	2636.99	2638.46		2638.72	0.005650	3.70	48.46	38.50	0.58
Alignment - Rio	620		Lat Struct									
Alignment - Rio	598.91	PF 1	107.05	2636.97	2638.25		2638.41	0.009776	3.14	33.87	56.84	0.69
Alignment - Rio	560		Lat Struct									
Alignment - Rio	539.8	PF 1	76.56	2636.88	2637.54	2637.54	2637.82	0.009643	2.59	22.31	46.06	0.65
Alignment - Rio	500		Lat Struct									
Alignment - Rio	490.4	PF 1	63.91	2636.00	2636.83	2636.76	2636.99	0.016404	3.19	20.03	44.53	0.84
Alignment - Rio	444.59	PF 1	63.91	2634.98	2635.85	2635.85	2636.09	0.023902	3.87	16.53	36.49	1.01

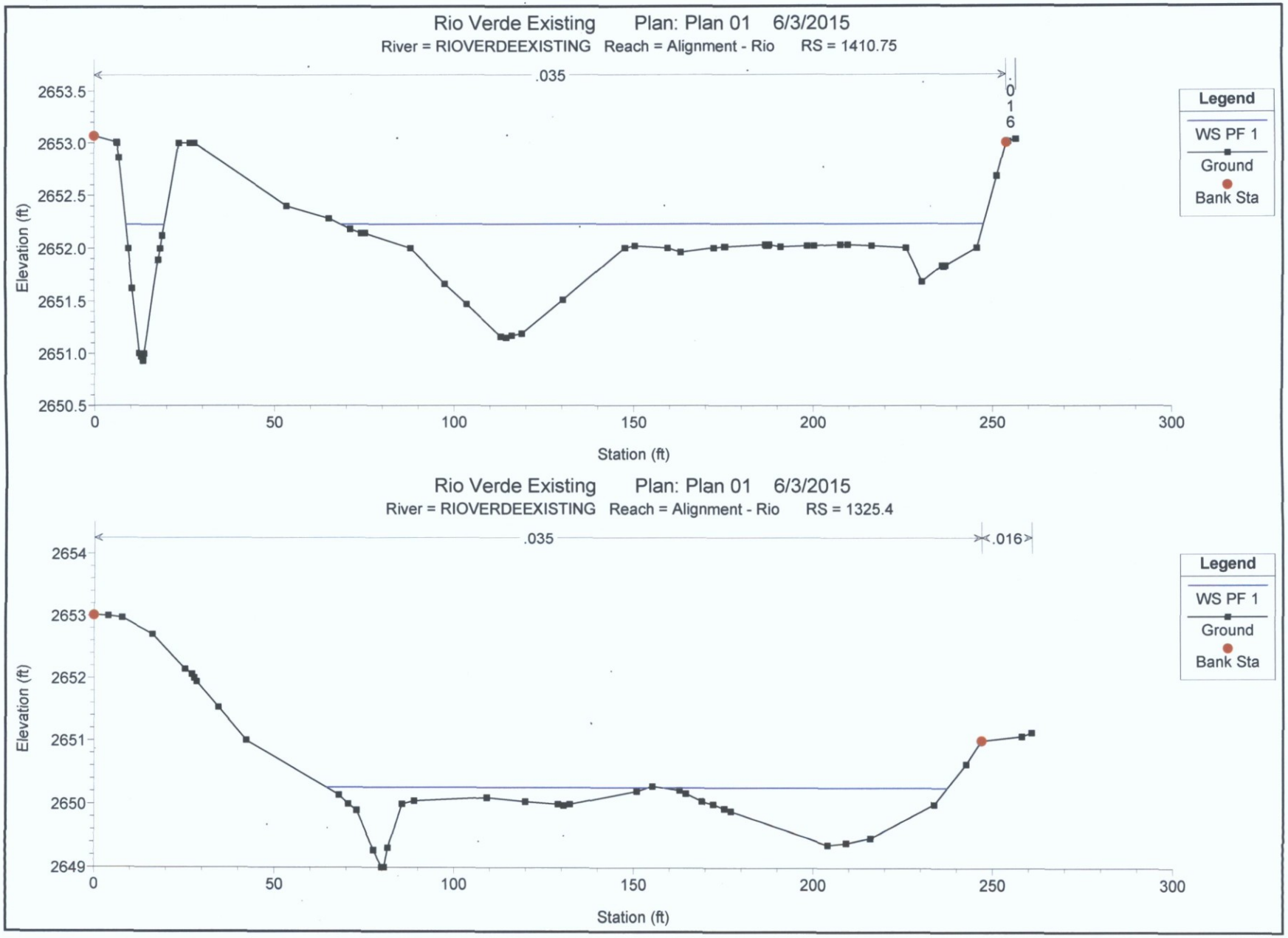
HEC-RAS Plan: Plan 01 River: RIOVERDEEXISTING Reach: Alignment - Rio Profile: PF 1 (Continued)

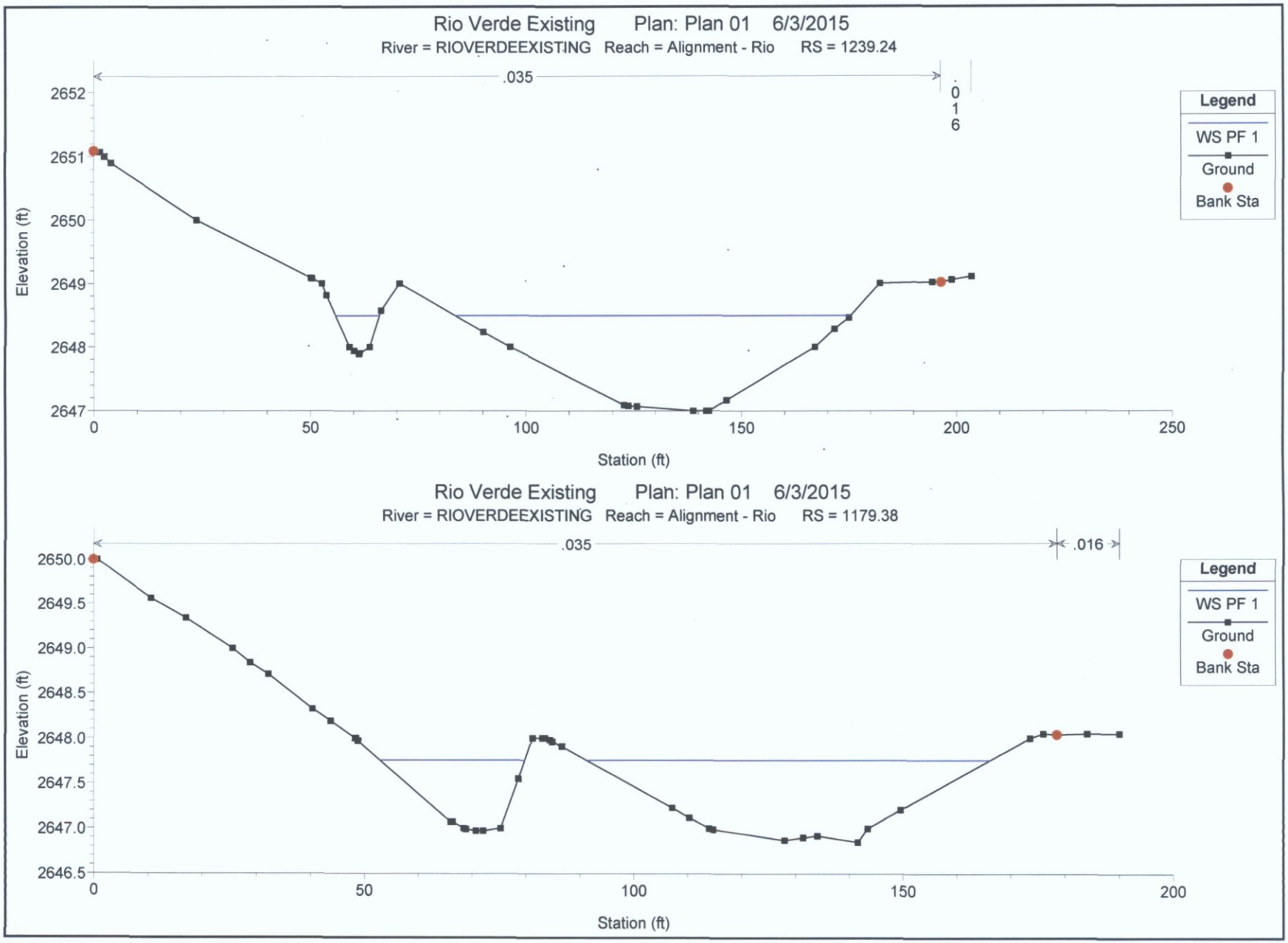
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Alignment - Rio	397.68	PF 1	63.91	2633.98	2634.96		2635.08	0.010811	2.81	22.76	44.79	0.69
Alignment - Rio	354.92	PF 1	63.91	2633.94	2634.36	2634.36	2634.56	0.013950	2.57	20.87	59.09	0.75

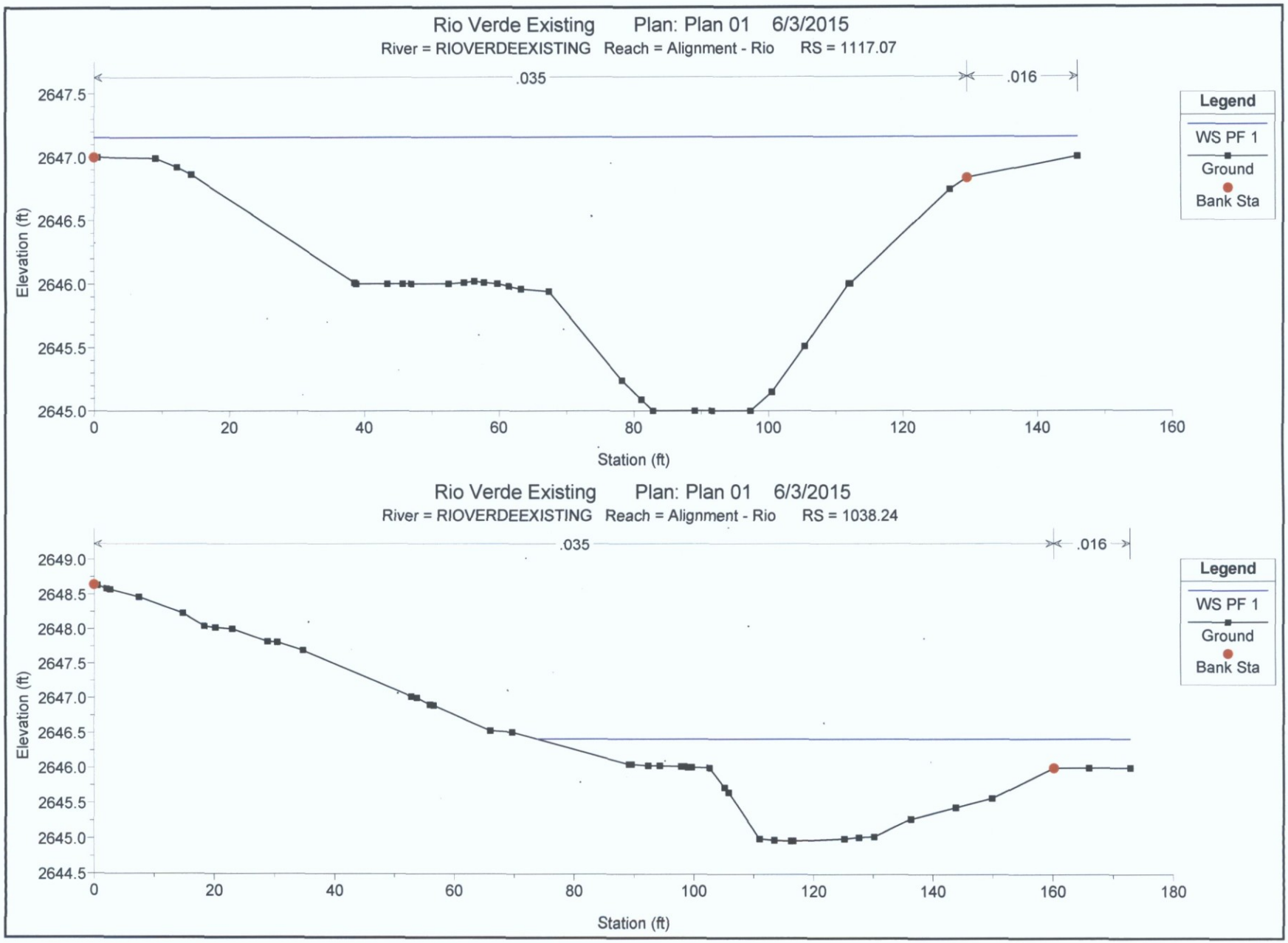

Rio Verde Existing Plan: Plan 01 6/3/2015
River = RIOVERDEEXISTING Reach = Alignment - Rio RS = 1954.68
.035
.016
Elevation (ft)
2667.4
2667.2
2667.0
2666.8
2666.6
2666.4
2666.2
2666.0
2665.8
0
50
100
150
200
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
Rio Verde Existing Plan: Plan 01 6/3/2015
River = RIOVERDEEXISTING Reach = Alignment - Rio RS = 1875.74
.035
Elevation (ft)
2666.0
2665.5
2665.0
2664.5
2664.0
2663.5
0
50
100
150
200
250
Station (ft)
Legend
WS PF 1
Ground
Bank Sta

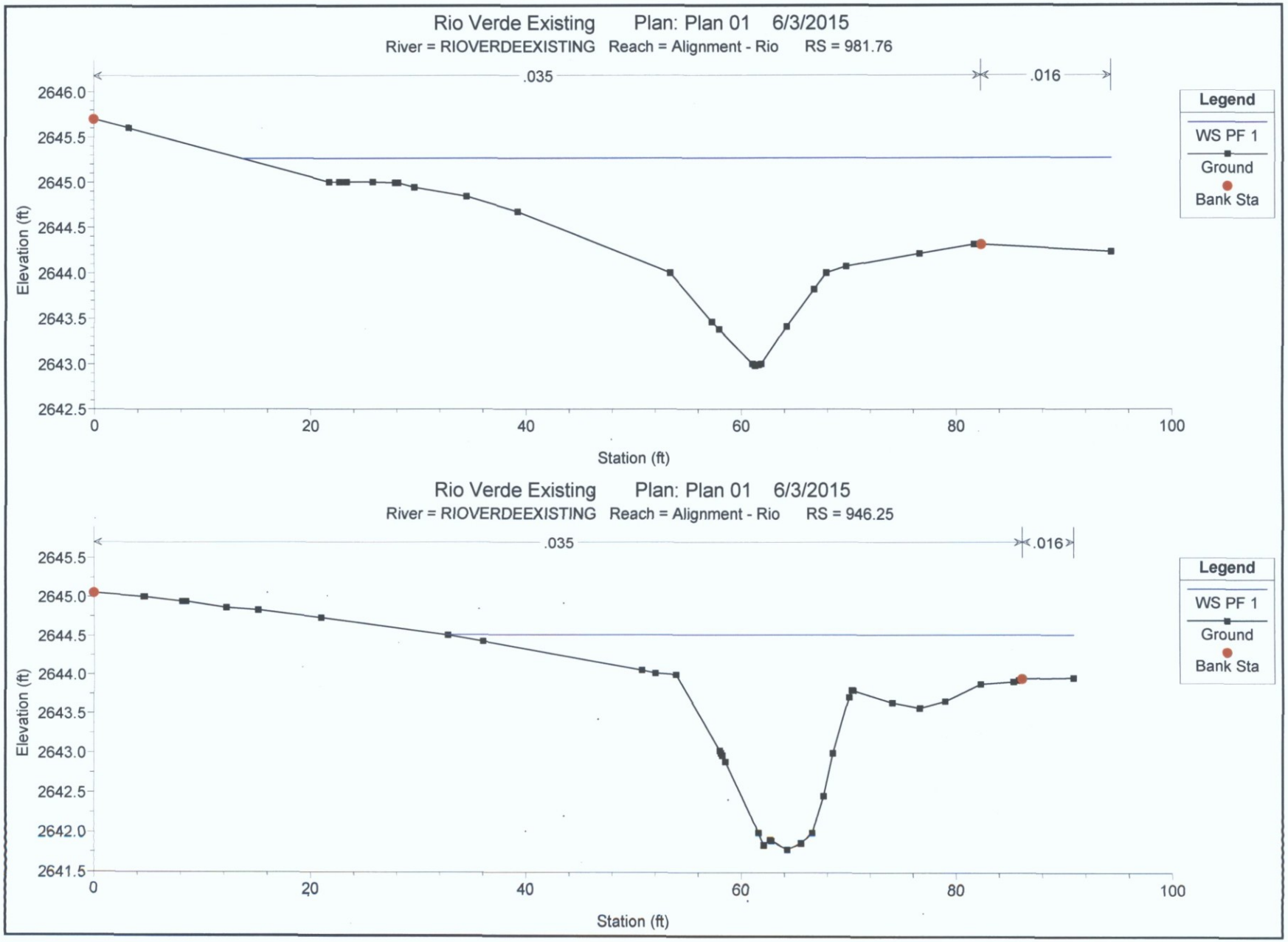

Rio Verde Existing Plan: Plan 01 6/3/2015
River = RIOVERDEEXISTING Reach = Alignment - Rio RS = 1793.75
.035
.016
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2663.5
2663.0
2662.5
2662.0
2661.5
2661.0
2660.5
0
50
100
150
200
250
300
Station (ft)
Rio Verde Existing Plan: Plan 01 6/3/2015
River = RIOVERDEEXISTING Reach = Alignment - Rio RS = 1703.64
.035
0
1
6
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2663
2662
2661
2660
2659
2658
0
100
200
300
400
500
Station (ft)

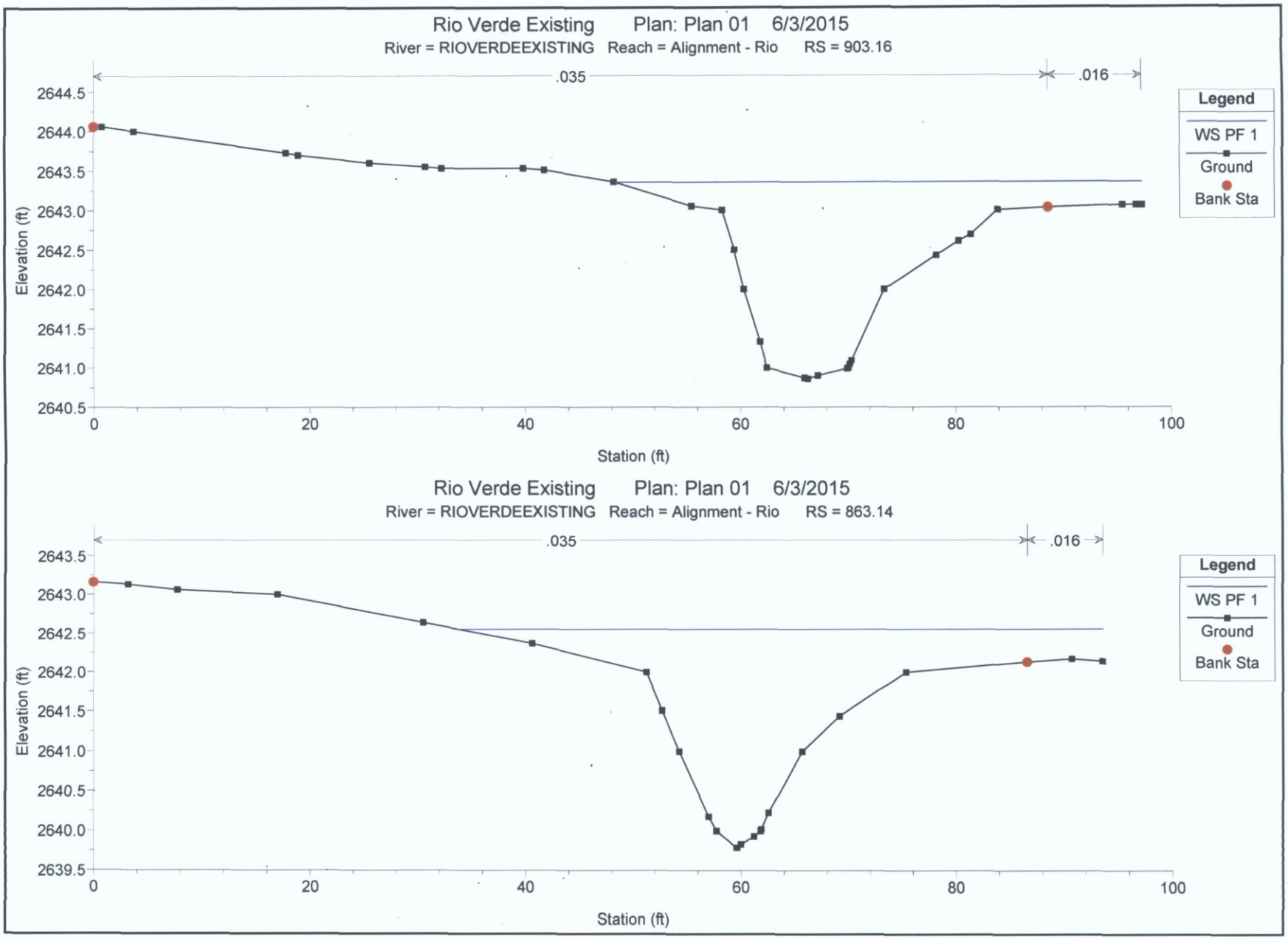

Rio Verde Existing Plan: Plan 01 6/3/2015
River = RIOVERDEEXISTING Reach = Alignment - Rio RS = 1620.39
.035
.016
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Rio Verde Existing Plan: Plan 01 6/3/2015
River = RIOVERDEEXISTING Reach = Alignment - Rio RS = 1527.47
.035
.016
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

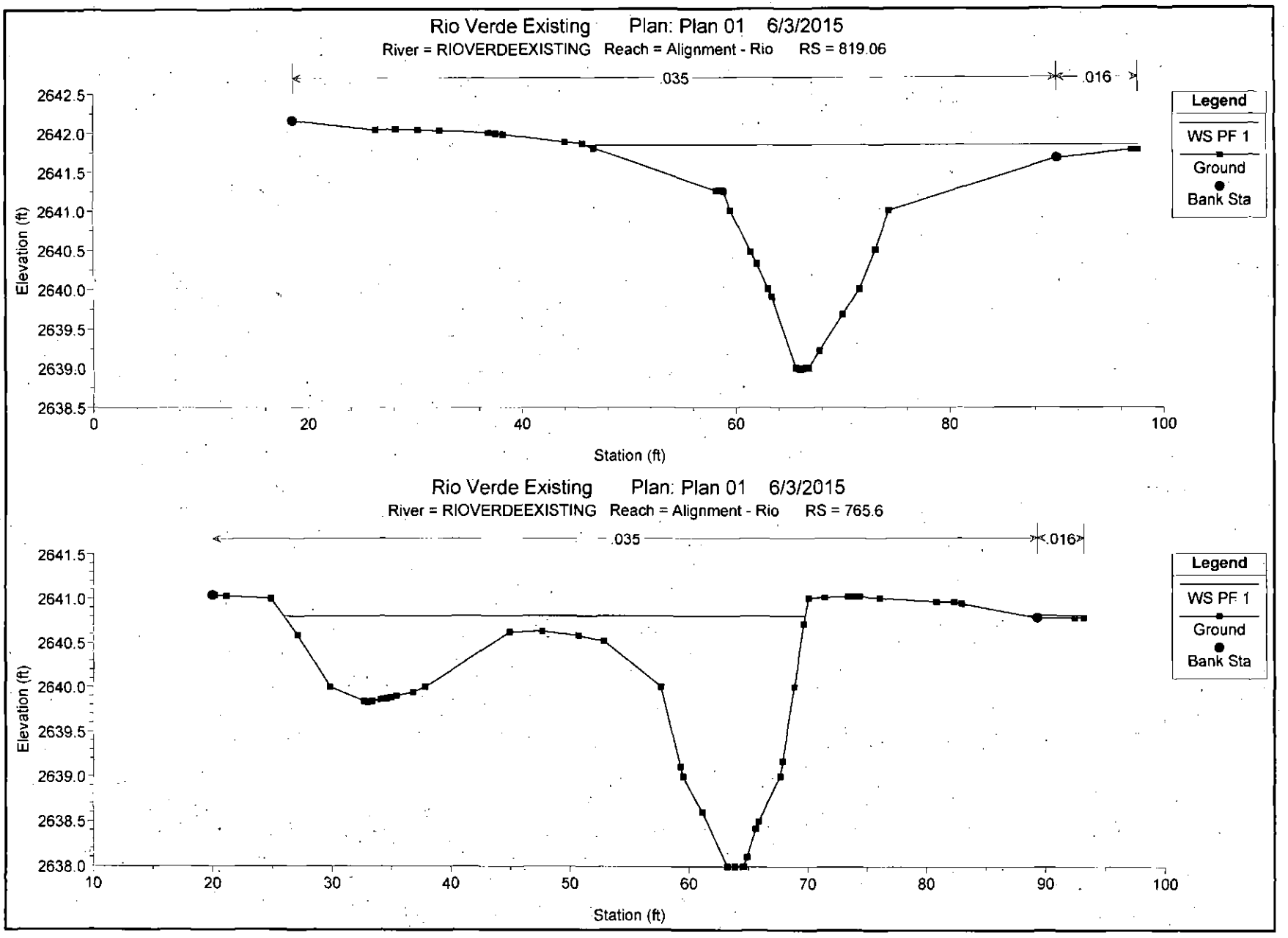

Rio Verde Existing Plan: Plan 01 6/3/2015
River = RIOVERDEEXISTING Reach = Alignment - Rio RS = 1410.75
.035
.016
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2653.5
2653.0
2652.5
2652.0
2651.5
2651.0
2650.5
0
50
100
150
200
250
300
Rio Verde Existing Plan: Plan 01 6/3/2015
River = RIOVERDEEXISTING Reach = Alignment - Rio RS = 1325.4
.035
.016
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2654
2653
2652
2651
2650
2649
0
50
100
150
200
250
300

