

GREAT NORTHWESTERN RAILWAY

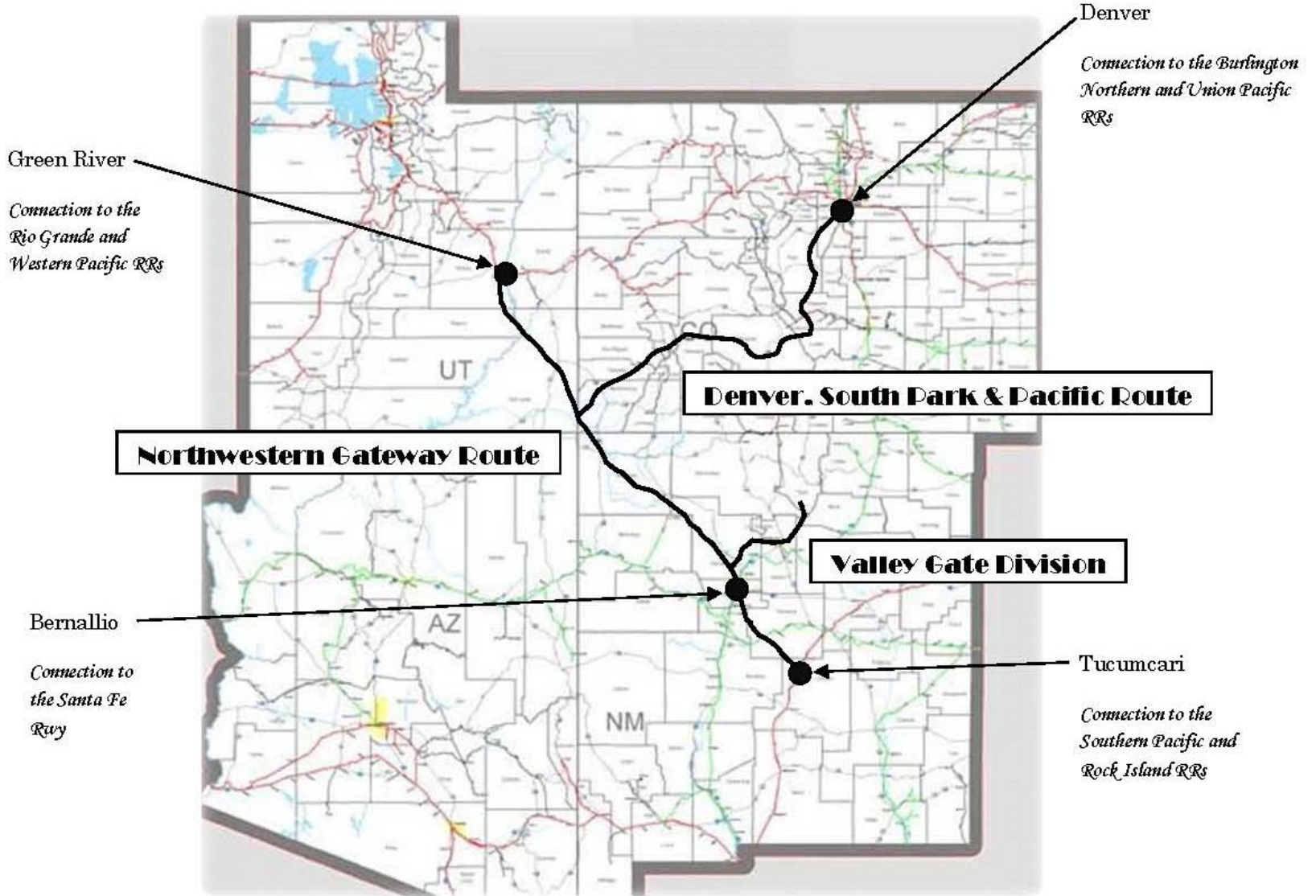
# OPERATIONS ORIENTATION



# History of the GNW

- **Connects UP/SP Overland Route and the AT&SF Santa Fe Trail - As the C&S Collapsed, GNW purchased the old DSP&P R.O.W. to provide a connection into Denver**
- **Set between 1970 and 1980**
- **Strong ties and commonality with the Southern Pacific**
- **First and Second Generation Diesels - GNW necessarily utilizes second hand units**



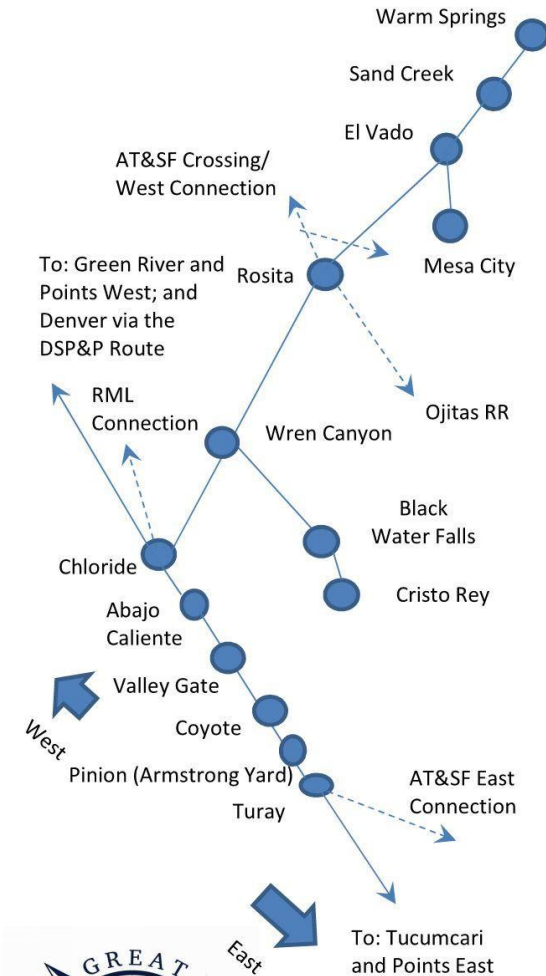


# WARM SPRINGS DISTRICT/ NEW MEXICO DIVISION

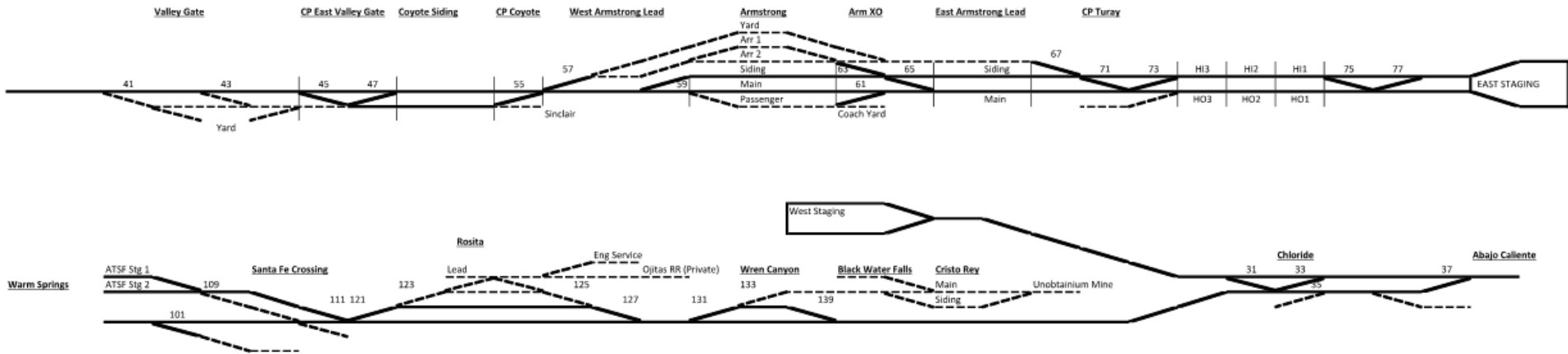
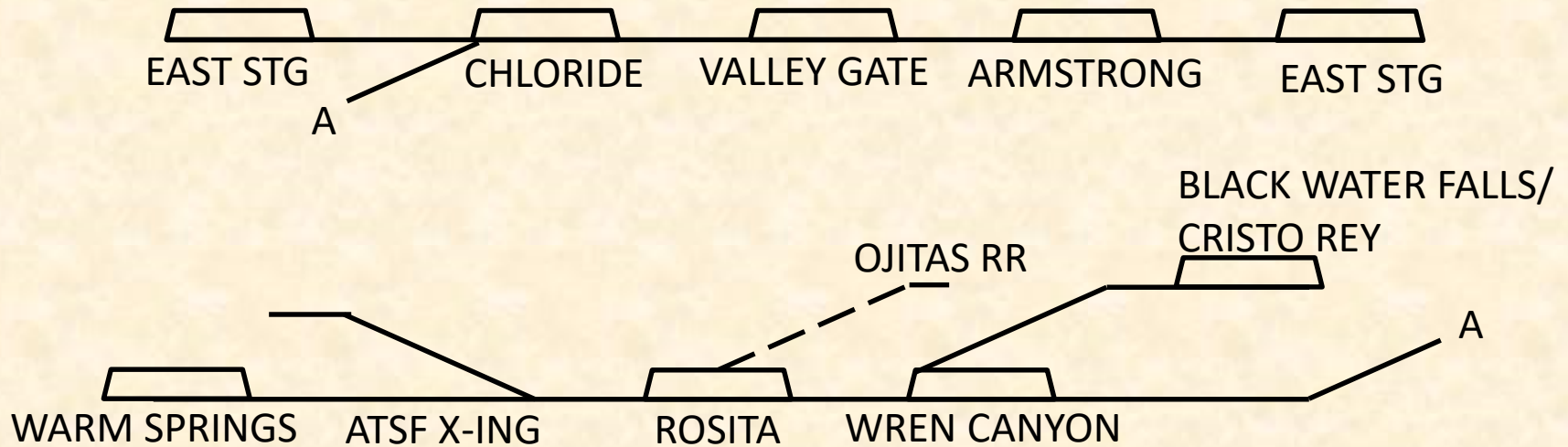
- Three Yards – Armstrong, Valley Gate and Warm Springs
- Through trains drop and pickup cars to and from the Warm Springs District at Armstrong
- Staging yards represent points east and west

## WARM SPRINGS DISTRICT

### AREA MAP



# The LAYOUT of the Layout



# OPERATING POSITIONS

- ***Armstrong Yardmaster*** – Handles and oversees all operations in Armstrong.
- ***Warm Springs Yardmaster*** – Handles and oversees all operations at Warm Springs.
- ***Road Engineer 1 and 2*** – Handles all train movements outside of Valley Gate and Warm Springs.
- ***Dispatcher*** – Responsible for the orderly release and control of trains.