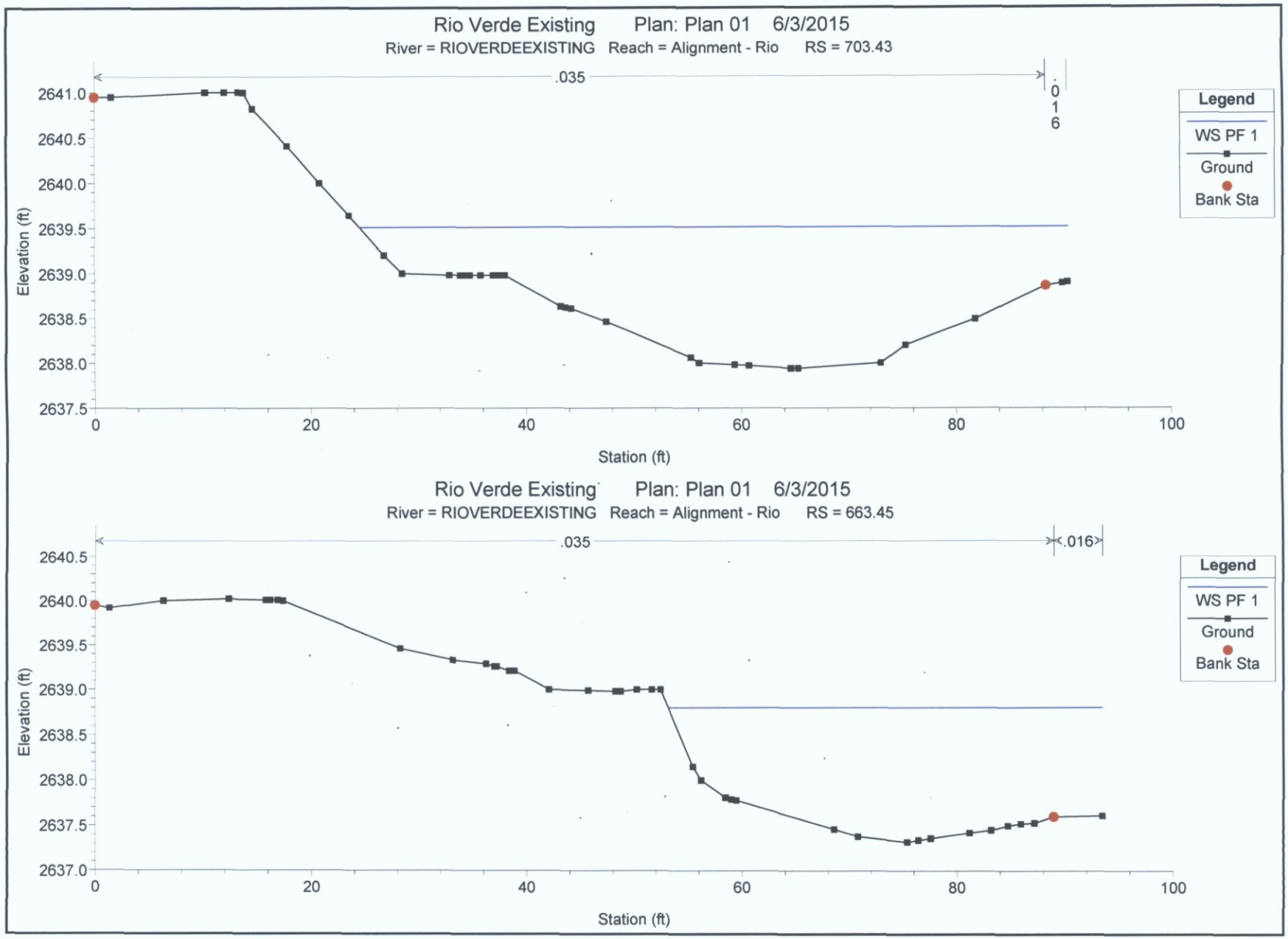

Rio Verde Existing Plan: Plan 01 6/3/2015
River = RIOVERDEEXISTING Reach = Alignment - Rio RS = 1239.24
.035
.016
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2652
2651
2650
2649
2648
2647
0
50
100
150
200
250
Rio Verde Existing Plan: Plan 01 6/3/2015
River = RIOVERDEEXISTING Reach = Alignment - Rio RS = 1179.38
.035
.016
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2650.0
2649.5
2649.0
2648.5
2648.0
2647.5
2647.0
2646.5
0
50
100
150
200

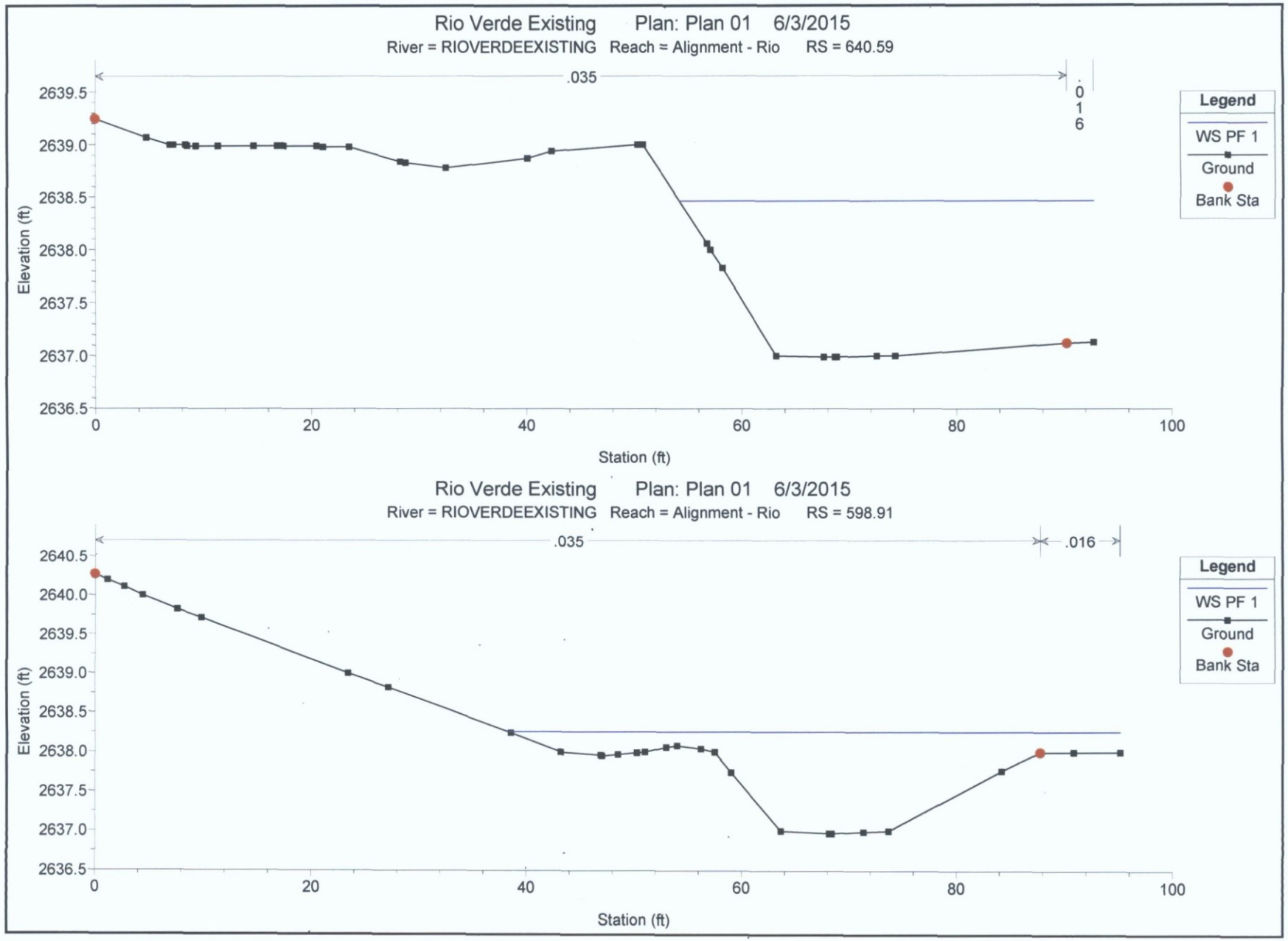

Rio Verde Existing Plan: Plan 01 6/3/2015
River = RIOVERDEEXISTING Reach = Alignment - Rio RS = 1117.07
.035
.016
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Rio Verde Existing Plan: Plan 01 6/3/2015
River = RIOVERDEEXISTING Reach = Alignment - Rio RS = 1038.24
.035
.016
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

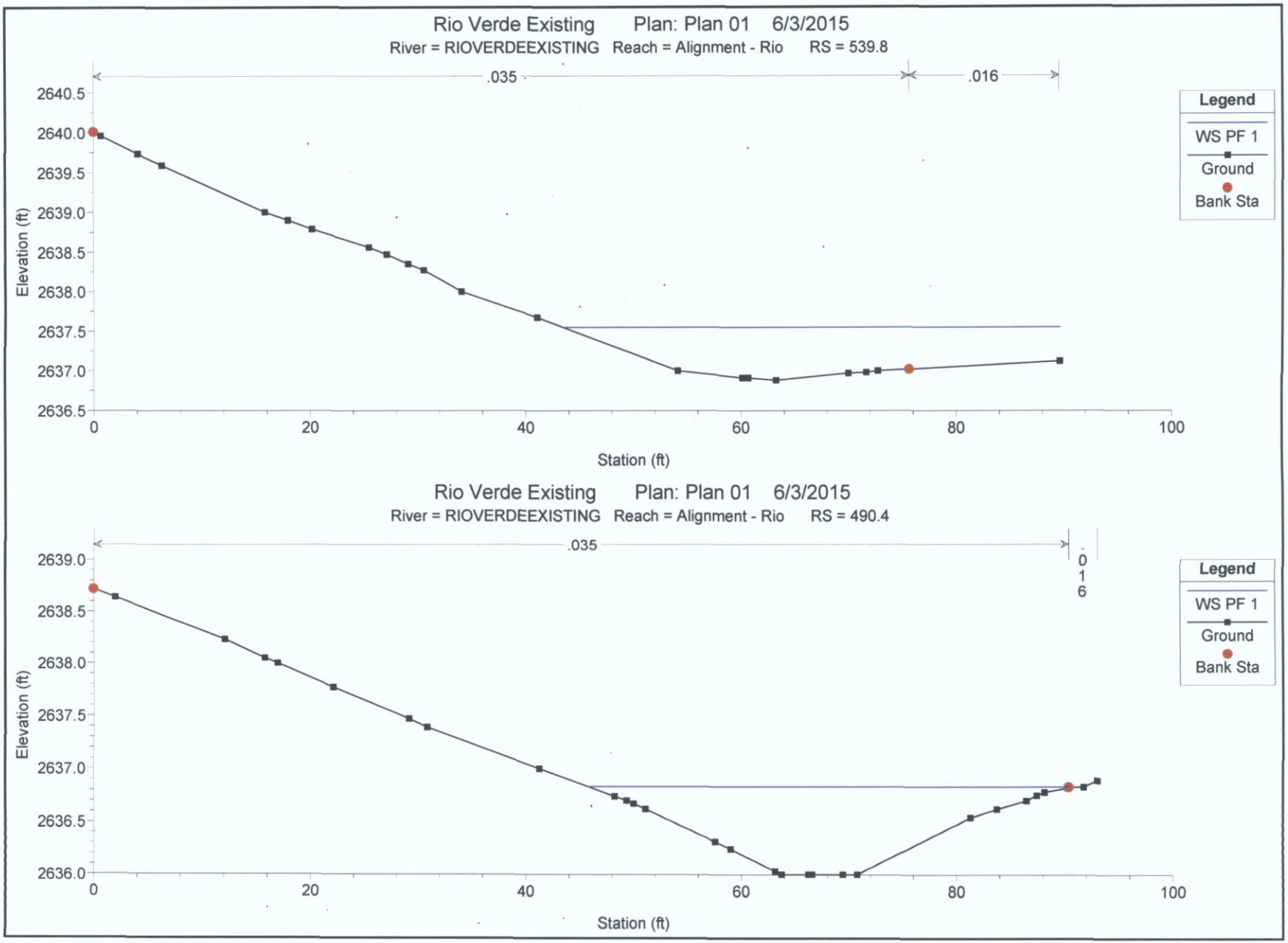

Rio Verde Existing Plan: Plan 01 6/3/2015
River = RIOVERDEEXISTING Reach = Alignment - Rio RS = 981.76
.035
.016
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Rio Verde Existing Plan: Plan 01 6/3/2015
River = RIOVERDEEXISTING Reach = Alignment - Rio RS = 946.25
.035
.016
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

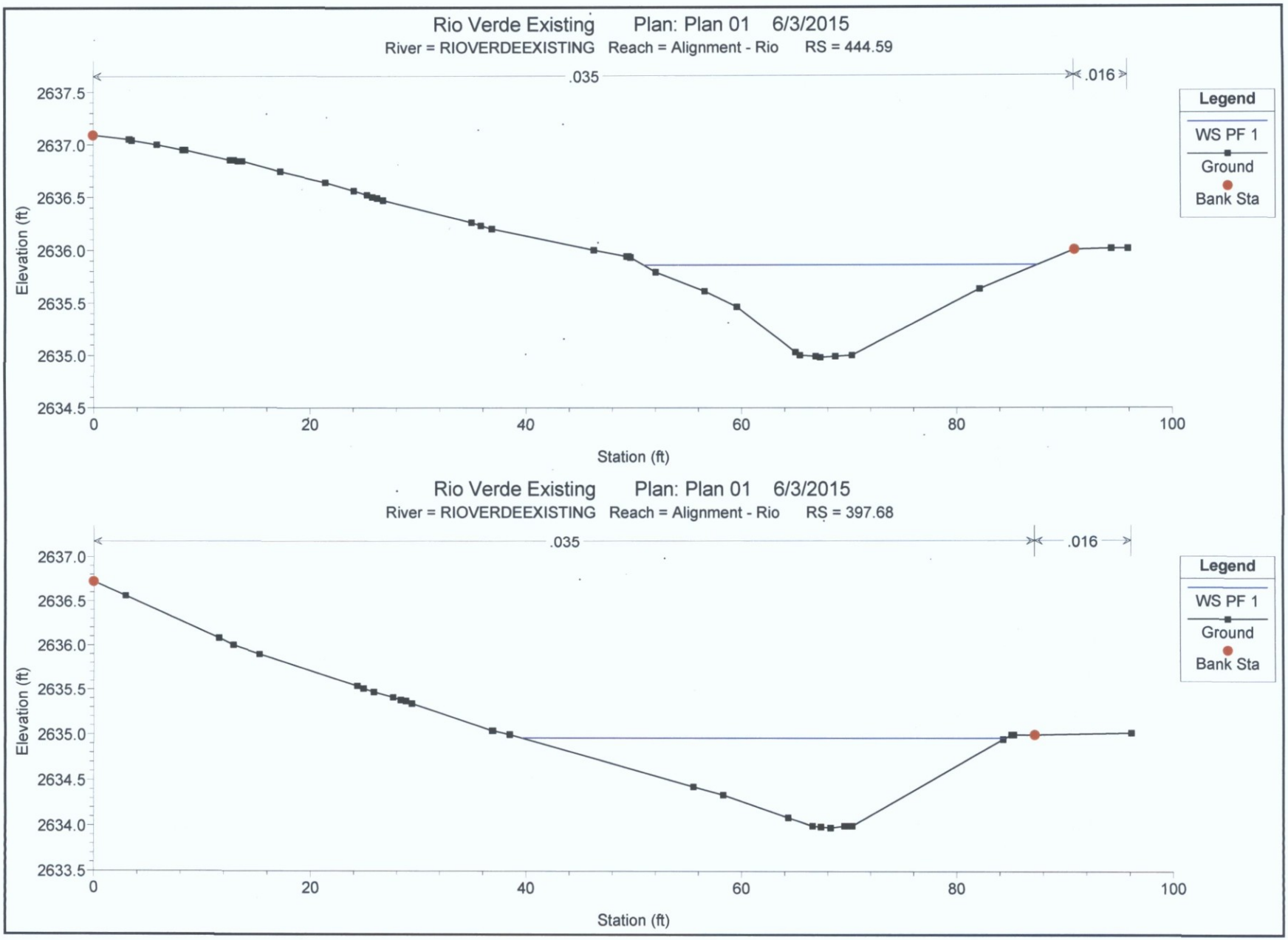

Rio Verde Existing Plan: Plan 01 6/3/2015
River = RIOVERDEEXISTING Reach = Alignment - Rio RS = 903.16
.035
.016
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2644.5
2644.0
2643.5
2643.0
2642.5
2642.0
2641.5
2641.0
2640.5
0
20
40
60
80
100
Station (ft)
Rio Verde Existing Plan: Plan 01 6/3/2015
River = RIOVERDEEXISTING Reach = Alignment - Rio RS = 863.14
.035
.016
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2643.5
2643.0
2642.5
2642.0
2641.5
2641.0
2640.5
2640.0
2639.5
0
20
40
60
80
100
Station (ft)

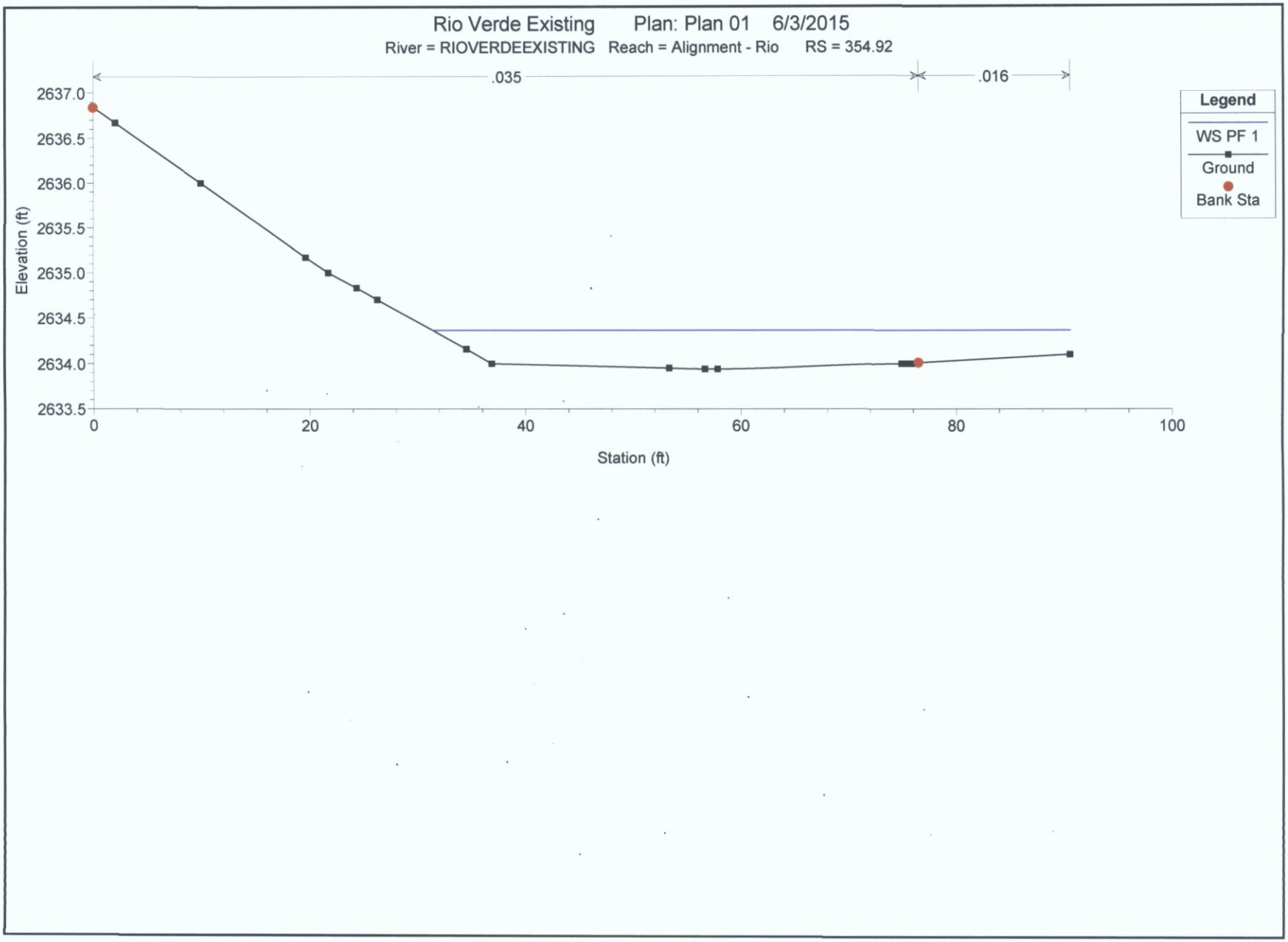

Rio Verde Existing Plan: Plan 01 6/3/2015
River = RIOVERDEEXISTING Reach = Alignment - Rio RS = 819.06
.035
.016
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Rio Verde Existing Plan: Plan 01 6/3/2015
River = RIOVERDEEXISTING Reach = Alignment - Rio RS = 765.6
.035
.016
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

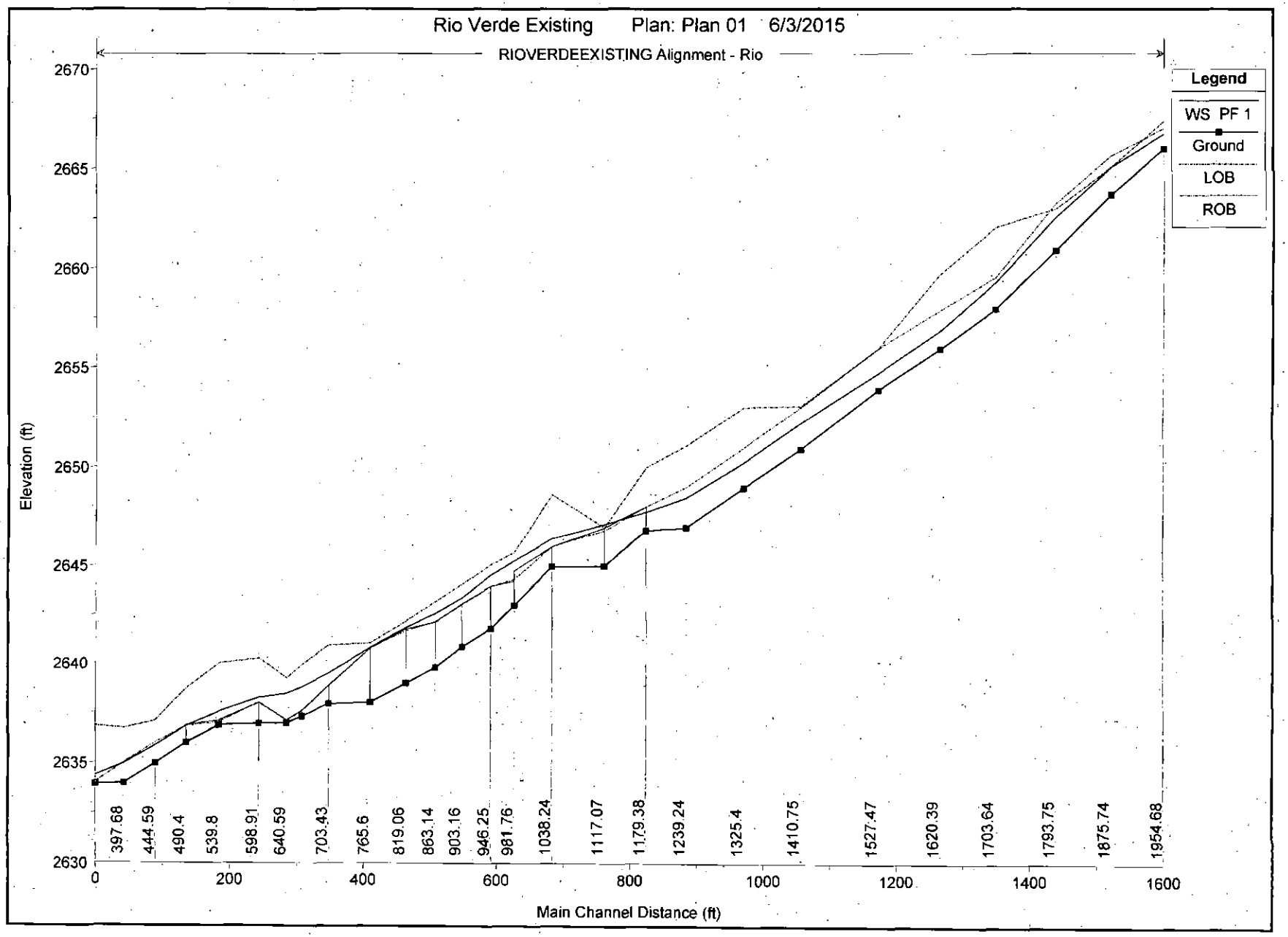

Rio Verde Existing Plan: Plan 01 6/3/2015
River = RIOVERDEEXISTING Reach = Alignment - Rio RS = 703.43
.035
.016
Elevation (ft)
2641.0
2640.5
2640.0
2639.5
2639.0
2638.5
2638.0
2637.5
0
20
40
60
80
100
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
Rio Verde Existing Plan: Plan 01 6/3/2015
River = RIOVERDEEXISTING Reach = Alignment - Rio RS = 663.45
.035
.016
Elevation (ft)
2640.5
2640.0
2639.5
2639.0
2638.5
2638.0
2637.5
2637.0
0
20
40
60
80
100
Station (ft)
Legend
WS PF 1
Ground
Bank Sta


Rio Verde Existing Plan: Plan 01 6/3/2015
River = RIOVERDEEXISTING Reach = Alignment - Rio RS = 640.59
.035
.016
Elevation (ft)
Station (ft)
Legend
WS PF 1
Ground
Bank Sta
Rio Verde Existing Plan: Plan 01 6/3/2015
River = RIOVERDEEXISTING Reach = Alignment - Rio RS = 598.91
.035
.016
Elevation (ft)
Station (ft)
Legend
WS PF 1
Ground
Bank Sta


Rio Verde Existing Plan: Plan 01 6/3/2015
River = RIOVERDEEXISTING Reach = Alignment - Rio RS = 539.8
.035
.016
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2640.5
2640.0
2639.5
2639.0
2638.5
2638.0
2637.5
2637.0
2636.5
0
20
40
60
80
100
Station (ft)
Rio Verde Existing Plan: Plan 01 6/3/2015
River = RIOVERDEEXISTING Reach = Alignment - Rio RS = 490.4
.035
.016
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2639.0
2638.5
2638.0
2637.5
2637.0
2636.5
2636.0
0
20
40
60
80
100
Station (ft)


Rio Verde Existing Plan: Plan 01 6/3/2015
River = RIOVERDEEXISTING Reach = Alignment - Rio RS = 444.59
.035
.016
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2637.5
2637.0
2636.5
2636.0
2635.5
2635.0
2634.5
0
20
40
60
80
100
Station (ft)
Rio Verde Existing Plan: Plan 01 6/3/2015
River = RIOVERDEEXISTING Reach = Alignment - Rio RS = 397.68
.035
.016
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2637.0
2636.5
2636.0
2635.5
2635.0
2634.5
2634.0
2633.5
0
20
40
60
80
100
Station (ft)

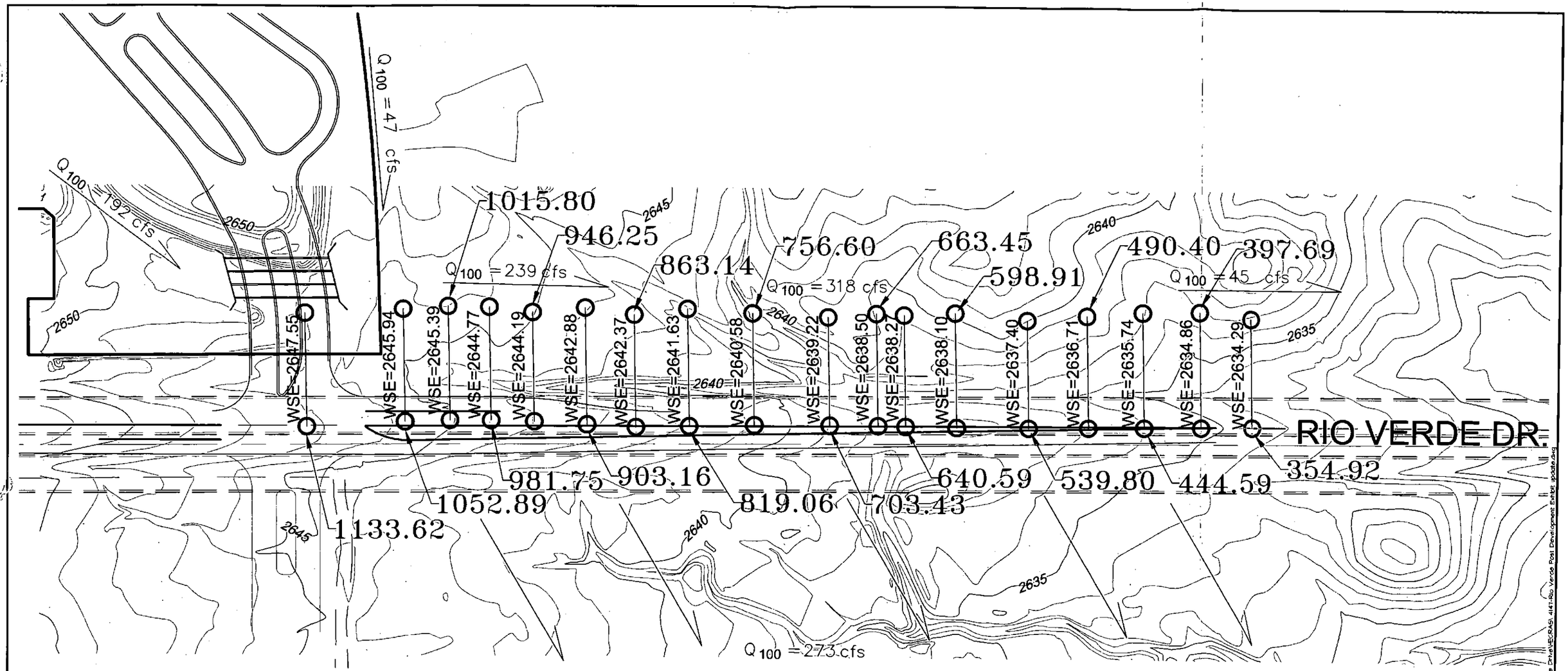

Rio Verde Existing Plan: Plan 01 6/3/2015
River = RIOVERDEEXISTING Reach = Alignment - Rio RS = 354.92
.035
.016
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2637.0
2636.5
2636.0
2635.5
2635.0
2634.5
2634.0
2633.5
0
20
40
60
80
100
Station (ft)


Rio Verde Existing Plan: Plan 01 6/3/2015
RIOVERDEEXISTING Alignment - Rio
Legend
WS PF 1
Ground
LOB
ROB
Elevation (ft)
Main Channel Distance (ft)
2670
2665
2660
2655
2650
2645
2640
2635
2630
0
200
400
600
800
1000
1200
1400
1600
397.68
444.59
490.4
539.8
598.91
640.59
703.43
765.6
819.06
863.14
903.16
946.25
981.76
1038.24
1117.07
1179.38
1239.24
1325.4
1410.75
1527.47
1620.39
1703.64
1793.75
1875.74
1954.68

RIO VERDE DRIVE

POST-DEVELOPMENT CONDITION

HEC-RAS



LEGEND

———	PROPERTY BOUNDARY
WSE=2688.5	HEC-RAS CROSS-SECTION AND 100-YEAR, 6-HOUR WATER SURFACE ELEVATION
1133.62	HEC-RAS RIVER STATION
Q_{100} =26 cfs	100-YEAR, 6-HOUR POST DEVELOPMENT CONDITION PEAK FLOW RATE

N

0 80 160

Horz. 1 in. = 80 ft.

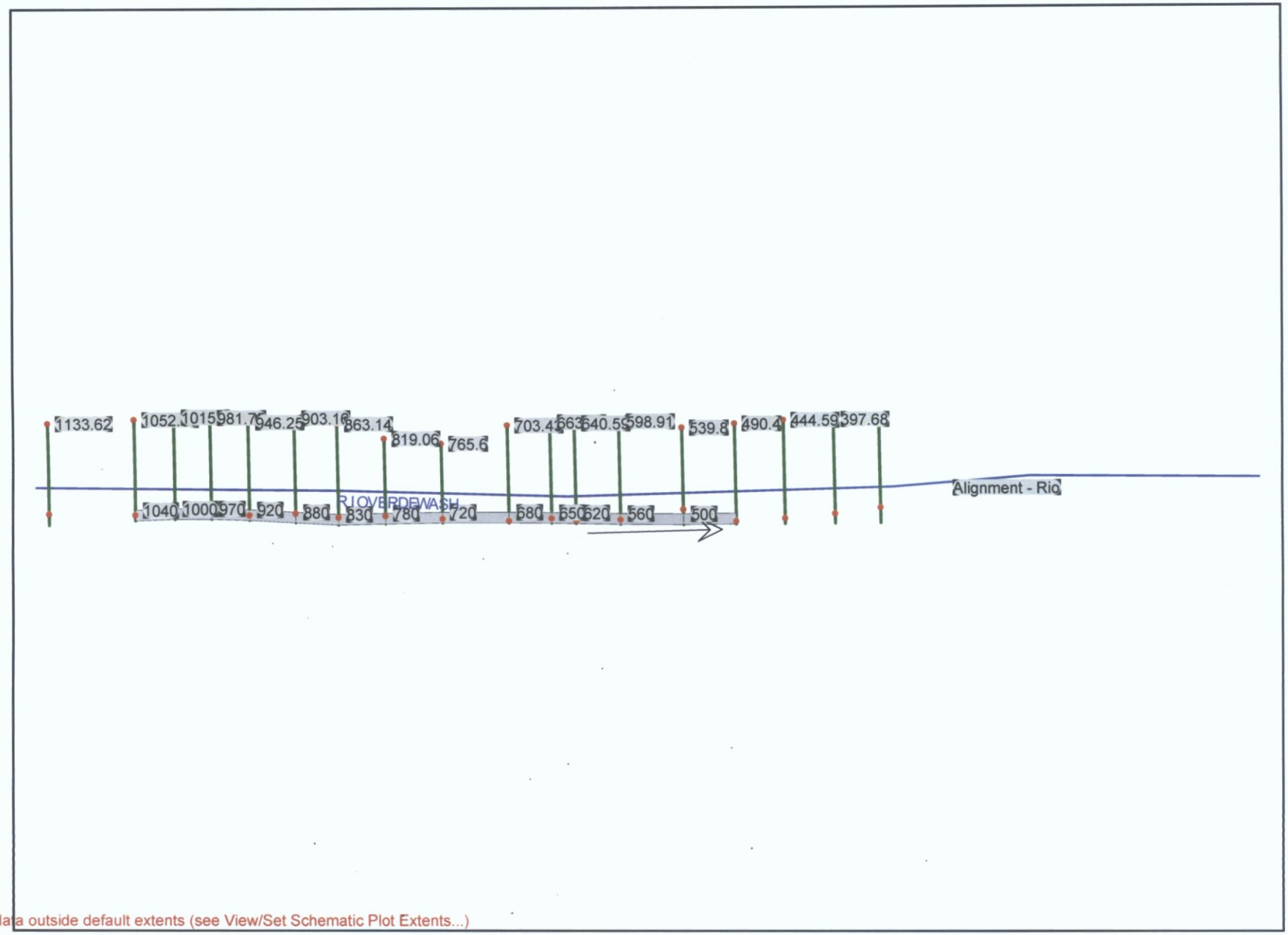
SCOTTSDALE NATIONAL GOLF CLUB

RIO VERDE DRIVE
POST DEVELOPMENT
HEC-RAS EXHIBIT

WOOD/PATEL
2051 W. Northern Ave.
Phoenix, AZ 85021
(602) 335-8500
www.woodpatel.com

JOB NO. 144147

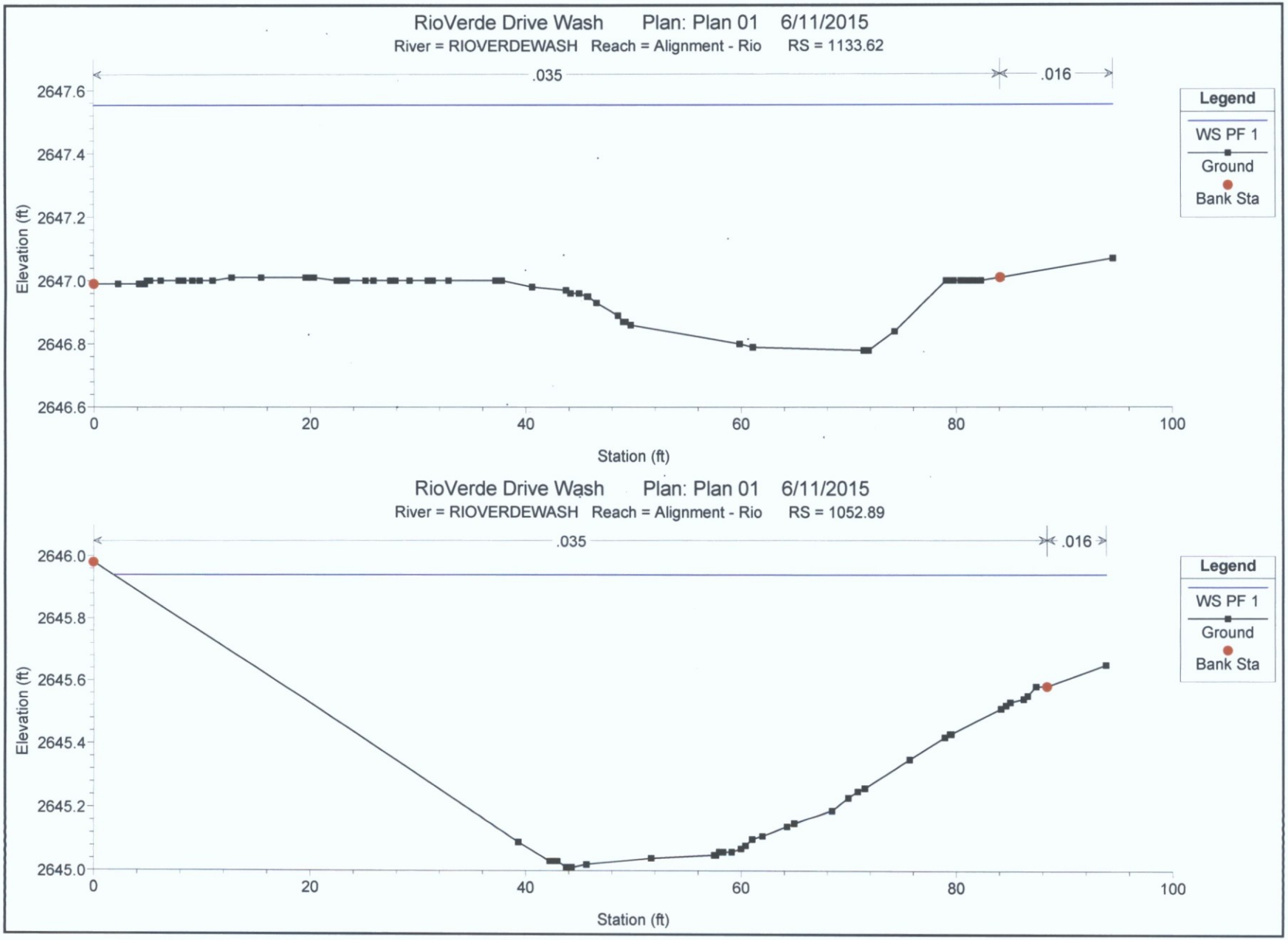
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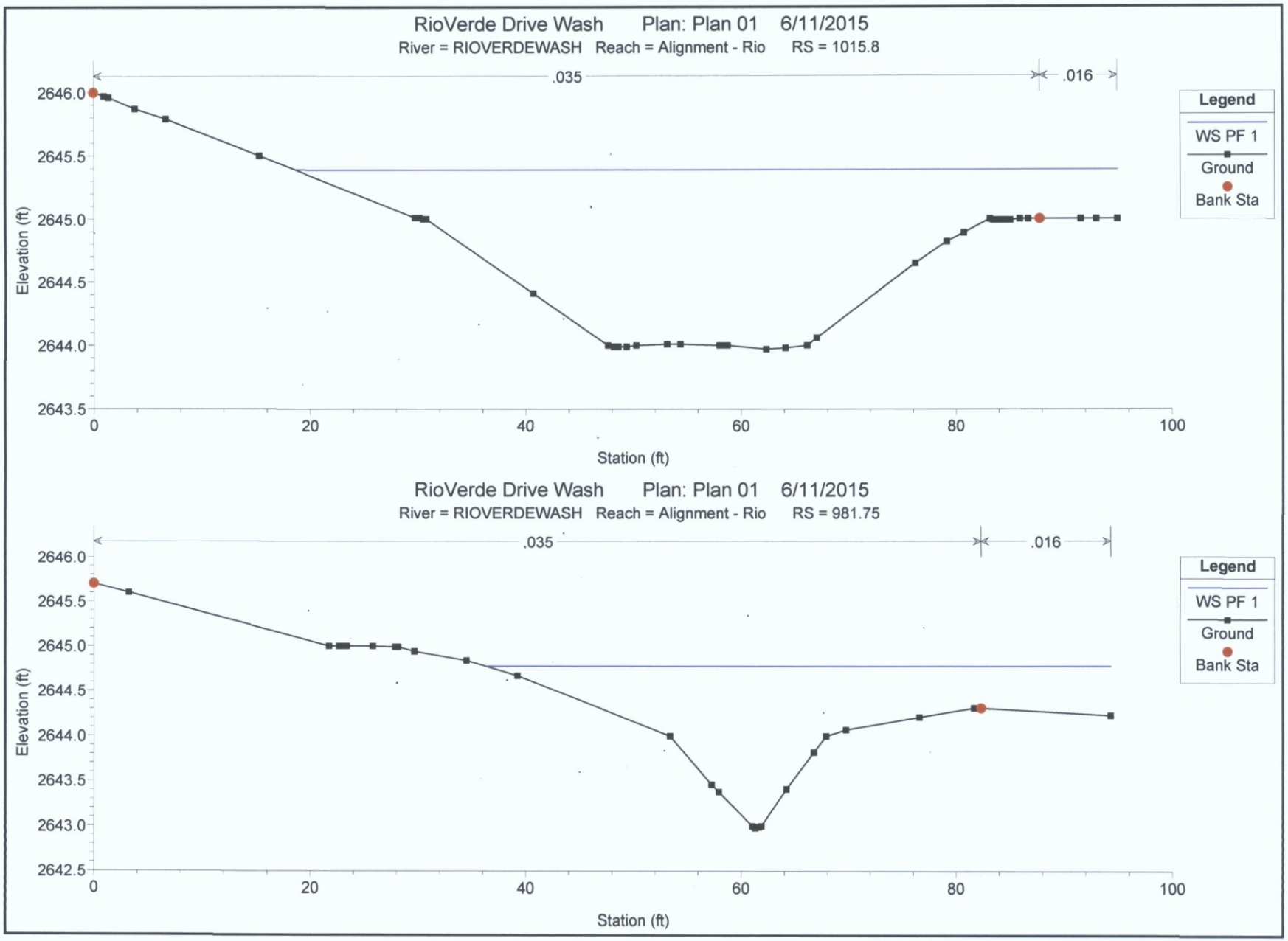


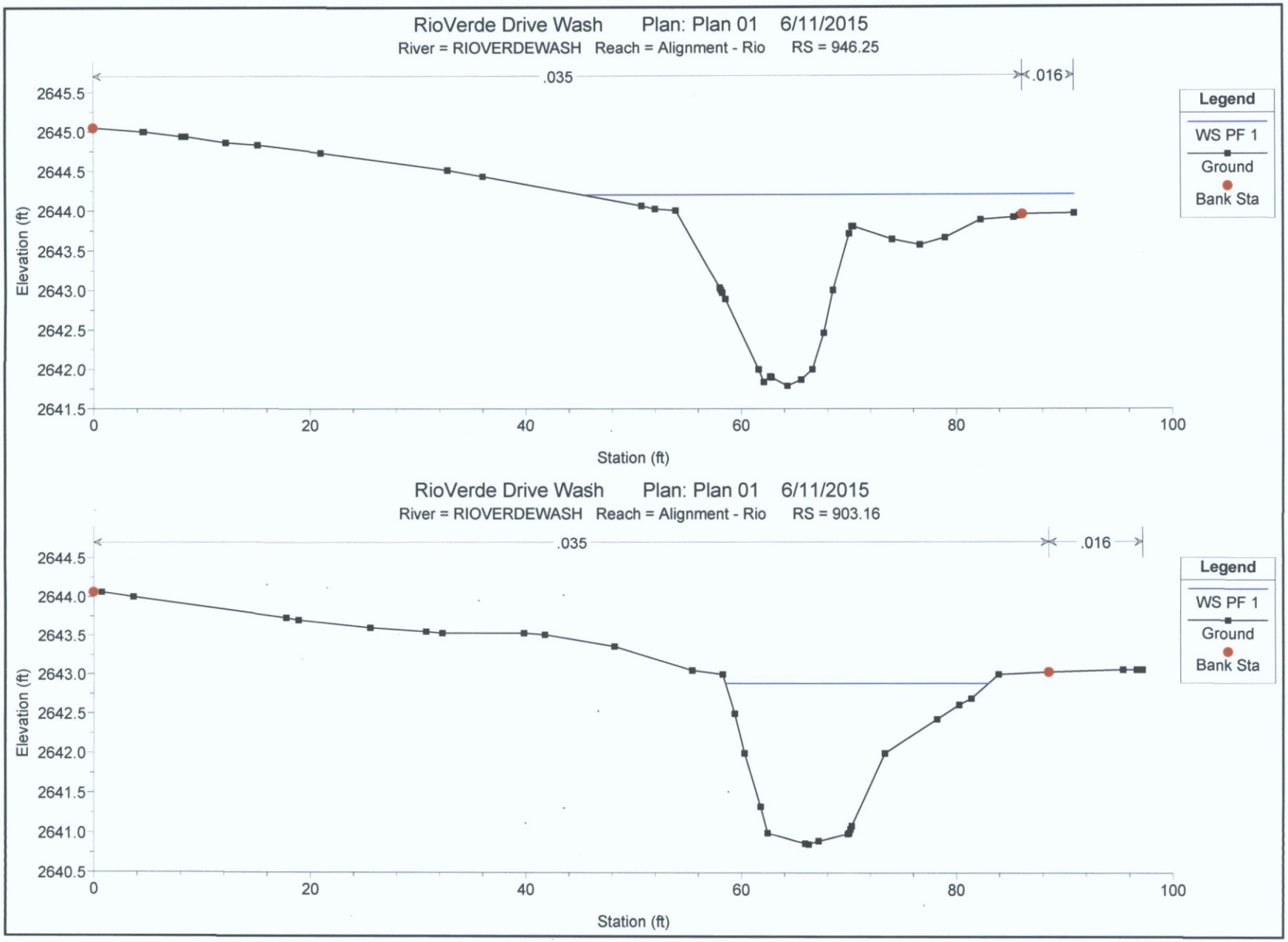
me schematic data outside default extents (see View/Set Schematic Plot Extents...)

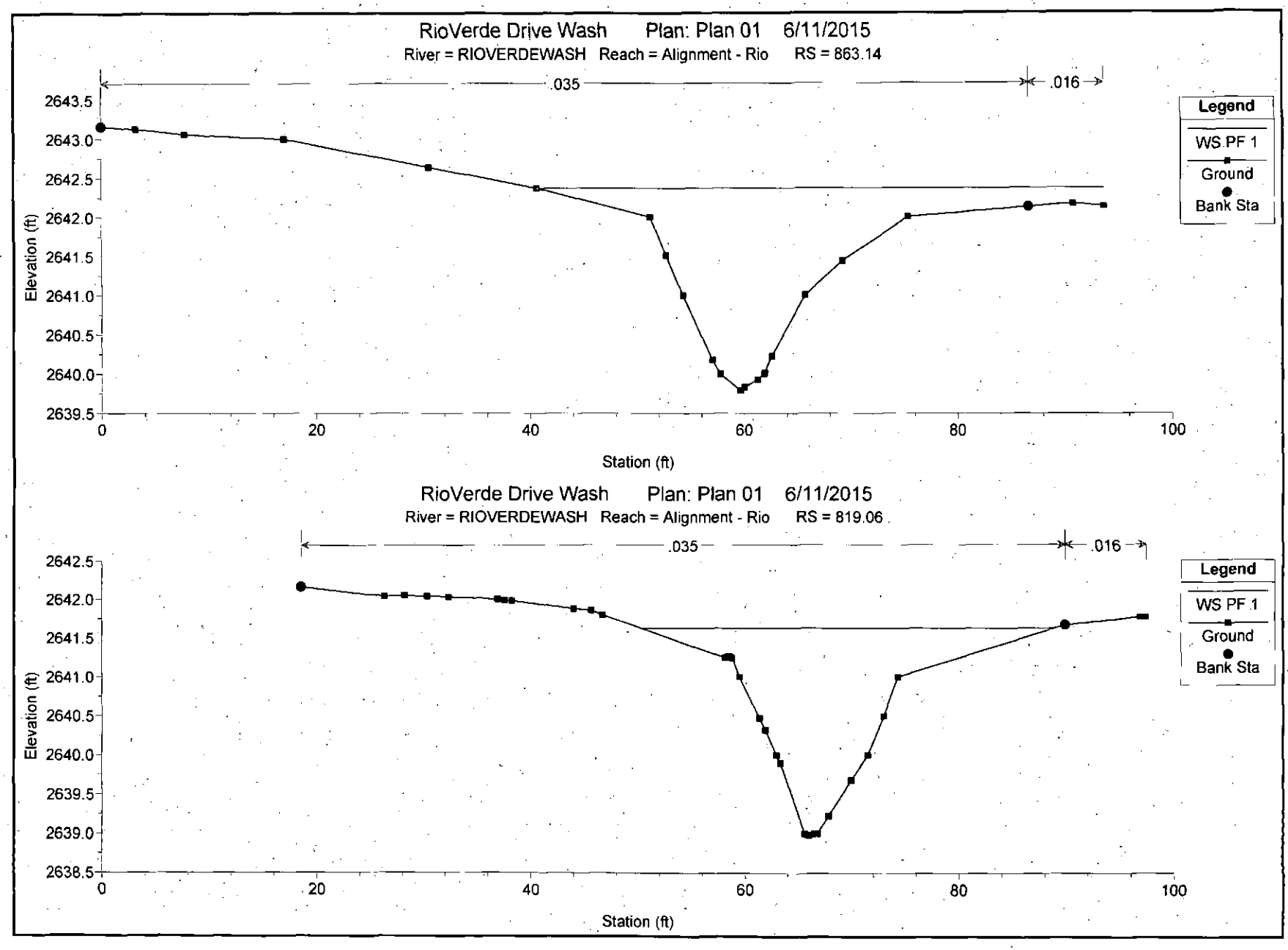
HEC-RAS Plan: Plan 01 River: RIOVERDEWASH Reach: Alignment - Rio Profile: PF 1

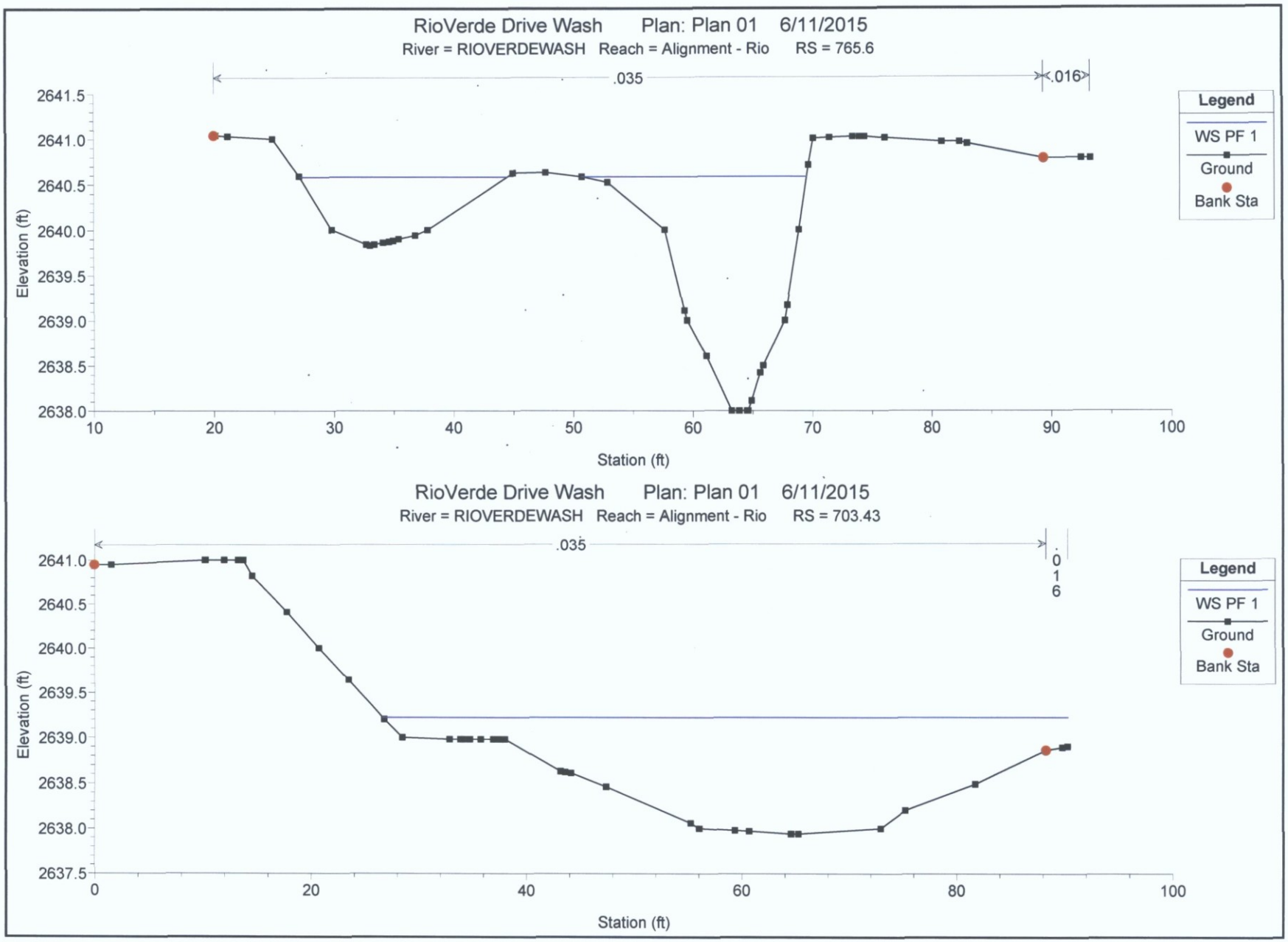
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Alignment - Rio	1133.62	PF 1	239.00	2646.78	2647.55	2647.55	2647.88	0.015701	3.85	57.41	94.45	0.86
Alignment - Rio	1052.89	PF 1	239.00	2645.01	2645.94	2645.94	2646.25	0.021039	4.38	53.80	92.06	1.00
Alignment - Rio	1040		Lat Struct									
Alignment - Rio	1015.8	PF 1	219.97	2643.97	2645.39		2645.58	0.008265	3.49	62.34	76.32	0.66
Alignment - Rio	1000		Lat Struct									
Alignment - Rio	981.75	PF 1	191.82	2642.98	2644.77	2644.75	2645.19	0.016082	4.38	39.87	57.91	0.90
Alignment - Rio	970		Lat Struct									
Alignment - Rio	946.25	PF 1	169.09	2641.79	2644.19	2644.19	2644.57	0.018241	4.94	34.28	45.43	0.96
Alignment - Rio	920		Lat Struct									
Alignment - Rio	903.16	PF 1	166.21	2640.86	2642.88	2642.88	2643.45	0.017943	6.05	27.48	24.43	1.00
Alignment - Rio	880		Lat Struct									
Alignment - Rio	863.14	PF 1	163.57	2639.79	2642.37		2642.61	0.010736	3.97	41.40	52.96	0.75
Alignment - Rio	830		Lat Struct									
Alignment - Rio	819.06	PF 1	160.48	2638.98	2641.63	2641.58	2642.01	0.017514	4.95	32.44	38.60	0.95
Alignment - Rio	780		Lat Struct									
Alignment - Rio	765.6	PF 1	160.48	2638.00	2640.58	2640.58	2641.01	0.019789	5.23	30.68	36.17	1.00
Alignment - Rio	720		Lat Struct									
Alignment - Rio	703.43	PF 1	232.28	2637.94	2639.22	2639.18	2639.56	0.016673	4.69	49.47	63.65	0.93
Alignment - Rio	680		Lat Struct									
Alignment - Rio	663.45	PF 1	181.60	2637.32	2638.50	2638.50	2638.97	0.012394	4.52	36.64	39.30	0.82
Alignment - Rio	650		Lat Struct									
Alignment - Rio	640.59	PF 1	120.88	2636.99	2638.27		2638.42	0.003840	2.80	41.09	37.27	0.47
Alignment - Rio	620		Lat Struct									
Alignment - Rio	598.91	PF 1	63.09	2636.97	2638.10		2638.20	0.008464	2.48	25.58	53.95	0.61
Alignment - Rio	560		Lat Struct									
Alignment - Rio	539.8	PF 1	49.84	2636.88	2637.40	2637.40	2637.61	0.011830	2.45	15.95	43.28	0.69
Alignment - Rio	500		Lat Struct									
Alignment - Rio	490.4	PF 1	45.18	2636.00	2636.71	2636.65	2636.85	0.016470	2.97	15.19	37.64	0.82
Alignment - Rio	444.59	PF 1	45.18	2634.98	2635.74	2635.74	2635.94	0.024171	3.59	12.59	31.39	1.00
Alignment - Rio	397.68	PF 1	45.18	2633.98	2634.86		2634.95	0.009471	2.45	18.42	40.23	0.64
Alignment - Rio	354.92	PF 1	45.18	2633.94	2634.29	2634.28	2634.44	0.015022	2.34	16.56	57.97	0.75