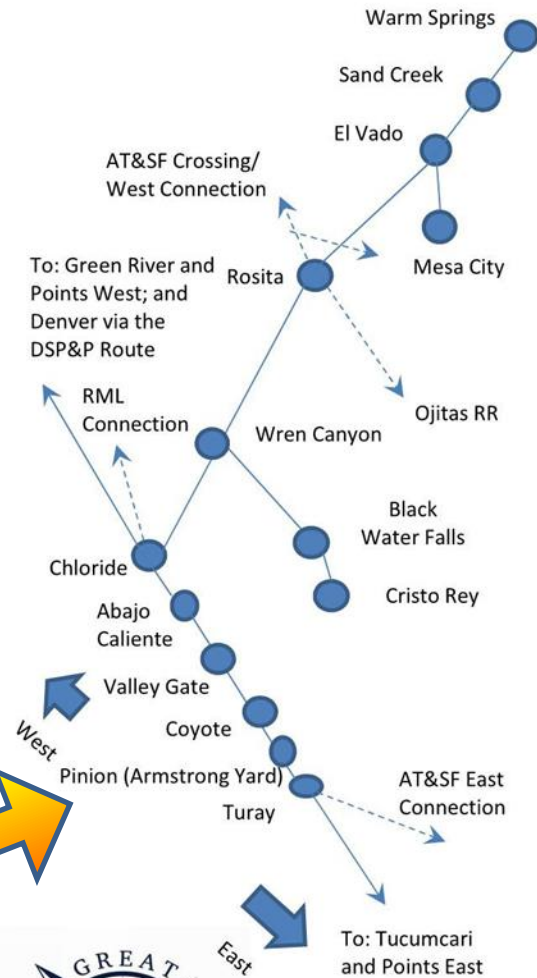
# ARMSTRONG

- Armstrong is primary gateway for Warm Springs District
- SP/GNW/ATSF through trains
- RML and CRI&P transfers
- Warm Springs “Haulers”
- Locals



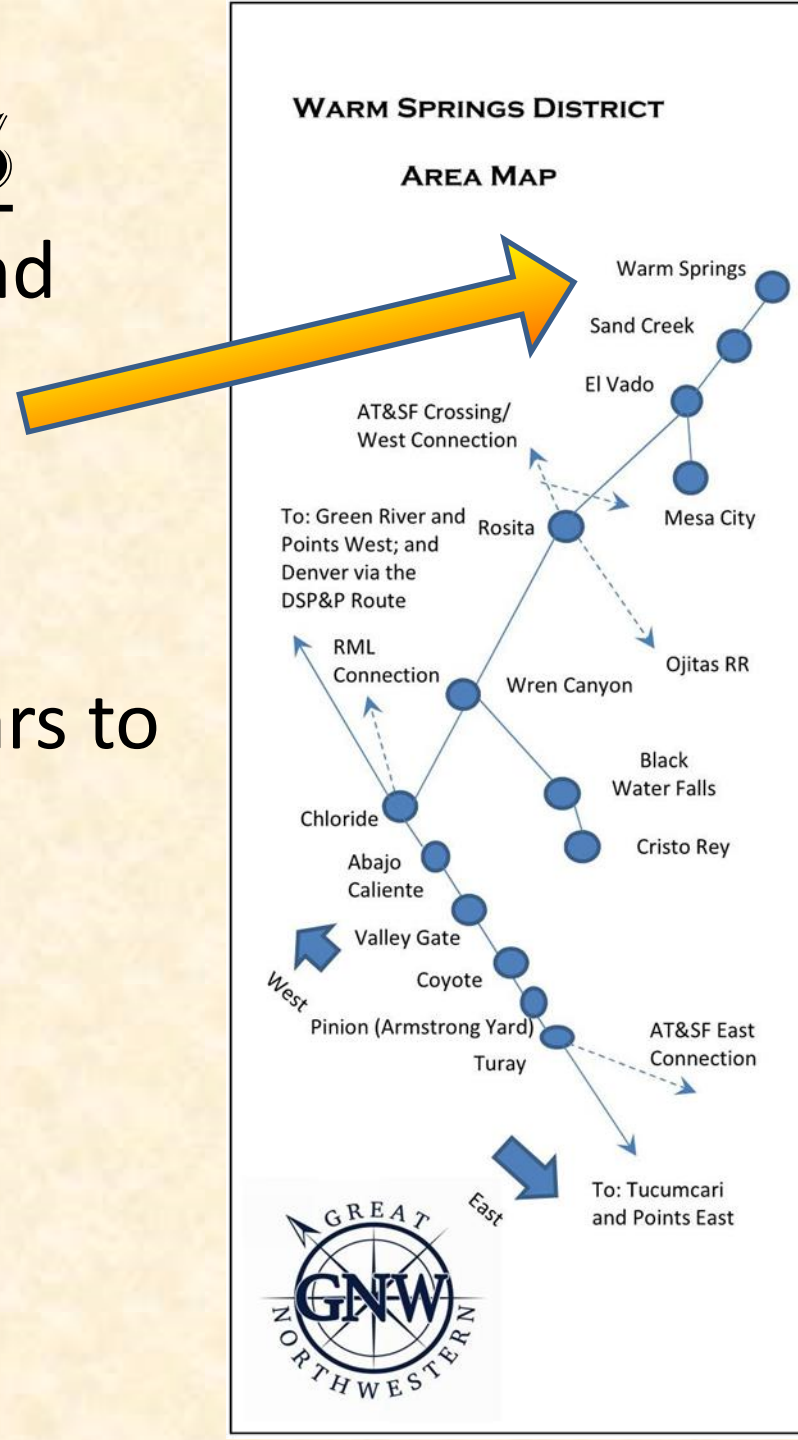
## WARM SPRINGS DISTRICT

### AREA MAP



# WARM SPRINGS

- Locals are used to deliver and collect cars.
- Warm Springs marshals cars from surrounding industry.
- Manifest freights transfer cars to and from Armstrong.





# ROAD CREWS

- Move trains across district.
- Through trains from Staging to Staging, dropping cars at Armstrong as required.

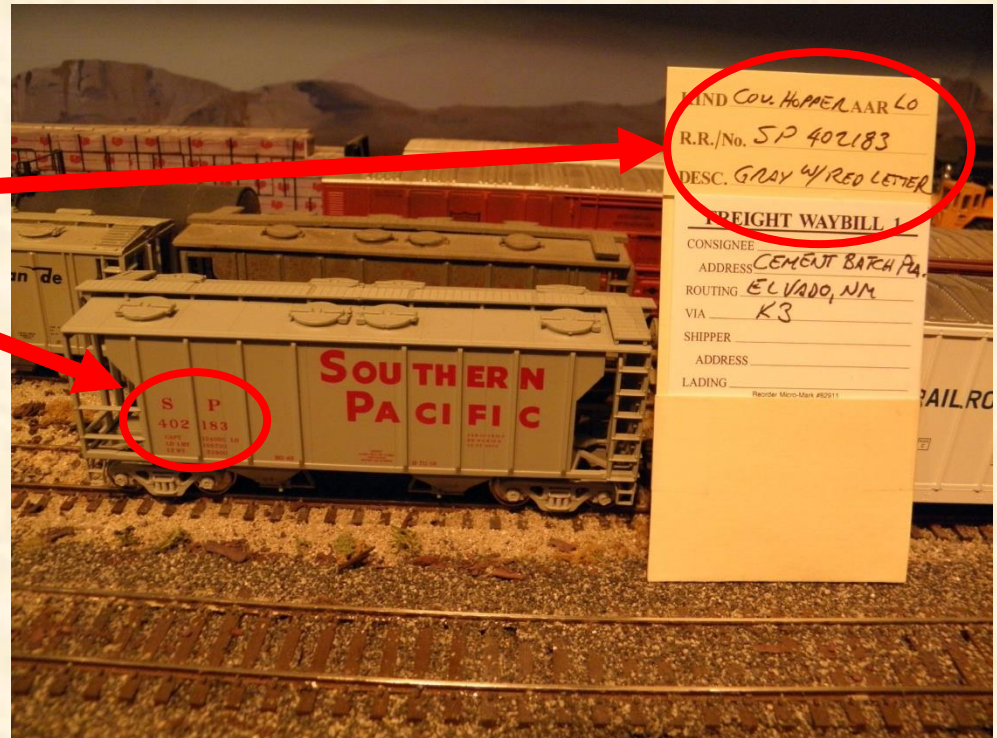


- Locals out and back from yards to service industries.
- Operates commute and Amtrak passenger trains.