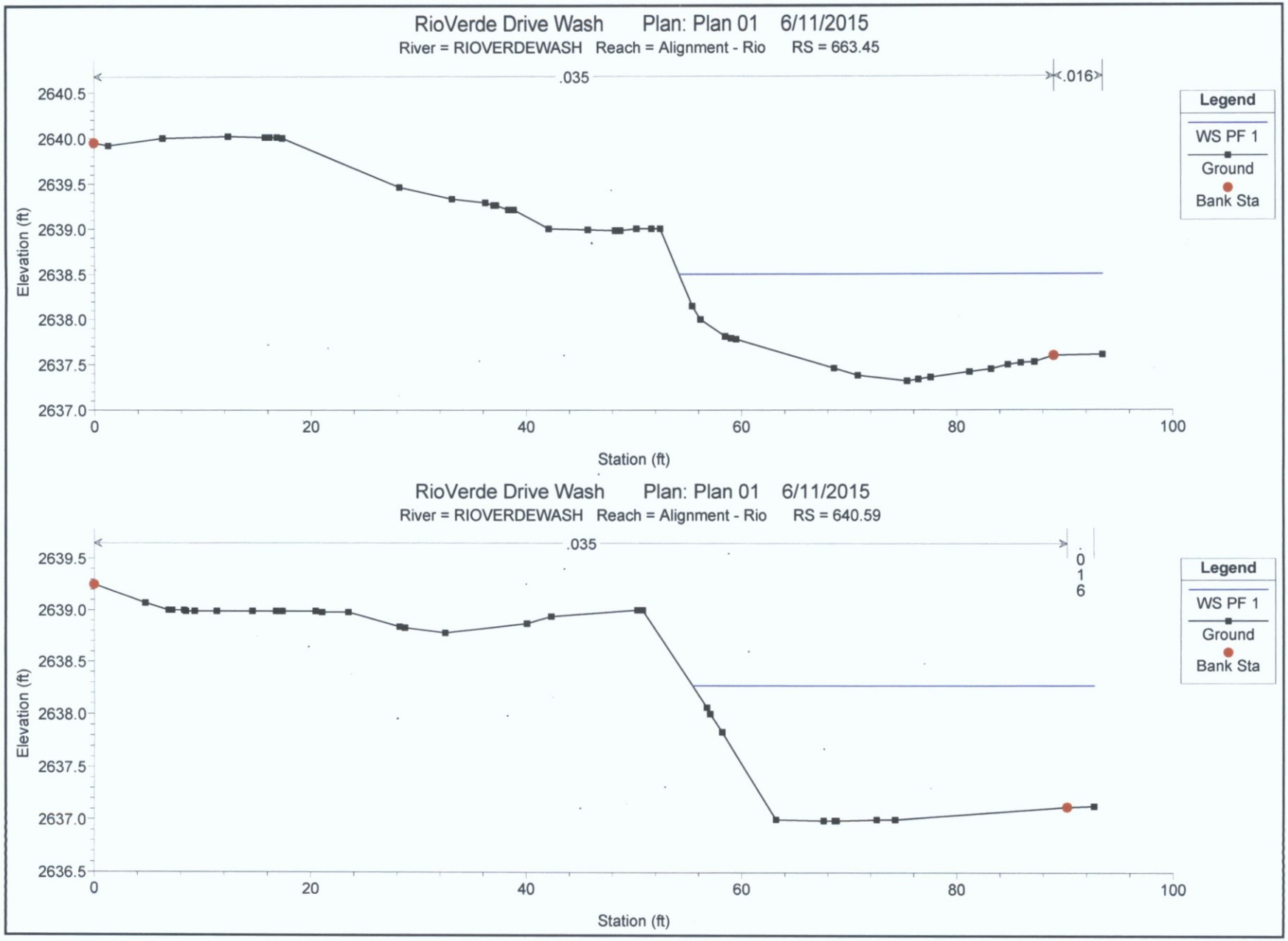

RioVerde Drive Wash Plan: Plan 01 6/11/2015
River = RIOVERDEWASH Reach = Alignment - Rio RS = 1133.62
.035
.016
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2647.6
2647.4
2647.2
2647.0
2646.8
2646.6
0
20
40
60
80
100
Station (ft)
RioVerde Drive Wash Plan: Plan 01 6/11/2015
River = RIOVERDEWASH Reach = Alignment - Rio RS = 1052.89
.035
.016
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2646.0
2645.8
2645.6
2645.4
2645.2
2645.0
0
20
40
60
80
100
Station (ft)

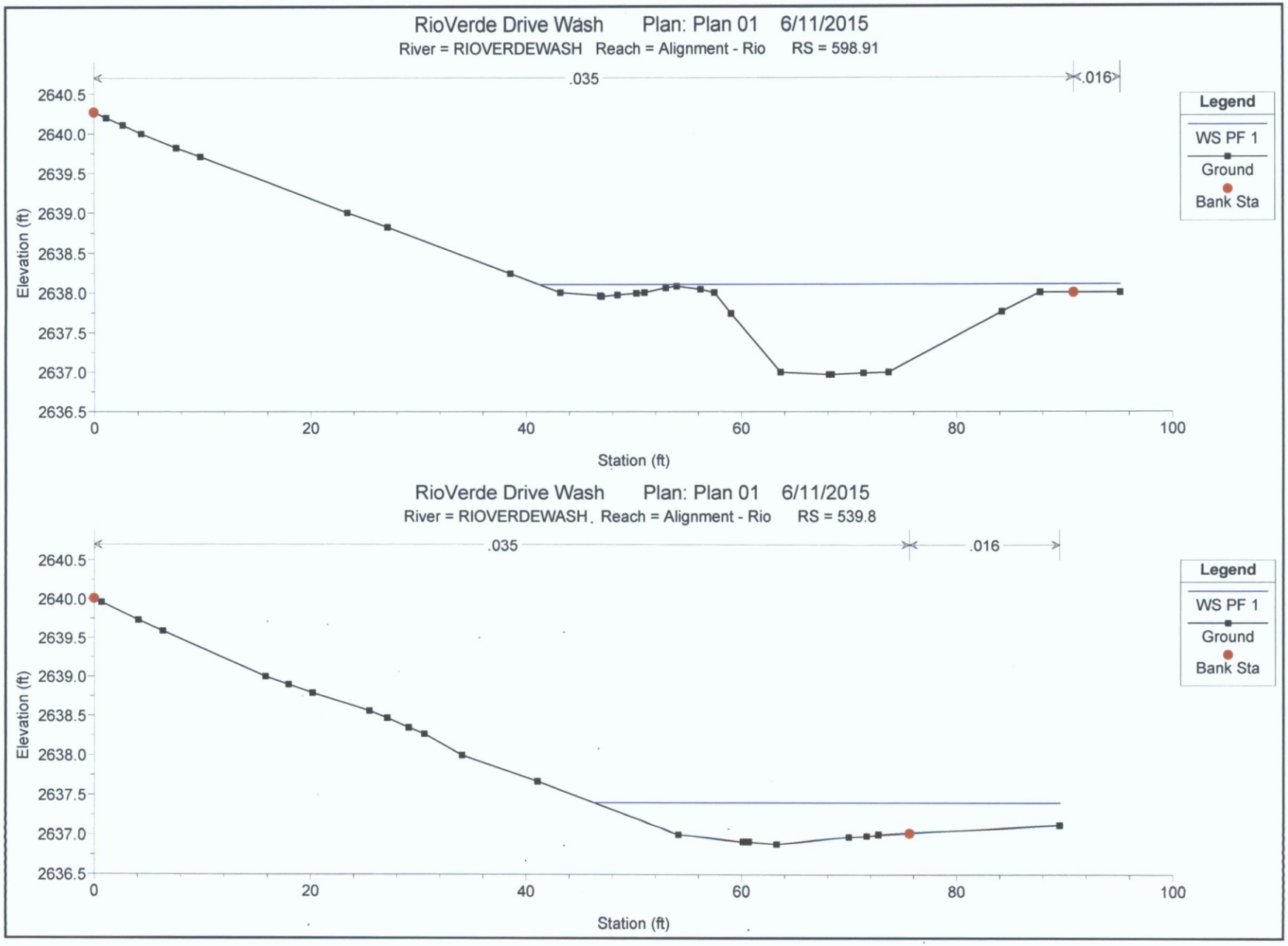

RioVerde Drive Wash Plan: Plan 01 6/11/2015
River = RIOVERDEWASH Reach = Alignment - Rio RS = 1015.8
.035
.016
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2646.0
2645.5
2645.0
2644.5
2644.0
2643.5
0
20
40
60
80
100
Station (ft)
RioVerde Drive Wash Plan: Plan 01 6/11/2015
River = RIOVERDEWASH Reach = Alignment - Rio RS = 981.75
.035
.016
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2646.0
2645.5
2645.0
2644.5
2644.0
2643.5
2643.0
2642.5
0
20
40
60
80
100
Station (ft)

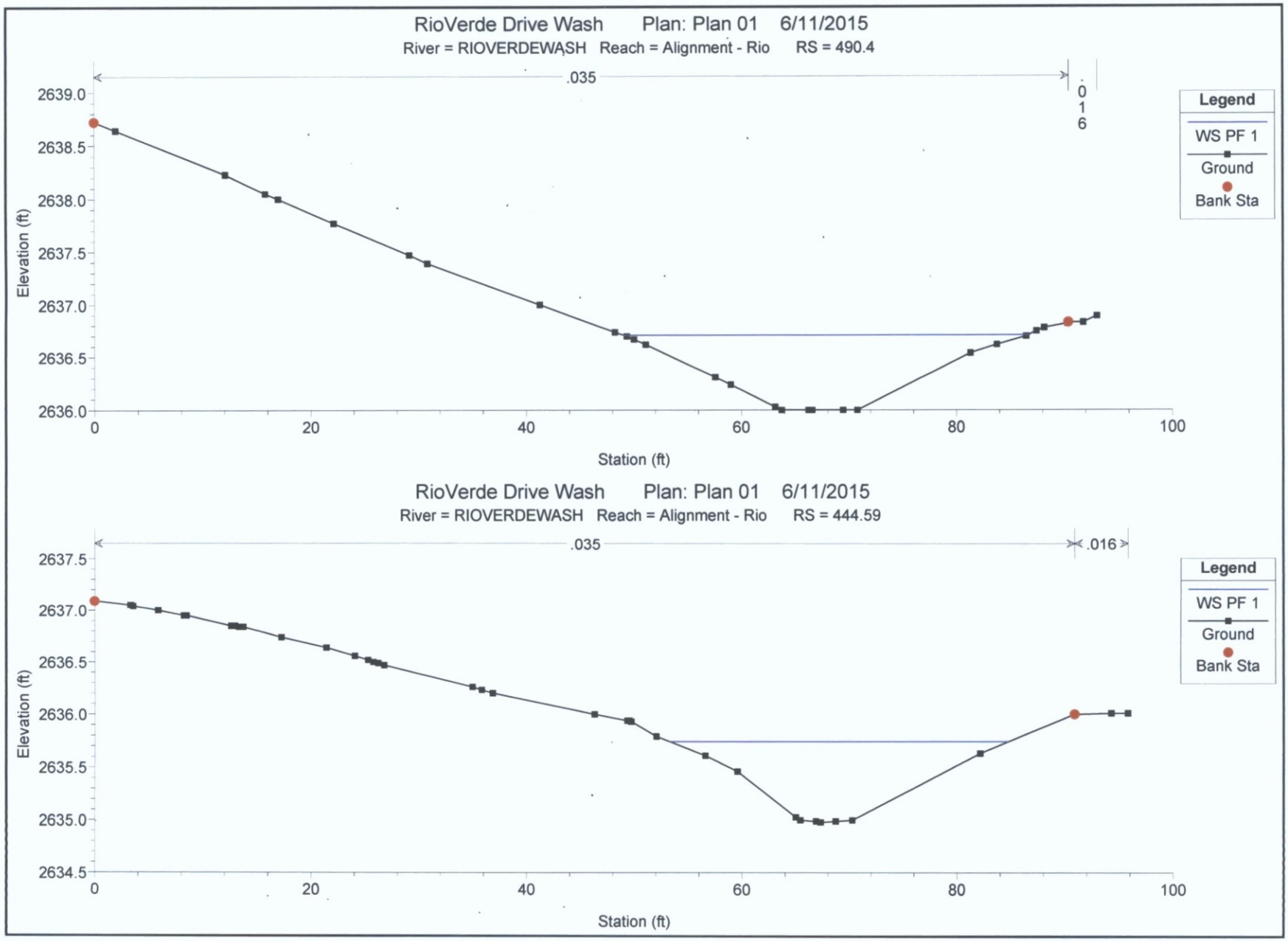

RioVerde Drive Wash Plan: Plan 01 6/11/2015
River = RIOVERDEWASH Reach = Alignment - Rio RS = 946.25
.035
.016
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2645.5
2645.0
2644.5
2644.0
2643.5
2643.0
2642.5
2642.0
2641.5
0
20
40
60
80
100
Station (ft)
RioVerde Drive Wash Plan: Plan 01 6/11/2015
River = RIOVERDEWASH Reach = Alignment - Rio RS = 903.16
.035
.016
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2644.5
2644.0
2643.5
2643.0
2642.5
2642.0
2641.5
2641.0
2640.5
0
20
40
60
80
100
Station (ft)

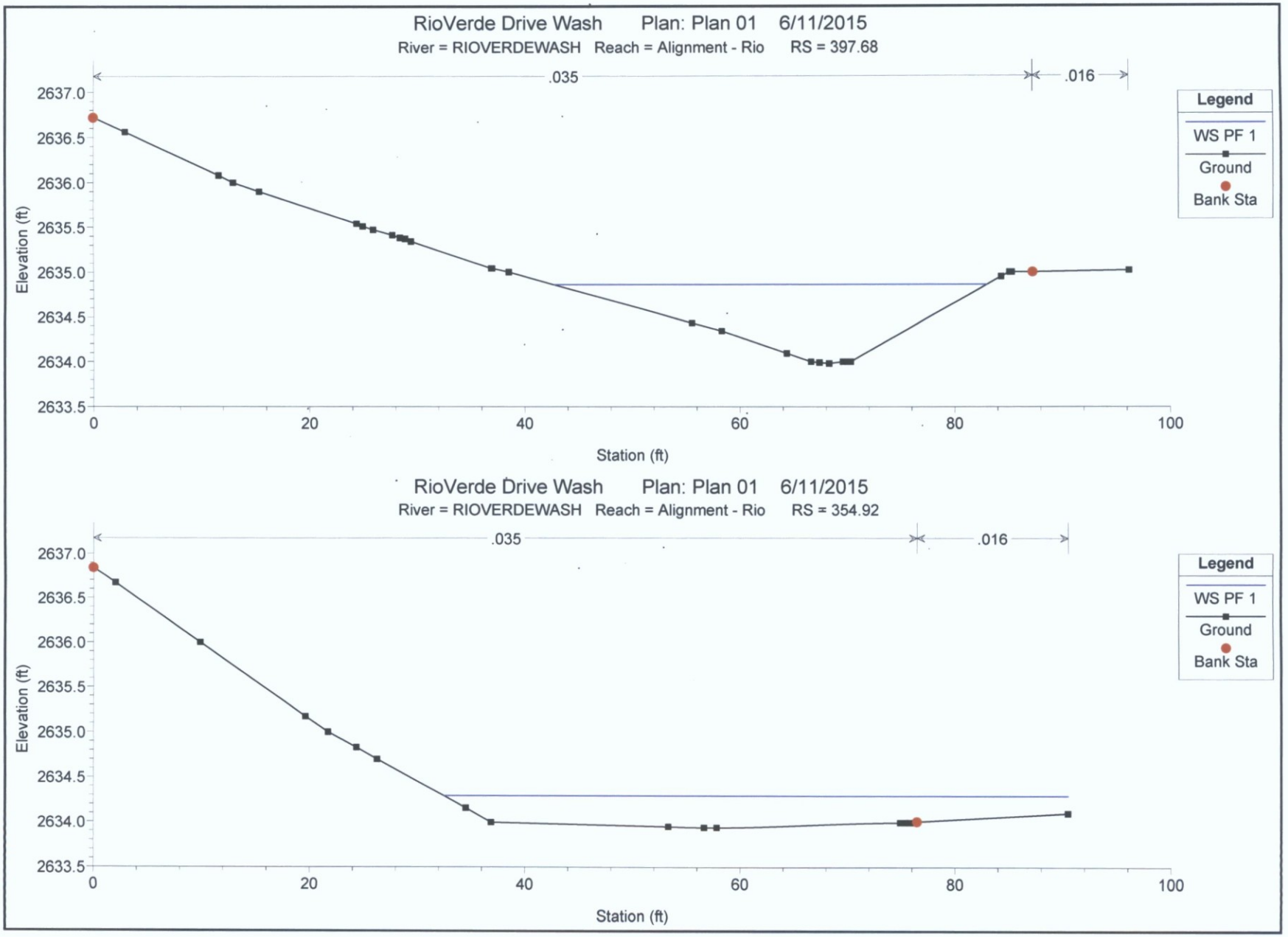

RioVerde Drive Wash Plan: Plan 01 6/11/2015
River = RIOVERDEWASH Reach = Alignment - Rio RS = 863.14
.035
.016
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
RioVerde Drive Wash Plan: Plan 01 6/11/2015
River = RIOVERDEWASH Reach = Alignment - Rio RS = 819.06
.035
.016
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

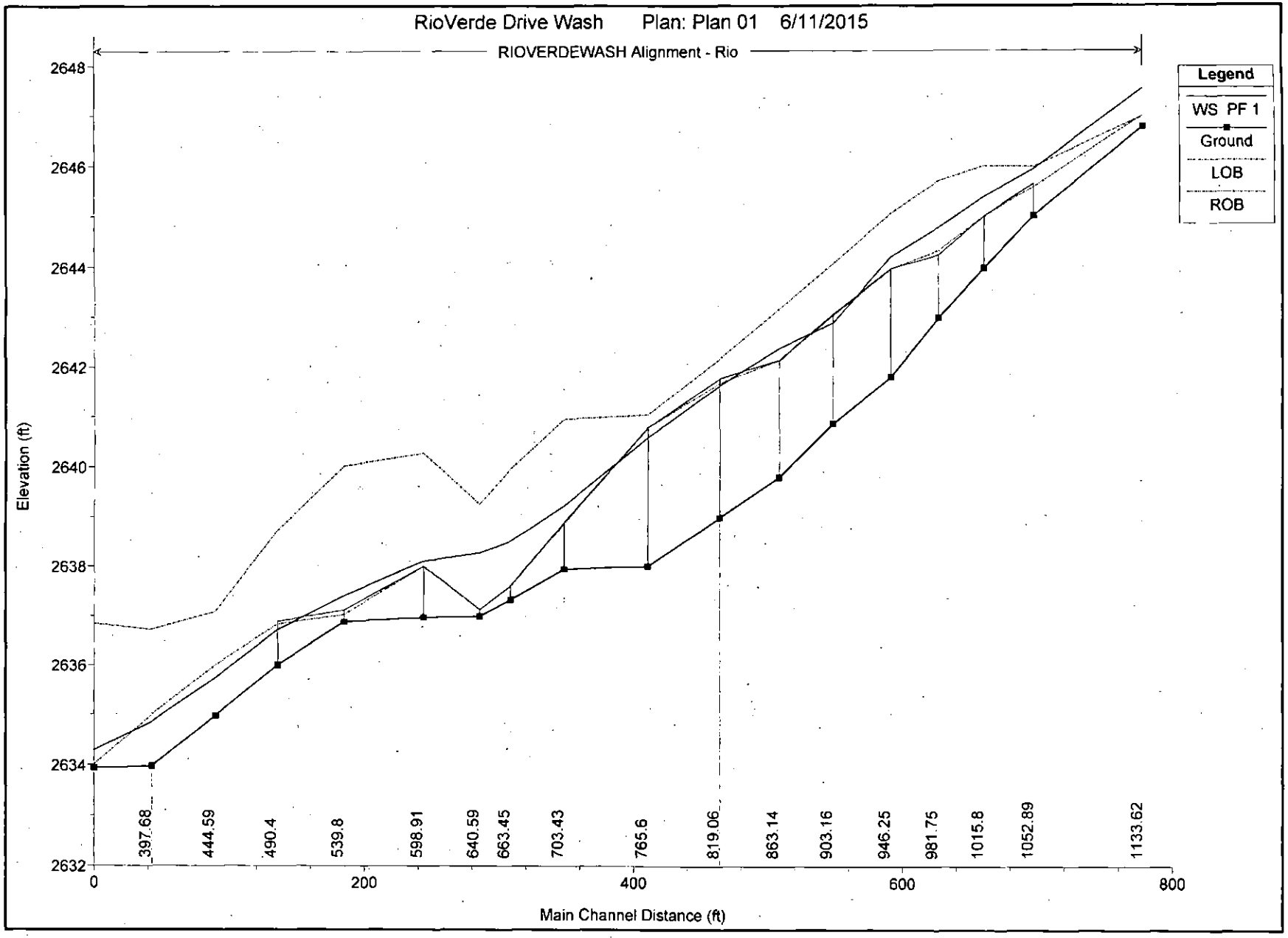

RioVerde Drive Wash Plan: Plan 01 6/11/2015
River = RIOVERDEWASH Reach = Alignment - Rio RS = 765.6
.035
.016
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
RioVerde Drive Wash Plan: Plan 01 6/11/2015
River = RIOVERDEWASH Reach = Alignment - Rio RS = 703.43
.035
.016
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


RioVerde Drive Wash Plan: Plan 01 6/11/2015
River = RIOVERDEWASH Reach = Alignment - Rio RS = 663.45
.035
.016
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2640.5
2640.0
2639.5
2639.0
2638.5
2638.0
2637.5
2637.0
0
20
40
60
80
100
Station (ft)
RioVerde Drive Wash Plan: Plan 01 6/11/2015
River = RIOVERDEWASH Reach = Alignment - Rio RS = 640.59
.035
.016
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2639.5
2639.0
2638.5
2638.0
2637.5
2637.0
2636.5
0
20
40
60
80
100
Station (ft)


RioVerde Drive Wash Plan: Plan 01 6/11/2015
River = RIOVERDEWASH Reach = Alignment - Rio RS = 598.91
.035
.016
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
RioVerde Drive Wash Plan: Plan 01 6/11/2015
River = RIOVERDEWASH, Reach = Alignment - Rio RS = 539.8
.035
.016
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


RioVerde Drive Wash Plan: Plan 01 6/11/2015
River = RIOVERDEWASH Reach = Alignment - Rio RS = 490.4
.035
.016
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
RioVerde Drive Wash Plan: Plan 01 6/11/2015
River = RIOVERDEWASH Reach = Alignment - Rio RS = 444.59
.035
.016
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


RioVerde Drive Wash Plan: Plan 01 6/11/2015
River = RIOVERDEWASH Reach = Alignment - Rio RS = 397.68
.035
.016
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2637.0
2636.5
2636.0
2635.5
2635.0
2634.5
2634.0
2633.5
0
20
40
60
80
100
Station (ft)
RioVerde Drive Wash Plan: Plan 01 6/11/2015
River = RIOVERDEWASH Reach = Alignment - Rio RS = 354.92
.035
.016
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
2637.0
2636.5
2636.0
2635.5
2635.0
2634.5
2634.0
2633.5
0
20
40
60
80
100
Station (ft)


RioVerde Drive Wash Plan: Plan 01 6/11/2015
RIOVERDEWASH Alignment - Rio
Legend
WS PF 1
Ground
LOB
ROB
Elevation (ft)
2648
2646
2644
2642
2640
2638
2636
2634
2632
0
200
400
600
800
Main Channel Distance (ft)
397.68
444.59
490.4
539.8
598.91
640.59
663.45
703.43
765.6
819.06
863.14
903.16
946.25
981.75
1015.8
1052.89
1133.62