# Car Cars and Waybills

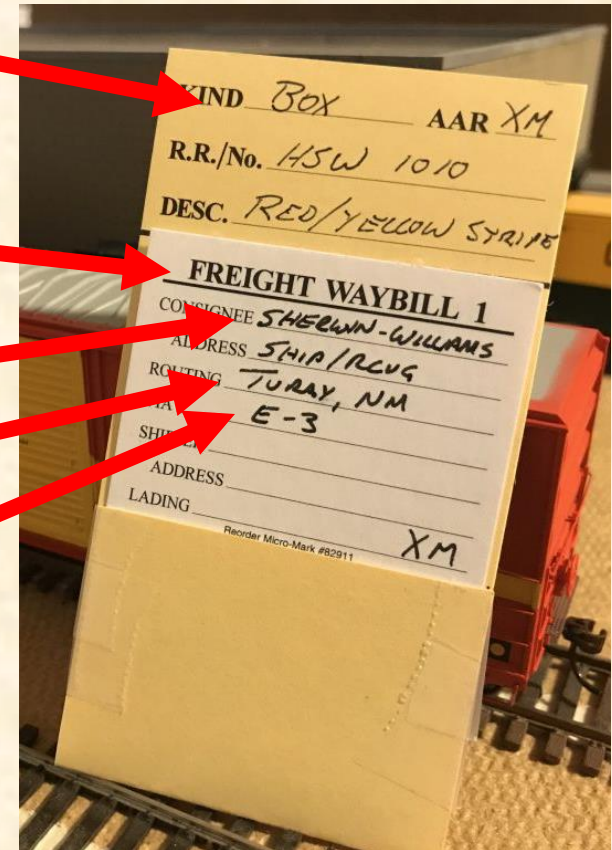
All Freight Traffic Moves via CC/WB

Reporting Marks  
and Description  
Match Car to Card



# How To Read A Car Card/Waybill

- Each Car Card...  
has an associated  
Waybill.
- The Waybill identifies  
the car's destination...  
the destination city...  
and the "TIBS" location.





# **Train/Industry Blocking System** **(TIBS)**

- To simplify car routing and locating industries, the GNW uses the Train/Industry Blocking System.
- Every city or off layout destination receives a LETTER CODE.
- Within each city, each possible car destination receives a specific NUMBER code.

# TIBS Listing

Turay is TIBS Letter ID "E"

Orchard Supply is TIBS Number ID "1" for yard area and 2 for warehouse.

Therefore, all cars destined for Orchard Supply will have TIBS ID E1 or E2.

## Off-Layout (Staging) Destinations

### Eastbound

<u>A</u>	East Staging	SP (Red)
<u>B</u>	East Staging	ATSF (Yellow)

## On-Layout Destinations

### PINION DISTRICT - ALL CARS WITH TIBS "E" THRU "L"

<u>E</u>	Turay
E-1	Orchard Supply Hardware - Yard Area
E-2	Orchard Supply Hardware - In Materials Building
<u>F</u>	E Turay
F-1	Bend Brewing Co - Grain
<u>G</u>	Halcon Cement
G-1	Cement
<u>H</u>	Armstrong
H-1	GNW Engine Service - Sand
<u>I</u>	(Spare)
<u>J</u>	Coyote/[Sinclair Refinery]
J-1/2	LNG - Propane/Butane
J-3	Fuel - Gasoline
J-4	Fuel - Diesel

# Off-Layout Destinations

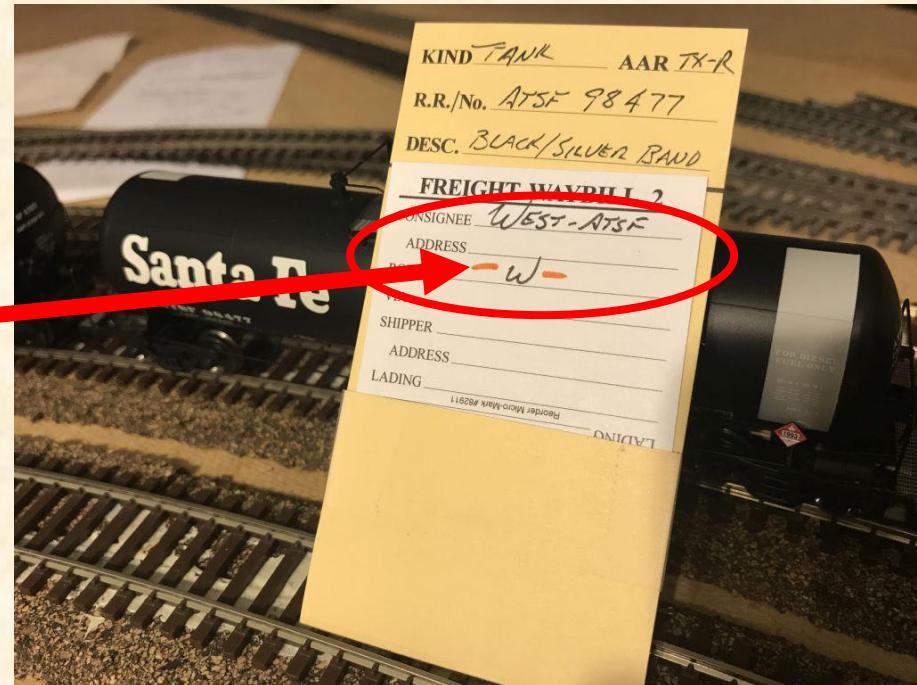
Generally off-layout destinations are only the TIBS Letter ID

## Off-Layout (Staging) Destinations

### Westbound

<u>W</u>	ATSF Staging	ATSF via Rosita (Orange)
<u>X</u>	West Staging	(Reserved)

Waybill is color coded to make it easy to see the destination is off layout.

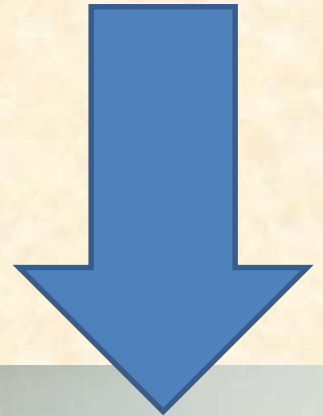




# STAGING...

*...Resides Under Armstrong...*

- *9 Tracks*
- *3 Trains per Track*



# Using TIBS

- Group cars with same TIBS designations; letters then numbers. (Called “BLOCKING”)
- Don’t need to know every industry destination; locals will get it there.
- Yards should be blocking all cars.





# Spotting Cars/Handling Cards

- *Once car is spotted, place car-card in Set-Out pocket*
- *Car-Cards for cars to be picked-up are in Pick-Up pocket*





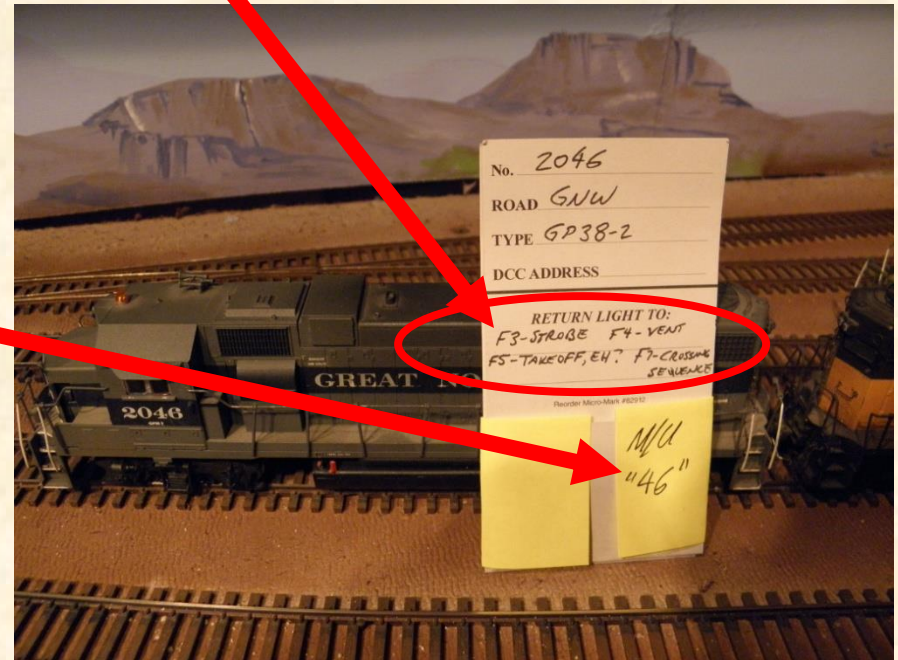
# Spotting Cars/Handling Cards

- *IF car cannot be spotted, place car on clear and available track and car-card in “HOLD” pocket.*
- *HOLD indicates car to be spotted when space available.*



# Non-Revenue Rolling Stock

- Engine, Caboose and other equipment
- Follow same Car-Card format
- Includes loco operation info
- “MU” locos –  
CC’s bound together  
with sticky indicating  
consist address.  
(Use as LOCO number)





# MAKING UP TRAINS

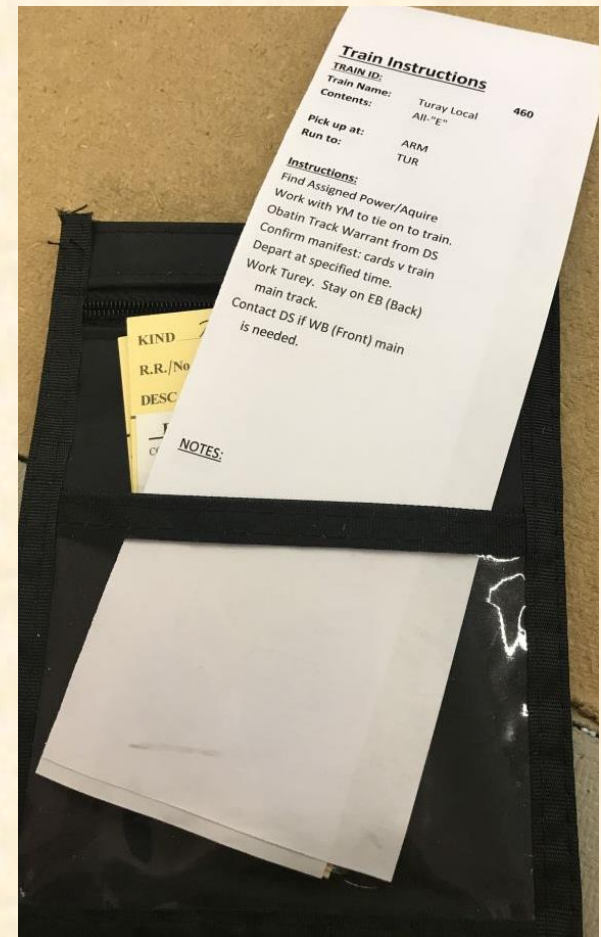
- Cars for a particular destination are collected to form trains.
- Trains are made up and released on a sequence, the Train List.
- Scheduled trains are run on a timetable.