Detention Basin Drain Times

DETENTION BASIN TIME TO DRAIN CALCULATION

Site:	Scottsdale National Golf Club
Location:	City of Scottsdale
Description:	Time to Drain Calculations - Must be Between 12 to 24 hours
References:	City of Scottsdale, Grading & Drainage Design Standards & Policies Manual; January, 2010. Micheal R. Lindeburg, PE, *Civil Engineer Reference Manual*, 2001.
Date:	6/4/2015

$$t = \frac{2 A_{bsn} (\sqrt{Z_1} - \sqrt{Z_2})}{C_d A_{orf} \sqrt{2g}}$$

DET 22

Bottom Area	130	ft^2
Top Area	27502	ft^2
Depth	5	ft
C_d	0.6	
Outlet Diameter	0.5	ft
Effective Area 6" Pipe	0.20	ft^2

Depth [feet]	Time required to drain step [sec]	Discharge Rate [cfs]
5.0	1307.50	2.1
4.9	1294.62	2.1
4.8	1281.61	2.1
4.7	1268.47	2.0
4.6	1255.18	2.0
4.5	1241.76	2.0
4.4	1228.19	2.0
4.3	1214.47	2.0
4.2	1200.59	1.9
4.1	1186.55	1.9
4.0	1172.34	1.9
3.9	1157.96	1.9
3.8	1143.39	1.8
3.7	1128.64	1.8
3.6	1113.70	1.8
3.5	1098.55	1.8
3.4	1083.19	1.7
3.3	1067.61	1.7
3.2	1051.80	1.7
3.1	1035.75	1.7
3.0	1019.44	1.6
2.9	1002.87	1.6
2.8	986.03	1.6
2.7	968.89	1.6
2.6	951.45	1.5
2.5	933.68	1.5
2.4	915.57	1.5
2.3	897.09	1.4
2.2	878.23	1.4
2.1	858.96	1.4
2.0	839.24	1.3
1.9	819.06	1.3
1.8	798.37	1.3
1.7	777.13	1.2
1.6	755.30	1.2
1.5	732.83	1.2
1.4	709.66	1.1
1.3	685.72	1.1
1.2	660.93	1.0
1.1	635.20	1.0
1.0	608.41	0.9
0.9	580.42	0.9
0.8	551.08	0.8
0.7	520.19	0.8
0.6	487.52	0.7
0.5	452.79	0.7
0.4	415.82	0.6
0.3	376.84	0.5
0.2	339.41	0.4
0.1	453.19	0.3

Total	45143	sec
	13	Hours
Max Discharge	2.1	cfs
Average Discharge	1.7	cfs

DET 92

Bottom Area	62792	ft^2
Top Area	85081	ft^2
Depth	3	ft
C_d	0.6	
Outlet Diameter	0.75	ft
Effective Area 9" Pipe	0.44	ft^2

Depth [feet]	Time required to drain step [sec]	Discharge Rate [cfs]
3.0	2328.79	3.7
2.9	2348.61	3.6
2.8	2369.88	3.6
2.7	2392.73	3.5
2.6	2417.33	3.4
2.5	2443.86	3.4
2.4	2472.54	3.3
2.3	2503.62	3.2
2.2	2537.37	3.2
2.1	2574.15	3.1
2.0	2614.33	3.0
1.9	2658.40	2.9
1.8	2706.93	2.9
1.7	2760.59	2.8
1.6	2820.23	2.7
1.5	2886.91	2.6
1.4	2961.92	2.5
1.3	3046.96	2.4
1.2	3144.22	2.3
1.1	3256.60	2.2
1.0	3388.08	2.1
0.9	3544.24	2.0
0.8	3733.25	1.9
0.7	3967.54	1.8
0.6	4267.30	1.6
0.5	4667.96	1.5
0.4	5239.18	1.3
0.3	6144.42	1.2
0.2	7916.07	1.0
0.1	18890.18	0.7

Total	115004	sec
	32	Hours
Max Discharge	3.7	cfs
Average Discharge	2.5	cfs

DETENTION BASIN TIME TO DRAIN CALCULATION

Site:	Scottsdale National Golf Club
Location:	City of Scottsdale
Description:	Time to Drain Calculations - Must be Between 12 to 24 hours
References:	City of Scottsdale, Grading & Drainage Design Standards & Policies Manual; January, 2010. Micheal R. Lindeburg, PE, *Civil Engineer Reference Manual*, 2001.
Date:	6/4/2015

$$t = \frac{2 A_{bsn} (\sqrt{Z_1} - \sqrt{Z_2})}{C_d A_{orf} \sqrt{2g}}$$

DET 112

Bottom Area	1131	ft^2
Top Area	18284	ft^2
Depth	5	ft
C_d	0.6	
Outlet Diameter	0.5	ft
Effective Area 6" Pipe	0.20	ft^2

Depth [feet]	Time required to drain step [sec]	Discharge Rate [cfs]
5.0	869.26	2.1
4.9	861.70	2.1
4.8	854.07	2.1
4.7	846.38	2.0
4.6	838.62	2.0
4.5	830.79	2.0
4.4	822.89	2.0
4.3	814.91	2.0
4.2	806.86	1.9
4.1	798.73	1.9
4.0	790.52	1.9
3.9	782.23	1.9
3.8	773.85	1.8
3.7	765.39	1.8
3.6	756.83	1.8
3.5	748.19	1.8
3.4	739.45	1.7
3.3	730.61	1.7
3.2	721.67	1.7
3.1	712.63	1.7
3.0	703.48	1.6
2.9	694.22	1.6
2.8	684.85	1.6
2.7	675.37	1.6
2.6	665.76	1.5
2.5	656.03	1.5
2.4	646.17	1.5
2.3	636.19	1.4
2.2	626.07	1.4
2.1	615.82	1.4
2.0	605.43	1.3
1.9	594.90	1.3
1.8	584.23	1.3
1.7	573.43	1.2
1.6	562.50	1.2
1.5	551.44	1.2
1.4	540.28	1.1
1.3	529.03	1.1
1.2	517.73	1.0
1.1	506.42	1.0
1.0	495.20	0.9
0.9	484.19	0.9
0.8	473.60	0.8
0.7	463.78	0.8
0.6	455.35	0.7
0.5	449.49	0.7
0.4	448.70	0.6
0.3	459.30	0.5
0.2	503.52	0.4
0.1	986.10	0.3

Total	33254	sec
	9	Hours
Max Discharge	2.1	cfs
Average Discharge	1.7	cfs

DET 130

Bottom Area	4912	ft^2
Top Area	13116	ft^2
Depth	5	ft
C_d	0.6	
Outlet Diameter	0.5	ft
Effective Area 6" Pipe	0.20	ft^2

Depth [feet]	Time required to drain step [sec]	Discharge Rate [cfs]
5.0	623.56	2.1
4.9	622.08	2.1
4.8	620.63	2.1
4.7	619.22	2.0
4.6	617.85	2.0
4.5	616.53	2.0
4.4	615.25	2.0
4.3	614.03	2.0
4.2	612.87	1.9
4.1	611.76	1.9
4.0	610.73	1.9
3.9	609.76	1.9
3.8	608.88	1.8
3.7	608.08	1.8
3.6	607.37	1.8
3.5	606.77	1.8
3.4	606.28	1.7
3.3	605.91	1.7
3.2	605.67	1.7
3.1	605.58	1.7
3.0	605.66	1.6
2.9	605.91	1.6
2.8	606.37	1.6
2.7	607.04	1.6
2.6	607.96	1.5
2.5	609.16	1.5
2.4	610.67	1.5
2.3	612.52	1.4
2.2	614.77	1.4
2.1	617.47	1.4
2.0	605.43	1.3
1.9	594.90	1.3
1.8	584.23	1.3
1.7	573.43	1.2
1.6	562.50	1.2
1.5	551.44	1.2
1.4	540.28	1.1
1.3	529.03	1.1
1.2	517.73	1.0
1.1	506.42	1.0
1.0	495.20	0.9
0.9	484.19	0.9
0.8	473.60	0.8
0.7	463.78	0.8
0.6	455.35	0.7
0.5	449.49	0.7
0.4	448.70	0.6
0.3	459.30	0.5
0.2	503.52	0.4
0.1	986.10	0.3

Total	29131	sec
	8	Hours
Max Discharge	2.1	cfs
Average Discharge	1.8	cfs

Storm Drain Hydraulics for Casitas Area and Sub-Basin 99

CASITAS AREA

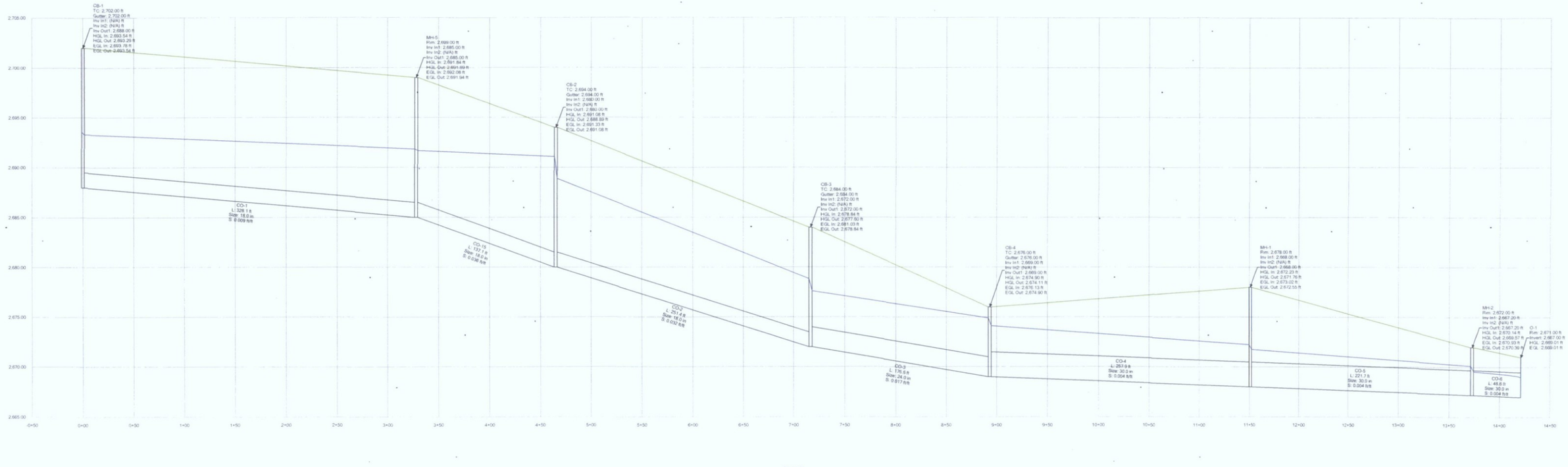
STORMCAD OUTPUT

Conduit FlexTable: Combined Pipe/Node Report

Label	Start Node	Stop Node	Length (ft)	Slope (ft/ft)	Pipe Size (in)	Flow (cfs)	Velocity (Out) (ft/s)	Invert (Up) (ft)	Invert (Down) (ft)	Elevation Ground (Start) (ft)	Elevation Ground (Stop) (ft)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)
CO-2	CB-2	CB-3	251.4	0.032	18.0	21.00	11.88	2,680.00	2,672.00	2,694.00	2,684.00	2,688.89	2,678.84	2,691.08	2,681.03
CO-3	CB-3	CB-4	176.6	0.017	24.0	28.00	8.91	2,672.00	2,669.00	2,684.00	2,676.00	2,677.60	2,674.90	2,678.84	2,676.13
CO-4	CB-4	MH-1	257.9	0.004	30.0	35.00	7.13	2,669.00	2,668.00	2,676.00	2,678.00	2,674.11	2,672.23	2,674.90	2,673.02
CO-5	MH-1	MH-2	221.7	0.004	30.0	35.00	7.13	2,668.00	2,667.20	2,678.00	2,672.00	2,671.76	2,670.14	2,672.55	2,670.93
CO-6	MH-2	O-1	48.6	0.004	30.0	35.00	8.28	2,667.20	2,667.00	2,672.00	2,671.00	2,669.57	2,669.01	2,670.39	2,670.07
CO-8	CB-6	MH-3	163.6	0.031	30.0	45.00	9.17	2,672.00	2,667.00	2,686.00	2,680.00	2,677.85	2,675.88	2,679.16	2,677.19
CO-9	MH-3	CB-7	100.1	0.010	30.0	45.00	9.17	2,667.00	2,666.00	2,680.00	2,675.00	2,674.97	2,673.76	2,676.28	2,675.07
CO-10	CB-7	MH-6	150.2	0.007	36.0	53.00	7.50	2,666.00	2,665.00	2,675.00	2,675.00	2,672.89	2,671.94	2,673.76	2,672.82
CO-11	MH-6	CB-9	224.0	0.004	36.0	53.00	7.50	2,665.00	2,664.00	2,675.00	2,674.00	2,671.07	2,669.65	2,671.94	2,670.53
CO-12	CB-9	MH-4	222.6	0.004	36.0	60.00	8.49	2,664.00	2,663.10	2,674.00	2,668.00	2,668.53	2,666.73	2,669.65	2,667.85
CO-13	MH-4	O-3	24.5	0.004	36.0	60.00	9.53	2,663.10	2,663.00	2,668.00	2,667.00	2,665.90	2,665.50	2,667.09	2,666.91
CO-1	CB-1	MH-5	328.1	0.009	18.0	7.00	3.96	2,688.00	2,685.00	2,702.00	2,699.00	2,693.29	2,691.84	2,693.54	2,692.08
CO-15	MH-5	CB-2	137.1	0.036	18.0	7.00	3.96	2,685.00	2,680.00	2,699.00	2,694.00	2,691.69	2,691.08	2,691.94	2,691.33

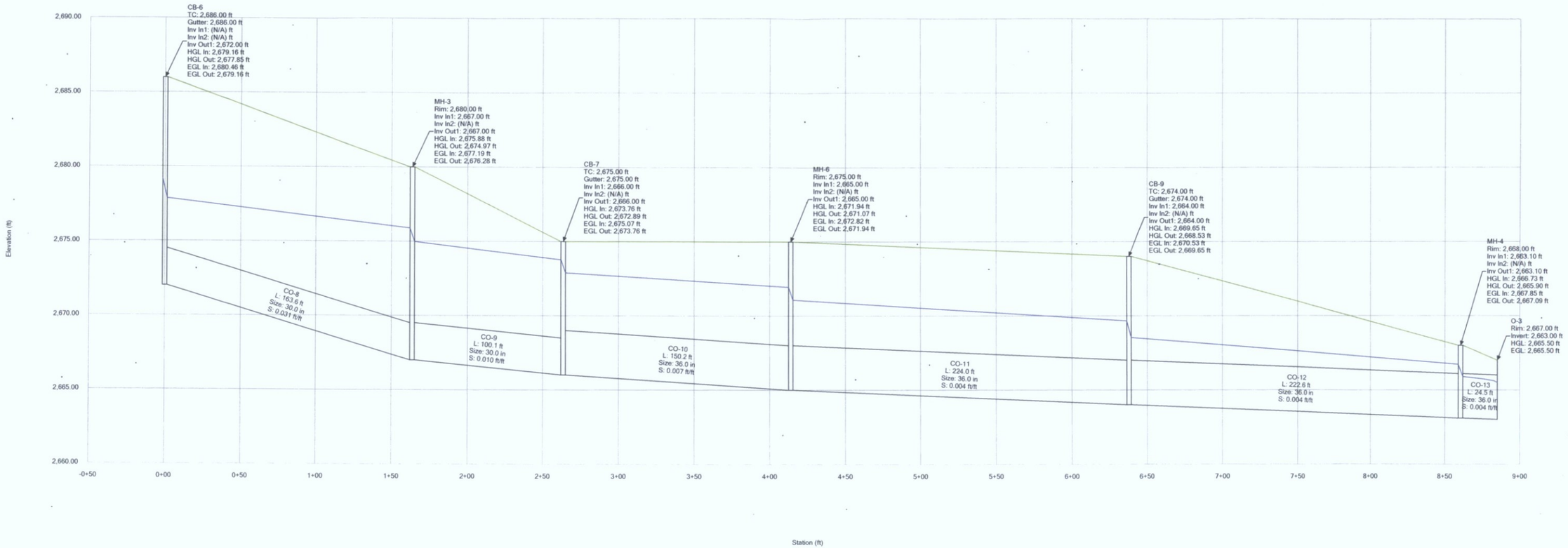
Profile Report

Engineering Profile - CB-1 TO O-1 (4147_FDR Post-Development HECRAS Culvert Option 6_05_2015 Alt.stsw)



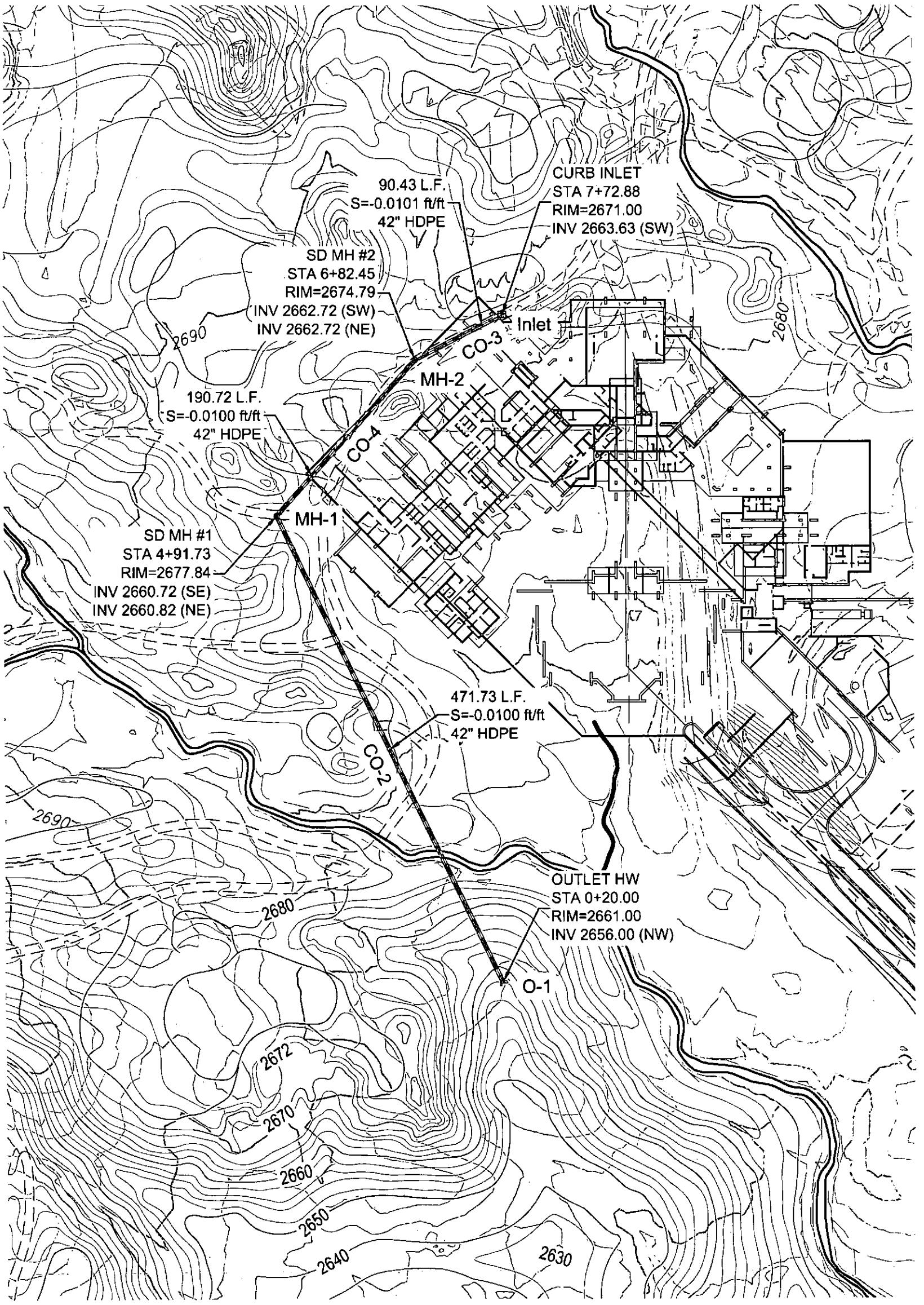
Profile Report

Engineering Profile - CB-6 TO O-3 (4147_FDR Post-Development HECRAS Culvert Option 6_05_2015 Alt.stsw)



BASIN 99 TO LAKE

STORMCAD OUTPUT



N

0 100 200

Horz. 1 in. = 100 ft.

SCOTTSDALE NATIONAL GOLF CLUB

CLUBHOUSE/LAKE
STORMCAD EXHIBIT

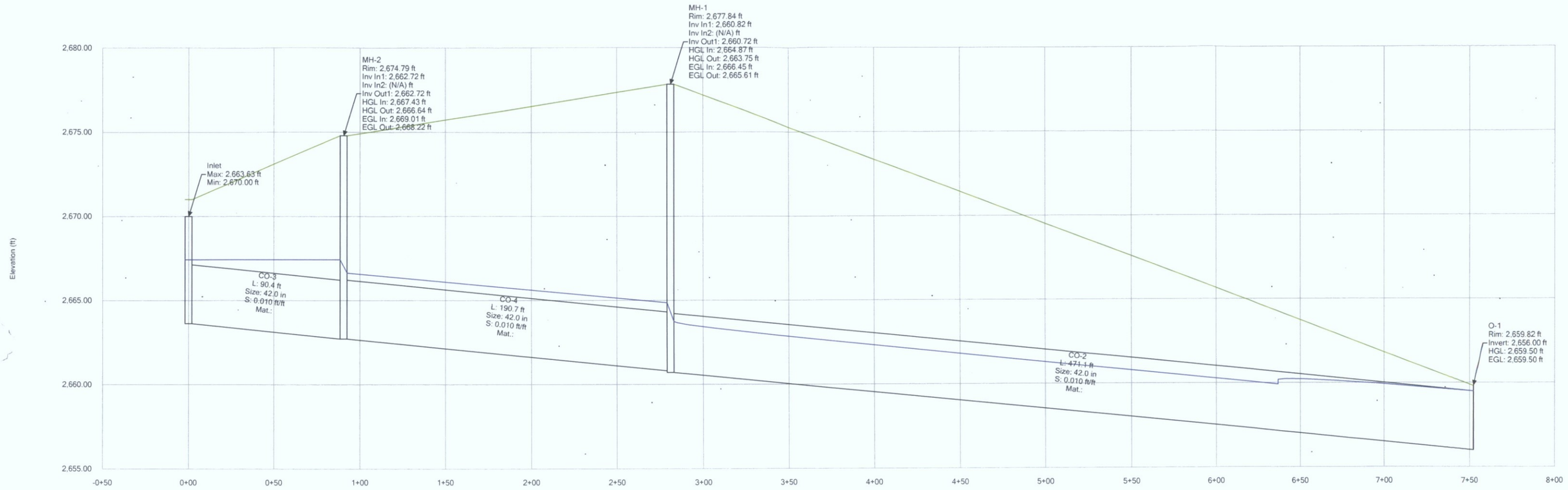
WOOD/PATEL
2051 W. Northern Ave.
Phoenix, AZ 85021
(602) 335-8500
www.woodpatel.com

JOB NO. 144147

Conduit FlexTable: Combined Pipe/Node Report

Label	Start Node	Stop Node	Length (ft)	Slope (ft/ft)	Pipe Size (in)	Flow (cfs)	Velocity (Out) (ft/s)	Invert (Up) (ft)	Invert (Down) (ft)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)
CO-2	MH-1	O-1	471.1	0.010	42.0	97.00	10.08	2,660.72	2,656.00	2,663.75	2,659.50	2,665.61	2,661.08
CO-3	Inlet	MH-2	90.4	0.010	42.0	97.00	10.08	2,663.63	2,662.72	2,667.43	2,667.43	2,669.01	2,669.01
CO-4	MH-2	MH-1	190.7	0.010	42.0	97.00	10.08	2,662.72	2,660.82	2,666.64	2,664.87	2,668.22	2,666.45

Profile Report
Engineering Profile - Profile - 1 (4147-Irrigation Exhibit.stsw)



Wash Erosion Hazard Setback Limits

WOOD/PATEL

CIVIL ENGINEERS * HYDROLOGISTS * LAND SURVEYORS * CONSTRUCTION MANAGERS

Project: *Scottsdale National Golf Club*
Location: *City of Scottsdale, Arizona*
Date: *13-Jun-15*
References: *Drainage Design Manual for Yavapai County*

ADWR Erosion Hazard Setback Equations
State Standard for Watercourse System Sediment Balance
SSA 5-96, LMSA-5, September 1996

For straight channel reaches or reaches with minor curvature — *setback = 1.0(Q100)^0.5*

For channels with obvious curvature or channel bend — *setback = 2.5(Q100)^0.5*

The setback allowance is to be measured outward from the 100-year floodway
Or the top of the channel bank, whichever is greater

EROSION HAZARD SETBACK CALCULATIONS
FOR WORST CASE SCENARIO

Wash Name	Q100 Discharge (in)	ADWR Erosion Hazard Setback (EHS) (ft)
Wash CP 060	316	44.4
(bend)		
Wash CP 060	316	17.8

Note:
The minimum EHS is 20' for Straight Channels
Worst Case Scerio is the wash with the highest peak 100-year discharge.

Bank Protection Wash Scour Analyses

Level 1 Analysis of Stream Degradation

Reference: ADWR, Flood Warning and Dam Safety Section, 1996.
State Standard 5-96: "Watercourse System Sediment Balance - Guideline 2:
Channel Degradation Estimation for Alluvial Channels in Arizona"

Assumptions: Channel reaches without major disturbances, such as dams and bridges.

Equations:

$$Ds = Dgs + Dlts$$

where:
Ds = total scour depth, in feet;
Dgs = general degradation, in feet;
Dlts = long term degradation, in feet;

For straight channel reaches:

$$Dgs = 0.157*Q100^{0.4}$$

For channel reaches with curvature:

$$Dgs = 0.219*Q100^{0.4}$$

Long term degradation:

$$Dlts = 0.02*Q100^{0.6}$$

Project Name: Scottsdale National Golf Club **Location:** CP 060
Worst Case Scenario

Input Data:

Q100 = 316 cfs

Ds =	2.20 ft	for straight channel
Ds =	2.82 ft	otherwise

Recommended Scour Depth = 3.0 ft

Note: the minimum total scour depth, Ds, shall be 3 feet.

APPENDIX D

Supporting Documentation

- Approved FDR for *The Golf Club Scottsdale Post-Development HEC-RAS*

- Approved Grading & Drainage Plans for *The Golf Club Scottsdale*, Sheets 6 of 16

PINNACLE
ENGINEERING, INC.