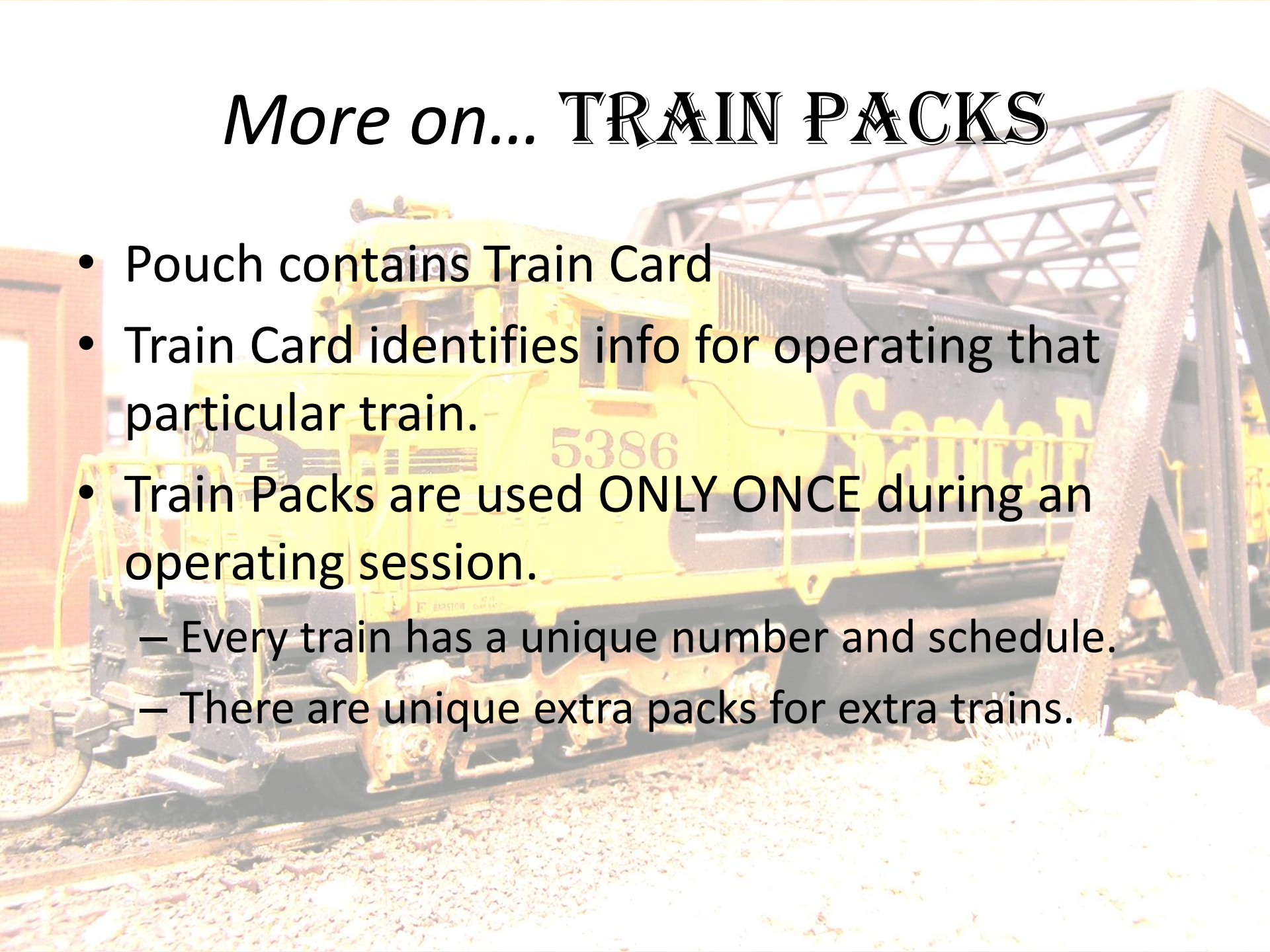
# TRAIN PACKS

- Car-Cards are collected for a particular destination.
- The collected cards form the basis of a train.
- Cards are placed into a pouch called a “TRAIN PACK.”



# *More on...* TRAIN PACKS

- Pouch contains Train Card
- Train Card identifies info for operating that particular train.
- Train Packs are used **ONLY ONCE** during an operating session.
  - Every train has a unique number and schedule.
  - There are unique extra packs for extra trains.





# Train Card

*Identifies all relevant info for operating a train:*

Train Name  
And TIBS contents

Train From/To  
and  
General  
Description of Work

Use the NOTES section for a scratch pad, or ID issues surfaced during your run. (They WILL be read!)

Train Number

## Train Instructions

**TRAIN ID:** 300

**Train Name:** WS-ARM Hauler

**Contents:** Non-"P" -->"R"

**Pick up at:** WS

**Run to:** ARM

### Instructions:

Find Assigned Power/Aquire  
Work with YM to ID power/train.  
Obtain Track Warrant from DS  
Couple onto train; airtest.  
Confirm manifest: cards v train  
Depart at specified time.  
Run to destination.  
If possible, call in cleared.  
Terminate train with DS  
Work with YM to park power

NOTES:



# *Dispatching ...and Control of Trains*



# THE GNW OPERATING CONCEPT

- Trains from staging bring cars onto the layout, generally by “SP” trains.
- Blocks of cars are dropped or picked up by these trains at Valley Gate.
- Balance of car movements are made by trains that originate and terminate on the layout.



# VALLEY GATE SUBDIVISION TRAIN LIST

All trains with designations greater than 199 are run as extras unless otherwise noted.  
First Class and Commuter Trains are run per Time Table Schedule and have all rights unless otherwise superseded.  
Based on Timetable No. 9

Description	Direction	Symbol	Train No.	Departure	Meet	Notes
20 Mile to Vado Coal	West	TMEVC	211	12:20 AM	300 at Chloride	Coal Unit Train to Wm Nixon Gen Station; No stop in Valley Gate
Warm Springs to Valley Gate Manifest	East	WSVGM	300	12:25 AM	301 at Mesa City	GNW Manifest Freight, from Warm Springs to Valley Gate
Valley Gate to Warm Springs Manifest	West	VGWSM	301	12:26 AM	300 at Mesa City	GNW Manifest Freight, from Valley Gate to Warm Springs
Montrose to Tucumcari Manifest (SP/GNW)	East	MOTUM	200	2:50 AM		Through freight; stops in Valley Gate - West
Tucumcari to Montrose Manifest (SP/GNW)	West	TUMOM	201	4:25 AM	212 at Chloride	Through freight; stops in Valley Gate - West
Vado to 20 Mile Coal (Empties)	East	EVTMC	212	5:27 AM	201 at Chloride	MT Coal Unit Train from Wm Nixon Gen Station; No stop in Valley Gate
Commuter	East	Commuter	110	6:00 AM	110 turns to become 113	Originates in Warm Springs, Terminates in Valley Gate-East
Amtrak - San Juan	West	San Juan	9	7:05 AM	110 at Valley Gate East	Stops in Valley Gate - East ONLY
Commuter	East	Commuter	112	8:07 AM	113 at Chloride	Originates in Warm Springs, Terminates in Valley Gate-East
Commuter	West	Commuter	113	8:30 AM	112 at Chloride	Originates in Valley Gate-East, Terminates in Warm Springs
Abajo Caliente Local	East	ACL	402	10:00 AM		GNW Local from Warm Springs to Abajo Caliente; Works Mesa City
Pacific Fruit Express	East	PFEX	172	10:20 AM		Express Refrigerated Train from West to East; Drop Del Monte Cars in VG
Valley Gate to Albuquerque Transfer (ATSF)	West	SFVGT	501	11:20 AM		AT&SF Transfer Return; Originates in Valley Gate goes to staging.
RI to Valley Gate Transfer (CRI&P)	East	RIVGT	602	1:05 PM	211 at Chloride	Rock Island Transfer from Staging; Terminates in Valley Gate
Albuquerque to Valley Gate Transfer (ATSF)	East	SFVGT	502	1:33 PM		AT&SF Transfer from Staging; Terminates in Valley Gate
Abajo Caliente Local	West	ACL	403	1:53 PM		GNW Local from Warm Springs to Abajo Caliente; Works Mesa City
RI to Valley Gate Transfer (CRI&P)	West	RIVGT	603	2:27 PM		Rock Island Transfer Return; Originates in Valley Gate goes to staging.
Montrose to Tucumcari Manifest (SP/GNW)	East	MOTUM	204	2:55 PM		Through freight; stops in Valley Gate - West
Warm Springs to Valley Gate Manifest	East	WSVGM	302	3:30 PM		GNW Manifest Freight, from Warm Springs to Valley Gate
Commuter	West	Commuter	115	5:18 PM	116 at Mesa City	Originates in Valley Gate-East, Terminates in Warm Springs
Commuter	East	Commuter	116	5:50 PM	115 at MC /8 at VG-E/Becomes 117	Originates in Warm Springs, Terminates in Valley Gate-East
Valley Gate to Warm Springs Manifest	West	WSVGM	303	6:30 PM	116 at Chloride	GNW Manifest Freight, from Valley Gate to Warm Springs
Amtrak - San Juan	East	San Juan	8	7:00 PM	117 at Valley Gate East	Stops in Valley Gate - East ONLY
Commuter	West	Commuter	117	8:30 PM	8 at Valley Gate East	Originates in Valley Gate-East, Terminates in Warm Springs
Tucumcari to Montrose Manifest (SP/GNW)	West	TUMOM	205	9:20 PM		Through freight; stops in Valley Gate - West



# *Release of Trains through* **TRACK WARRANT AUTHORIZATION**

- Two kinds of track:  
    MAIN LINE and Everything Else...
- Yard Areas Under Yard Master Control
- Mainline Under Dispatcher Control
- Need Authorization to Enter and Use Mainline