FINAL DRAINAGE REPORT

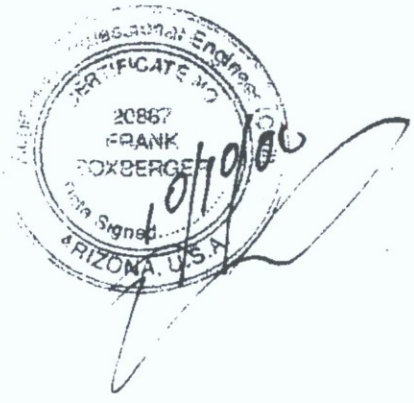
FOR

THE GOLF CLUB SCOTTSDALE

(Job # 60007)

Prepared for:

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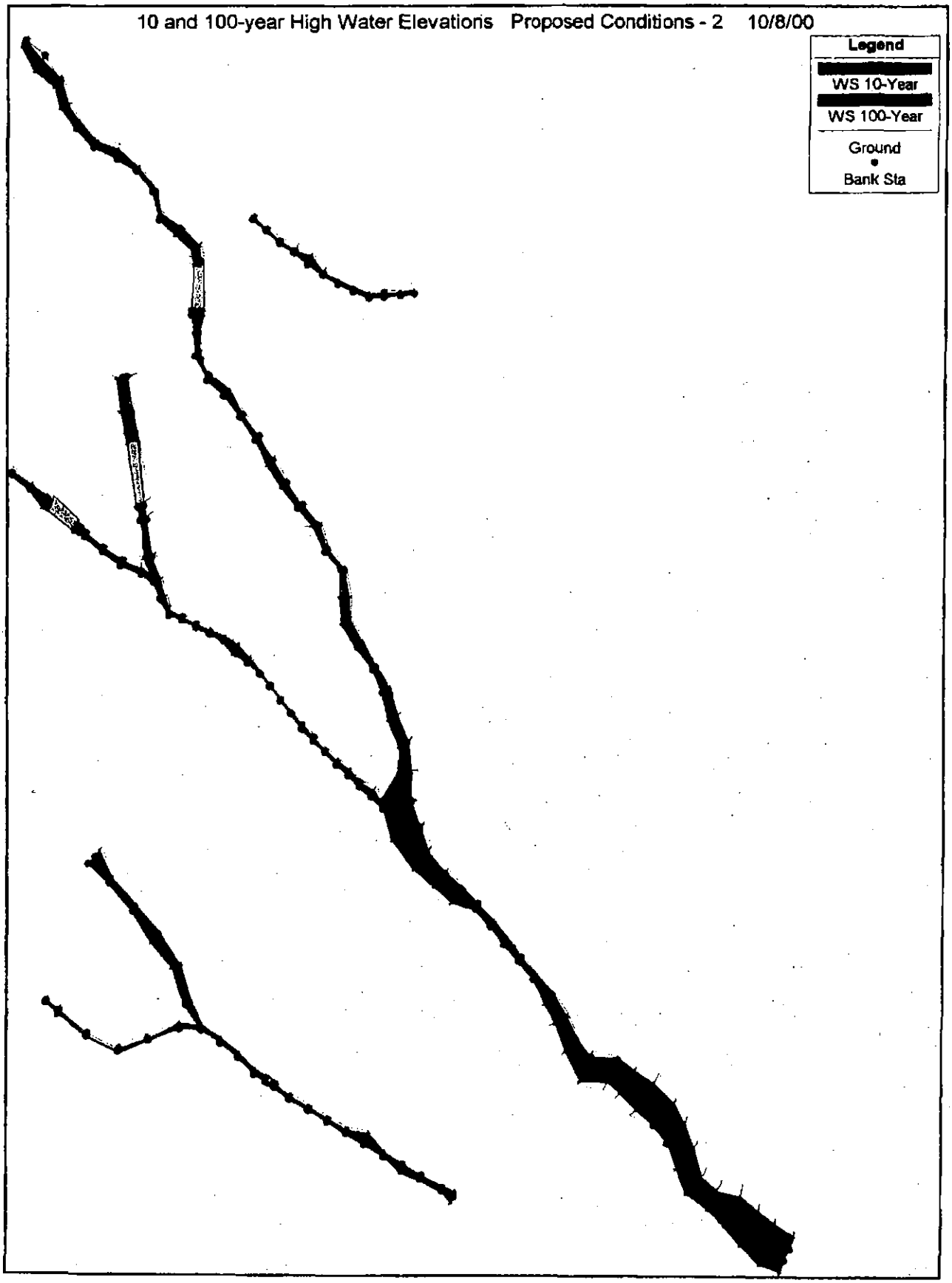
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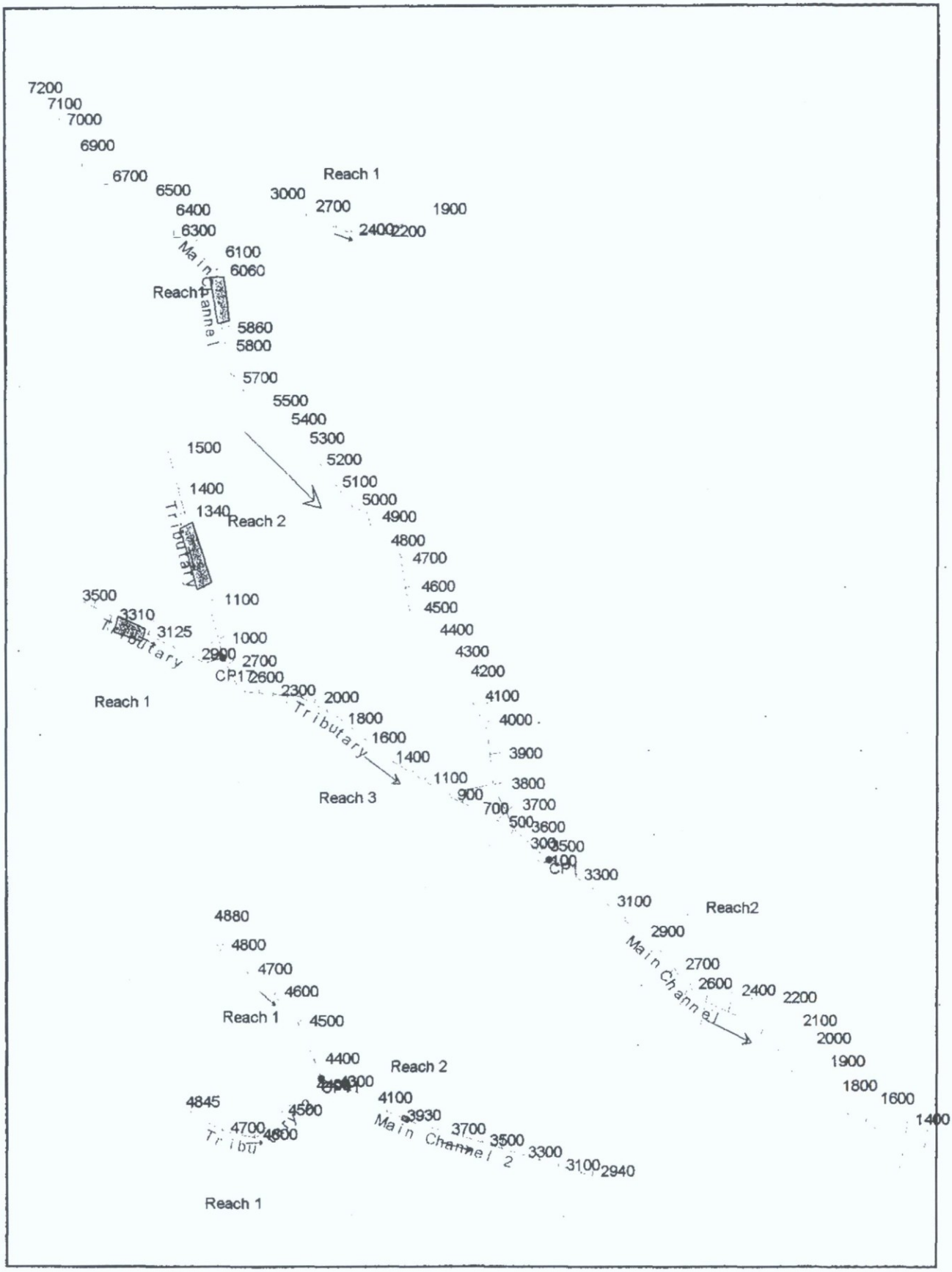
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10 and 100-year High Water Elevations Proposed Conditions - 2 10/8/00
Legend
WS 10-Year
WS 100-Year
Ground
Bank Sta


7200
7100
7000
6900
6700
6500
6400
6300
6100
6060
5860
5800
5700
5500
5400
5300
5200
5100
5000
4900
4800
4700
4600
4500
4400
4300
4200
4100
4000
3900
3800
3700
3600
3500
3300
3100
2900
2700
2600
2400
2200
2100
2000
1900
1800
1600
1400
1500
1400
1340
1100
1000
900
700
500
300
100
3500
3310
3125
2900
2700
2600
2300
2000
1800
1600
1400
1100
4880
4800
4700
4600
4500
4400
4300
4100
3930
3700
3500
3300
3100
2940
4845
4700
4600
3000
2700
1900
2400
2200
Reach 1
Reach 2
Reach 3
Reach1
Reach2
Main Channel
Main Channel 2
Tributary
CP1
CP

HEC-RAS Plan: 02

River	Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Main Channel 3	Reach 1	3000	50.00	2692.75	2693.43	2693.43	2693.67	0.020780	4.01	12.77	27.82	0.97
Main Channel 3	Reach 1	3000	88.00	2692.75	2693.67	2693.67	2694.00	0.017033	4.68	20.38	34.29	0.94
Main Channel 3	Reach 1	2900	50.00	2690.30	2691.04	2691.03	2691.30	0.021854	4.12	12.13	23.05	0.99
Main Channel 3	Reach 1	2900	88.00	2690.30	2691.29	2691.29	2691.65	0.019364	4.81	18.60	27.40	0.99
Main Channel 3	Reach 1	2800	50.00	2688.00	2688.82	2688.82	2689.09	0.022408	4.19	11.94	22.21	1.01
Main Channel 3	Reach 1	2800	88.00	2688.00	2689.09	2689.09	2689.43	0.020570	4.71	18.67	27.28	1.00
Main Channel 3	Reach 1	2700	50.00	2686.00	2686.61		2686.79	0.019873	3.48	14.38	32.42	0.92
Main Channel 3	Reach 1	2700	88.00	2686.00	2686.79	2686.79	2687.07	0.022246	4.25	20.72	37.61	1.01
Main Channel 3	Reach 1	2600	50.00	2684.00	2684.50	2684.50	2684.66	0.028668	3.26	15.45	51.06	1.04
Main Channel 3	Reach 1	2600	88.00	2684.00	2684.66	2684.66	2684.86	0.025055	3.58	24.72	64.02	1.01
Main Channel 3	Reach 1	2500	50.00	2681.10	2681.99		2682.21	0.015128	3.74	13.36	21.90	0.84
Main Channel 3	Reach 1	2500	88.00	2681.10	2682.20	2682.20	2682.56	0.017336	4.86	18.84	31.06	0.95
Main Channel 3	Reach 1	2400	50.00	2679.50	2680.52	2680.52	2680.81	0.013299	4.60	14.12	28.78	0.84
Main Channel 3	Reach 1	2400	88.00	2679.50	2680.81	2680.81	2681.15	0.012215	5.29	24.03	39.27	0.85
Main Channel 3	Reach 1	2300	84.00	2677.10	2678.08	2678.05	2678.41	0.017841	4.66	18.07	25.69	0.95
Main Channel 3	Reach 1	2300	148.00	2677.10	2678.41	2678.41	2678.89	0.015604	5.58	27.93	33.23	0.94
Main Channel 3	Reach 1	2200	84.00	2675.20	2676.39	2676.39	2676.75	0.014408	4.92	19.22	32.09	0.89
Main Channel 3	Reach 1	2200	148.00	2675.20	2676.77	2676.77	2677.19	0.011815	5.58	33.99	46.55	0.85
Main Channel 3	Reach 1	2100	84.00	2673.45	2674.46	2674.46	2674.79	0.018957	4.62	19.11	31.33	0.97
Main Channel 3	Reach 1	2100	148.00	2673.45	2674.79	2674.79	2675.19	0.017453	5.23	30.82	39.93	0.97
Main Channel 3	Reach 1	2000	84.00	2671.35	2672.72	2672.72	2673.11	0.012525	5.36	19.93	29.25	0.86
Main Channel 3	Reach 1	2000	148.00	2671.35	2673.12	2673.12	2673.58	0.011435	6.19	33.65	39.44	0.86
Main Channel 3	Reach 1	1900	84.00	2670.00	2670.83	2670.80	2671.08	0.020026	4.69	22.55	39.73	0.99
Main Channel 3	Reach 1	1900	148.00	2670.00	2671.08	2671.07	2671.44	0.020025	5.60	33.68	45.60	1.04
Tributary 1	Reach 1	4400	13.00	2658.50	2658.95	2658.95	2659.13	0.025674	3.34	3.89	11.20	1.00
Tributary 1	Reach 1	4400	28.00	2658.50	2659.20	2659.20	2659.45	0.022762	4.00	7.00	14.03	1.00
Tributary 1	Reach 1	4300	13.00	2657.00	2657.45	2657.45	2657.61	0.026188	3.16	4.12	13.16	1.00
Tributary 1	Reach 1	4300	28.00	2657.00	2657.67	2657.67	2657.89	0.024266	3.78	7.41	17.06	1.01
Tributary 1	Reach 1	4200	13.00	2654.00	2654.60	2654.60	2654.83	0.024007	3.86	3.37	7.29	1.00
Tributary 1	Reach 1	4200	28.00	2654.00	2654.92	2654.92	2655.26	0.021874	4.66	6.01	9.06	1.01
Tributary 1	Reach 1	4100	13.00	2651.00	2651.93	2651.93	2652.24	0.024351	4.47	2.91	4.76	1.01
Tributary 1	Reach 1	4100	28.00	2651.00	2652.38	2652.38	2652.77	0.022166	5.00	5.60	7.29	1.01
Tributary 2	Reach 1	4800	13.00	2649.00	2649.48	2649.48	2649.67	0.025231	3.57	3.64	9.33	1.01
Tributary 2	Reach 1	4800	28.00	2649.00	2649.75	2649.75	2650.04	0.022026	4.31	6.50	11.27	1.00
Tributary 2	Reach 1	4700	13.00	2647.50	2648.98		2649.00	0.000486	1.12	14.90	16.28	0.17
Tributary 2	Reach 1	4700	28.00	2647.50	2649.87		2649.89	0.000368	1.33	30.30	26.24	0.16
Main Channel 2	Reach 1	4600	131.00	2658.40	2659.60		2659.71	0.005336	2.75	50.34	82.20	0.53
Main Channel 2	Reach 1	4600	231.00	2658.40	2660.06		2660.18	0.003315	2.81	93.57	102.09	0.45
Main Channel 2	Reach 1	4500	131.00	2656.85	2658.48	2658.48	2659.02	0.014078	6.00	23.64	26.08	0.92
Main Channel 2	Reach 1	4500	231.00	2656.85	2659.05	2659.05	2659.69	0.011177	6.76	41.74	37.95	0.87
Main Channel 2	Reach 1	4400	131.00	2654.65	2656.31	2656.31	2656.86	0.012016	6.35	25.94	29.04	0.88
Main Channel 2	Reach 1	4400	231.00	2654.65	2656.95	2656.95	2657.48	0.008568	6.71	50.98	47.66	0.79
Main Channel 2	Reach 1	4300	131.00	2652.45	2653.68	2653.68	2653.99	0.013240	5.50	37.14	60.97	0.88
Main Channel 2	Reach 1	4300	231.00	2652.45	2654.05	2654.05	2654.38	0.010978	5.99	63.32	78.00	0.84
Main Channel 2	Reach 1	4200	131.00	2650.25	2651.93	2651.93	2652.39	0.011522	5.98	29.62	37.20	0.85
Main Channel 2	Reach 1	4200	231.00	2650.25	2652.45	2652.45	2652.94	0.009626	6.63	53.95	57.83	0.82
Main Channel 2	Reach 1	4100	131.00	2648.05	2649.71	2649.71	2650.17	0.011483	5.75	28.29	36.58	0.84
Main Channel 2	Reach 1	4100	231.00	2648.05	2650.19	2650.19	2650.72	0.010073	6.53	49.56	50.17	0.83
Main Channel 2	Reach 2	4300	143.00	2645.85	2647.70	2647.70	2648.34	0.013897	6.51	23.80	21.36	0.93
Main Channel 2	Reach 2	4300	256.00	2645.85	2648.40	2648.40	2649.18	0.011044	7.46	41.84	31.84	0.88
Main Channel 2	Reach 2	4200	143.00	2643.65	2645.30	2645.30	2645.80	0.012602	6.48	30.26	37.03	0.90
Main Channel 2	Reach 2	4200	258.00	2643.65	2645.82	2645.82	2646.46	0.011942	7.63	49.59	41.02	0.92
Main Channel 2	Reach 2	4100	143.00	2641.45	2643.21	2643.21	2643.76	0.012150	6.51	28.45	28.40	0.89

HEC-RAS Plan: 02 (Continued)

River	Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Main Channel 2	Reach 2	4188	258.00	2641.45	2643.79	2643.79	2644.48	0.011252	7.64	47.33	36.90	0.90
Main Channel 2	Reach 2	4000	143.00	2639.25	2640.97	2640.97	2641.50	0.012066	6.25	28.45	30.40	0.88
Main Channel 2	Reach 2	4000	258.00	2639.25	2641.84		2642.25	0.006061	5.94	61.99	46.53	0.67
Main Channel 2	Reach 2	3938	143.00	2637.20	2639.62	2638.69	2639.96	0.002148	2.96	48.23	25.11	0.38
Main Channel 2	Reach 2	3938	258.00	2637.20	2641.99	2639.30	2642.08	0.000521	2.39	116.42	37.94	0.21
Main Channel 2	Reach 2	3900	Culvert									
Main Channel 2	Reach 2	3880	161.00	2636.25	2637.96	2637.96	2638.62	0.017277	6.53	24.64	18.80	1.01
Main Channel 2	Reach 2	3880	291.00	2636.25	2638.65	2638.65	2639.51	0.015854	7.44	39.10	22.93	1.00
Main Channel 2	Reach 2	3800	161.00	2634.15	2635.92	2635.92	2636.54	0.017431	6.33	25.43	20.70	1.01
Main Channel 2	Reach 2	3800	291.00	2634.15	2636.57	2636.57	2637.39	0.013498	7.30	41.87	30.42	0.95
Main Channel 2	Reach 2	3760	161.00	2632.05	2633.87	2633.87	2634.49	0.017475	6.30	25.55	20.96	1.01
Main Channel 2	Reach 2	3760	291.00	2632.05	2634.50	2634.50	2635.33	0.014322	7.35	40.70	27.73	0.97
Main Channel 2	Reach 2	3678	161.00	2629.95	2631.87	2631.87	2632.45	0.017839	6.11	26.33	23.01	1.01
Main Channel 2	Reach 2	3680	291.00	2629.95	2632.45	2632.45	2633.24	0.014785	7.13	41.73	29.50	0.98
Main Channel 2	Reach 2	3600	161.00	2627.85	2629.69	2629.69	2630.27	0.017861	6.09	26.43	23.29	1.01
Main Channel 2	Reach 2	3600	291.00	2627.85	2630.30	2630.30	2631.02	0.014469	6.82	44.09	37.96	0.96
Main Channel 2	Reach 2	3480	161.00	2625.75	2627.74	2627.74	2628.08	0.009229	4.83	44.58	84.33	0.74
Main Channel 2	Reach 2	3480	291.00	2625.75	2628.10	2628.10	2628.44	0.009340	5.42	79.65	106.74	0.77
Main Channel 2	Reach 2	3360	161.00	2623.65	2625.34	2625.34	2625.88	0.013409	6.11	30.71	32.58	0.90
Main Channel 2	Reach 2	3360	291.00	2623.65	2625.92	2625.92	2626.57	0.011594	7.06	52.69	43.50	0.88
Main Channel 2	Reach 2	3240	161.00	2621.50	2623.22	2623.21	2623.60	0.015569	5.18	33.26	42.70	0.96
Main Channel 2	Reach 2	3240	291.00	2621.50	2623.62	2623.62	2624.12	0.015808	5.97	53.50	57.30	0.95
Main Channel 2	Reach 2	3120	161.00	2619.50	2621.35	2621.35	2621.93	0.016850	6.11	26.57	27.16	0.99
Main Channel 2	Reach 2	3120	291.00	2619.50	2622.04	2622.04	2622.57	0.010759	6.09	56.43	53.00	0.83
Main Channel 2	Reach 2	3000	161.00	2617.75	2619.24	2619.24	2619.70	0.018578	5.43	29.70	33.78	1.00
Main Channel 2	Reach 2	3000	291.00	2617.75	2619.74	2619.74	2620.31	0.013636	6.15	51.41	54.68	0.92
Main Channel 2	Reach 2	2880	163.00	2616.80	2618.38	2618.38	2618.79	0.011574	5.31	36.33	61.10	0.83
Main Channel 2	Reach 2	2880	299.00	2616.80	2618.86	2618.86	2619.23	0.008355	5.59	81.58	113.40	0.75
Tributary	Reach 1	3000	99.00	2725.20	2726.50	2726.50	2726.86	0.013225	5.22	23.94	34.94	0.87
Tributary	Reach 1	3000	175.00	2725.20	2726.85	2726.85	2727.33	0.013161	6.25	37.38	41.29	0.91
Tributary	Reach 1	2880	99.00	2722.75	2724.14		2724.35	0.007608	3.68	27.22	31.78	0.65
Tributary	Reach 1	2880	175.00	2722.75	2724.69		2724.92	0.004922	3.97	50.00	50.97	0.56
Tributary	Reach 1	2760	99.00	2721.00	2724.22	2722.04	2724.24	0.000205	1.12	104.47	97.93	0.12
Tributary	Reach 1	2760	175.00	2721.00	2724.77	2722.50	2724.80	0.000282	1.45	161.48	107.90	0.14
Tributary	Reach 1	2640	Culvert									
Tributary	Reach 1	2520	99.00	2716.00	2717.44		2717.61	0.008149	3.26	30.38	31.17	0.56
Tributary	Reach 1	2520	175.00	2716.00	2717.93		2718.14	0.005705	3.69	47.38	38.05	0.56
Tributary	Reach 1	2400	99.00	2715.50	2716.90	2716.90	2717.34	0.015441	5.57	20.55	25.02	0.94
Tributary	Reach 1	2400	175.00	2715.50	2717.35	2717.35	2717.89	0.014446	6.36	33.21	31.92	0.94
Tributary	Reach 1	2280	99.00	2713.50	2714.98	2714.98	2715.36	0.014157	5.54	23.49	31.95	0.90
Tributary	Reach 1	2280	175.00	2713.50	2715.37	2715.37	2715.83	0.014121	6.36	37.74	41.11	0.93
Tributary	Reach 1	2040	99.00	2712.00	2713.21		2713.47	0.014866	4.12	24.05	33.80	0.86
Tributary	Reach 1	2040	175.00	2712.00	2713.46	2713.46	2713.89	0.019428	5.26	33.27	39.58	1.01
Tributary	Reach 1	1920	99.00	2710.35	2711.39	2711.39	2711.74	0.020380	4.68	21.30	34.89	1.00
Tributary	Reach 1	1920	175.00	2710.35	2711.75	2711.75	2712.15	0.015653	5.20	36.56	51.82	0.93
Tributary	Reach 2	1560	54.00	2721.30	2721.81	2721.81	2721.96	0.021832	3.22	17.62	63.87	0.94
Tributary	Reach 2	1560	93.00	2721.30	2721.95	2721.95	2722.15	0.021947	3.87	26.54	75.85	0.98
Tributary	Reach 2	1400	54.00	2719.00	2720.63		2720.64	0.000445	1.13	58.80	66.16	0.17
Tributary	Reach 2	1400	93.00	2719.00	2721.49		2721.50	0.000179	0.98	120.68	77.37	0.11
Tributary	Reach 2	1340	54.00	2718.00	2720.63	2718.71	2720.63	0.000085	0.59	93.95	60.51	0.08
Tributary	Reach 2	1340	93.00	2718.00	2721.49	2718.96	2721.49	0.000066	0.67	153.49	77.74	0.07
Tributary	Reach 2	1250	Culvert									

HEC-RAS Plan: 02 (Continued)

River	Reach	River Sta	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Tributary	Reach 2	1100	54.00	2712.00	2712.57	2712.57	2712.82	0.022754	3.99	13.55	27.43	1.00
Tributary	Reach 2	1100	93.00	2712.00	2712.80	2712.80	2713.13	0.020953	4.64	20.05	30.35	1.01
Tributary	Reach 2	1000	54.00	2709.80	2710.60		2710.68	0.008161	2.55	22.81	49.62	0.61
Tributary	Reach 2	1000	93.00	2709.80	2710.81		2710.93	0.007949	2.96	33.62	53.70	0.63
Tributary	Reach 3	2700	164.00	2707.90	2708.65	2708.65	2708.92	0.024137	4.64	39.48	75.19	1.06
Tributary	Reach 3	2700	291.00	2707.90	2708.92	2708.92	2709.28	0.021625	5.22	60.84	86.31	1.05
Tributary	Reach 3	2600	164.00	2705.45	2706.70	2706.70	2707.06	0.016401	5.09	34.18	48.39	0.93
Tributary	Reach 3	2600	291.00	2705.45	2707.06	2707.06	2707.45	0.014988	5.91	60.99	83.43	0.93
Tributary	Reach 3	2500	164.00	2703.20	2704.55		2704.80	0.008322	4.04	42.65	47.63	0.69
Tributary	Reach 3	2500	291.00	2703.20	2705.12		2705.40	0.005993	4.55	73.10	59.56	0.63
Tributary	Reach 3	2400	164.00	2700.70	2702.86	2702.86	2703.56	0.017165	6.70	24.49	17.74	1.00
Tributary	Reach 3	2400	291.00	2700.70	2703.60	2703.60	2704.44	0.014155	7.41	40.50	28.42	0.96
Tributary	Reach 3	2300	164.00	2698.60	2700.53	2700.53	2701.02	0.018577	5.59	29.34	30.57	1.01
Tributary	Reach 3	2300	291.00	2698.60	2701.02	2701.02	2701.65	0.015786	6.39	46.59	40.66	0.96
Tributary	Reach 3	2200	164.00	2696.75	2698.47	2698.47	2698.96	0.012952	5.73	32.18	41.10	0.88
Tributary	Reach 3	2200	291.00	2696.75	2698.98	2698.98	2699.55	0.010637	6.52	56.32	62.54	0.85
Tributary	Reach 3	2100	164.00	2695.15	2696.77	2696.77	2697.18	0.011085	5.52	39.31	55.43	0.83
Tributary	Reach 3	2100	291.00	2695.15	2697.19	2697.19	2697.67	0.010518	6.42	66.93	75.68	0.84
Tributary	Reach 3	2000	164.00	2693.40	2694.52	2694.52	2694.92	0.018804	5.16	34.55	49.90	0.95
Tributary	Reach 3	2000	291.00	2693.40	2695.09	2695.09	2695.41	0.008236	4.99	83.23	142.38	0.72
Tributary	Reach 3	1900	164.00	2690.75	2692.06	2692.06	2692.39	0.014658	4.84	35.97	59.82	0.89
Tributary	Reach 3	1900	291.00	2690.75	2692.51		2692.84	0.010101	5.24	66.09	73.68	0.79
Tributary	Reach 3	1800	164.00	2688.35	2690.09	2690.09	2690.77	0.016900	6.65	24.71	19.13	1.00
Tributary	Reach 3	1800	291.00	2688.35	2690.79	2690.79	2691.66	0.012641	7.58	41.39	28.28	0.93
Tributary	Reach 3	1700	164.00	2686.15	2687.89	2687.89	2688.48	0.017696	6.17	26.59	22.77	1.01
Tributary	Reach 3	1700	291.00	2686.15	2688.53	2688.53	2689.22	0.014386	6.69	44.79	34.00	0.95
Tributary	Reach 3	1600	164.00	2683.75	2685.50	2685.50	2686.11	0.015626	6.32	26.73	23.83	0.97
Tributary	Reach 3	1600	291.00	2683.75	2686.10	2686.10	2686.92	0.012999	7.42	42.73	29.12	0.94
Tributary	Reach 3	1500	164.00	2681.60	2683.14	2683.14	2683.62	0.016756	5.65	30.14	32.47	0.97
Tributary	Reach 3	1500	291.00	2681.60	2683.63	2683.63	2684.25	0.015056	6.45	48.14	40.27	0.97
Tributary	Reach 3	1400	164.00	2679.20	2680.94	2680.94	2681.47	0.015369	6.01	29.88	29.98	0.95
Tributary	Reach 3	1400	291.00	2679.20	2681.48	2681.48	2682.13	0.014342	6.82	48.43	38.64	0.96
Tributary	Reach 3	1300	164.00	2677.00	2678.68	2678.68	2679.19	0.015345	5.80	30.54	33.25	0.94
Tributary	Reach 3	1300	291.00	2677.00	2679.15	2679.15	2679.81	0.015732	6.79	48.57	43.78	0.99
Tributary	Reach 3	1200	164.00	2674.75	2676.30	2676.30	2676.91	0.015892	6.29	26.58	24.17	0.97
Tributary	Reach 3	1200	291.00	2674.75	2676.92	2676.92	2677.70	0.012460	7.24	44.35	32.89	0.92
Tributary	Reach 3	1100	164.00	2673.00	2674.29		2674.61	0.011543	4.54	36.97	43.61	0.80
Tributary	Reach 3	1100	291.00	2673.00	2674.64	2674.58	2675.15	0.012736	5.82	53.71	52.79	0.89
Tributary	Reach 3	1000	164.00	2671.05	2672.86	2672.86	2673.40	0.012173	6.14	31.54	32.84	0.86
Tributary	Reach 3	1000	291.00	2671.05	2673.52	2673.52	2674.08	0.008858	6.65	63.43	69.09	0.80
Tributary	Reach 3	900	180.00	2669.20	2671.09	2671.09	2671.58	0.015061	5.98	35.00	37.29	0.94
Tributary	Reach 3	900	357.00	2669.20	2671.78	2671.78	2672.27	0.011680	6.28	73.78	69.36	0.87
Tributary	Reach 3	800	180.00	2666.65	2667.75	2667.75	2668.21	0.019014	4.87	33.56	38.05	0.98
Tributary	Reach 3	800	357.00	2666.65	2668.35	2668.35	2668.86	0.013371	5.67	63.36	69.67	0.89
Tributary	Reach 3	700	180.00	2664.20	2665.45	2665.45	2665.90	0.018887	5.43	33.14	36.60	1.01
Tributary	Reach 3	700	357.00	2664.20	2666.00	2666.00	2666.66	0.016790	6.52	54.73	41.95	1.01
Tributary	Reach 3	600	180.00	2662.00	2663.53	2663.53	2664.04	0.015409	5.83	32.57	34.87	0.95
Tributary	Reach 3	600	357.00	2662.00	2664.17	2664.17	2664.87	0.012396	6.99	58.27	44.90	0.92
Tributary	Reach 3	500	180.00	2659.80	2661.31	2661.31	2661.71	0.017418	5.85	38.84	47.20	1.00
Tributary	Reach 3	500	357.00	2659.80	2661.81	2661.81	2662.35	0.017373	6.88	66.30	61.59	1.03
Tributary	Reach 3	400	180.00	2656.90	2658.61	2658.61	2659.13	0.017699	5.77	31.44	33.32	1.00
Tributary	Reach 3	400	357.00	2656.90	2659.25	2659.25	2659.80	0.011386	6.27	69.09	70.94	0.86

HEC-RAS Plan: 02 (Continued)

River	Reach	River Sta	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Tributary	Reach 3	300	180.00	2654.00	2655.84	2655.84	2656.47	0.017397	6.38	28.20	22.70	1.01
Tributary	Reach 3	300	357.00	2654.00	2656.62	2656.62	2657.48	0.013129	7.50	50.08	34.24	0.94
Tributary	Reach 3	200	180.00	2651.60	2653.89	2653.89	2654.54	0.011151	7.09	33.33	28.53	0.87
Tributary	Reach 3	200	357.00	2651.60	2654.69	2654.69	2655.52	0.010336	8.51	60.00	37.62	0.89
Tributary	Reach 3	100	180.00	2649.20	2650.48	2650.48	2650.88	0.019854	5.05	35.62	45.78	1.01
Tributary	Reach 3	100	357.00	2649.20	2650.98	2650.98	2651.50	0.017970	5.80	61.60	59.81	1.01
Main Channel	Reach1	7200	142.00	2724.20	2725.01	2724.96	2725.27	0.017919	4.12	34.64	58.28	0.92
Main Channel	Reach1	7200	250.00	2724.20	2725.29	2725.25	2725.66	0.017016	5.00	51.30	61.58	0.95
Main Channel	Reach1	7100	142.00	2722.10	2723.35	2723.35	2723.54	0.014162	4.42	45.54	102.27	0.85
Main Channel	Reach1	7100	250.00	2722.10	2723.52	2723.52	2723.81	0.016829	5.42	63.63	102.99	0.95
Main Channel	Reach1	7000	142.00	2719.80	2721.32	2721.32	2721.60	0.011092	4.76	39.10	73.01	0.80
Main Channel	Reach1	7000	250.00	2719.80	2721.58	2721.58	2721.95	0.011820	5.67	59.73	82.73	0.85
Main Channel	Reach1	6900	158.00	2718.00	2719.85	2719.85	2720.22	0.009537	5.61	43.13	65.40	0.78
Main Channel	Reach1	6900	278.00	2718.00	2720.22	2720.22	2720.64	0.009499	6.44	70.93	79.91	0.80
Main Channel	Reach1	6800	158.00	2716.20	2717.91	2717.91	2718.36	0.010706	5.87	36.80	46.84	0.82
Main Channel	Reach1	6800	278.00	2716.20	2718.38	2718.38	2718.90	0.010013	6.75	63.49	67.91	0.83
Main Channel	Reach1	6700	158.00	2713.95	2715.69	2715.89	2716.42	0.010820	6.17	31.99	34.47	0.84
Main Channel	Reach1	6700	278.00	2713.95	2716.50	2716.50	2717.07	0.008977	6.89	59.98	60.37	0.80
Main Channel	Reach1	6600	158.00	2711.70	2713.48	2713.48	2713.87	0.010399	5.24	35.75	64.67	0.84
Main Channel	Reach1	6600	278.00	2711.70	2713.90	2713.90	2714.30	0.009259	5.70	67.26	80.25	0.79
Main Channel	Reach1	6500	158.00	2709.45	2711.28	2711.28	2711.89	0.014312	6.35	27.06	24.86	0.93
Main Channel	Reach1	6500	278.00	2709.45	2711.90	2711.90	2712.62	0.012733	7.16	44.96	33.17	0.92
Main Channel	Reach1	6400	158.00	2707.20	2708.76	2708.76	2709.28	0.016922	5.80	27.75	29.77	0.98
Main Channel	Reach1	6400	278.00	2707.20	2709.28	2709.28	2709.95	0.013409	6.88	45.39	39.00	0.93
Main Channel	Reach1	6300	158.00	2704.90	2706.80	2706.80	2707.33	0.011289	6.12	31.50	35.96	0.85
Main Channel	Reach1	6300	278.00	2704.90	2707.36	2707.36	2707.95	0.009498	6.86	56.66	52.16	0.82
Main Channel	Reach1	6200	158.00	2702.50	2704.28	2704.28	2704.86	0.016231	6.12	26.45	26.47	0.97
Main Channel	Reach1	6200	278.00	2702.50	2705.08	2705.08	2705.56	0.007805	5.85	62.98	81.03	0.73
Main Channel	Reach1	6100	158.00	2700.00	2702.48		2702.66	0.003415	3.44	49.60	46.96	0.47
Main Channel	Reach1	6100	278.00	2700.00	2703.02		2703.27	0.003478	4.20	81.61	69.97	0.50
Main Channel	Reach1	6000	163.00	2699.45	2702.48	2701.08	2702.55	0.001043	2.19	76.48	47.27	0.27
Main Channel	Reach1	6000	289.00	2699.45	2703.02	2701.61	2703.15	0.001434	3.00	105.16	60.22	0.33
Main Channel	Reach1	5900	Culvert									
Main Channel	Reach1	5800	165.00	2695.85	2697.43		2697.53	0.003814	2.63	63.11	68.46	0.46
Main Channel	Reach1	5800	286.00	2695.85	2697.96		2698.08	0.002804	2.84	108.05	100.43	0.42
Main Channel	Reach1	5700	165.00	2694.90	2696.56	2696.56	2697.09	0.013839	5.99	30.29	33.58	0.92
Main Channel	Reach1	5700	286.00	2694.90	2697.09	2697.09	2697.73	0.011307	6.76	51.68	46.61	0.88
Main Channel	Reach1	5600	165.00	2693.10	2694.57	2694.57	2695.06	0.018681	5.60	29.45	30.83	1.01
Main Channel	Reach1	5600	286.00	2693.10	2695.04	2695.04	2695.65	0.017300	6.27	45.83	38.11	1.01
Main Channel	Reach1	5500	165.00	2691.45	2692.86		2693.00	0.004177	3.02	55.21	49.11	0.49
Main Channel	Reach1	5500	286.00	2691.45	2693.22		2693.48	0.005057	3.94	73.90	53.00	0.57
Main Channel	Reach1	5400	165.00	2690.00	2691.89	2691.89	2692.31	0.011849	5.39	35.13	48.47	0.84
Main Channel	Reach1	5400	286.00	2690.00	2692.33	2692.33	2692.75	0.010112	5.72	62.22	69.00	0.80
Main Channel	Reach1	5400	162.00	2688.00	2689.58	2689.58	2690.09	0.018395	5.76	28.11	27.68	1.01
Main Channel	Reach1	5400	287.00	2688.00	2690.08	2690.08	2690.75	0.016588	6.56	43.93	37.02	1.00
Main Channel	Reach1	5300	162.00	2686.00	2687.36	2687.36	2687.81	0.019072	5.36	30.24	34.48	1.01
Main Channel	Reach1	5300	287.00	2686.00	2687.81	2687.81	2688.38	0.017645	6.05	47.45	42.52	1.01
Main Channel	Reach1	5200	162.00	2684.00	2685.11	2685.10	2685.42	0.017298	5.26	38.51	60.81	0.96
Main Channel	Reach1	5200	287.00	2684.00	2685.41	2685.41	2685.83	0.017010	6.28	57.81	68.89	1.00
Main Channel	Reach1	5100	162.00	2682.45	2683.55	2683.55	2683.86	0.019419	4.67	36.49	59.44	0.98
Main Channel	Reach1	5100	287.00	2682.45	2683.89	2683.84	2684.29	0.016260	5.38	57.59	64.12	0.95
Main Channel	Reach1	5000	168.00	2680.10	2681.55		2681.89	0.012845	4.63	40.59	42.84	0.84
Main Channel	Reach1	5000	348.00	2680.10	2681.95	2681.91	2682.49	0.015907	5.89	59.03	50.92	0.96

HEC-RAS Plan: 02 (Continued)

River	Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Main Channel	Reach1	4900	188.00	2678.00	2679.81	2679.81	2680.37	0.017741	5.97	31.48	28.69	1.00
Main Channel	Reach1	4900	348.00	2678.00	2680.49	2680.49	2681.12	0.011835	6.48	59.71	62.43	0.88
Main Channel	Reach1	4800	188.00	2676.00	2677.64	2677.62	2678.15	0.017032	5.70	32.96	31.16	0.98
Main Channel	Reach1	4800	348.00	2676.00	2678.17	2678.17	2678.89	0.016397	6.81	51.23	37.44	1.01
Main Channel	Reach1	4700	188.00	2674.00	2675.83	2675.83	2676.40	0.017850	6.04	31.14	27.99	1.01
Main Channel	Reach1	4700	348.00	2674.00	2676.48	2676.48	2677.19	0.013568	6.88	53.07	43.67	0.94
Main Channel	Reach1	4600	188.00	2672.35	2674.26	2674.26	2674.77	0.011853	5.79	36.57	48.99	0.85
Main Channel	Reach1	4600	348.00	2672.35	2674.86	2674.86	2675.39	0.009076	6.39	75.73	82.62	0.79
Main Channel	Reach1	4500	188.00	2670.50	2672.53	2672.53	2672.93	0.008373	5.70	49.94	69.43	0.74
Main Channel	Reach1	4500	348.00	2670.50	2672.97	2672.97	2673.45	0.008857	6.77	84.74	87.35	0.79
Main Channel	Reach1	4400	188.00	2668.30	2670.22	2670.22	2670.77	0.015219	6.00	32.56	38.19	0.95
Main Channel	Reach1	4400	348.00	2668.30	2670.86	2670.86	2671.44	0.010284	6.50	67.69	68.75	0.83
Main Channel	Reach1	4300	188.00	2666.30	2668.32	2668.32	2668.92	0.011579	6.49	34.58	33.59	0.87
Main Channel	Reach1	4300	348.00	2666.30	2668.99	2668.99	2669.73	0.010284	7.59	60.86	45.27	0.86
Main Channel	Reach1	4200	188.00	2664.30	2666.16	2666.16	2666.58	0.013184	5.27	40.28	61.35	0.87
Main Channel	Reach1	4200	348.00	2664.30	2666.65	2666.65	2667.10	0.010025	5.84	77.90	85.00	0.81
Main Channel	Reach1	4100	188.00	2662.30	2664.13	2664.13	2664.54	0.009592	5.89	43.41	56.81	0.79
Main Channel	Reach1	4100	348.00	2662.30	2664.61	2664.61	2665.06	0.008775	6.65	80.98	93.41	0.79
Main Channel	Reach1	4000	211.00	2660.60	2661.39		2661.67	0.016844	4.26	52.55	91.79	0.91
Main Channel	Reach1	4000	371.00	2660.60	2661.71		2662.06	0.013784	5.00	82.85	94.56	0.88
Main Channel	Reach1	3900	211.00	2658.70	2659.66		2659.91	0.016056	4.33	54.86	83.54	0.90
Main Channel	Reach1	3900	371.00	2658.70	2659.88	2659.88	2660.31	0.020205	5.79	73.58	88.37	1.05
Main Channel	Reach1	3800	211.00	2656.60	2657.13	2657.13	2657.35	0.017723	2.82	58.08	127.36	0.84
Main Channel	Reach1	3800	371.00	2656.60	2657.36	2657.36	2657.58	0.015646	3.46	99.12	241.69	0.84
Main Channel	Reach1	3700	211.00	2653.75	2654.97	2654.97	2655.15	0.014711	3.78	65.51	221.23	0.84
Main Channel	Reach1	3700	371.00	2653.75	2655.15	2655.15	2655.36	0.014968	4.31	112.98	272.12	0.87
Main Channel	Reach1	3600	211.00	2651.10	2652.52	2652.52	2652.73	0.010843	4.70	73.73	180.30	0.79
Main Channel	Reach1	3600	371.00	2651.10	2652.72	2652.72	2652.98	0.012189	5.57	110.34	187.28	0.86
Main Channel	Reach1	3500	211.00	2649.10	2650.21	2650.21	2650.55	0.017076	4.83	44.98	69.31	0.94
Main Channel	Reach1	3500	371.00	2649.10	2650.56	2650.56	2650.98	0.014505	5.65	74.20	97.13	0.92
Main Channel	Reach2	3400	435.00	2646.95	2648.68		2649.07	0.010287	5.71	91.81	99.58	0.81
Main Channel	Reach2	3400	798.00	2646.95	2649.45		2649.78	0.005848	5.65	195.25	165.94	0.66
Main Channel	Reach2	3300	454.00	2644.80	2647.15	2647.15	2647.92	0.013563	7.15	58.26	47.80	0.95
Main Channel	Reach2	3300	826.00	2644.80	2647.98	2647.98	2648.94	0.012067	8.17	113.71	61.71	0.94
Main Channel	Reach2	3200	472.00	2642.75	2644.78	2644.78	2645.51	0.013858	6.97	71.62	54.25	0.96
Main Channel	Reach2	3200	854.00	2642.75	2645.57	2645.57	2646.51	0.010943	8.04	120.37	67.85	0.91
Main Channel	Reach2	3100	472.00	2640.80	2642.80	2642.80	2643.53	0.014395	6.93	71.26	53.23	0.97
Main Channel	Reach2	3100	854.00	2640.80	2643.55	2643.55	2644.54	0.012089	8.20	114.71	63.64	0.95
Main Channel	Reach2	3000	472.00	2638.75	2641.19	2641.19	2641.97	0.015813	7.11	66.40	42.83	1.01
Main Channel	Reach2	3000	854.00	2638.75	2642.00	2642.00	2643.02	0.014675	8.09	105.57	53.11	1.01
Main Channel	Reach2	2900	472.00	2636.40	2638.81	2638.81	2639.55	0.013835	7.45	73.87	48.69	0.97
Main Channel	Reach2	2900	854.00	2636.40	2639.56	2639.56	2640.57	0.013796	8.79	112.28	53.93	1.01
Main Channel	Reach2	2800	472.00	2634.70	2636.58	2636.58	2637.04	0.012531	5.87	96.28	110.96	0.88
Main Channel	Reach2	2800	854.00	2634.70	2637.03	2637.03	2637.65	0.012595	7.09	147.58	120.06	0.93
Main Channel	Reach2	2700	474.00	2632.50	2634.53	2634.53	2634.98	0.013501	5.84	96.26	112.39	0.90
Main Channel	Reach2	2700	854.00	2632.50	2634.97	2634.97	2635.55	0.013595	6.90	148.38	126.13	0.94
Main Channel	Reach2	2600	474.00	2630.70	2632.82	2632.82	2633.20	0.014438	5.84	103.65	143.80	0.93
Main Channel	Reach2	2600	854.00	2630.70	2633.19	2633.19	2633.72	0.014912	7.08	159.92	157.65	0.98
Main Channel	Reach2	2500	474.00	2628.90	2630.74	2630.74	2631.05	0.015921	5.02	105.99	181.21	0.93
Main Channel	Reach2	2500	854.00	2628.90	2631.06	2631.06	2631.46	0.016404	6.01	174.28	229.72	0.98
Main Channel	Reach2	2400	474.00	2626.50	2628.23	2628.23	2628.67	0.014180	5.70	97.56	124.79	0.92
Main Channel	Reach2	2400	854.00	2626.50	2628.74	2628.74	2629.19	0.010249	6.13	186.54	229.00	0.83

HEC-RAS Plan: 02 (Continued)

River	Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Main Channel	Reach2	2500	484.00	2625.25	2626.67	2626.67	2626.97	0.014748	5.02	121.56	222.16	0.90
Main Channel	Reach2	2300	868.00	2625.25	2626.96		2627.36	0.014636	5.97	189.99	240.76	0.94
Main Channel	Reach2	2200	484.00	2622.80	2624.93	2624.93	2625.19	0.012468	5.01	134.43	262.33	0.84
Main Channel	Reach2	2000	868.00	2622.80	2625.19	2625.19	2625.54	0.013333	5.99	206.95	285.17	0.90
Main Channel	Reach2	2100	484.00	2621.00	2623.22	2623.22	2623.50	0.008257	5.11	145.04	268.34	0.73
Main Channel	Reach2	2100	868.00	2621.00	2623.48	2623.48	2623.86	0.010246	6.33	215.22	274.61	0.83
Main Channel	Reach2	2000	484.00	2619.60	2621.51	2621.51	2621.82	0.010211	5.66	130.91	218.60	0.80
Main Channel	Reach2	2000	868.00	2619.60	2621.82	2621.82	2622.21	0.011374	6.68	202.40	236.80	0.87
Main Channel	Reach2	1900	484.00	2618.25	2619.75	2619.75	2620.12	0.016305	5.60	109.59	180.21	0.96
Main Channel	Reach2	1900	868.00	2618.25	2620.16	2620.16	2620.58	0.013020	6.23	190.52	236.27	0.91
Main Channel	Reach2	1800	484.00	2616.40	2617.86	2617.86	2618.20	0.014987	5.39	116.16	182.52	0.92
Main Channel	Reach2	1800	868.00	2616.40	2618.21	2618.21	2618.62	0.013731	6.15	185.78	209.14	0.92
Main Channel	Reach2	1700	484.00	2614.85	2616.15	2616.15	2616.47	0.015991	5.18	110.91	185.53	0.94
Main Channel	Reach2	1700	868.00	2614.85	2616.46	2616.46	2616.91	0.016037	6.25	168.71	190.60	0.98
Main Channel	Reach2	1600	497.00	2612.80	2614.31	2614.31	2614.59	0.019275	4.68	118.52	206.84	0.98
Main Channel	Reach2	1600	884.00	2612.80	2614.57	2614.57	2614.98	0.018495	5.63	173.07	217.51	1.01
Main Channel	Reach2	1500	497.00	2610.90	2612.54	2612.54	2612.83	0.018630	5.06	116.90	201.20	0.98
Main Channel	Reach2	1500	884.00	2610.90	2612.81	2612.81	2613.23	0.018865	5.91	172.94	207.91	1.03
Main Channel	Reach2	1400	497.00	2609.15	2609.98	2609.98	2610.20	0.016505	2.93	138.68	327.93	0.82
Main Channel	Reach2	1400	884.00	2609.15	2610.17	2610.17	2610.48	0.019721	3.89	200.92	350.57	0.94
Main Channel	Reach2	1300	523.00	2607.45	2608.51	2608.51	2608.76	0.017992	3.74	135.69	265.57	0.90
Main Channel	Reach2	1300	926.00	2607.45	2608.75	2608.75	2609.09	0.018678	4.66	202.38	319.50	0.97

APPENDIX E

Electronic Digital Files

- **DDMSW Existing & Post-Development ZIP Files**
- **Existing & Post-Development HEC-1 Files**
- **Existing & Post-Development Wash HEC-RAS files**
- **Existing & Post-Development Rio Verde Drive HEC-RAS files**
- **PDF of Preliminary Drainage Report**

Electronic Files READ ME.txt

City of Scottsdale, Arizona
Project Name: PRELIMINARY DRAINAGE REPORT - 90% LEVEL FOR SCOTTSDALE NATIONAL GOLF CLUB
PREPARED BY WOOD/PATEL

Date Prepared: 06/16/2015

PDF OF PRELIMINARY DRAINAGE REPORT - 90% LEVEL FOR SCOTTSDALE NATIONAL GOLF CLUB

Computer Program Files

DDMSW BACKUP FILES SUBMITTED:

SNGC EXISTING.ZIP
SNGC PROP.ZIP
SNGC PROPSHAPEFILES.ZIP

HEC-1 FILES SUBMITTED:

FDR EXISTING MODELS HEC1

2-YEAR MODEL:	SNGCEX2.DAT
	SNGCEX2.OH1
10-YEAR MODEL:	SNGCEX10.DAT
	SNGCEX10.OH1
100-YEAR MODEL:	SNGEX100.DAT
	SNGEX100.OH1

FDR POST-DEVELOPMENT MODELS HEc1

2-YEAR MODEL:	SNGCFT2.DAT
	SNGCFT2.OH1
10-YEAR MODEL:	SNGCFT10.DAT
	SNGCFT10.OH1
100-YEAR MODEL:	SNGFT100.DAT
	SNGFT100.OH1

HEC-RAS EXISTING CONDITION PROJECT Files SUBMITTED:

EXWASH043.PRJ
EXWASH055.PRJ
EXWASH080.PRJ
EXWASH085.PRJ
EXWASH092.PRJ
EXWASH106.PRJ
EXWASH130.PRJ
EXWASH210.PRJ

HEC-RAS POST-DEVELOPMENT PROJECT Files SUBMITTED:

WASH043.PRJ
WASH055.PRJ
WASH073B.PRJ
WASH080.PRJ
WASH82.PRJ
WASH84.PRJ
WASH92.PRJ
WASH150.PRJ
WASH210.PRJ

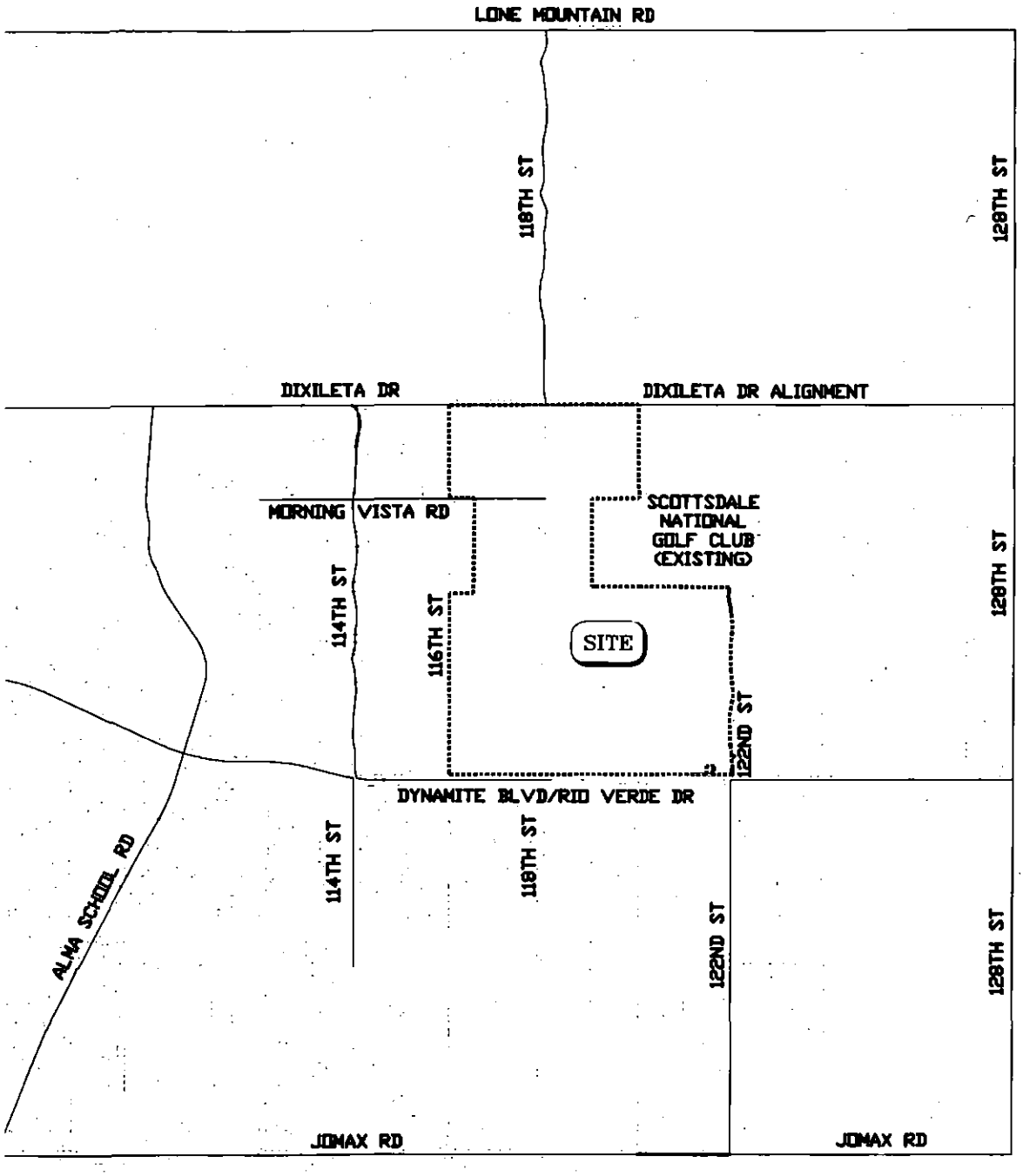
RIO VERDE DRIVE HEC-RAS PROECT FILES SUBMITTED:

Electronic Files READ ME.txt

EXISTING CONDITION:	RIOVERDEEXISTING.PRJ
POST-DEVELOPMENT CONDITION:	RIOVERDEDRIVEWASH.PRJ

PLATE 1

VICINITY MAP



SCOTTSDALE NATIONAL GOLF CLUB

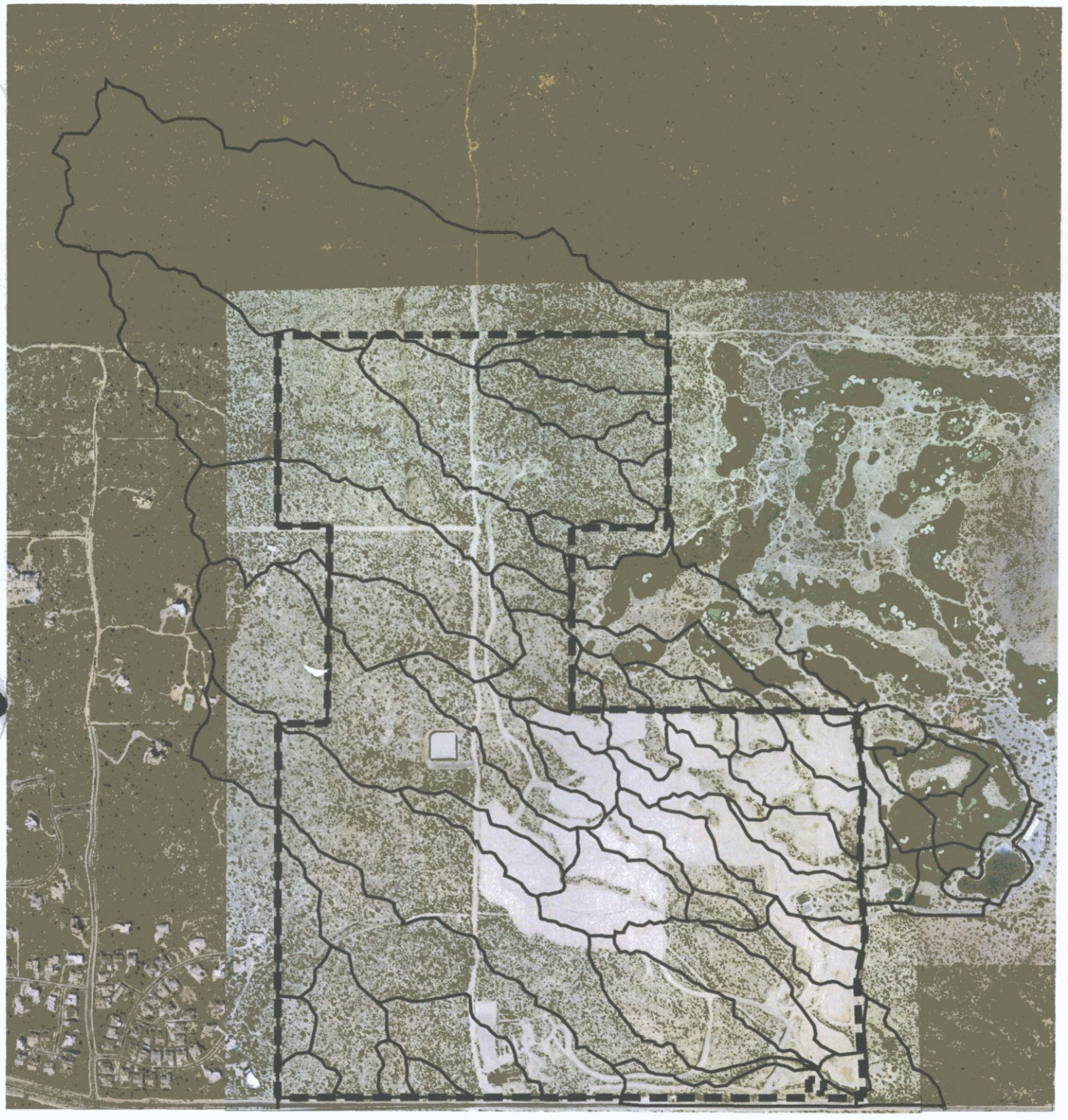
PLATE 1
VICINITY MAP

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JOB NO. 144147

PLATE 2

AERIAL MAP



1000 0 500 1000

Horz. 1 in. = 1000 ft.

N

SCOTTSDALE NATIONAL GOLF CLUB

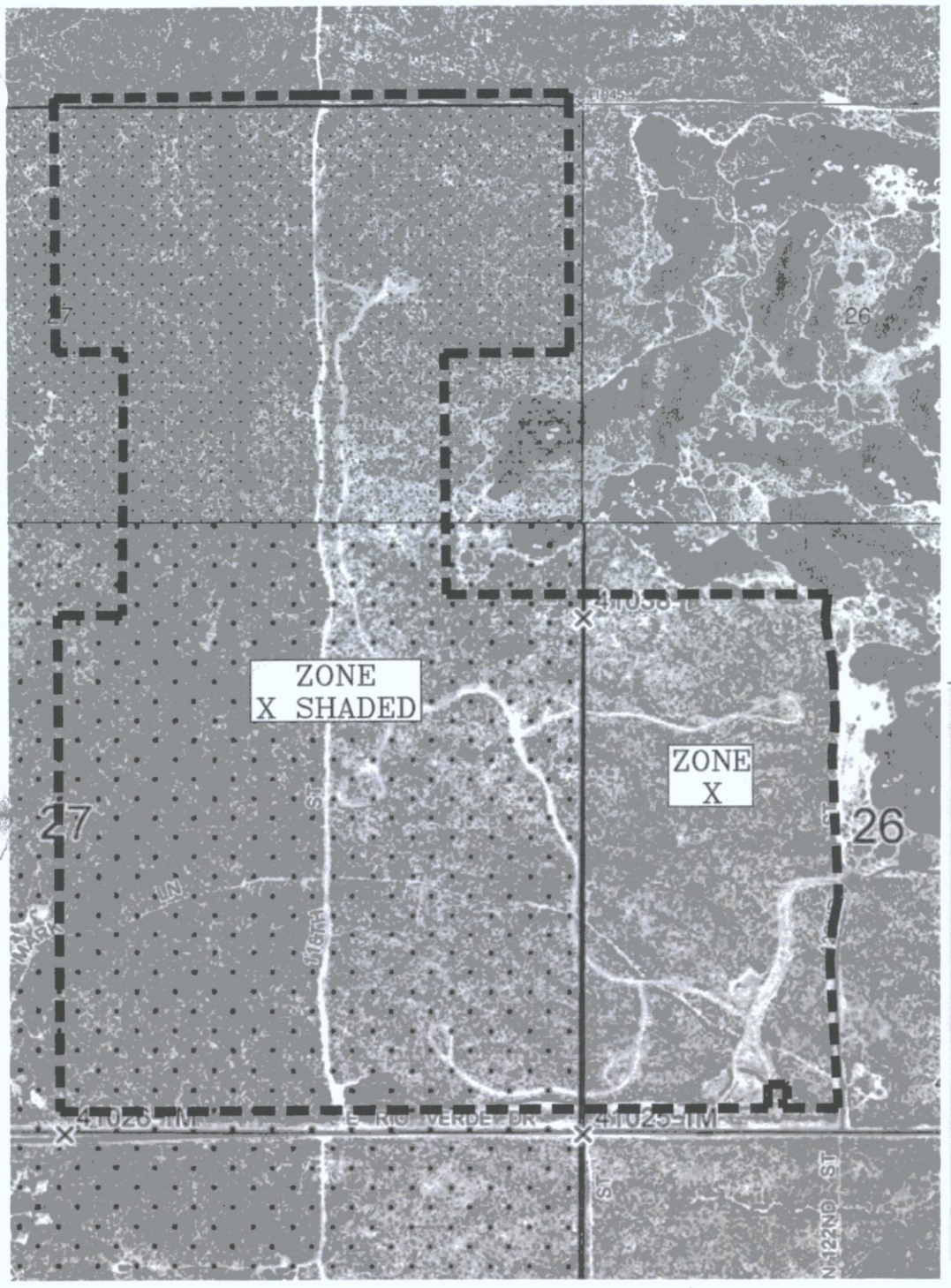
PLATE 2
AERIAL MAP

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PLATE 3

FEMA FLOOD INSURANCE RATE MAP



NFIP

PANEL 0914L

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

MARICOPA COUNTY, ARIZONA

AND INCORPORATED AREAS

PANEL 914 OF 4425

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SCOTTSDALE, CITY OF	045012	0914	L

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
04013C0914L

MAP REVISED
OCTOBER 16, 2013

Federal Emergency Management Agency

NFIP

PANEL 1330L

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

MARICOPA COUNTY, ARIZONA

AND INCORPORATED AREAS

PANEL 1330 OF 4425

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SCOTTSDALE, CITY OF	045012	1330	L

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
04013C1330L

MAP REVISED
OCTOBER 16, 2013

Federal Emergency Management Agency

Zone "X" is defined by FEMA as follows:
Areas determined to be outside the 0.2% annual chance floodplain.

Zone "X" (Shaded) is defined by FEMA as follows:
Areas of 0.2% annual chance flood: areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

900 0 450 900

Horz. 1 in. = 900 ft.

N

SCOTTSDALE NATIONAL GOLF CLUB

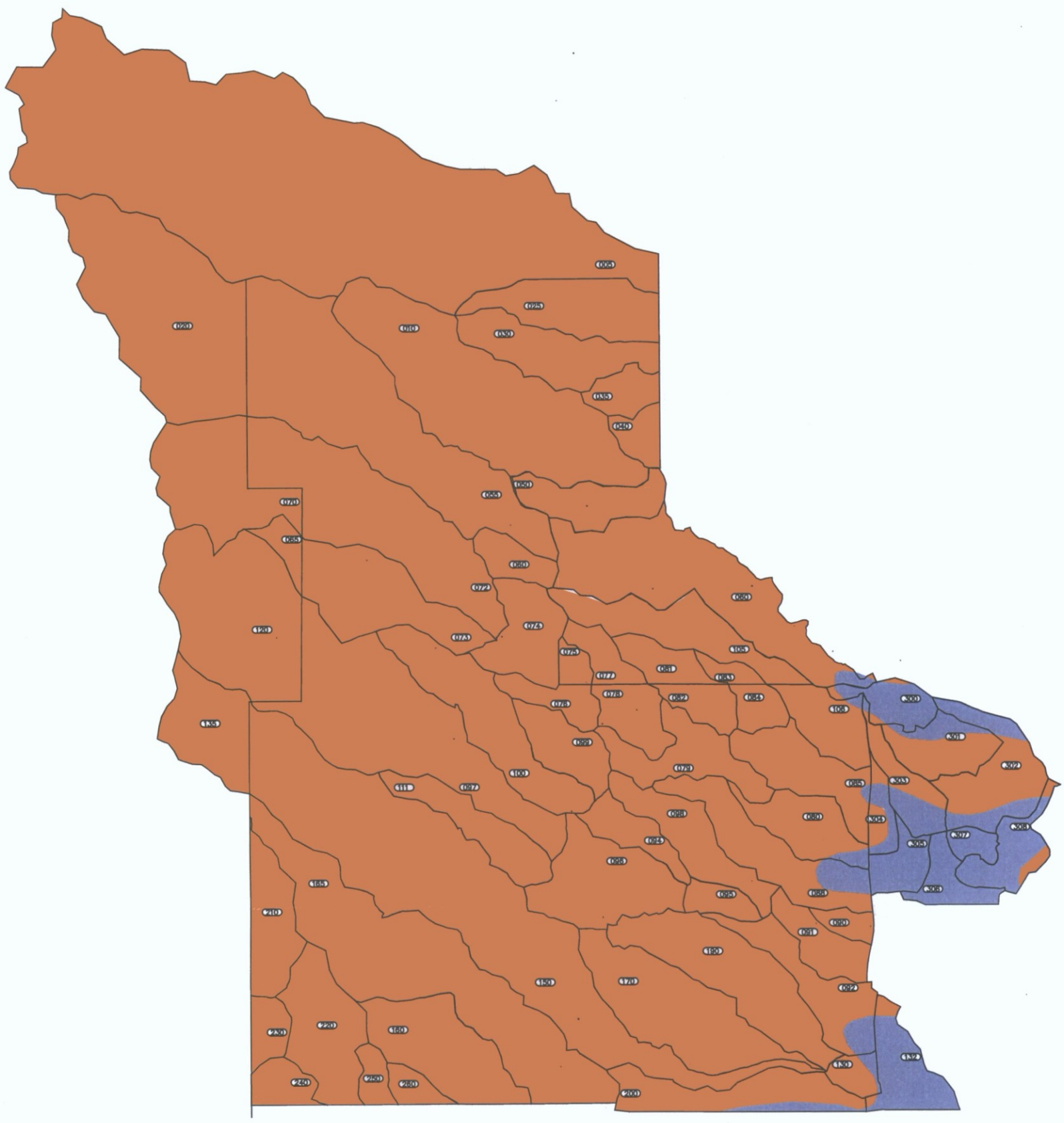
PLATE 3
FEMA FLOOD INSURANCE RATE MAP

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PLATE 4

Existing Condition Soils Map



LEGEND

SOIL 61

SOIL 96

SUB BASIN BOUNDARY

(135) SUB BASIN ID

N

0 800 1600

Horz. 1 in. = 800 ft.

K:\2014\144147\Project Reports\Drainage\Exhibits\SNGC Plate 4 Existing Condition Soils Map 11x17.dwg

SCOTTSDALE NATIONAL GOLF CLUB

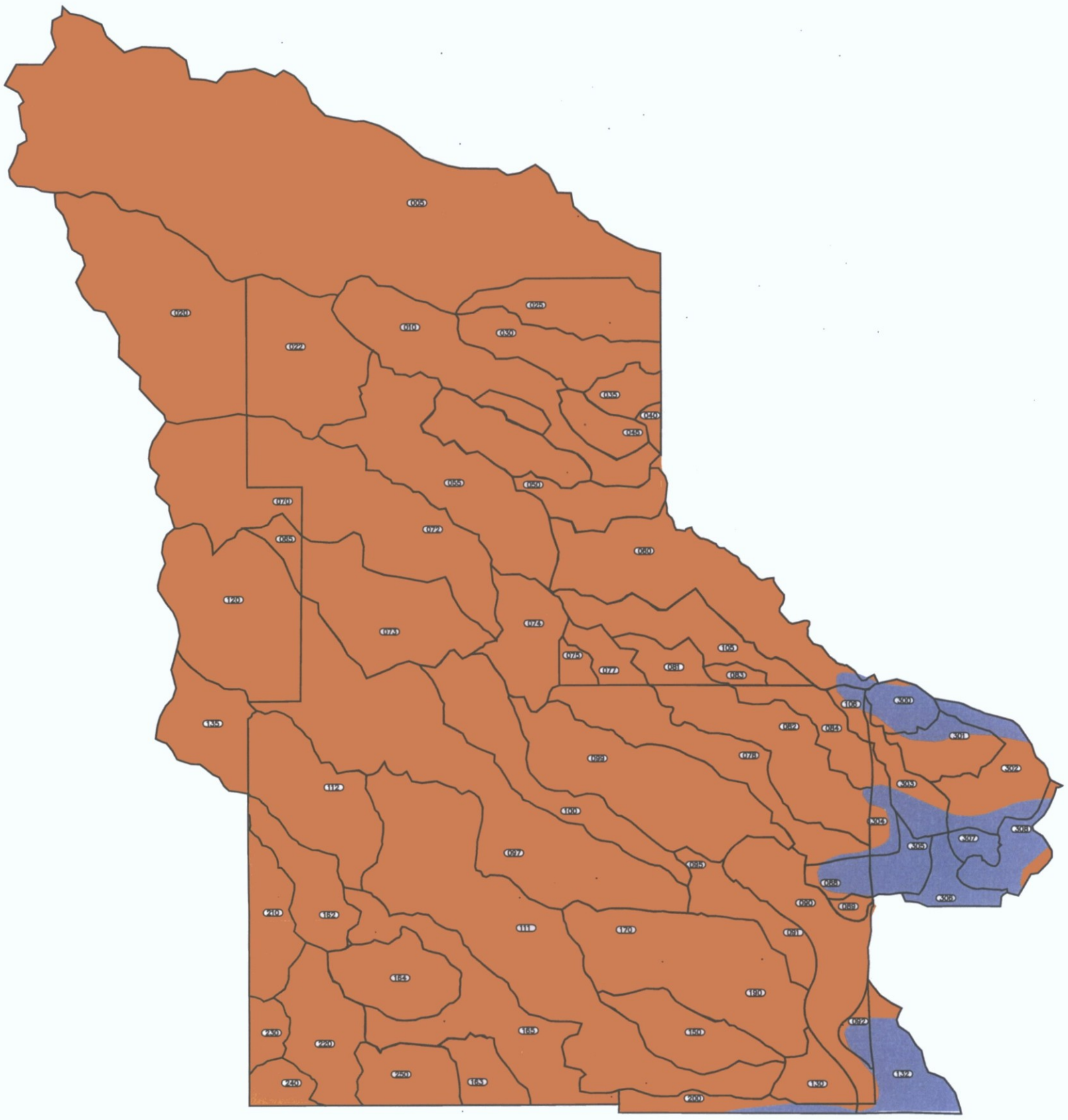
PLATE 4
EXISTING CONDITION
SOILS MAP

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PLATE 5

Post-Development Soils Map



LEGEND

- SOIL 61
- SOIL 96
- SUB BASIN BOUNDARY
- (135) SUB BASIN ID

N

0 800 1600

Horz. 1 in. = 800 ft.

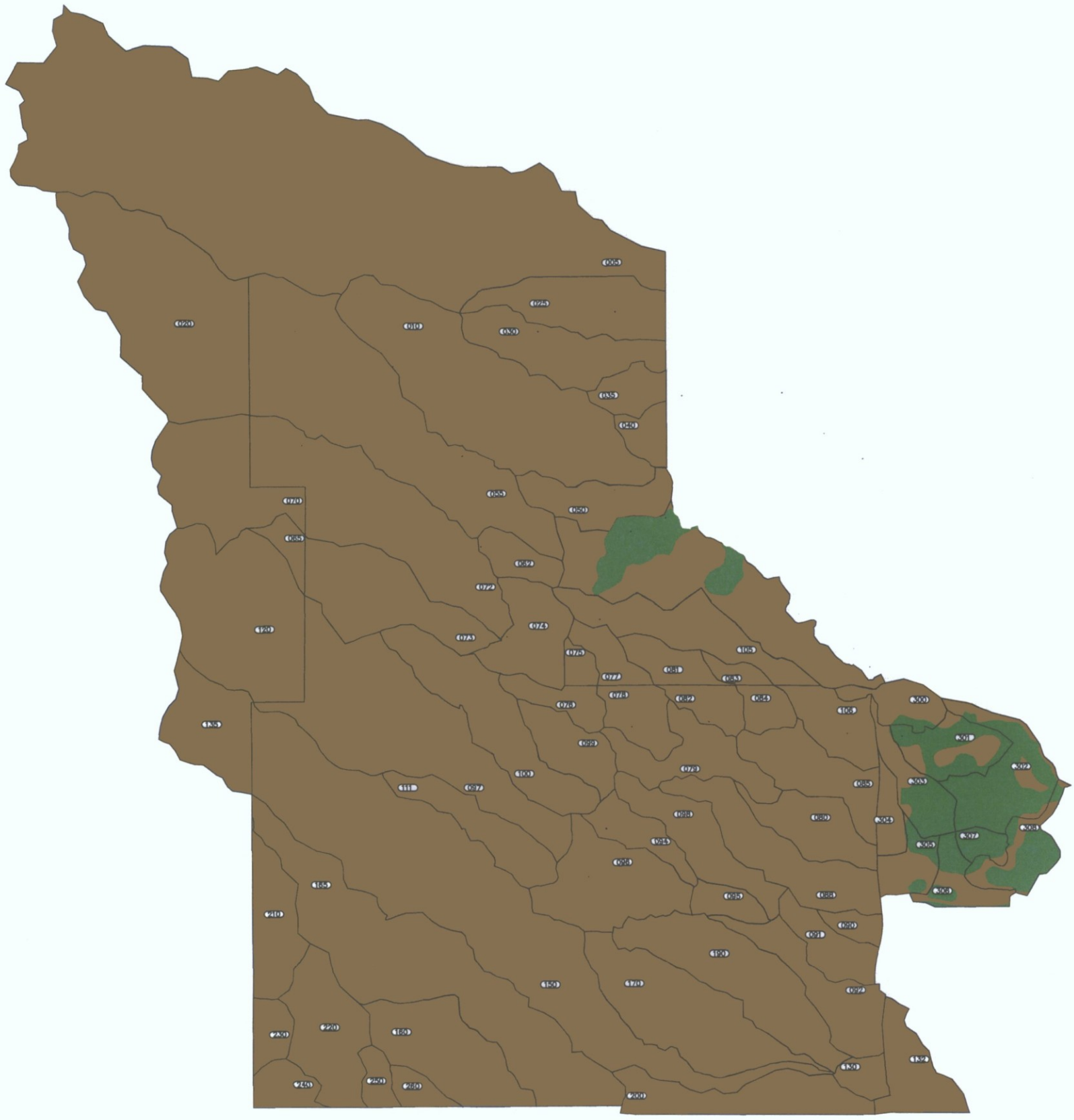
SCOTTSDALE NATIONAL GOLF CLUB

PLATE 5
DEVELOPED CONDITION
SOILS MAP

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PLATE 6
Existing Condition Land Use Map



LEGEND

DESERT LAND USE

GOLF LAND USE

135 SUB BASIN ID

N

0 800 1600

Horz. 1 in. = 800 ft.

N:\3245\144147\Project Reports\Drainage\Exhibits\PDR 4-PDR Existing Condition Land Use Hydrology

SCOTTSDALE NATIONAL GOLF CLUB

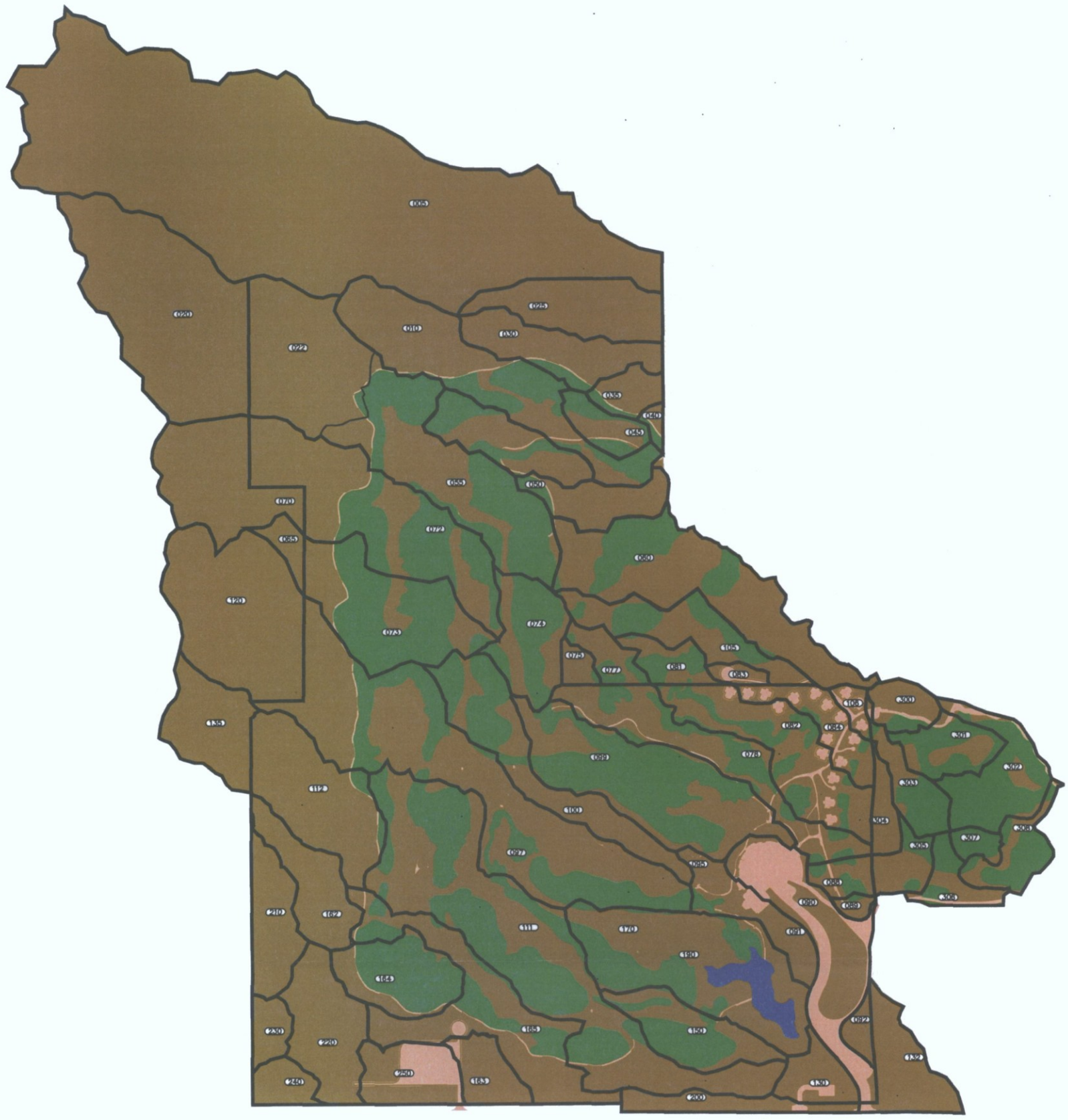
PLATE 6
EXISTING CONDITION
LAND USE MAP

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PLATE 7

Post-Development Condition Land Use Map



LEGEND

- DESERT LAND USE
- GOLF LAND USE
- IMPERVIOUS LAND USE
- LAKE LAND USE
- (135) SUB BASIN ID

N

0 800 1600

Horz. 1 in. = 800 ft.

SCOTTSDALE NATIONAL GOLF CLUB

PLATE 7
DEVELOPED CONDITION
LAND USE MAP

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PLATE 8

Existing Condition HEC-1 Schematic Map

PLATE 9

Post-Development Condition HEC-1 Schematic Map

PLATE 10

Existing Condition HEC-RAS Map

PLATE 11

Post-Development Condition HEC-RAS Map

PLATE 12

Post-Development Condition Drainage Map