# TRACK WARRANTS

- Depending on Session, May Be Verbal or Paper
- Defines Limits of Authorization
- Authorizations should be read back to assure understanding
- Once given, train OWNS that track

## GREAT NORTHWESTERN RAILWAY TRACK WARRANT

No. \_\_\_\_\_, 19 \_\_\_\_

To: \_\_\_\_\_ At: \_\_\_\_\_  
(Mark "X" in box for each item instructed)

1.  Track Warrant No. \_\_\_\_\_ is void.
2.  Proceed from \_\_\_\_\_ To \_\_\_\_\_  
On \_\_\_\_\_ Track
3.  Proceed from \_\_\_\_\_ To \_\_\_\_\_  
On \_\_\_\_\_ Track
4.  Work between \_\_\_\_\_ & \_\_\_\_\_.
5.  Not in Effect Until Arrival Of \_\_\_\_\_ At \_\_\_\_\_.
6.  Joint Authority Between \_\_\_\_\_ And \_\_\_\_\_  
*Note: Trains must move at RESTRICTED speed.*
7.  This Authority Expires at \_\_\_\_\_.
8.  Hold Main Track At Last Named Point.
9.  Clear Main At Last Named Point.
10.  Do Not Foul Limits Ahead of \_\_\_\_\_, \_\_\_\_\_.
11.  Between \_\_\_\_\_ & \_\_\_\_\_  
Make all movements at restricted speed.  
Limits occupied by train, engine, men or equipment.
12.  Do Not Exceed \_\_\_\_\_ MPH Between \_\_\_\_\_  
& \_\_\_\_\_
13.  Track Bulletins In Effect \_\_\_\_\_, \_\_\_\_\_,  
\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_
14.  Other Special Instructions: \_\_\_\_\_  
\_\_\_\_\_

OK \_\_\_\_\_, \_M Disp. \_\_\_\_\_ Copied By \_\_\_\_\_

With the understanding that all mainline track switches within the limits released are lined for the main track:

Reported Clear \_\_\_\_\_ at \_\_\_\_\_, \_M By \_\_\_\_\_  
(Location) (Time) (Crew Member)

Reported Clear \_\_\_\_\_ at \_\_\_\_\_, \_M By \_\_\_\_\_  
(Location) (Time) (Crew Member)

Reported Clear \_\_\_\_\_ at \_\_\_\_\_, \_M By \_\_\_\_\_  
(Location) (Time) (Crew Member)

# TRACK WARRANTS

## PART 1: Header

- Sequence number

GREAT NORTHWESTERN RAILWAY  
TRACK WARRANT

- Date

No. \_\_\_\_\_, 19\_\_\_\_

- Train No.

To: \_\_\_\_\_ At: \_\_\_\_\_

*(Mark "X" in box for each item instructed)*

- Where you are



# TRACK WARRANTS

## PART 2: Authorizations

- Provides SPECIFIC authorizations for train to use Main Track
  - Not all blocks will be checked
- Train HOLDS the authority listed as defined in the Warrant

### Segment 1:

1.  Proceed from \_\_\_\_\_ To \_\_\_\_\_
2.  Not in Effect Until Arrival Of \_\_\_\_\_ At \_\_\_\_\_.
3.  Hold Main Track At Last Named Point.
4.  Clear Main At Last Named Point.

### Segment 2:

5.  Proceed from \_\_\_\_\_ To \_\_\_\_\_
6.  Not in Effect Until Arrival Of \_\_\_\_\_ At \_\_\_\_\_.
7.  Hold Main Track At Last Named Point.
8.  Clear Main At Last Named Point.

### Segment 3:

9.  Proceed from \_\_\_\_\_ To \_\_\_\_\_
10.  Not in Effect Until Arrival Of \_\_\_\_\_ At \_\_\_\_\_.
11.  Hold Main Track At Last Named Point.
12.  Clear Main At Last Named Point.

# TRACK WARRANTS

## PART 3: Other Instructions

- Provides additional instructions to crew.
- These are not optional and must be authorized, adhered to.

Other Instructions:

13.  Work between \_\_\_\_\_ & \_\_\_\_\_.
14.  Joint Authority Between \_\_\_\_\_ And \_\_\_\_\_.  
*Note: Trains must move at RESTRICTED speed.*
15.  This Authority Expires at \_\_\_\_\_.
16.  Do Not Foul Limits Ahead of \_\_\_\_\_, \_\_\_\_\_.
17.  Do Not Exceed \_\_\_\_\_ MPH Between \_\_\_\_\_  
& \_\_\_\_\_.
18.  Other Special Instructions: \_\_\_\_\_  
\_\_\_\_\_

# TRACK WARRANTS

## PART 4: Readback and OK

OK \_\_\_\_\_, \_\_M Disp. \_\_\_\_\_ Copied By \_\_\_\_\_

*Track Warrant is now in effect!*

## PART 5: Cleared/Roll-up

With the understanding that all mainline track switches within the limits released are lined for the main track:

Reported Clear \_\_\_\_\_ at \_\_\_\_\_, \_\_M By \_\_\_\_\_  
(Location) (Time) (Crew Member)

Reported Clear \_\_\_\_\_ at \_\_\_\_\_, \_\_M By \_\_\_\_\_  
(Location) (Time) (Crew Member)

Reported Clear \_\_\_\_\_ at \_\_\_\_\_, \_\_M By \_\_\_\_\_  
(Location) (Time) (Crew Member)



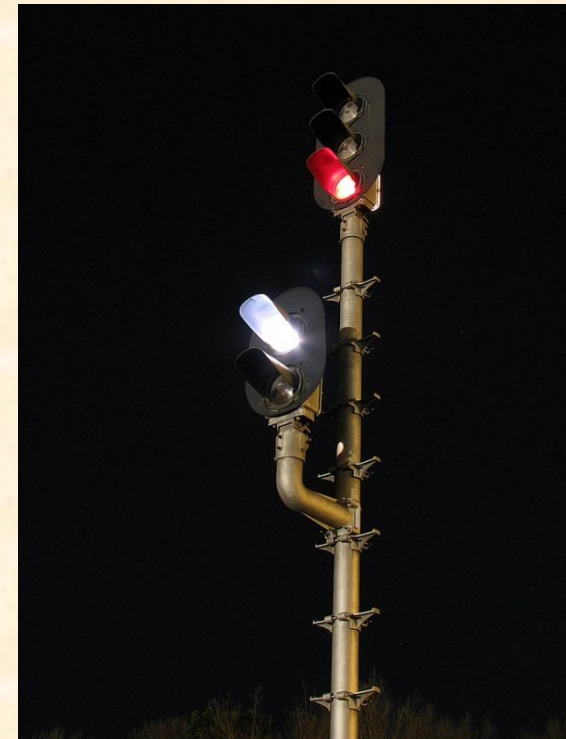
# ABS / APB Signals

- ABS / Interlocking Signals Exist on Warm Springs Branch
- ABS: Automatic Block Signals  
APB: Absolute Permissive Block
  - Indicates OCCUPANCY
  - NOT Track Authorization
- Red = Stop
- Not Red = Look at your Track Warrant



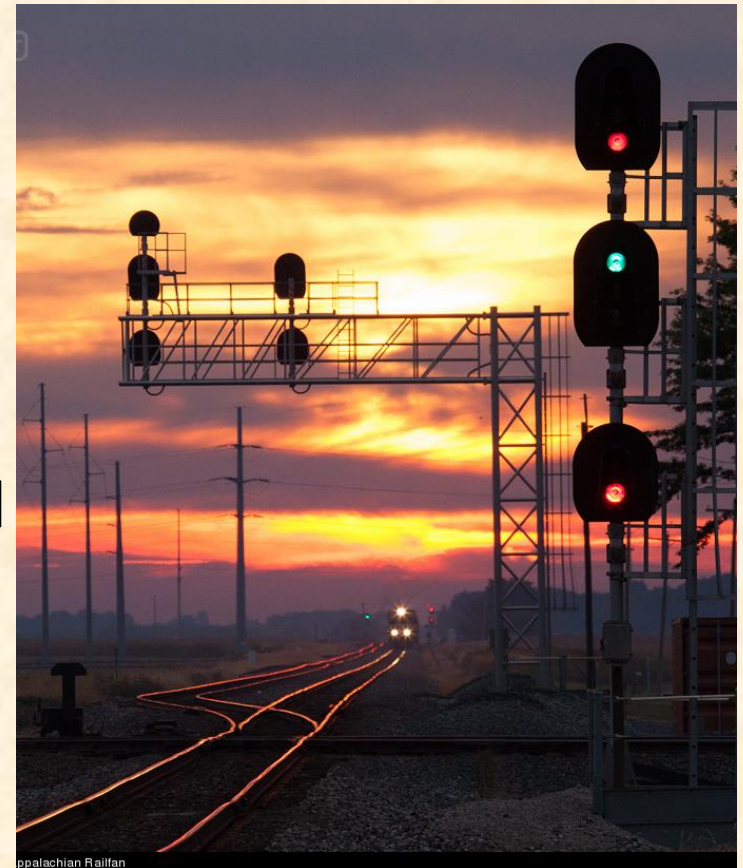
# Interlocking Signals

- Interlocking Signals Exist at East El Vado Jct
  - Provides PERMISSION to ENTER Yard Limits
  - Provides ROUTE INFORMATION to LEAVE Yard
- Entering:
  - Red: Stop
  - Lunar White: Restricted
  - Red Flashing: Restricted



# Interlocking Signals (Cont'd)

- Interlocking Signals
  - Multi-Head Signals
  - Indicates ROUTE AND OCCUPANCY
  - Does NOT Convey Authority
  - Upper Head: Primary Route
  - Lower Heads: Secondary and tertiary routes
  - “Impossible” Routes always Red
- Located At:
  - Leaving Warm Springs
  - More to come....





# YARD LIMITS

- Do not need Track Warrant for Movements Within Yard Limits
- Cannot move into Yard Limits without Yard Master Authorization.



# YARD LIMITS

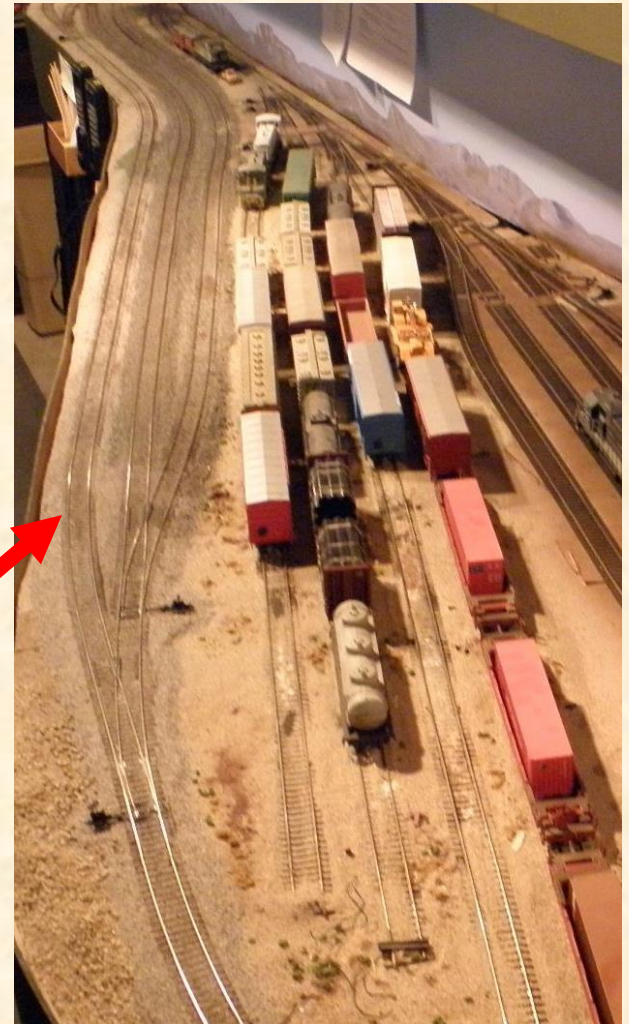
- YARD LIMITS DO NOT EXIST AT ARMSTRONG
  - The Main Line and Siding are under control of the Dispatcher
  - Yard tracks, ARE under ARM YM control
  - “Armstrong Tower” can override DS, but ask permission first.





# YARD LIMITS

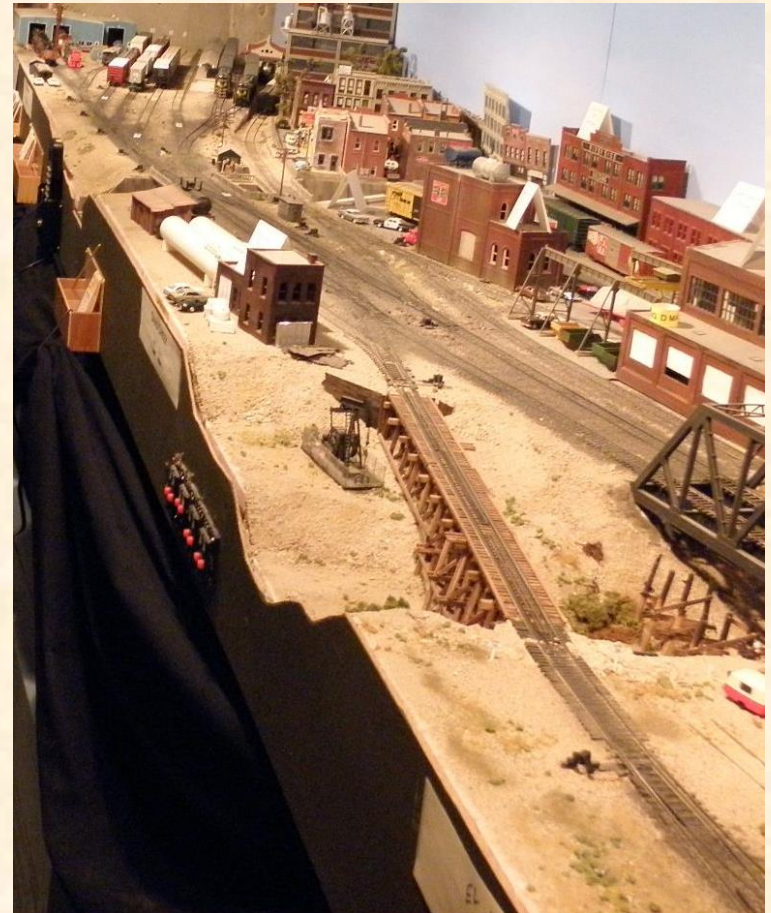
- YARD LIMITS DO NOT EXIST AT VALLEY GATE
  - The Main Line Is Under Control of the Dispatcher
  - However, sidings, yard tracks, etc ARE under Valley Gate YM control
- Mainline Denoted by LIGHT COLOR BALLAST through Valley Gate





# YARD LIMITS

- Yard Limit EXIST at WARM SPRINGS from El Vado to End-of-Track at Warm Springs.
- All movements within Warm Springs District are under control of Warm Springs YM.



# Industrial Switchers

- Abajo Caliente has a captive switcher.
  - Limits of operation are to derail.
- Rosita interchanges with private mining Ojitas RR.
- Foreign/Private RR power not permitted to operate on GNW tracks.





# TRAIN HANDLING

- Throttles
- Sound
- Techniques





# The MRC Prodigy Handheld

- Easy to Operate
  - Instructions are on back!
- Press LOCO, type in number, and touch enter to capture a loco.

Speed control – either by “+” or “-” buttons or by knob.

- Yard Master throttles are tethered, road throttles are wireless.

Direction between + and – keys...

Railroad time

Previous Locos



# Sound Equipped Loco Controls

In general:

F0 – Headlight

F1 – Bell

F2 – Long Horn

F3 – Short Horn

F4 – Dynamic Brake Sound

F5 – Gyra Light or Beacon

F6 – Backup Light

F7 – Brakes

F8 – Silence (Mute)

F9 – Dim (Headlight and B/U Light)

STOP – Shutdown – Also stops loco when moving

(See Loco cards for specifics on each engine)



# LOCOMOTIVE OPERATION

- Power is on the tracks at all times.
- Digital Carrier Control (DCC) sends signals over the rails to the loco to command actions.
- All locos are addressed by their number.
- All are sound equipped; most are Soundtraxx Tsunami. Refer to Loco Card for commands.
- All are programmed with momentum!
  - If lights and sound are on, power is getting to the unit.



# MOMENTUM

- Prototype locos weight between 150 and 250 tons – they don't start and stop easily.
- Simulated within the decoders.
- Road units have more.
- Slower is better.
- Plan your moves.



# SPEED

## *How Fast Is Fast Enough?*

- 25-45 MPH on Mainline
  - Note Signage
- 10 MPH in yards



Speed Table	
MPH	Seconds per 50'
5	6.8s
10	3.4s
15	2.3s
20	1.7s
25	1.4s
30	1.1s
40	0.9s
50	0.7s
60	0.6s



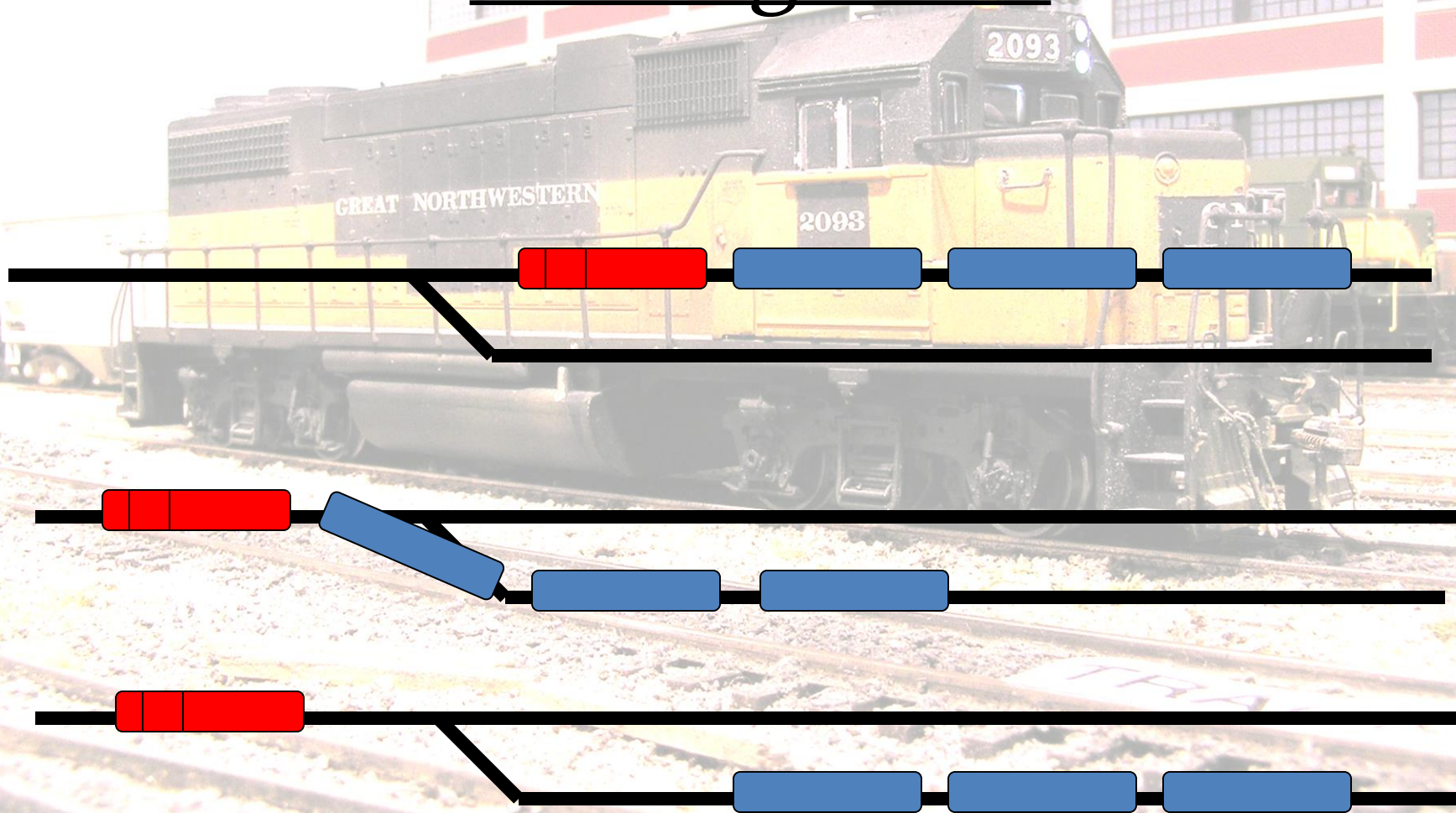
# SWITCHING OPERATIONS

- Group Movements
  - Preferably work everything as a trailing point movement.
  - Group all facing point movements and make just one run-around.



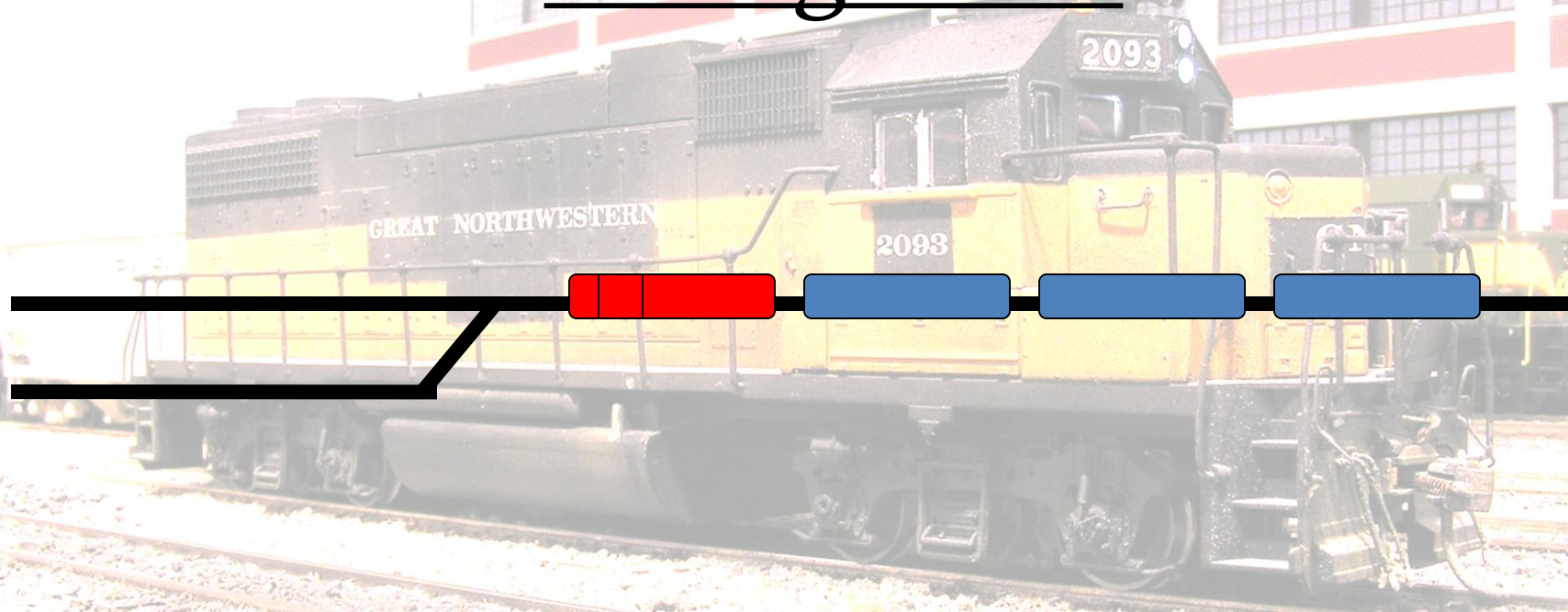


# Trailing Point



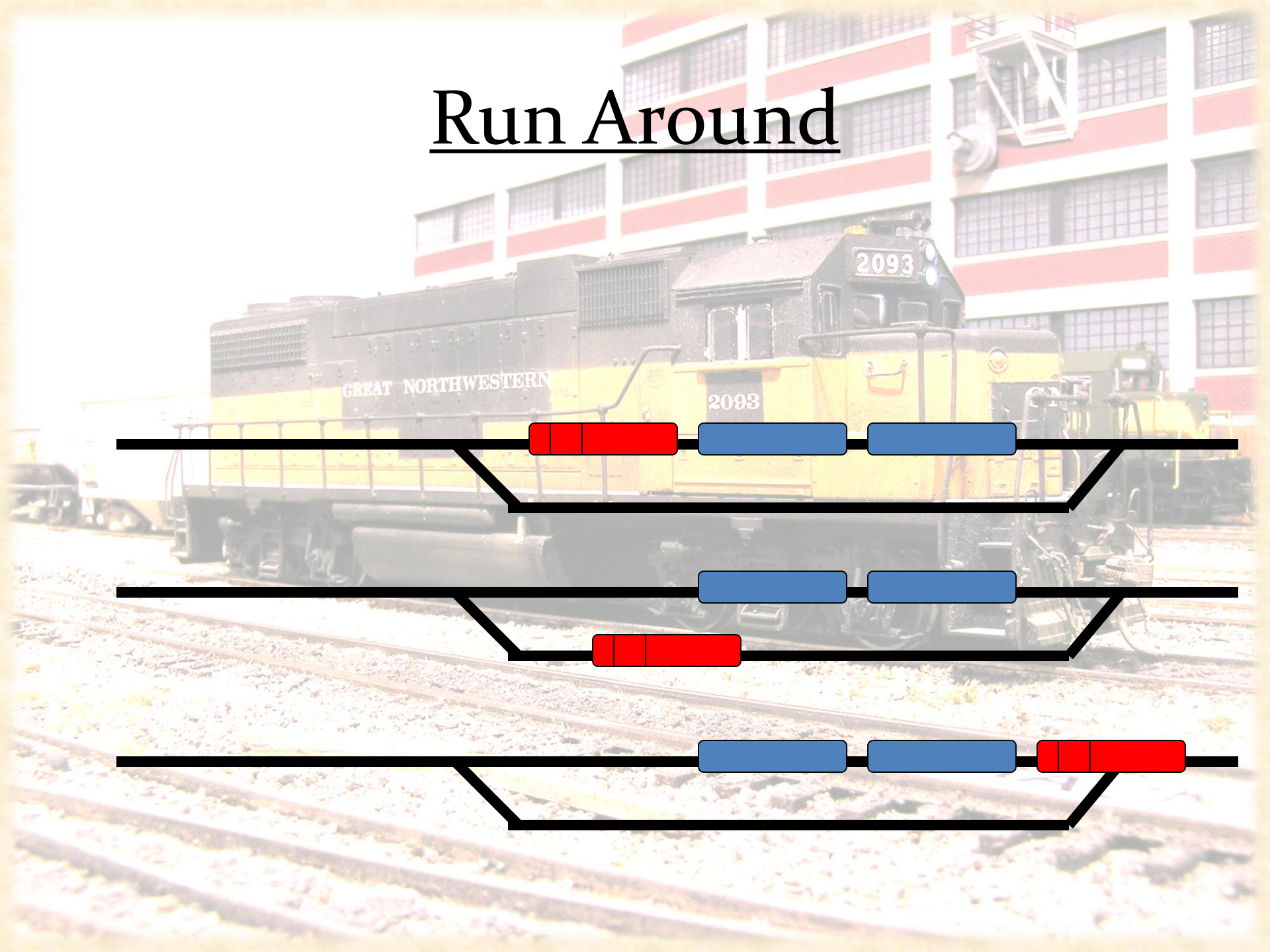


# Facing Point





# Run Around

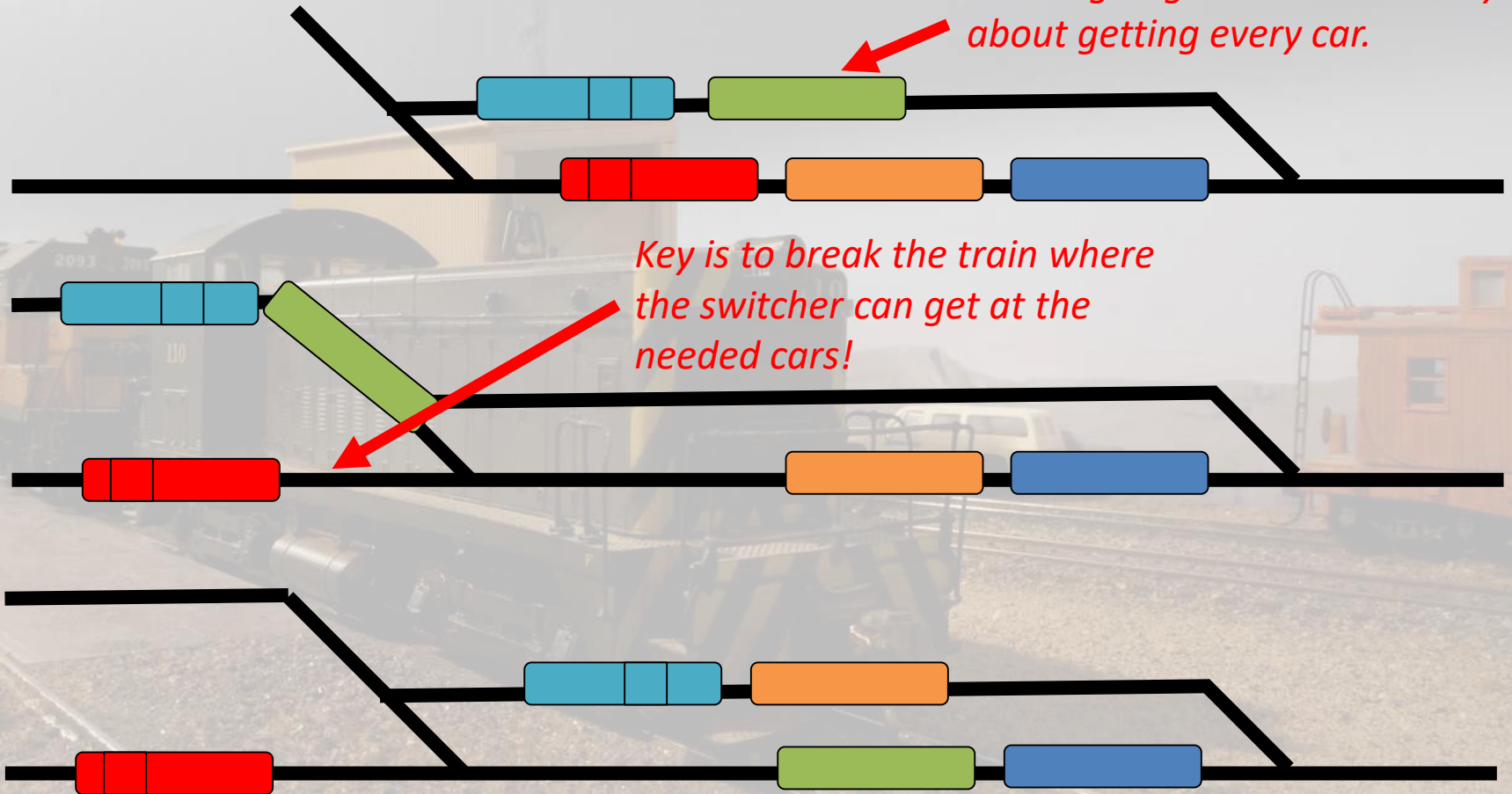




# Thru Trains at Valley Gate

- Should not take much time – at most 6 moves
  - Shown for Eastbound.

*Switcher needs to be ready with the outgoing cut.... Don't worry about getting every car.*

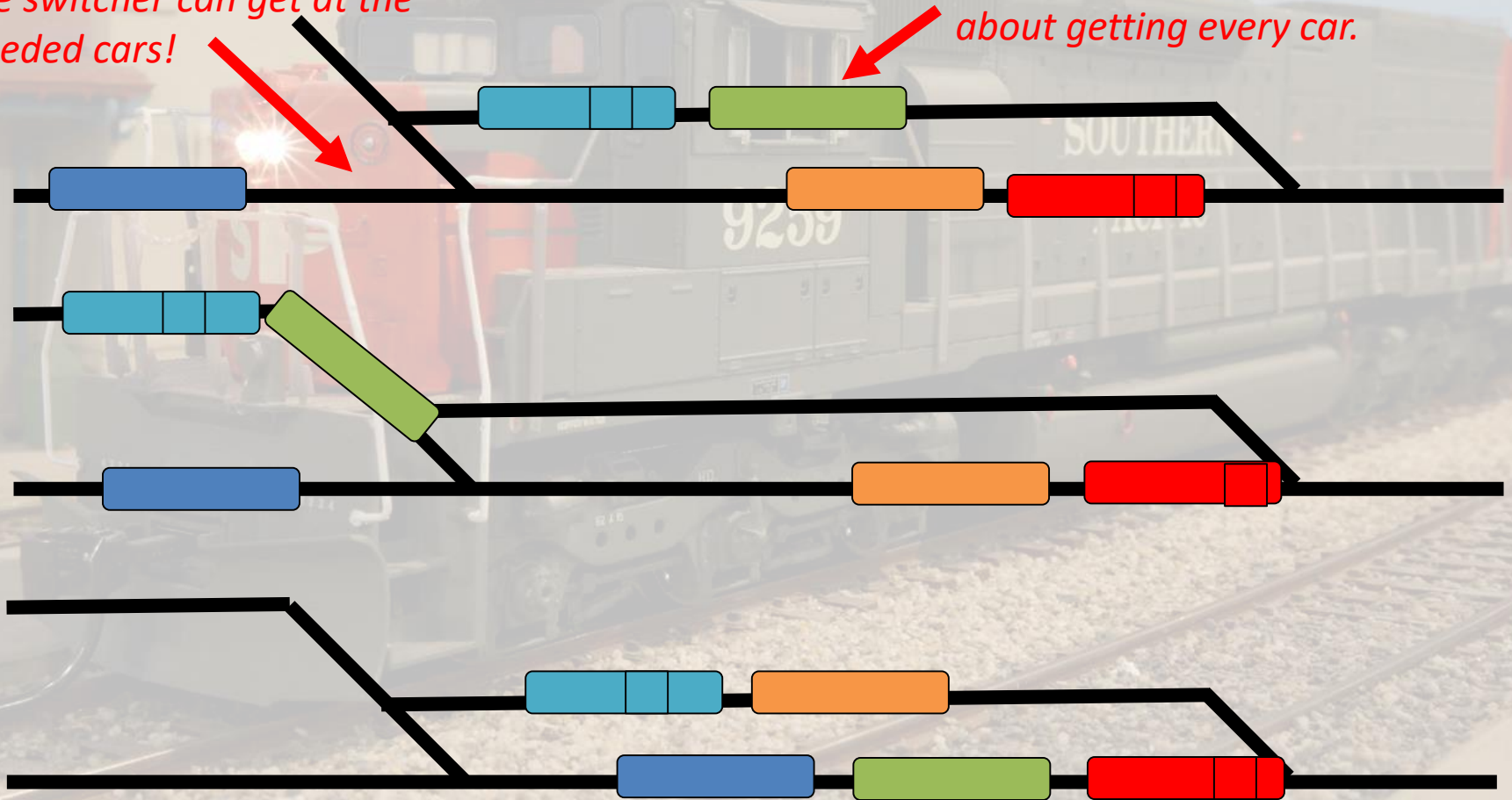


# Thru Trains at Valley Gate

- Similar for Westbound trains

*Key is to break the train where the switcher can get at the needed cars!*

*Switcher needs to be ready with the outgoing cut.... Don't worry about getting every car.*



# ADDED ELEMENTS FOR REALISM

- Deliberate moves. Plan before working.
- Group facing/trailing point moves.
- Slower is better.
- Other ideas:
  - Time to pump up air in cars. Typ 1 min per car.
  - Think about where your brakeman is, and pause to drop him, pick him up, plan cuts where his is...
  - Blow Horn: Before moving, RR crossings, etc.
  - Ring Bell: Stations, engine facilities, grade crossings.



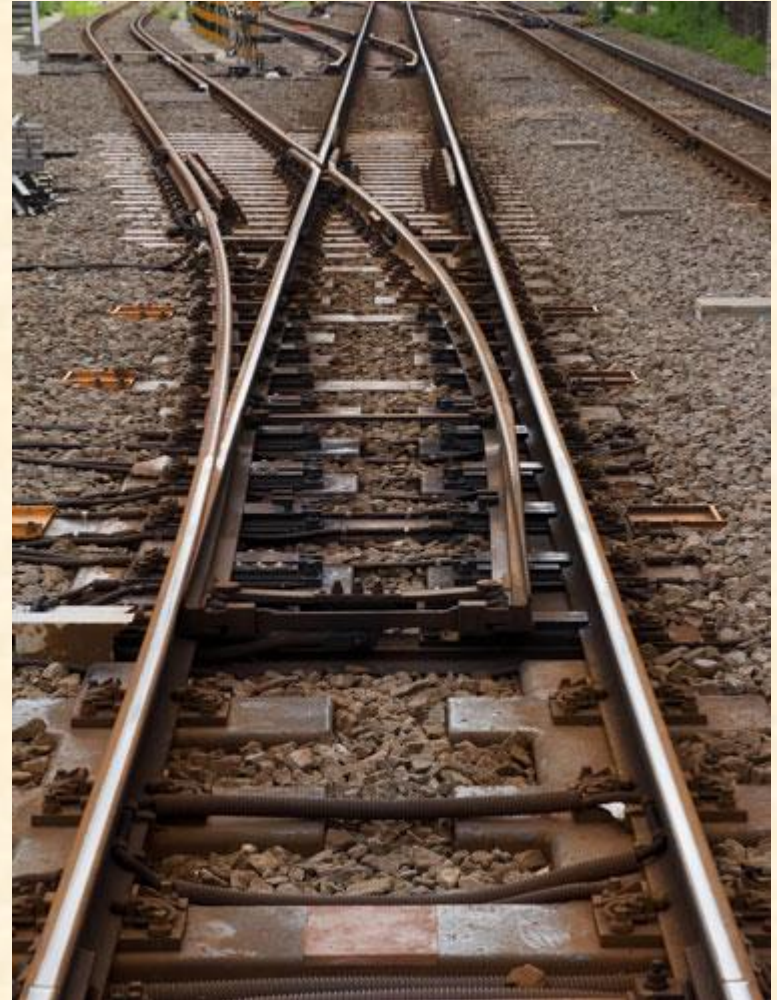
# *Clean up after switching...*

- Return all Switches to the NORMAL or MAINLINE position.
- Leave Car-Cards in proper locations.
- Verify Train-Packs that you have correct cards.



# *Reduce Derailments...*

- Check – Align - Check





# GNW MISCELLANEA

- No Food or Drinks in the RR Room
  - Water OK - We have water bottles for you!
- Tight Quarters – Make Room for each other
- Bad Order Cars –
  - Flag with Pink Slip
  - Set out at first convenient location.
- Bathroom – Next to RR entrance or upstairs
- Aprons – Available if desired
- Evening/Night Lighting



# Closing Thoughts....

- *Goal is to simulate a rail transportation system in scale.*
- *Operate realistically:*
  - *Speed is not as much a factor as deliberate and safe movements.*
  - *Follow prototype practices as much as possible.*
- *Have fun!*







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